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The Role of Early Attachment Experiences in the Development of Self-Views and Emerging Cognitive Vulnerability to Depression

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Graduate Program in Psychology
A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy
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The Role of Early Attachment Experiences in the Development of Self-Views and Emerging Cognitive Vulnerability to Depression

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by

Tara Elise Morley

Graduate Program in Psychology

A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

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Abstract

Attachment theory proposes that through repeated interactions with primary caregivers early in life, children develop representations of the self and others that influence various aspects of subsequent development. In particular, Bowlby proposed that children develop vulnerability to psychopathology such as depression based on these early experiences (Bowlby, 1980). Numerous studies using self-report measures with adult participants have supported these assertions: Individuals with non-secure attachment styles are more likely to experience low self-esteem and depression than those with non-secure attachments (Dozier, Stovall-McClough, & Albus, 2008). However, these studies say little about the developmental origins of such processes, and prospective longitudinal studies beginning in childhood are necessary to provide support for Bowlby's proposal. Unfortunately, few such studies exist in the extant literature. The purpose of the current study was to add to the existing literature by examining associations between *early* attachment and both self-views and vulnerability to depression in early childhood.

The three studies in this set follow 70 children who were seen at three time points: 27 months, 42 months and 5.5 years. Mother-child attachment was assessed at the first two visits, and representations of the self and helpless responses to failure were examined at the latter assessment.

As predicted, children with a history of secure attachment possessed more positive self-views related to cognitive competence and displayed less helplessness following a disappointing social situation. Contrary to expectations however, there was no association between attachment quality and helplessness following achievement-based

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failure, and children with non-secure attachment displayed more positive self-views with regard to physical competence than their secure counterparts. Additionally, a change from secure to non-secure attachment over the first few years of life was associated with the least positive self-views and responses to failure.

These findings provide a more descriptive account of both self-views and responses to failure associated with early attachment quality than was previously available in the literature. The results are discussed in relation to existing theory and empirical research. This research has important implications for understanding developmental sequel associated with early attachment quality and also for clinical interventions aimed at improving outcomes for children with sub-optimal experiences in early attachment relationships.

Keywords: Attachment, Self-Representations, Self-Esteem, Vulnerability to Depression, Cognitive Vulnerability, Helplessness

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General Introduction

Depression is among the most common and debilitating psychological conditions afflicting modern society (Alloy, Abramson, Keyser, Gerstein, & Sylvia, 2008; Kessler, 2002). With a 12-month prevalence estimated at 7% and high associated mortality rates (American Psychiatric Association, 2013), depression has negative consequences for millions of individuals and their families. Depression is characterized by cognitive, affective, physical and motivation symptoms including low mood, insomnia and difficulty concentrating. The impact of this disorder touches on many aspects of daily functioning, including interpersonal relationships, academic and vocational performance and physical health (American Psychiatric Association, 2013). Understanding how this debilitating condition first develops is essential for informing early interventions aimed at decreasing its negative consequences.

Various theorists have suggested that experiences with parents very early in life have important implications for later emotional functioning (Beck, 1967, 1987; Bowlby, 1980; Ingram, 2001, 2003; Moran, Neufeld-Bailey & DeOliviera, 2008). Attachment theory, as originally proposed by John Bowlby, may thus help elucidate how life's earliest relationship experiences influence depressive vulnerability. Bowlby (1970; 1980) believed that infants develop bonds, or attachments, through repeated interactions with primary caregivers over the first few years of life. Through these ongoing interactions, children develop expectations about the support and availability of others that influence the development of complementary models of the self. These representations of the self and others (termed Internal Working Models {IWM}), influence the development and maintenance of other relationships throughout the lifespan. Bowlby proposed that three

distinct representations of the self and others would emerge as a function of differing experiences in early relationships: secure, anxious and independent.

Individuals who receive responsive, consistent and sensitive caregiving from their primary attachment figures in the first months and years of life are expected to develop *stable and secure attachment representations*. Their desires for comfort, support, and exploration were mostly respected and consistently met leaving them confident that important others are available, accessible and supportive during times of need. They develop a complementary model of the self as valuable, lovable and worthy of consistent support (Bowlby, 1970, 1980). Those individuals who develop *anxious attachment representations*, in contrast, are likely to have experienced inconsistent caregiving where the support and affection they received were largely determined by the caregiver's own desires. Through such early experiences individuals learn that the actions of others are not contingent on their own needs and they consequently lack a sense of control over their own environments. Additionally, due to concern and preoccupation with caregiver availability, these individuals fail to develop a competent sense of self; they tend to relinquish their own wishes and desires to comply with the demands of important others in their lives. They, thus, tend to rely on the support and approval of others and have doubts regarding their own efficacy and worth (Bowlby, 1970, 1980). Finally, Bowlby (1977, 1980) hypothesized that the attachment representations of those he characterized as possessing an *independence of affectional ties* are the product of a critical and unavailable attachment figure who, in particular, repeatedly rejected their bids for comfort from stress. These individuals develop a model of others as unavailable and unsympathetic during difficult times. As a result of being unable to look to their

attachment figure, they are left to deal with emotionally charged situations on their own and, thus, their self-representations are characterized by self-sufficiency. Mary Ainsworth's creation of the Strange Situation Procedure (SSP), a structured laboratory protocol focused on infant responses to separations from the mother (Ainsworth, Bell, & Stayton, 1971; Ainsworth, Blehar, Waters, & Wall, 1978), made it possible to empirically study Bowlby's proposal that specific early attachment experiences led to these distinct representations of relationships. Ainsworth (1978) identified three distinct patterns of attachment based on the infant's use of the mother to restore equanimity following a separation from her: secure, ambivalent and avoidant - patterns that closely paralleled the representations of attachment described by Bowlby as stable/secure, anxious and independent respectively.

Bowlby believed that the emerging self-views associated with these unique early experiences in relationships had important implications for vulnerability to later emotional disturbances such as depression: "The psychology and psychopathology of emotion is found in large part to be the psychology and psychopathology of affectional bonds" (Bowlby, 1977, p. 130). In particular, Bowlby predicted that the positive and stable representations of the self held by secure individuals would protect them from experiencing depression following negative interpersonal events, while those with anxious or independent representations would have less adept coping mechanisms and, as a result, higher depressive vulnerability. In accordance with Bowlby's hypothesis, a surge of literature over the past few decades based on self-report measures with adult participants has identified associations between attachment style and symptoms of depression (Dozier, Stovall-McClough, & Albus, 2008; Williams & Riskind, 2004).

Such findings suggest that individuals with stable and supportive attachments to important others are much less likely to suffer from depression than those with less supportive relationships. There is also some limited evidence from longitudinal studies that attachment experiences in infancy are associated with symptoms of psychopathology much later in life (Carlson, 1998; Duggal, Carlson, Sroufe, & Egeland, 2001). The most compelling support for Bowlby's proposal, however, would be the identification of a mechanism underlying the association between these early experiences and dysfunctional emotional functioning many years later (Morley & Moran, 2011). One mechanism proposed to account for this association is that negative cognitive patterns contribute to the development of depression following adverse life events (Ingram, 2003; Moran et al., 2008; Williams & Riskind, 2004). Again, research using self-report measures with adult participants has established links between these cognitive processes and attachment styles (Armsden, McCauley, Greenberg, & Burke, 1990; Barrett & Holmes, 2001; Greenberger & McLaughlin, 1998; Safford, Alloy, Crossfield, Morocco, & Wang, 2004). More specifically, individuals with secure attachment styles are much less likely to report the presence of cognitive processes that have been linked to depression than those with non-secure attachments. Further research has implicated the role of an individual's self-views in these associations: Individuals in secure attachment relationships experience higher levels of self-esteem which appears to protect them from the negative cognitive processes associated with depression (Bowlby, 1980).

While these findings have important implications for understanding processes that may contribute to depression in adulthood, they say little about how life's earliest relationship experiences, or attachments, influence subsequent emotional functioning.

Cross-sectional study designs using adult self-reports of current attachment style and retrospective accounts of early experiences with parents restrict the conclusions that can be made regarding the influence of *early* experiences on later functioning (Bretherton & Munholland, 2008; Dweck & London, 2004; Thompson, 2008). Numerous authors have cited concerns regarding the validity of adolescent and adult recall of early attachment experiences (Gamble & Roberts, 2005; Ingram, 2003). Recollection of memories from several decades previous can be affected by various factors apart from the experiences themselves (Maughan & Rutter, 1997; Winkielman & Schwarz, 2001). This problem is especially salient when studying depressed individuals who may suffer from biased recall as a result of current negative affectivity (Gamble & Roberts, 2005). Additionally, attachment experiences that are considered most critical in influencing an individual's IWM occur over the first few years of life: Many of these memories are preverbal and inaccessible in adulthood. Thus, it is difficult to determine if recall of early experiences with attachment figures reflects actual experiences with these individuals or contemporary perceptions that are influenced by other factors. Finally, studies assessing attachment in adulthood using cross-sectional designs cannot determine the direction of causality in associations between attachment and vulnerability to depression: that is, it is unclear whether reported attachment style is a developmental antecedent of cognitive vulnerabilities to depression or a consequence of these maladaptive patterns of thinking and the negative affect that often accompanies them.

Overall, limitations associated with cross-sectional study designs using self-report measures in adulthood leave many important questions unanswered. Only developmental research examining these processes from a longitudinal perspective can elucidate how

early attachment experiences influence cognitive processes that constitute a depressive vulnerability. Unfortunately, very few studies of this nature exist in the extant literature (Clark & Symons, 2000; Morley & Moran, 2011). The purpose of the current set of three studies is to address this gap in the literature by examining associations of *early* attachment experiences with socio-emotional competence in early childhood. The first study in this set examines associations between early mother-child attachment and emerging vulnerability to depression in both an achievement and interpersonal context. The second study focuses on associations between early mother-child attachment and a developing sense of self. This study also examines what role – if any – self-views play in the association between early attachment and vulnerability to depression. The final study examines the contribution of change and stability in attachment across early childhood in the development of both self-views and depressive vulnerability. Implications for clinical practice, directions for future research and limitations across studies are addressed in the general conclusion. The research covered across this set of studies is necessary to provide empirical support for the notion that early experiences with primary caregivers are influential in these development outcomes. We begin with an examination of how life's earliest relationship experiences contribute to emerging cognitive processes that constitute a vulnerability to depression.

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Chapter 1: The Role of Early Attachment Experiences in the Onset of Cognitive Vulnerability to Depression

Shortly after John Bowlby developed his theory of attachment, Aaron Beck began working on a hypothesis to account for individual variation in vulnerability to depression. Beck (1967, 1987) formulated a theory to account for the fact that some individuals become depressed following stressful life events, while others react less severely. Beck argued that depression should no more be thought of as an affective disorder than should scarlet fever be described as a disease of the skin, i.e., that external presentation should not be confused with the underlying pathology. Rather, he proposed that the affective, motivational and even physical symptoms of depression were primarily a product of the way an individual perceives him or herself, the world and the future – that depression is primarily a disorder of cognition. Beck observed in his own patients that negative cognitive patterns most often preceded unpleasant affective experiences. Additionally, the content of these cognitive distortions closely paralleled that of the emotional response, indicating there may be a causal association (Beck, 1967; Beck & Dozois, in press). Empirical work of his own confirmed Beck's theory: the way an individual structures and perceives an experience will determine his or her affective response to it. Beck subsequently developed a cognitive theory to explain differential susceptibility to depression following stressful life events (Beck, 1967, 1987).

Aspects of Beck's theory have also been drawn upon to support a related but more specific account of vulnerability to depression: *helplessness theory* (Abramson, Seligman, & Teasdale, 1978; Nolen-Hoeksema et al., 1986). Helplessness theory was founded on studies observing cognitive, emotional and motivational responses to

repeated electric shocks in dogs. Over time, these dogs passively accepted the shocks, making no attempts to escape even when it was possible to do so (Schueller & Seligman, 2008). Replication of similar studies with human participants produced nearly analogous results. However, an important difference in the human studies was that not *all* participants responded to uncontrollable events with helplessness. Thus, the theory was reformulated to suggest that an individual's subjective interpretation of the event is an important determinant of both helpless responses and subsequent depression (Abramson et al., 1978). That is, the extent to which an individual makes stable, internal and global attributions following negative experiences is a critical determinant of helpless responses to such events (Alloy, Abramson, Keyser, Gerstein, & Sylvia, 2008; Nolen-Hoeksema et al., 1986). Numerous studies have found associations between these helpless explanatory styles and symptoms of depression in adults (Abramson et al., 1978; Schueller & Seligman, 2008) and in children and adolescents (Gladstone & Kaslow, 1995; LaGrange et al., 2008; Nolen-Hoeksema et al., 1986). Several longitudinal studies have gone further to identify the moderating role of stressful or negative life events in contributing to the onset of depression in individuals with such negative explanatory styles (Dozois & Beck, 2008).

Domain-Specificity of Cognitive Vulnerability

Various theorists have further proposed that these predisposing cognitive processes may be differentially activated by domain-specific negative life-events (Blatt & Homann, 1992; Clark, Beck & Brown, 1992). That is, while some individuals will hold such negative beliefs following an event they perceive as threatening their independence or sense of accomplishment (*achievement domain*), others will make similar attributions

only following events that jeopardize their social acceptance or personal relationships (*social domain*). The extent to which an individual possesses these negative cognitive patterns following failure in a particular domain will depend on the relative importance he or she places on experiences in that domain. Both Beck (Clark et al., 1992) and Blatt (Blatt & Homann, 1992) have proposed that individuals who place a high value on interpersonal relationships and assess their own worth through the acceptance and love of others will be more likely to become depressed following an event they perceive as threatening their social acceptance. Alternatively, individuals who strive for autonomy and personal independence often hold high standards for themselves and place more value on their own accomplishments as reflections of their self-competence. These individuals would be more vulnerable to depression following an event they perceived as involving a loss or limitation of this autonomy or personal achievement. Empirical findings for these cognitive sub-types have been somewhat mixed and limitations still exist in the ability to accurately measure domain-specific vulnerabilities (Iacoviello, Grant, Alloy, & Abramson, 2009). However, research has generally supported the notion that vulnerability to depression is a result of the interaction between these domain-specific cognitive vulnerabilities and congruent life stressors (Hammen, Ellicott, & Gitlin, 1989; Nelson, Hammen, Daley, Burge, & Davila, 2001; Segal, Shaw, Vella, & Katz, 1992).

While considerable research has substantiated the role of cognitive vulnerabilities in the onset and maintenance of depression, developmental origins and trajectories of these vulnerabilities, however, are less clear (Hankin, 2008; Moran, Neufeld-Bailey, & DeOliviera, 2008).

When Do These Cognitive Processes First Emerge and Stabilize?

In considering the origins of these cognitive processes, it is important to understand at what point in development these negative thought patterns first emerge and stabilize. This has recently become an area of great interest to many depression researchers, with varying perspectives emerging on the issue. Traditionally, theory and research have indicated that cognitive vulnerabilities to depression become increasingly stable with age and show little predictive validity until late childhood and early adolescence (Cole et al., 2008; LaGrange et al., 2008).

However, theoretical assertions put forth by both Bowlby and Beck suggest that relational experiences very early in life have a strong influence on the development of these negative cognitive patterns (Beck, 1967; Bowlby, 1980). If such assertions are in fact correct, there must be a mechanism linking experiences early in life with these vulnerabilities so many years later. Common limitations associated with many existing studies of cognitive vulnerabilities in young children may have diminished their ability to obtain accurate accounts of these processes in younger age groups (Burhans & Dweck, 1995; Murray, Woolgar, Cooper, & Hipwell, 2001). For the most part, self-reports of negative self-schema and helpless explanatory styles for children of all ages were the sole source of information gathered in studies that arrived at these conclusions. For example, the Children's Attributional Style Interview (CASI) (Conley, Haines, Hilt & Metalsky, 2001) has been utilized in several studies to assess the extent to which children possess a helpless explanatory style after failure (Cole et al., 2008; LaGrange et al., 2008). This measure includes hypothetical scenarios for which children provide a causal explanation and indicate the degree to which this explanation is internal, stable and global. While

some research has provided evidence for the validity of the CASI in capturing cognitive vulnerabilities to depression in young children (Conley et al., 2001), other research has not supported the utility of this measure with a young age group (Cole et al., 2008; LaGrange et al., 2008). The limited cognitive capabilities characteristic of early childhood may constrain the child's ability to provide accurate responses of this nature. For example, research has indicated that representations of ones' behaviour and observations of *actual* behaviour differ substantially in children under the age of 9 (Vitaro & Pelletier, 1991). Thus, self-reports of helpless responses to hypothetical scenarios are unlikely to provide an accurate reflection of responses to and interpretations of actual events. In response to such methodological limitations, several studies have designed more ecologically-valid assessments to measure cognitive vulnerabilities to depression in children as young as 4 years-old (Kistner, Ziegert, Castro, & Robertson, 2001; Murray et al., 2001; Smiley & Dweck, 1994; Ziegert, Kistner, Castro, & Robertson, 2001). Additionally, while the CASI and other self-report measures of helpless attributions typically combine responses to both interpersonal and achievement oriented failure scenarios, unique tasks have recently been developed to assess distinct domain-specific vulnerabilities.

Helplessness following achievement-based failure in early childhood. In one of the first studies to examine in-vivo responses to failure, Smiley and Dweck (1994) examined 4 and 5 year-old children's explanations for real failure on a series of insoluble puzzle tasks. It was predicted that these behavioural tasks would be more likely to capture helpless attributions than would hypothetical scenarios. Following exposure to a series of soluble and insoluble puzzles, children were given the opportunity to choose one

of these puzzles to work on again and asked why they chose that puzzle. Children were assigned to a *learning goal group* if their choice reflected a desire to persist with a challenging/insoluble puzzle and to a *performance goal group* if the choice indicated a desire to avoid the more challenging puzzles. They found that children in the latter group, and particularly those who also expressed low confidence, were more likely to exhibit a helpless explanatory style following failure: they made more negative self-evaluations, expressed lower confidence in their future puzzle-solving abilities, and tended to believe that difficulty on these tasks was a result of their lack of ability. These findings clearly established that individual differences in helpless attributions are present in children as young as 4 years of age but beg questions regarding the stability and predictive validity of these processes - questions that have been addressed in more recent studies.

In a longitudinal study that followed children from kindergarten to grade 5, Ziegert et al. (2001) utilized the same challenging puzzle task as Smiley and Dweck (1994) to examine the developmental trajectory and predictive validity of responses to failure in young children. Ziegert et al. developed a composite score for helplessness based on children's responses to several questions about their puzzle solving abilities, including why they believed they failed the tasks, whether they thought they could solve the tasks given more time and how they expected to perform on similar tasks in the future. Helpless explanatory styles assessed through this procedure showed moderate stability between ages 5 and 6 ($r = .41$), a correlation comparable to the one-year stability estimates typically reported in studies using self-reports with older children (Cole et al., 2008; LaGrange et al., 2008; Nolen-Hoeksema et al., 1986). The same children were seen

again at age 10, a time when cognitive vulnerabilities to depression have been shown to demonstrate more stable properties (Ingram, 2001; Nolen-Hoeksema et al., 1986; Ziegert et al., 2001). Helpless explanations in kindergarten were significantly predictive of a lack of persistence, low expectations for future success, and teacher ratings of helplessness on a similar task at age 10. A related study used these same participants to examine whether these early indices of helplessness would be predictive of symptoms of depression at age 10: Attributions for failure at age five were modestly predictive of later negative self-worth, self-reported symptoms of depression and teacher-reported symptoms of depression (Kistner et al., 2001). Following the success of the challenging puzzle task in identifying early vulnerability to depression, other interactive tasks provided further evidence for the validity of cognitive vulnerabilities in this young age group (e.g., Murray et al., 2001).

Helplessness following interpersonal-based failure in early childhood. Other tasks have been developed to similarly assess cognitive vulnerability to depression in children following interpersonal-based failure (Erdley, Loomis, Cain, & Dumas-Hines, 1997; Goetz & Dweck, 1980; Hayden, Klein, Durbin, & Olino, 2006). Several studies have examined variations of a Pen-Pal Club task to examine such vulnerabilities. This task begins with an adult experimenter inviting participants to apply to a pen-pal club run by children in another province. Participants are asked to write a letter to a member of the acceptance committee that would then be transmitted through a one-way radio and used to determine if the child will be accepted into the club. Following the “relaying” of this message and “receiving” a response, the experimenter informs the child the acceptance committee is not sure he/she can join the club. Children are then provided with the

opportunity to write a second letter. Reactions to this ambiguous response from the fictitious acceptance committee are used to examine attributions participants make about themselves and their abilities and of their persistence in re-applying to the club. Together, these responses are used as an indication of helplessness in an interpersonal context.

Several studies have demonstrated that, as in situations probing the achievement domain, an individual's goal orientation predicts responses in this interpersonal task (Erdley et al., 1997; Goetz & Dweck, 1980). Erdley et al. randomly assigned fourth and fifth grade children to a condition where they were told either to focus on performance goals (i.e., "We would like to see how good you are at making friends) or learning goals (i.e., "This will give you the opportunity to practice and improve your ways of making friends") prior to completing the Pen-Pal Club task. Children in the performance goal condition were significantly more likely to refuse to send a second letter or include less information in their second attempt. Additionally, these individuals asked more questions in their second letter, a strategy previously found to divert attention away from oneself following achievement-related failure (Diener & Dweck, 1980). Thus, goal-orientation was significantly associated with helpless responses to interpersonal-oriented failure, leading to conclusions analogous to those drawn by Dweck and colleagues in the achievement-domain: Children's interpretations of social failure are associated with helpless responses to these tasks. However, these studies provide little information on the predictive validity of these helpless responses in early childhood for determining risk for depression. To address this gap in the literature, Hayden et al. (2006) examined associations between responses to social failure at age 7 using a variation of the Pen-Pal Club task (the "Cool Kids Club task") and self-reported symptoms of depression.

Helpless responses to interpersonal failure during the Cool Kids Club task were associated with concurrent self-reports of depressive symptomatology. Other research has similarly found that inaccurate perceptions of abilities in the social domain during childhood are associated with risk for depression (Kistner, David-Ferdon, Repper, & Joiner, 2006).

Thus, contrary to previous assertions, there is evidence that cognitive vulnerabilities to depression do indeed emerge in children as young as 4 or 5 years old. While these cognitive patterns may become more stable in adolescence and adulthood, research indicates that processes placing individuals at-risk for depression begin early in life and developmentally-sensitive measures are necessary to identify them. However, these findings still leave many important questions unanswered regarding the developmental antecedents of these cognitive processes.

Developmental Origins of Cognitive Vulnerabilities to Depression

Beck (1967) described the experiences an individual has early in life with important others such as parents, siblings and friends as critical to the development of self-schemas. More specifically, he believed the judgments made by such others toward an individual and the extent to which the individual identified with these key figures would have important implications for the self-concept. These theoretical notions closely resemble those previously put forth by John Bowlby (1958). In fact, Bowlby himself noted this connection: "Both formulations postulate that depressive-prone individuals possess cognitive schemas having certain unusual but characteristic features which result in their construing events in the idiosyncratic ways they do" (1980, p. 249). Since this early work, various other theorists have drawn similar conclusions to Bowlby, citing close

associations between Beck's notion of schemas and Bowlby's concept of IWMs (Barrett & Holmes, 2001; Ingram, 2001, 2003; Williams & Riskind, 2004). IWMs of attachment are now widely recognized for providing important insights into the cognitive processes that characterize depressive vulnerability (Dozier, Stovall-McClough, & Albus, 2008; Moran et al., 2008; Morley & Moran, 2011). Thus, attachment theory, as originally proposed by John Bowlby, provides an important framework for understanding the developmental origins of cognitive vulnerability to depression.

Attachment and Cognitive Vulnerabilities to Depression

IWMs of attachment are held to influence multiple aspects of functioning primarily through their impact on representations of the self and others (Bowlby, 1980). Bowlby reasoned that an IWM would act as an interpretive lens that would give rise to person-specific "cognitive biases" that could greatly influence expectations and evaluations of social encounters (Bowlby, 1980, p. 232). He hypothesized that an inability to develop a stable and secure relationship with a primary caregiver, despite repeated attempts to do so, would leave an individual feeling helpless in his or her ability to develop close relationships. Subsequent difficulties in social encounters would then be interpreted through this helpless framework, or IWM, and contribute to risk for depression following negative interpersonal experiences (Williams & Riskind, 2004). Thus, individuals with negative early attachment experiences would be vulnerable to making helpless attributions following social situations that activate these IWM's.

While Bowlby's theoretical work on depressive vulnerability primarily focused on the influence these biases have in interpersonal relationships, recent theorists have broadened the scope of his original work by suggesting that IWMs affect interpretations of a wider

range of challenging and stressful life events (Dykman, 1998; Ingram, 2001, 2003; Moran et al., 2008; Riskind & Alloy, 2006; Sochos & Tsalta, 2008). One theory that has identified a plausible connection between IWM's of attachment and depressive vulnerability in the achievement domain is *Goal-Orientation Theory*. This theory proposes that whether an individual is motivated to *learn* versus *prove their ability* during a difficult task will determine the likelihood that he or she will either respond with helplessness or persist in attempts to overcome obstacles. Numerous theorists have proposed that the basis of an individual's goal orientation is founded in early experiences with attachment figures (Dykman, 1998; Rusk & Rothbaum, 2010). Having been unable to develop a stable sense of competency and self-worth through their interactions with early caregivers, individuals with non-secure attachment histories view challenging situations of all kinds as measures of their core traits that have the potential to prove (or disprove) their self-worth. These attributions lead to a lack of persistence when encountering obstacles as a result of the negative implications that failure would carry (i.e., *If I fail, then I am worthless*) (Kuiper, Ollinger, & Air, 1989). When these individuals do encounter failure, the likelihood of making internal, stable and global attributions is high given their beliefs that performance is an assessment of their core abilities and worth (Dweck & Leggett, 1988). In contrast, having developed a positive and stable sense of self through early parent-child interactions, secure individuals are less likely to be threatened by the consequences of failure: They develop confidence that the positive representations others have of them will remain stable, even following situations in which they fail to achieve a desired outcome (Mikulincer & Shaver, 2007). Empirical research has indeed shown that secure individuals are better able to focus on learning and

improving on their abilities during challenging situations since they are less preoccupied with the implications of potential failure (Elliot & Reis, 2003; Moss & St-Laurent, 2001). Thus, in addition to risk following interpersonal failure, early non-secure attachment may also place individuals at risk for vulnerability to depression in the achievement domain.

Research guided by these theoretical frameworks has established clear associations between attachment style in adulthood and a tendency to attribute failure to internal, stable and global characteristics – well-established markers of depressive vulnerability. While individuals with secure attachments are unlikely to possess these helpless explanatory styles, those who endorse non-secure attachment patterns report higher levels of these negative attributions (Armsden, McCauley, Greenberg, & Burke, 1990; Barrett & Holmes, 2001; Greenberger & McLaughlin, 1998; Safford, Alloy, Crossfield, Morocco, & Wang, 2004). However, there is a dearth of research more specifically examining potential differences in associations between attachment security and domain-specific vulnerability to depression. Thus, despite strong theoretical links in both domains, it remains unclear whether non-secure attachment places individuals at risk for the cognitive processes that characterize depressive vulnerability in both the interpersonal and achievement domains (Rusk & Rothbaum, 2010).

Status of Current Longitudinal Research on Attachment and Cognitive

Vulnerability to Depression

Although existing research has identified an association between attachment status in adulthood and cognitive styles related to depression, this work tells us very little about the developmental mechanisms behind this association (Bretherton & Munholland, 2008; Dweck & London, 2004; Thompson, 2008). A comprehensive evaluation of this

hypothesis demands prospective longitudinal studies beginning in infancy and an examination of more specific social cognitive mechanisms. However, there is currently a lack of longitudinal research specifically examining associations between attachment in the first few years of life and the emergence of vulnerability to depression in early childhood. The little research of this nature that does exist suggests there are meaningful differences in how children respond to challenging tasks based on their early attachment histories (Arend, 1984; Matas, Arend, & Sroufe, 1978; Sroufe, 2005). Findings from two separate longitudinal examinations of early attachment trajectories indicate that young children in secure relationships demonstrated more competence and persistence on a series of difficult tasks than their non-secure peers (Fish, 2004; Sroufe, 2005). However, no study has yet to examine how early attachment experiences would influence helpless attributions – and subsequently depression – following such tasks in early childhood.

Purpose of the Present Study

As the foregoing account indicates, there is currently a dearth of prospective longitudinal research specifically examining the influence of early attachment experiences on cognitive vulnerabilities to depression in early childhood (Morley & Moran, 2011). However, theoretical assertions suggest these relationships play a pivotal role in the development of cognitive biases or the way in which an individual interprets and perceives various situations. Such biases in the interpretation of events, specifically the tendency to attribute negative experiences to stable, internal and global causes, have been shown to play a causal role in the onset and maintenance of depression in both childhood (Gladstone & Kaslow, 1995; Hayden et al., 2006; Kistner et al., 2001; LaGrange et al., 2008; Ziegert et al., 2001) and adulthood (Abramson et al., 1978;

Schueller & Seligman, 2008). Thus, identifying the developmental origins of these cognitive processes has important implications for clinical practice (Kistner et al., 2006). Additionally, little is understood about the impact of early relationship experiences on domain-specific cognitive vulnerability to depression and it is unclear whether negative early attachment experiences influence vulnerability to depression generally, or in specific domains. The purpose of the current study is to add to the existing literature in the following ways: (1) To examine associations between attachment experiences very early in life and the later emergence of helpless explanatory styles in early childhood, and (2) to examine associations between early attachment experiences and domain-specific vulnerability to depression.

To meet the first objective, attachment relationships were assessed at age 3.5 years using a well-validated separation-reunion procedure, and helplessness was measured at age 5.5 years with the ecologically-validated methods described in the previous review. To date, no other study has examined longitudinal associations between attachment security and the emergence of helpless explanatory styles using such comprehensive assessments.

To address the second goal of this study, two distinct assessments of helplessness in early childhood were included. First, the challenging puzzle task created by Dweck and further developed by Kistner and colleagues was used to examine helplessness in the achievement domain. This task has shown good reliability (Ziegert et al., 2001) and predictive (Kistner et al., 2001; Ziegert et al., 2001) and concurrent (Smiley & Dweck, 1994) validity in this young age group. The previously described assessments of helplessness in the social domain however have only been used with children as young as

7 years old (Erdley et al., 1997; Goetz & Dweck, 1980; Hayden et al., 2006), and were considered too sophisticated for 5 year old children¹. Thus, a modified version of the “Cool Kids Club” task – the Social Disappointment Task – was developed for the current study to include a more developmentally appropriate assessment for this young age group.

Hypothesis 1. Based on strong theoretical associations (Barrett & Holmes, 2001; Bowlby, 1980; Ingram, 2001, 2003; Williams & Riskind, 2004) and robust evidence from the adult literature (Armsden et al., 1990; Barrett & Holmes, 2001; Greenberger & McLaughlin, 1998; Safford, Alloy, Crossfield, Morocco & Wang, 2004), it was expected that children with a history of secure attachment would exhibit less helplessness following failure than those with a history of non-secure attachment.

Hypothesis 2. Given that attachment security is an interpersonal process and IWMs develop through repeated experiences with important others (Bowlby, 1980; Ingram 2003), it was expected that attachment security would be most strongly associated with helplessness in a social context.

Methods

Participants

Participants were part of an ongoing longitudinal study with the Child Development Group at the University of Western Ontario, and were recruited for the study in two phases. In 2004, mothers were initially approached during their post-partum stay at a London-area hospital and invited to participate with their infants. Eighty-four

¹ This decision was based on the nature of the questions used in this procedure, in addition to a discussion with the author of one of the published studies using this task with 7 year-old children (Dr. Elizabeth Hayden).

mothers agreed to participate. These dyads were subsequently seen on eight separate occasions in their homes or at the university during the first six years of the child's life. In 2008, the seventh visit was conducted when children were 3.5 years of age, and 50 of the original families (Wave 1) returned to participate. At this time, another fifty 3.5 year-old children and their mothers (Wave 2) were recruited from the community to participate in attempt to increase the sample size. This resulted in 100 dyads at the 3.5 year assessment all of whom were also contacted to attend the 5.5 year follow-up visit within the next two years. Seventy of these families returned for the 5.5 year assessment. All 70 children who participated in both the 3.5 and 5.5 year assessments were included as part of the current study.

A breakdown of demographic information for all families is presented in Table 1. Gender was evenly represented across the sample (51% female) and 86% of the children were first-born in their family. Demographics were generally consistent across both time points, however there was a notable increase in both the proportion of mothers working full time, and number of hours spent away from the child between 3.5 and 5.5 years of age. This is likely a reflection of the fact that most children were enrolled in either part-time or full-time kindergarten at the time of their 5.5 year assessment.

Table 1

Demographic Information from 3.5 Year and 5.5 Year Visits.

Demographic Information							
Visit	Child's Age ¹	Mother's Age ²	Mother's Education ³	Mother's Work ⁴	Hours Away ⁵	Married/Common-Law	Household Income
Visit 1	3.80 (0.15)	33.73 (5.04)	14.94 (1.90)	34% F/T 28% P/T 32% N/A	24.21 (15.42)	93%	\$60,000 - \$69,000
Visit 2	5.76 (0.15)	35.96 (5.25)	14.99 (2.03)	54% F/T 29% P/T 15% N/A	35.18 (15.29)	90%	\$60,000 - \$69,000

Note. All numbers in table represent averages reported across the entire sample.

¹ Child's age reported in years. ² Mother's age reported in years. ³ Average number of years in school. ⁴ F/T indicates percentage of mothers working full time; P/T indicates percentage of mothers working part time; N/A represents mothers who are not working outside of the home.

⁵ Average number of hour mother spends away from the child per week.

Several descriptive analyses were run to identify potential differences in demographic characteristics of families who completed both visits, compared with those who withdrew prior to the second assessment (see Table 2). There were no significant differences between families who completed the study and those who withdrew in terms of maternal education, marital status, work status, hours away from the child or annual household income. It should be noted that although not significant, there did appear to be slightly higher numbers of mothers who were single and working among those who did not complete the study, likely because it was more difficult for these mothers to find time to attend the university to participate.

Table 2

Descriptive Statistics of Demographic Information by Mothers who Completed the Study and Mothers who Withdrew from the Study

	Participation in Study	
	Withdrew ^a	Completed ^b
Maternal Education	14.55 (2.50)	14.90 (1.92)
Mothers Married/ Common-Law	70.00%	85.20%
Mothers Working	76.20%	60.10%
Hours Away from Child per week	26.60 (15.74)	23.90 (15.50)
Annual Household Income	\$65, 000	\$65, 000

^aN = 29; ^b N = 70

Note: Mean differences were analyzed using one-way ANOVA and categorical differences were analyzed using chi-square; Annual income is scored on a scale from 1 (Less than 10,000) to 9 (Greater than 80,000).

Materials

Separation-reunion procedure (Cassidy & Marvin, 1992). To assess attachment in the pre-school years, Cassidy and Marvin (1992) designed a mother-child separation-reunion procedure, adapted from the infant Strange Situation Procedure (SSP), that would capture attachment behaviours relevant to this older age group. Procedural changes focused on the need to increase the attachment-related stressor by increasing both the frequency and duration of the time the child spent alone. At the beginning of this procedure, the mother and child interacted together for 3 minutes, following which the mother was instructed to leave the room when signaled by a knock on the door, and the child was left on his/her own for 4 minutes. The mother was then asked to return to the room for 3 minutes, and leave again at the sound of another knock. The child was left alone for another 4 minutes before the mother returned to interact with the child for 3 minutes. The procedure was video-recorded, and trained coders assigned a classification according to Cassidy and Marvin's (1992) *Attachment Organization in Preschool Children: Procedures and Coding Manual*. Coding procedures outlined in this manual were based on attachment theory and adapted from the infant SSP coding procedures to account for speech and other more advanced communication and behaviours typical of a pre-school aged child (Thompson, 2008). Similar to the infant coding procedures, the child's behaviours upon reunion with the mother were central to the coding and classification. Each dyad was assigned one of the following classifications: Secure, Avoidant, Ambivalent, Controlling, Disorganized or Insecure-Other. In accordance with hypotheses outlined for the current study classifications were dichotomized into Secure versus non-Secure (i.e., Avoidant, Ambivalent, Controlling, Disorganized and Insecure-

Other) for all primary analyses. This procedure has been well-validated as a measure of attachment in the pre-school years (Solomon & George, 2008; Stevenson-Hinde & Shouldice, 1993): It has been associated with earlier attachment classifications in meaningfully consistent ways (NICHD, 2001; Thompson, 2008) and also with concurrent assessments of constructs theoretically linked to attachment quality (Moss, Bureau, Cyr, Mongeau, & St-Laurent, 2004; Moss, Cyr, & Dubois-Comtois, 2004; NICHD, 2001).

Achievement-based failure: Challenging puzzle task (Kistner et al. 2001; Ziegert et al., 2001). This procedure was designed to assess helpless attributions following achievement-related failure in early childhood. In this task, children were first asked to indicate their affect by selecting one from a series of smiley faces, and then presented with a series of four puzzles to complete. Completion of the first puzzle was timed, to provide an indication of the child's overall puzzle solving ability. The next two puzzles were "failure" episodes. With the second puzzle, children were told they would have 2 minutes to put all of the pieces together. After 2 minutes, or when 3 puzzles pieces were left – whichever came first – children were then informed that time was up and they did not finish the puzzle. They were then given a third puzzle and told that they would also have 2 minutes to finish that one. After 2 minutes or when 4 pieces were left - again whichever came first – they were informed that time was up and they did not finish the puzzle. Children were then again invited to indicate how they were feeling, and asked a series of questions about their performance on these failure episodes (see items 2 to 4 in Table 3). Following this, children were given another timed puzzle for which they were provided enough time to finish, regardless of how long it took. Children were then asked which of the last three puzzles they would choose to do again if they had more time, and

why, and also how many puzzles they would expect to solve if they were provided with another three puzzles (see items 5 and 6 in Table 3). At the end of the procedure, the experimenter informed the child that they had “accidentally” given him/her the puzzles meant for the 7 year old children, and explained that was why they were so difficult to complete (See Appendix A for a complete script).

Attributions and helplessness composite score. A composite score, ranging from 0 (*no helplessness*) to 6 (*very high helplessness*) was used to characterize the degree of helplessness displayed by each child in this achievement-based failure scenario. Six indicators were used to create this score; each was assigned a 1 (*helpless response*) or a 0 (*mastery response*)². Scores on all indicators were then totaled to create the helplessness composite score. The six indicators and associated scores are outlined in Table 3. Helplessness composite scores on this task have previously demonstrated moderate stability in this age group (Kistner et al., 2001), and have also been associated with self-reports and teacher reports of negative self-worth and symptoms of depression five years later (Ziegert et al., 2001).

² In a few isolated cases, it was very difficult to classify the child’s response as mastery vs. helpless. For example, when asked how many puzzles they thought they could solve in the future, three children said “1 or 2”. In these cases, a score of .5 was assigned.

Table 3

Indicators for Helplessness Composite Score of Puzzle Task.

Helplessness Indicator	Helpless Response (“1”)	Mastery Response (“0”)
1. Change in self-report of affect pre-failure to post-failure	Decrease in happiness	Stable or increased happiness
2. Response to: “Do you think you could finish these two puzzles if you had lots of time, or do you think you are not good enough at solving puzzles?”	No – not good enough	Yes – could finish them
3. Response to: “If you tried your very hardest, do you think you could solve these two puzzles?”	No – could not solve them	Yes – could solve them
4. Response to: “If we have time later and you could work on one of these puzzles again, which one would you do?”	Choice to rework a previously solved puzzle	Choice to attempt an unfinished puzzle
5. Response to “Why did you choose that puzzle?”	Provision of a reason focusing on the puzzle being easier or more likely to result in success than the other puzzles	Any other reason provided that does not meet indicator for helpless response
6. Response to “If I gave you three more puzzles to solve, how many do you think you would finish?”	Prediction he/she would solve none or only 1 puzzle	Prediction that he/she would solve 2 or 3 puzzles

Behavioural helplessness coding of puzzle task. The challenging puzzle task was chosen for the current study since it was a previously-validated, ecologically-relevant measure of helpless attributions in early childhood (Kistner et al., 2001; Smiley & Dweck, 1994; Ziegert et al., 2001). However, given that children's *perceptions of their responses* to events have been found to differ from their *actual reactions* (Vitaro & Pelletier, 1991), there remains the possibility that children may have had difficulty identifying and/or expressing their helpless attributions during the puzzle task. As a result, a behaviour-based coding system was also developed for this study in attempt to capture both overt and subtle helpless-related *behaviours* exhibited by children during the task, independent of their reported *attributions*. Based on a review of previous research using similar procedures to assess helpless behaviours in early childhood (Erdley et al., 1997; Goetz & Dweck, 1980; Hayden et al., 2006; Smiley & Dweck, 1994; Ziegert et al., 2001), a coding system was designed to capture behavioral indications of helplessness along two dimensions: *Decrease in Desire*, and *Lack of Persistence*. The two domains and associated scores are outlined in Table 4.

Table 4

Behavioral Helplessness Coding System for Puzzle Failure Task

Domain	Description	Levels and Code Values	Coding Procedure ^a
Decrease in Desire	Desire was coded prior to beginning the first puzzle (pre-failure) and following the last two puzzles (Post-failure)	<ul style="list-style-type: none"> • <i>Strong Hesitation</i> (4): Dread or an aversion towards starting the puzzle. • <i>Some Hesitation</i> (3): Hesitating to begin (e.g., latency to start, sad expression) • <i>Neutral</i> (2): No enthusiasm and no hesitation (e.g., minimal latency to begin but no smile) • <i>Some Desire</i> (1): Showing enthusiasm (e.g., minimal latency to begin; smiling) • <i>Strong Desire</i> (0): Showing extreme enthusiasm (e.g., saying “yay a puzzle!”) 	Subtract pre-failure desire from average post-failure desire; Possible scores range from 4 (<i>Large Decrease in Desire</i>) to – 4 (<i>Large Increase in Desire</i>).
Lack of Persistence	Average persistence for the duration of both post-failure puzzles	<ul style="list-style-type: none"> • <i>Refusal</i> (4): Refusing to work on puzzle • <i>Not Focused</i> (3): Withdrawing from task or applying little effort (e.g., daydreaming) • <i>Neutral</i> (2): Working on the task, but monotonously (e.g., doing so slowly) • <i>Effort</i> (1): Applying at least some effort (e.g., hands continuously working on pieces) • <i>Maximum Effort</i> (0): Maximum effort (e.g., scrambling to finish when time is up) 	Average persistence score for both post-failure puzzles Possible scores range from 0 (<i>Applying maximum effort to task</i>) to 4 (<i>Not persisting with task</i>)

A trained coder rated behaviours in both domains from a video-recording of the challenging puzzle task. A second rater coded 25% of the videos and an inter-rater reliability analysis using the Kappa statistic indicated that there was substantial agreement (Viera & Garrett, 2005) between raters (Kappa = .68, $p < .001$). All disagreements were within one point.

Social-based failure: Social-disappointment task. This procedure was designed to assess helpless attributions following social-based failure in early childhood. It was adapted from a similar procedure designed for slightly older children (Erdley et al., 1997; Hayden et al., 2006), which was judged to be too sophisticated for 5-year-olds. In this assessment, the child is interrupted during one of his/her activities by an experimenter knocking on the door. The child is informed that a group of children his/her age are playing a “really fun game” across the hallway and is asked if s/he would like to join them when done with their research activities for the day. If the child responds “yes” to this question, the experimenter leaves and returns a couple of minutes later to tell him/her that the other children are unsure if s/he can come join them – they want to find out more about him/her first. If the child responds “no” to the initial question, the experimenter returns a few minutes later to say that the other children actually wanted to know more about him before they decided if s/he could join them anyway. In both scenarios, the experimenter who has been working with the child then asks a series of six questions (see Table 5) to find out how s/he would like to respond to this request, and also how this experience made him/her feel (see Appendix B and Appendix C for complete scripts). At the end of the procedure, the child was informed that once the children were told about him/her, they really wanted to play together, but their mother’s told them they had to

return home for lunch/dinner. The child was then provided with a toy that they were told the other children left for him/her since they thought s/he sounded so nice.

Attributions and helplessness composite score. A composite score ranging from 0 (*no helplessness*) to 6 (*very high helplessness*) was derived from answers given to each of the six questions asked after the rejection to assign a helplessness score for this disappointing social scenario. Six indicators were used to create this score, with each indicator being assigned a 1 (*helpless response*) or a 0 (*mastery response*). Scores on all indicators were then totaled to create the helplessness composite score. The six indicators and associated scores are outlined in Table 5. Previous research has linked helpless responses to social failure with concurrent (Gladstone & Kaslow, 1995; Hayden et al., 2006) and future (Clark et al., 1992) symptoms of depression. Given the limited range of behaviours exhibited by children during this task, a behavioural coding system similar to that created for the puzzle task was deemed inappropriate for this procedure³.

Chronbach's alpha (α) was used to assess the internal consistency among the helplessness indicators for each failure task. The alphas were below acceptable values for both the puzzle task ($\alpha = .28$) and the social task ($\alpha = .58$) (Chronbach & Shavelson, 2004). This pattern is consistent with the fact that each indicator reflects a distinct aspect of helplessness and previous research has not always found significant associations among various aspects of helpless attributions (e.g. Internal, stable and global attributions) (Kistner et al., 2001; Man & Hamid, 1998; Ziegert et al., 2001). Similarly,

³ A coding procedure analogous to the behavioural coding for the puzzle task was created and applied to the social-based failure scenario. However, it was very difficult to obtain valid and reliable indicators of behavior on this task, since the children answered the questions quite quickly for the most part, and engaged in limited conversation apart from answering these questions. This was in contrast to the puzzle task, which occurred over a 15 to 25 minute time span during which children were more vocal and engaged in a variety of different behaviours. Data for the social-task behavioural coding is available upon request.

Ziegert et al. (2001) highlight that no one indicator alone is meant to be suggestive of helplessness, and that some children may endorse certain more common responses to failure (e.g., A decrease in affect) but not other attributions (e.g., Insufficient ability and efforts attributions). Thus, it is not surprising that the internal consistency among items is low. The composite score was designed according to the logic that a combination of these multiple aspects of helplessness would provide an indication of where each child falls along the continuum between mastery and helplessness. The present study will make use of the composite score in all analyses, rather than analyzing any single indicator alone.

Table 5

Indicators for Helplessness Composite Score of Social Disappointment Task

Helplessness Indicator	Helpless Response (“1”)	Mastery Response (“0”)
1. Response to: “When you think about what happened with the other children, how does it make you feel?”	Little Sad or Really Sad	Neutral, Little Happy or Really Happy
2. Response to: “Do you think if we told the children more about you, they would want you to come and play with them?”	No, Maybe, or I Don’t Know	Yes – they would want me to come
3. Response to: “Would you like us to tell the children more about you and then ask them if you can join them?”	No – don’t ask them	Yes – ask them
4. Response to: “When you think about the other children not asking you to join them, does it make you feel like you are good at making friends or not good at making friends?”	Not good at making friends	Good at making friends
5. Response to: “When you think about the other children not asking you to join them, does it make you feel like you are a good boy/girl or not a good boy/girl?”	Not a good boy/girl	Good boy/girl
6. Response to: “When you think about the other children not asking you to join them, does it make you feel like you are a nice boy/girl or not a nice boy/girl?”	Not a nice boy/girl	Nice boy/girl

Kaufman Brief Intelligence Test – Second edition (K-BIT-2; Kaufman & Kaufman, 2004). The K-BIT is a brief measure used to assess three areas of intellectual functioning: Receptive language, expressive language and perceptual reasoning. This measure was developed to produce IQ scores analogous to those on the gold-standard Weschler Intelligence Scales, but with a shorter administration time. The K-BIT-2 has demonstrated good reliability and validity in initial psychometric studies (Kaufman & Kaufman, 2004; Powell, Plamandon, & Retzlaff, 2002; Slate, Graham, & Bower, 1996). The two language scores are combined to create a *Verbal IQ* score, and the perceptual reasoning score is used as a measure of *Non-Verbal IQ*. Both measures of intellectual functioning were examined as control variables, to ensure that any significant associations between attachment classifications and performance on the failure tasks were not confounded by differences in intellectual functioning.

Table 6 provides a summary of all measures used in the present study, the construct being assessed through each measure, the coding procedures applied to each measure and the corresponding score to represent that construct.

Table 6

Overview of all Measures and Variables to be used in Study 1

Construct Assessed	Measure Used	Age at Administration	Coding Procedure	Outcome Scores to be Used in Analyses
<i>Attachment in Preschool</i>	Separation-Reunion Procedure (Cassidy & Marvin, 1992)	3.5 years	Classifications are assigned by trained coders based on Cassidy and Marvin's (1992) preschool attachment classification system	Categorical Attachment Classification: <i>Secure</i> or <i>non-Secure</i> .
<i>Achievement-Based Failure: Helpless Attributions</i>	Challenging Puzzle Task (Kistner et al., 2001; Ziegert et al., 2001)	5.5 years	A composite score is determined based on 6 indicators. For each indicator a "0" is assigned for a mastery response and a "1" is assigned for a helpless response. All 6 scores are totaled to compose a total score ranging from 0 – 6, with 6 denoting the highest level of helplessness	Total Score on <i>Helplessness Composite</i> (0 – 6)
<i>Achievement-Based Failure: Behavioural Helplessness</i>	Challenging Puzzle Task (Kistner et al., 2001; Ziegert et al., 2001)	5.5 years	Videos were coded for indications of <i>Decrease in Desire</i> to complete the task and <i>Lack of Persistence</i> on the task both pre and post failure	<i>Decrease in Desire</i> (-4 to 4); <i>Lack of Persistence</i> (0 - 4)
<i>Social-Based Failure: Helpless Attributions</i>	Social-Disappointment Task	5.5 years	A composite score is determined based on 6 indicators. For each indicator a "0" is assigned for a mastery response and a "1" is	Total Score on <i>Helplessness Composite</i> (0 – 6)

			assigned for a helpless response. All 6 scores are totaled to compose a total score ranging from 0 – 6, with 6 denoting the highest level of helplessness	
<i>Intelligence Quotient (IQ)</i>	Kaufmann Brief Intelligence Test (K-BIT)	5.5 years	Scores are calculated based on child's performance and compared to age-norms to determine standardized Verbal, Non-Verbal and Total IQ scores	Standard Scores for <i>Verbal IQ</i> , <i>Non-Verbal IQ</i> and <i>Total IQ</i>

Procedure

At the 3.5 year visit, the child visited the university with his/her mother and participated in a series of tasks assessing various aspects of development, including a separation/reunion procedure designed to assess the attachment relationship with his/her mother. Approximately two years later at age 5.5 years, children returned to the university to complete various assessments of self-representations and responses to achievement- and social-based failures, among several other activities. At both visits, mothers also completed a series of questionnaires on various aspects of their child's behaviours and socio-emotional functioning and a short interview to obtain updated demographic information. Each visit took approximately 2 hours to complete, and families were compensated for their time with a modest honorarium.

Results

Descriptive Statistics

Missing data. Attachment data at 3.5 years were unavailable for one dyad as a result of a technical problem with the video recording during the procedure. At the 5.5-year assessment, data from the challenging puzzle task was missing for one child who grew distraught, and the procedure was aborted. At this same age, data were unavailable on the social-disappointment task for two children as a result of invalidated procedures during administration, and one child whose mother requested the procedure not be performed. Data on intellectual functioning were unavailable for one child who became ill during this part of the assessment. Finally, one child was diagnosed with Asperger's Disorder between the 3.5 and 5.5 year assessments, and the failure tasks were substantially modified to accommodate his needs, which invalidated the procedures and

his data was excluded from analyses. Thus, data were available for 68 children for attachment classifications, 68 children for the challenging puzzle task, 66 children for the Social Disappointment task and 69 children for intellectual capacity. Of the 68 children who completed the challenging puzzle task, 61 videos were suitable for behavioural coding.

Attachment classifications. The distribution of attachment classifications is presented in Table 7. The overall distribution of classifications, particularly the low prevalence of avoidant attachment and higher representations of ambivalent/controlling classifications, is consistent with previous research assessing attachment in this age group (Milan, Snow, & Belay, 2009; NICHD, 2001). In particular, the high prevalence of Controlling classifications is in line with theoretical conjecture that the preschool period is a stage where children with non-secure attachment histories exert a more coercive role in the relationship and compel the caregiver to comply with their attachment-related needs (Crittenden, 2000; NICHD, 2001). In accordance with the study's hypotheses, the groups were dichotomized into secure and non-secure for all analyses.

Helplessness tasks. Descriptive statistics for both failure tasks are provided for the entire sample in Table 8.

Table 7

Distribution of Attachment Classifications

All Attachment Classification						
Secure N (%)	Avoidant N (%)	Ambivalent N (%)	Disorganized N (%)	Controlling N (%)	I-O N (%)	Total N (%)
45 (66%)	0 (0%)	5 (7%)	1 (2%)	13 (19%)	4 (6%)	68 (100%)

Dichotomized Attachment Classifications		
Secure N (%)	Non- Secure N (%)	Total N (%)
45 (66%)	23 (34%)	68 (100%)

Note: Attachment classifications were determined using the Cassidy-Marvin Preschool Attachment Classification System; Attachment data was unavailable for one participant.

Table 8

Descriptive Statistics for all Helplessness Variables

	Mean	SD	Minimum	Maximum
<u>Puzzle Task – Helpless Composite^a</u>	1.92	1.24	0.00	6.00
<u>Puzzle Task – Lack of Persistence^b</u>	1.14	1.03	0.00	4.00
<u>Puzzle Task – Decrease in Desire^c</u>	0.91	0.92	-1.00	3.00
<u>Social Task – Helpless Composite^d</u>	1.21	1.34	0.00	5.00

Note. Helplessness Composite possible scores range from 0 (No Helplessness) to 6 (High Helplessness); Possible scores for Lack of Persistence ranged from 0 (Highly Persistent) to 4 (Not Persistent at All); Possible Decrease in Desire scores ranged from -4 (Large Increase in Desire) to 4 (Large Decrease in Desire)

^a N = 68; ^b N = 61; ^c N = 61; ^d N = 66

The detailed pattern of responses to these failure tasks is presented in Table 9 through a breakdown of responses to each of the attributions questions for the challenging puzzle task and social disappointment task for the entire sample.

Table 9

Descriptive Statistics for Helpless Attributions on Failure Tasks

Challenging Puzzle Task	
Helplessness Indicator	Mean Item Score ¹
Reduction in Affect Pre-Failure to Post Failure	0.60 (0.49)
Could you finish these two puzzles if you had lots of time, or are you not good enough at solving puzzles?	0.24 (0.43)
If you tried your very hardest, do you think you could solve these two puzzles?	0.19 (0.40)
If you could work on one of these puzzles again, which one would you do?	0.19 (0.40)
Why did you choose that puzzle?	0.34 (0.46)
If I gave you three more puzzles to solve, how many do you think you would finish?	0.36 (0.47)
Social Disappointment Task	
Helplessness Indicator	Mean Item Score ¹
Negative affect following rejection	0.33 (0.48)
If we told the children more about you, would they would want you to come and play with them?	0.11 (0.31)
Would you like us to tell the children more about you and then ask them if you can join them?	0.18 (0.39)
Does it make you feel like you are good/not good at making friends?	0.30 (0.46)
Does it make you feel like you are a good boy/girl or not a good boy/girl?	0.14 (0.35)
Does it make you feel like you are a nice boy/girl or not a nice boy/girl?"	0.15 (0.36)

¹Items were scored as 0 (Mastery) or 1 (Helpless); The mean item score is therefore a proportion of the number of children who endorsed a helpless response, equivalent to a percentage

Table 9 shows that for both failure tasks, the highest percentage of helpless versus mastery responses was seen in self-reported affect, indicating that children generally were upset by these failures. On the puzzle task, helpless responses were most commonly observed in responses to the question regarding expectations for future success, followed by reasons provided for choosing which puzzle to attempt again, and attributions about puzzle solving abilities. Children appeared to endorse less indicators of helplessness overall during the social disappointment task. Following the social failure, mean helplessness scores were highest for attributions about social abilities, while responses to most other items had a similar proportion of helpless versus mastery-related responses.

There was no significant association between the helplessness composite scores on the challenging puzzle task and social disappointment task ($r = .20, ns$) indicating that helplessness in one domain does not necessarily predict helplessness in another domain. There were however, some associations between individual helplessness indicators in the achievement and social domains (see Table 10).

Table 10

Associations Among Helplessness Indicators in Social and Achievement Domains

		Achievement-Based Failure					
		Affect	Good enough	More effort	Choice	Reason	Future success
Social-Based Failure	Affect	.09	.01	-.02	.10	-.26*	.13
	Expect success	.08	-.07	-.17	.09	.10	.05
	Attempt	.23	-.07	-.04	.08	-.01	-.11
	Good at friendship	.18	.13	.36**	-.04	.03	.15
	Nice boy/girl	.12	.13	.16	-.06	.03	.11
	Good boy-girl	.24	.10	.25*	-.08	.04	-.02

*p < .05; **p < .01; ***p < .001

Normality of Distribution

Helplessness data for both tasks were examined for *skewness* and *kurtosis*. Values for both statistics were converted to standard scores (z scores) to determine whether the distributions were significantly different from normal (Fields, 2009; Tabachnick & Fidell, 2007). Composite scores for both the social-based helplessness ($z = 3.35, p < .001$) and achievement-based helplessness ($z = 2.36, p < .05$) tasks were significantly positively skewed, i.e., scores were clustered toward the lower end of the distribution. In an attempt to correct for this, several transformations were applied to the helplessness data (i.e., log, square root and reciprocal transformations). However, none of these transformations significantly improved the normality of the distribution. Issues with this assumption are considered most serious when there are corresponding issues with homogeneity of variance (Tabachnick & Fidell, 2007), and assumptions for homogeneity of variance were met for all analyses. Thus, the ANOVA statistics used in the following analyses should still provide a robust examination of the untransformed data (Fields, 2009; Tabachnick & Fidell, 2007).

Control Variables

When examining associations between a predictor variable (e.g., attachment) and a later outcome (e.g., helplessness), it is important to consider confounding variables that may also be impacting the dependent variable⁴.

⁴ A confounding variable is one other than the predictor variable of interest that has an effect on the outcome (Tabachnick & Fidell, 2007). The standard criteria for such treatment is that a variable must (a) be significantly related to the dependent variable and (b) have no significant association with the independent variable (Fields, 2009). If the variable in question is related to *both* the independent and dependent variables, it should not be controlled for because this may remove important variance in the predictor variable that is influencing the outcome (Fields, 2009).

A number of family demographic variables were examined as potential confounds that may be subject to statistical control: mother's level of education, annual household income, number of hours the mother spent away from the child per week, parent's marital status and mother's work status. Previous research has identified links between such demographic factors and vulnerability to depression (Elovainio et al., 2012; Jackson & Goodman, 2011). No associations were found between any of these variables and either helplessness score (i.e., Achievement-based and social-based).

A number of child characteristics that could influence task outcomes were also examined as potential confounds. Given previous research linking intellectual functioning with performance on helplessness tasks in early childhood (Hayden et al., 2006) children's IQ at age 5.5 was examined as a covariate. Descriptive statistics for intellectual functioning are provided in Table 11. There were no significant associations between either of the helplessness scores and any of the various measures of IQ (verbal IQ, non-verbal IQ, and IQ composite). Thus, any main effects observed between early attachment and later helplessness cannot be accounted for by the child's intellectual functioning.

Table 11

Descriptive Statistics for Intellectual Functioning

	Mean	Minimum	Maximum	Range
Non-Verbal	103.35 (14.54)	80.00	136.00	56.00
Verbal	109.68 (11.40)	77.00	129.00	52.00
Total IQ	107.85 (12.46)	85.00	136.00	51.00

Note. IQ was assessed with the Kaufman Brief Intelligence Test – Second Edition (K-BIT-2). Mean levels of IQ are 100 with a SD of 15.

Children's age was also considered, given that vulnerability to depression tends to become more stable and reliable with increased age (Cole et al., 2008; LaGrange et al., 2008). There were no associations found between children's age at the time of the visit and either of the helplessness scores.

Finally, associations between gender and vulnerability to depression have been cited in the literature; Women tend to experience higher rates of depression than their male counterparts (van Beek, Hesse, Hutteman, Verhulp, & van Leuven, 2012). While these associations are most typically reported for adolescents and adults (Mezulis, Funasaki, Charbonneau, & Hyde, 2010), some studies have identified gender differences in how symptoms of depression are expressed in childhood (Hankin & Abramson, 1999; Samm et al., 2008). As a result, gender was considered as a possible control variable but no significant relationships were found between gender and helplessness scores in either the social or achievement domain.

Associations Between Attachment and Helplessness

Attachment and achievement-based helpless attributions. Analyses of variance were used to examine associations between attachment security and achievement-related helplessness. Assumptions for homogeneity of variance were met using Levene's test, $F(1, 62) = .00, p > .05$. There was no significant variation in overall helplessness on the challenging puzzle task between children in secure ($M = 1.97; SD = 1.89$) versus non-secure ($M = 1.82; SD = 1.38$) attachment relationships, $F(1,65) = 0.21, ns, \eta_p^2 = .00$ (Observed power = .07). Chi-square analyses examining variation in responses on each of the six helplessness indicators individually revealed that there were

no significant differences on any one item for individuals in secure versus non-secure attachment relationships.

Attachment and achievement-based behavioural helplessness. During administration of the challenging puzzle task, some children's verbal reports of non-helpless attributions contrasted sharply with the helpless behaviours they exhibited following the failure puzzles (e.g., wanting to give up, or spontaneously making negative self-attributions). To examine the possibility that children may have been *showing* helplessness following the puzzle failure, but not *endorsing* helplessness on the attribution items, associations between early attachment and both *lack of persistence* and *decrease in desire* following failure on the puzzle tasks were also examined. A Multivariate Analysis of Variance (MANOVA) was conducted with attachment security as the grouping variable and both persistence and desire as the dependent variables.

Assumptions for homogeneity of variance were met using Box's test of Equality of Covariance Matrices, Box's $M = 1.39$, $F(3, 61223.32) = 0.44$, $p > .05$. There were no significant differences between children in secure and non-secure attachment relationships on the behavioural measures of helplessness, $F(2, 57) = .08$, ns, $\eta_p^2 = .00$ (*Observed power* = .06). That is, children with a non-secure attachment history did not display a greater decrease in desire, or show less persistence following the puzzle failures than those with secure attachment histories.

Attachment and social-based helplessness. Analyses of variance were also used to examine associations between attachment security and social-based helplessness.

Assumptions for homogeneity of variance were met using Levene's test, $F(1, 62) = .266$, $p > .05$. Children in secure attachment relationships ($M = 0.98$; $SD = 1.14$) displayed

significantly less helplessness than those in non-secure attachment relationships ($M = 1.68$; $SD = 1.62$) on the social disappointment task, $F(1, 64) = 4.15$, $p < .05$, $\eta_p^2 = .06$ (*Observed power* = .52). Chi-square analyses examining variation in responses on each of the six helplessness indicators individually revealed that there were no significant differences on any one item for individuals in secure versus non-secure attachment relationships.

Discussion

The current study explored the role of early mother-child attachment in emerging vulnerabilities to depression in childhood. The primary hypothesis that early non-secure attachment would be associated with helpless responses to failure was partially supported: Children with a history of non-secure attachment displayed more helplessness than those with a history of non-secure attachment, but only in the social domain. This finding is consistent with the second hypothesis that there would be a stronger connection between attachment security and vulnerability to depression in the social domain given that attachment is an interpersonal construct. This finding is also in line with theoretical work emphasizing the role of IWM's in the interpretation of interpersonal events. Bowlby believed that the inability to develop a stable and supportive relationship early in life, despite repeated attempts to do so, would result in attributing future interpersonal loss to one's own inability to develop or maintain close relationships (Bowlby, 1970, 1977, 1980). Many depression researchers since Bowlby's time have further supported these assertions. In their accounts of the origins of cognitive vulnerability to depression, Williams and Riskind (2004) and Ingram (2001) focus on the distorted interpretations of interpersonal experiences that are characteristic of individuals with non-secure

attachment styles, and ultimately lead to risk for depression. Empirical research with adults has in fact revealed links between non-secure attachment style, interpersonal challenge or loss and subsequent depression (Fowler, Allen, Oldham, & Frueh, 2013; Margolese, Markiewicz, & Doyle, 2005). Thus, the finding that children with a non-secure attachment history exhibited more helplessness following a disappointing social situation is consistent with this line of theory linking early relationship experiences to subsequent interpretations of social interactions.

While little previous empirical research has so specifically examined these associations with regard to social-based helplessness, several studies have examined links between attachment security and attributions made during social situations more generally. In their examination of how self-reports of attachment style are related to concurrent reports of attributional style, Barrett and Holmes (2001) found that adolescents and young adults who reported insecure attachments with their parents perceived ambiguous social situations as more threatening than did their secure counterparts, and also exhibited less proactive responses to these events. Similarly, in an analysis of how kindergarten and first grade students responded to negative social scenarios with ambiguous intent, Cassidy and colleagues (Cassidy, Kirsh, Scolton, & Parke, 1996) demonstrated that children in secure attachment relationships made more positive attributions about a peer's intentions, and also viewed themselves as more likable than their non-secure counterparts. Thus, the current findings are consistent with other research on attachment and functioning within the social domain, and also lend credence to theoretical conjecture linking early relationship experiences with social-based depressive vulnerability.

In contrast, theoretical links connecting early attachment to goal orientation, and subsequent achievement-based helplessness, were not supported in this study. These non-significant findings were fairly robust in that they were demonstrated through associations between early attachment and two distinct assessments of achievement-based helplessness: Children's self-reports of their helpless attributions and behavioural observations of helplessness exhibited following a series of puzzle failures. While theoretical research has linked early relationship experiences to vulnerability in the achievement domain, there is currently very little empirical support for these assertions, and the present study suggests that these associations may not exist. In contrast to the current findings, however, two previous studies that examined longitudinal associations between infant attachment and response to achievement-based challenge in early childhood did find that children with non-secure attachment histories demonstrated less competence during these tasks (Fish, 2004; Sroufe, Egeland, Carlson, & Collins, 2005). Children with a history of secure attachment demonstrated greater mastery during a set of challenging puzzles in one study (Fish, 2004) and a series of challenging achievement-based tasks in the other (Sroufe et al., 2005). However, both of these studies assessed response to challenge in terms of overall observed competence and emotion regulation – constructs that differ from the more specific assessments of helplessness applied in the current study. Thus, while young children with non-secure attachment histories have been shown to struggle more with challenging achievement-based situations, thus far it does not appear that they exhibit more behavioural or cognitive features of helplessness during these struggles than those children with a history of secure attachment. Given the strong theoretical links proposed between attachment and achievement-based helplessness

however, it is important to explore several other possible explanations for the lack of association found in the current study.

The nature of the failure in the challenging puzzle task may partially explain the lack of association with early attachment experiences. In particular, the achievement-based failure task differed from the disappointing social situation in several important ways. First, the nature of the stressor in the latter was much more ambiguous than the former. While children in the social scenario were provided with a vague and uncertain indication of whether or not the other children would want to play with him/her, the puzzle task provided more direct and explicit feedback that the child failed to complete the puzzles in the allotted time. Some research has suggested that it is the construal of *ambiguous* stimuli that links early attachment experiences to cognitive biases in the interpretation of events (Barrett & Holmes, 2001; Blain, Thompson, & Whiffen, 1993). Barrett and Holmes found that individuals with insecure attachment styles interpreted ambiguous social stimuli as more threatening, and responded less proactively, than their secure counterparts. Thus, it may be that the circumscribed failure in the puzzle task led most children to the conclusion that they had performed poorly, whereas the social disappointment task was more open to capture how children would interpret the scenario on their own. While helpless responses on both tasks have been linked to depressive vulnerability, it may only be the interpretation of ambiguous events that is associated with insecure IWM's of attachment.

Additionally, the two tasks may have differed in the quality of helplessness they provoked. In their initial reformulation of helplessness theory, Abramson and colleagues (1978) made a distinction between *personal* and *universal* helplessness. Personal

helplessness occurs when an individual feels that he or she lacks the requisite skills for completing a task. In contrast, universal helplessness involves the belief that, although the individual feels helpless in meeting a challenge, he or she believes that others in a similar situation would feel the same way. For example, if children during the challenging puzzle task believed the puzzles were too difficult for a child their age to complete in time, they would experience a different form of helplessness (i.e., universal) than those who concluded that they lacked the ability to complete the task, despite the fact that others in their position could likely do so (i.e., personal). In fact, during administration of this task many children grew frustrated and agitated with the challenging puzzles, and did seem to believe that they were impossible to finish in time. It is thus possible that the helplessness exhibited by children during this task was more often universal than personal since the children may have inferred that most children their age would encounter similar difficulties. In contrast, it is unlikely that children would have experienced universal helplessness during the social disappointment task, given the direct feedback about unique characteristics of the child having implications for the task outcome (i.e., “The other children are not sure if you can join them yet, *they want to find out more about you first*”). While both forms of helplessness would present with similar behavioural outcomes (e.g., Lack of persistence), they hold different implications for feelings of self-worth and emotional functioning. It may be that early attachment experiences are only associated with the more internal aspects of helplessness characteristic of the personal sub-type, which may have been better captured in the interpersonal scenario. This is consistent with theoretical work that emphasizes the role of self-worth and internal attributions in connecting early relationship experiences with

helpless explanatory styles. Thus, it remains possible that non-secure attachment is associated with personal (vs. universal) helplessness rather than social (vs. achievement) based helplessness. Future research using manipulations of helplessness sub-type (e.g., Telling participants, “Most children your age were able to solve these puzzles” versus “Most other children your age were unable to solve these puzzles”) within both the achievement and social domains would provide an empirical assessment of this proposition, and help clarify associations between attachment and domain-specific vulnerability to depression.

Furthermore, analyses in the current study were only examined in terms of dichotomous attachment security. The possibility remains that while helplessness in the achievement domain was not associated with non-secure attachment overall, it may be related to sub-classifications that were not specifically examined in the current sample due to limitations with regard to sample size. In particular, theoretical links between attachment and vulnerability to depression in the achievement domain are arguably most relevant for individuals with a history of avoidant attachment (Morley & Moran, 2011). Bowlby (1977, 1980) hypothesized that the attachment representations of children whose relationships are characterized by avoidance are the product of a critical and unavailable attachment figure who, in particular, repeatedly rejected their bids for comfort from stress. These individuals develop a model of others as unavailable and unsympathetic during difficult times. Unable to look to their attachment figure during times of need, they are left to deal with emotionally charged situations on their own and, thus, their self-representations are characterized by self-sufficiency. Achievement-related failure can be particularly threatening to this sense of autonomy and self-sufficiency, and has been

theorized to place these individuals at risk for depression (Morley & Moran, 2011). However, the current study was unable to examine variation in helpless responses to failure among different non-secure attachment classifications due to sample size restrictions, especially in the non-secure classifications. Furthermore, none of the dyads in our sample were classified as avoidant at age 3.5. Thus, future research will be necessary to determine whether achievement-based helplessness is unrelated to attachment quality as the present study suggested, or possibly associated with attachment patterns in preschool that were underrepresented in the current study.

Finally, these findings may simply indicate that while early attachment experiences influence vulnerability to depression in the social domain, they have little bearing on similar processes in the achievement domain. While more recent theoretical work has tied early attachment experiences to depressive vulnerability in the achievement domain, Bowlby's original work linking attachment to depression was anchored in an interpersonal context. Much of his work on attachment and psychological functioning centred around the impact that early relationship experiences would have on functioning in later social relationships, and particularly the negative attributions non-secure individuals would make following interpersonal loss. Similarly, many researchers since Bowlby's time have focused on the importance of attachment-related stressors in activating IWM's and associated cognitive bias in individuals with non-secure attachment histories. For example, Williams and Riskind (2004) emphasize the role of IWMs of attachment as relational schemas that function to guide one's own behavior and anticipate the behavior of others in *social interactions*. Similarly, Ingram (2001) discusses the distorted perceptions of *interpersonal* encounters that result from non-secure attachment

histories and subsequently confer risk for depression. In general, assertions such as this linking early attachment to depressive vulnerability in the social domain are arguably more pervasive and thoroughly developed than similar arguments in the achievement domain. Based on these theoretical propositions, it is not surprising that attachment was associated with helplessness in an interpersonal, but not achievement-based context. Nevertheless, more research is necessary to replicate, clarify and expand on these findings before such a conclusion can be made.

Theoretical associations discussed in the present study highlight the importance of children's views of the self in connecting early attachment experiences to later depressive vulnerability. However, it remains to be seen what – if any – role self-views played in these associations. The following study examines emerging self-representations as a function of early attachment history and explores their role in the association between early attachment and subsequent helpless responses to failure.

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Chapter 2: The Role of Early Attachment Experiences in Emerging Self-Views

According to Bowlby, children develop representations, or Internal Working Models of attachment based on their history of interaction with their caregiver (Bowlby, 1958, 1970, 1977). These representations are believed to reflect how consistently accessible, responsive and accepting the caregiver is to the child's needs. Bowlby further proposed that children would develop a complementary model of the self, based on these experiences with important others. In this regard, attachment theory closely resembles long-standing beliefs on the development of the self that emphasize the views of others as the basis for constructing representations of oneself. In particular, Cooley's *looking glass self-theory* purports that individuals develop a sense of self through perceptions displayed by others who are ascendant over them (Cooley, 1904, as cited in James, 2003). Thus, an individual's self-conception will reflect perceptions of his/her importance to others. This is entirely consistent with Bowlby's proposition that children develop representations of themselves based on the attitudes and behaviours expressed toward them by primary attachment figures. Both theories provide a general framework for the importance of early relationship experiences for developing views of the self. An understanding of the nature and capacity of self-views very early in life is essential for a more detailed account of how such early attachment experiences contribute to emerging self-representations.

Domain Specific Self-Concept vs. Global Self-Views

Bowlby's theory emphasizes the role of attachment experiences in an individual's general sense of worth and importance early in life. However, many other theorists have suggested that such *global* views of the self do not exist in early childhood and emerge only later (Harter, 1982; Verschueren, Buyck, & Marcoen, 2001). Harter and colleagues

(1982, 1984) have long contended that self-views held by children under the age of 8 are characterized by domain-specific representations of competence and acceptance and lack a more integrated global assessment. She proposed that the ability to develop an integrated and unified sense of self is a more sophisticated process that occurs later in development. In Harter's opinion, the self-views of young children instead reflect more concrete and direct perceptions of one's competence and abilities in a variety of domains. Many studies have yielded results consistent with this hypothesis that suggest self-concepts in distinct domains are associated with different developmental antecedents and outcomes for young children (Gladstone & Kaslow, 1995; Harter, 1982; Harter & Pike, 1984; Verschueren, Doumen, & Buyse, 2012; Verschueren, Marcoen, & Buyck, 1998). For example, Verschueren and colleagues (2012) have shown that particular domain-specific aspects of self-concept at age six are associated with different early relationship experiences: While general self-concept was most strongly linked to mother-child relationship quality, academic self-concept was more closely associated with teacher-child relationships and social self-concept was only related to relationships with peers. Moreover, Garrison et al. have shown that domains of self-concept at a young age are associated with unique aspects of concurrent development. That is, while self-reported cognitive competence was associated with analogous teacher reports, neither physical competence nor social acceptance correlated with teacher-reports of these same processes. Additionally, while Verschueren et al. (1998) found that children's reports of both cognitive and physical competence were associated with their behaviourally presented self-esteem, the same was not true for reports of social acceptance. Thus, there is evidence that young children's perceptions of their competence and acceptance in

unique domains are rooted in different early life experiences, and may subsequently impact different aspects of development. As Harter proposed, there appears to be merit in examining the domain-specific perceptions of self-concept in early childhood.

Since Harter's foundational work on the development of the self, however, more recent research has revealed that infants and young children have a far greater capacity for understanding their social environment than was previously believed (Hamlin & Wynn, 2011; Hamlin, Wynn, Bloom, & Mahajan, 2011; Johnson, Dweck, & Chen, 2007). In a series of groundbreaking studies, Hamlin and colleagues have shown that as young as 6 months of age, infants show a preference for a helpful (vs. unhelpful) puppet, and pro-social (vs. anti-social) character they viewed in a short vignette. Moreover, Johnson et al. have found that 12 to 16 month-old infants in secure attachment relationships take longer to habituate to a display of an unresponsive caregiver than they do a responsive one. The same was not true of individuals classified as non-secure. Longer habituation to a given stimuli is considered reflective of how novel and unfamiliar it is, suggesting that individuals classified as secure were more accustomed to the responsive scenario than those classified as non-secure. Findings from studies such as these reveal that infants and toddlers learn from the actions of others and have a basic understanding of their social environment – the same environment within which theory proposes they develop a sense of self. Not unexpectedly then, several studies have uncovered signs of global self-representations in children as young as 5 years old – a process previously believed to be too cognitively advanced for this age group (Harter, 1982).

This latter research flows from the proposal by various theorists that children derive a rudimentary global sense of self at a very young age characterized by a general feeling of being lovable vs. unlovable or worthy vs. unworthy (e.g., Cassidy 1988; Cassidy, Kirsh, Scolton, & Parke, 1996; Verschueren et al., 2001). This notion is compatible with Bowlby's prediction that children develop a general feeling of worth through experiences with caregivers very early in life. Many studies have utilized interviews with a friendly puppet to examine the validity of children's global representations of the self at a very young age (Cassidy, 1988; Clark & Symons, 2000, 2009; Verschueren et al., 2001). Verschueren and colleagues (2001) found that children with positive global self-views at age 5 reported higher social acceptance, physical attractiveness and global self-worth three years later, and were also rated as more independent and better adjusted by their teachers than those who reported negative self-views at age 5. In addition, other studies have shown that at age 5 and 6, self-reports of global self-worth have good reliability (Borgers, van den Bergh, & Hox, 2001; Cassidy, 1988; Van den Bergh & De Rycke, 2003; Verschueren et al., 2012) and are associated with theoretically predicted constructs including social and academic competence and relationships with others (Borgers et al., 2001; Cassidy, 1988; Verschueren et al., 2012).

Thus, although self-representations likely continue to develop and become more sophisticated across childhood and adolescence, children's self-representations from a very early age – in terms of both domain-specific views as well as global self-worth - have important implications for later development. We now turn to a more detailed analysis of how life's earliest relationship experiences influence these emerging views of the self.

Associations Between Attachment and Emerging Self-Views in Early Childhood

The preceding review suggests that both domain-specific and global views of the self in early childhood have important implications for concurrent and later development. Theory has linked both these aspects of emerging self-views to early relationship experiences with caregivers.

Bowlby proposed that individuals who develop secure attachment relationships are likely to have experienced responsive, consistent and sensitive caregiving from their primary attachment figures early in life. Empirical research has largely supported these assertions (Atkinson et al., 2000; De Wolff & van Ijzendoorn, 1997; Pederson et al., 1990). Having had their desires for comfort, support and exploration respected and consistently met, secure individuals learn that important others are available, accessible and supportive during times of need. Consequently, they develop a complementary model of the self as valuable, lovable and worthy of consistent support. In contrast, individuals in non-secure attachment relationships most often experience caregiving characterized by either inconsistent responding or rejection. Through such experiences, the child learns that the actions of others are not contingent on his/her own needs and desires, and they develop corresponding self-views that suggest that they are, at times, unimportant and/or unworthy to others.

These early relationship experiences may also impact more concrete, domain-specific aspects of self-representations. Baldwin and colleagues (Baldwin, 1997; Baldwin, Fehr, Keedian, Sediell, & Thompson, 1993; Baldwin & Sinclair, 1996) have proposed that the sense of self is socially constructed through feedback from important others; an individual will develop either an unconditional positive sense of self through

consistent and supportive feedback, or a conditional sense of worth based on receiving positive feedback only when an evaluative standard is met. He believed this conditional sense of worth develops through repeated interactions with caregivers that provide a framework for “If...then” contingencies associated with views of the self (Baldwin & Sinclair, 1996). For example, a young boy playing soccer with his father who is yelled at for missing the ball may develop a contingency of “*If I don’t get the ball, then I am a failure*”, which would likely result in a contingent sense of self with respect to physical competence. However, the same representation may not be activated in other contexts. That is, if this father does not provide the same negative feedback when his son does poorly on a test at school, he may not hold the same contingent self-views with respect to cognitive competence (Baldwin, 1997; Kuiper, Olinger, & Air, 1989).

Consistent with these theoretical propositions, numerous studies have found associations between mother-child attachment relationships and both global and domain-specific self-views in early childhood. Higher self-reports of perceived cognitive and physical competence, as well as greater global self-worth have typically been found among children in secure attachment relationships (Cassidy, 1988; Clark & Symons, 2009; Verschueren & Marcoen, 1999; Verschueren, Marcoen, & Schoefs, 1996). For example, Verschueren and Marcoen found that attachment security at age 5 was associated with both higher global self-worth and perceptions of cognitive and physical competence. Similarly, Cassidy found that children in secure relationships at age 6 reported higher global self-esteem and greater competence than those in avoidant or resistant relationships. Consistent with theoretical conjecture, these studies suggest that experiences in supportive early relationships lead to an overall positive model of the self.

Other research, however, has identified more complicated, non-linear associations between attachment and self-concept in early childhood. In several studies, secure attachment has been associated with open - as opposed to positive - self-views, whereas non-secure attachment has been linked to more positive, near “perfect” representations of the self (Cassidy, 1988; Clark & Symons, 2000). In a longitudinal analysis of these associations, Clark and Symons found that neither attachment at age 2 nor 5 was predictive of positive self-views in early childhood, however attachment at both time points was predictive of how open children were to admitting imperfections. While children in secure relationships presented themselves more realistically and acknowledged imperfections, those in non-secure relationships were more likely to present themselves as flawless. Similarly, Cassidy found that at age 6, concurrent attachment security was associated with open descriptions of the self, whereas avoidant attachment was linked to “perfect” presentations of the self during a puppet interview. These studies indicate that early attachment experiences may have a greater impact on the *patterns* of young children’s responses to assessments of self-concept rather than the *content* of their actual responses. However, at least one study has failed to replicate these same findings. Verschueren et al., (1996) found that attachment security at age 5 was associated with positivity, and not openness, in the puppet interview. In fact, secure children in their study were overrepresented in the “positive perfect” category, rarely admitting to flaws or imperfections.

Such mixed findings with regard to how early relationship experiences influence emerging self-representations thus fail to resolve how early attachment security impacts emerging self-views. At present, it remains unclear whether these individuals are more

likely to develop an overall low self-worth, negative self-views in particular domains, or a defensive sense of self characterized by difficulty acknowledging imperfections. Clarifying the nature of these associations is critical for advancing theoretical work linking early relationship experiences with emerging representations of the self, for understanding the risks that may be associated with negative early attachment experiences, and for informing clinical interventions aimed at supporting children in such circumstances. The previously reviewed studies have employed a variety of methodological approaches to examine these associations, some of which may have limited the ability to accurately capture these processes in young children. The present study set out to utilize the most valid and reliable measures and procedures available in attempt to further elucidate the nature of these associations.

Empirical research examining associations between attachment and self-concept have utilized a variety of assessments. In the studies reviewed above, measures of attachment representations included interviews (Clark & Symons, 2000; Verschueren et al., 2001), questionnaires (Verschueren & Marcoen, 2002) story-stem completion tasks (Verschueren & Marcoen, 1999; Verschueren et al., 1996) and q-sort methodology (Clark & Symons, 2009; Verschueren et al., 2012). Only one of these studies (Cassidy, 1988) employed a separation and reunion procedure to classify the mother-child relationship, a method that has long been considered the gold-standard measure of attachment from infancy to early childhood (Solomon & George, 2008). The tendency to utilize measures other than separation-reunion paradigms can be attributed in part to the labour-intensive nature of the associated data collection and coding. However, separation-reunion procedures currently demonstrate the strongest psychometric properties in comparison

with other methods (Moss, Bureau, Cyr, Mongeau & St. Laurent, 2004; Solomon & George, 2008). Thus, in order to maximize the validity of a measure of attachment, the current study employed the Preschool Attachment Classification System (Cassidy & Marvin, 1992) – a separation and reunion procedure for 3 to 4 year olds (Solomon & George, 2008) - to assess mother-child attachment in the preschool years.

Previous studies have also employed a variety of measures for assessing emerging self-views in this young age group. These measures typically fall into one of two broad domains: interview-format or self-report questionnaire. The interactive interview was one of the first avenues identified for assessing global self-views in this age group; however, some research has suggested that such transparent self-assessments may elicit a defensive reaction in individuals who have difficulty acknowledging their own limitations (Cassidy, 1988). Such a reaction may explain some of the “perfect” patterns of responding identified among different groups of children in the previously reviewed studies. In contrast, Harter’s scales of competence, acceptance, and global self-worth were developed to represent negative qualities more favourably. Participants are presented with descriptions of two children – one who presents positively on a given trait and one who is less positive – and asked which one they are most similar to. This method was designed to reduce defensive reactions by implying that flaws are acceptable through asking the child to identify with another individual who already reported feeling that way. The current study examined self-views using Harter’s measures in an effort to obtain as honest responding as possible from this young age group.

This study also examined links between attachment and self-views using a longitudinal design – something only a few previous studies have done (e.g., Clark &

Symons, 2000; Verschueren et al., 2001, 2012). The majority of previous work has been conducted using concurrent assessments of mother-child relationships and self-concept (e.g., Cassidy, 1988; Clark & Symons, 2009; Verschueren & Marcoen, 2002; Verschueren et al., 1996). However, attachment theory predicts that experiences in early relationships impact emerging self-views through repeated interactions with caregivers over time. To examine this proposition, it is important to assess attachment quality several years prior to self-views in order to capture how repeated experiences in that relationship impacted representations of the self at a later stage (Baldwin, 1997; Baldwin, et al., 1993; Baldwin & Sinclair, 1996; Bowlby, 1980). This is particularly important since attachment quality can change over time (Bar-Haim, Sutton, Fox, & Marvin, 2000), and concurrent assessments of the relationship may not reflect attachment representations from earlier ages that would be predicted to impact emerging self-views (Bowlby, 1980). As a result, the current study assessed attachment at age 3.5 and self-concept two years later at age 5.5.

Finally, previous research that assessed the style of children's responses to self-concept measures has typically utilized categorical labels (i.e., Open vs. Perfect) to classify responses. Assigning participants to categories in this way may obscure important variation in responses not captured by these pre-determined categories. Such methods are considered "variable-oriented" in that they examine linear associations between pre-determined variables (Bergman & Magnusson, 1997). In contrast, in a "person-centred" approach the unit of analysis becomes the profile of scores exhibited by each participant across all variables simultaneously (Bailey et al., 2007; Bergman & Magnusson, 1997). This allows for the identification of groups of children who displayed

similar patterns of responding across a set of variables. A person-centred Q factor-analysis was applied to the self-concept data to identify dominant patterns of responding across all items on the Pictorial Scale of Perceived Competence and Social Acceptance. The association between these response styles and attachment security were then examined using more traditional linear analyses to determine whether patterns of responding exhibited across the PSPCSA vary as a function of early attachment experiences. To date, no other study has explored profiles of responding on self-concept measures in this manner to examine associations with early attachment security. These methodological strengths will build on findings from previous studies that have examined associations between early attachment and emerging self-views to help clarify the nature of these associations. Such research is necessary to advance theory linking early relationship experiences to representations of the self in early childhood.

From Attachment to Depressive Vulnerability by Way of Representations of the Self

The maladaptive and contingent self-views described above share common features with helpless explanatory styles following failure: Both represent cognitive frameworks that suggest to an individual that he or she is, at times, unworthy. Thus, it follows that children who possess an unstable view of self and associated low self-worth (Baldwin & Sinclair, 1996) will be vulnerable to helplessness following challenging situations. This reasoning is in line with various self-theorists who have described similar associations between self-views and cognitive vulnerability to depression, and also alluded to the importance of early attachment experiences in these associations (Dykman, 1998; Rusk & Rothbaum, 2010; Smiley & Dweck, 1994). As a common link, these theories all point to the stable and positive sense of self derived through early experiences

in secure attachment relationships as a protective factor against the threat of failure. Individuals with a history of secure attachment are expected to focus on positive aspects of their experience and improving their abilities in challenging situations – their focus is less related to the outcome of such events since they have developed an unconditional, positive sense of self that is not dependent on attaining success (Rusk & Rothbaum, 2010).

Both attachment and self-theorists hold that, in contrast to those in secure attachment relationships, individuals with non-secure attachment histories must continuously strive to establish a sense of competence and worth, having been unable to do so through their early interactions. These individuals tend to view challenging or difficult situations as measures of their core traits that have the potential to prove (or disprove) and validate (or invalidate) their self-worth. Furthermore, negative experiences during challenging situations carry the implication not only of incompetence on a particular task, but also of an overall low self-worth (Baldwin & Sinclair, 1996; Dykman, 1998). These attributions lead to a lack of persistence in challenging situations, because – having concluded that poor performance is indicative of an overall low ability and worth – these individuals do not expect that increased effort will be of any use. Consequently, interpreting failure through this framework is expected to place individuals with negative or unstable self-views at risk for the cognitive and behavioural characteristics of helplessness following failure (Dweck & Leggett, 1988). This is entirely consistent with the suggestion that sub-optimal experiences in early attachment relationships lead to unstable views of the self that place individuals at risk for explanatory styles that can subsequently lead to depression (Dykman, 1998; Rusk & Rothbaum, 2010). Despite these

compelling theoretical links, to our knowledge, no study has yet to examine these associations in early childhood. Thus, the current study will examine representations of the self as a mediating pathway between early attachment experiences and helpless attributions following failure.

Hypothesis 1. Based on previous findings (Cassidy, 1988; Clark & Symons, 2009; Verschueren & Marcoen, 1999, 2002; Verschueren et al., 1996) and the well-validated methodology utilized in this study, it was expected that children with secure attachment histories would have a more positive self-concept than those with non-secure attachment histories. That is, individuals classified as secure in the separation reunion procedure at age 3.5 will report higher scores on Harter's scales of physical competence, cognitive competence, and social acceptance at age 5.5 than those classified as non-Secure.

Hypothesis 2. Based on theory (Bowlby, 1980) and recent advances in the assessment of global self-views in early childhood (Borgers et al., 2001; Van den Bergh & De Rycke, 2003), it was expected that children with a history of secure attachment would report higher global self-worth than those with non-secure attachment histories. That is, children classified as secure in the separation and reunion procedure at age 3.5 will report greater global self-worth on Harter's scale at age 5.5.

Hypothesis 3. It was also expected, given that Harter's measure was designed to reduce defensive responding in young children (Cassidy, 1988; Harter & Pike, 1984), that examining patterns of responding on self-concept measures would reveal that individuals with secure attachment relationships present themselves more positively overall (as opposed to "open") than those with non-secure attachment histories.

Hypothesis 4. It was hypothesized that individuals with negative self-views would be more vulnerable to helplessness following failure than those with more positive self-views. That is, children who report lower global self-worth on Harter's scale will also show greater helplessness following failure in both the challenging puzzle task and social disappointment task.

Hypothesis 5. It was predicted that the association between non-secure attachment early in life and helpless responses to both the challenging puzzle task and social disappointment task at age 5.5 would be mediated by global self-worth.

Methods

Participants

Participants were part of the ongoing longitudinal study described in Study 1 of this dissertation. All 70 mother-child dyads who participated in Study 1 also completed both the 3.5 and 5.5 year assessments that were included as part of the present study. Complete demographic information for the sample is available on pages 25 to 29 in Chapter 1.

Materials

Separation-reunion procedure (Cassidy & Marvin, 1992). This procedure was used to assess the mother-child attachment relationship in the pre-school years. For a full description of this measure, please refer to page 30 in Chapter 1.

Pictorial scale of perceived competence and social acceptance (PSPCSA; Harter, 1982; Harter & Pike, 1984). This scale was designed to capture young children's perceptions of their competence and acceptance in multiple domains. Participants were presented with pictures of two children, each of whom possessed a

different quality on a particular trait. They were then asked to point to the child that was the most like them (e.g., “This boy/girl is *good* at skipping, and this boy/girl is *not very good* at skipping – which one is the most like you?”). Once children identified with one of the options, they were then asked to point to either a small or large circle below the picture to help quantify their answer (e.g., “Are you *really* good at skipping or are you *pretty* good at skipping?” or “Are you *not very good* at skipping or are you *sort of good* at skipping?”). Presenting traits in this manner, where both positive and negative characteristics are depicted as common occurrences among other children, is designed to reduce biased responding due to wishful thinking, a common cognitive phenomenon in this age group (Cassidy, 1988; Harter & Pike, 1984).

Each of the 18 items was scored on a 4-point scale based on the statement with which the child identified and how he or she quantified their response: A score of 1 was assigned when the child chose a negative trait and then the large circle (i.e., Not very good), a 2 for a negative trait and small circle (i.e., Sort of good), a 3 for a positive trait and small circle (i.e., Pretty good) and a 4 for a positive trait and large circle (i.e., Really good). There were three subscales within the measure, each comprised of 6 items. Scores for all items within each subscale were totaled to create an overall score for that scale ranging from 6 to 24, with higher scores denoting greater competence/acceptance.

The PSPCSA was designed to assess domain-specific self-views in early childhood, and was not intended to be used as a composite measure of more global self-views. The three domains of self-concept derived from this measure were: Cognitive Competence, Physical Competence and Peer Acceptance. The *Cognitive Competence* domain assessed perceptions of achievement-oriented abilities, (e.g., This boy/girl knows

lots of things in school, and this boy/girl doesn't know very many things in school); *Physical Competence* examined perceptions of physical abilities (e.g., This boy/girl is good at running and this boy/girl is not very good at running); and *Peer Acceptance* assessed perceptions of social acceptance and inclusion (e.g., This boy/girl has lots of friends to play with on the playground, and this boy/girl doesn't have as many friends to play with on the playground). A fourth sub-scale from this measure, *Maternal Acceptance*, was not used in the current study given its close theoretical association to representations of attachment relationships. This was considered a potential confound in a study examining associations between early relationships and later self-concept, and also did not accurately capture the dependent variable of interest given the focus on the *mothers'* behavior as opposed to the child's views of the *self* in that sub-scale.

The PSPCSA has demonstrated good psychometric properties in low-risk samples of children in kindergarten and grade 1 (Cassidy, 1988; Garrison, Earls, & Kindlon, 1983; Harter & Pike, 1984). Sub-scales have generally demonstrated good internal consistency (Harter & Pike, 1984) with some exceptions (Mantzicopoulos, French, & Maller, 2004), and acceptable convergent (Harter & Pike, 1984), discriminant (Harter & Pike, 1984) and predictive validity (Bierer, 1981, as cited in Harter & Pike, 1984; Cassidy, 1988). Although young children tend to represent themselves highly and score positively on most items overall, this measure has uncovered considerable variability in responding and has been found capable of identifying a subset of children who present themselves less positively (Harter & Pike, 1984). Some findings have also suggested that *patterns* of extreme responding on this task at both ends of the spectrum (i.e., Very low or very high responses) may reflect problems with self-perceptions in early childhood

(Cassidy, 1988; Harter & Pike, 1984). Thus, despite some limitations with internal consistency, this measure has demonstrated generally strong psychometric properties in low-risk samples and has shown stronger validity than self-report questionnaires and direct interviews in this young age group (Cassidy, 1988).

Chronbach's alpha (α) was used to assess the internal consistency among the items comprising each scale (see Table 12). Alpha values for all scales were *acceptable* to *good*, with the exception of the physical competence scale, which was in the *unacceptable* range (Chronbach & Shavelson, 2004). This pattern, i.e., lower internal consistency among items in the physical competence domain, has also emerged in previous research using this scale (Garrison et al., 1983; Harter & Pike, 1984; Mantzicopoulos et al., 2004). One possible explanation that has been proposed to account for this pattern is that children in this age range tend to report consistently high scores on the physical competence scale, leading to low variability and a restricted range that can reduce reliability (Harter & Pike, 1984; Mantzicopoulos et al., 2004).

Table 12

Internal Consistency for Harter's Scales

	Chronbach's Alpha (α)	Descriptor
Cognitive Competence	.76	Acceptable
Physical Competence	.41	Unacceptable
Peer Acceptance	.81	Good
Total Competence/Acceptance	.82	Good
Global Self-Esteem	.71	Acceptable

Note. Chronbach's alpha values > .80 are considered good, > .60 are acceptable, > .50 are poor, and < .50 are unacceptable (Gardner & Tremblay, 2007).

Self-perception profile for children (SPPC; Harter, 1985). The self-perception profile for children is a measure of self-representations for children aged 8 years and older and assesses the more global and integrated views traditionally thought to develop in middle to later childhood. This measure has shown good psychometric properties with children from low-risk samples aged 8 and older (Granleese & Joseph, 1994; Schumann et al., 1999). More recently, similar global measures of the self have been successfully administered to children ages 5 to 8 (Marsh, Craven, & Debus, 1991; Van den Bergh & De Rycke, 2003; Verschueren et al., 2001). The *Global Self-Worth* sub-scale of the SPPC was included in the current study to capture a more global self-view as reflected in a child's general views of their perceived worth (e.g., "Some children are usually happy with themselves and other children wish they were someone else - which one is the most like you?"). Standard administration procedures for this scale suggest that children be asked to read alternatives and check a box that indicates if that choice is "really true for me" or "sort of true for me". Given the younger age of the current sample, the items were administered using the same methodology as the PSPCSA (i.e., with visual depictions of items along with circled options to qualify their responses), as these procedures have been shown to be more engaging and easily understood by children ages 4 to 7 (Harter & Pike, 1984).

The items on this scale were scored in a manner consistent with those from the PSPCSA, with possible Global Self-Worth sub-scale scores ranging from 6 – 24.

Rosenberg self-esteem scale (RSE) (Rosenberg, 1965). This scale is a brief measure of self-esteem that has demonstrated good reliability and validity across many samples of varying ethnicity (Hatcher & Hall, 2009; Robins, Hendin, & Trzesniewski,

2001) and age (Bagley & Mallick, 2001; Martin-Albo, Nunez, Navarro, Grijalvo, & Navascues, 2007). The RSE has shown strong associations with constructs theoretically-linked to self-esteem, such as psychological functioning (Banos & Guillen, 2000; Mohammadi, 2004; Robins et al., 2001). Significant associations between the RSE and the Global Self-Worth sub-scale of Harter's Self-Perception Profile for Adolescents have also been reported (Hagborg, 1993). Given its' strong psychometric properties and broad applications, this measure was used as a general indication of the child's sense of self, as reported by their mother. Mothers were asked to complete this questionnaire based on how they thought their child felt about him/herself. This score was used as a measure of convergent validity for the child's own reports of their sense of self.

Achievement-based failure: Challenging puzzle task - attributions (Kistner et al., 2001; Ziegert et al., 2001). This procedure was designed to assess helpless attributions following achievement-related failure in early childhood. For a full description of this measure, please refer to pages 31 to 35 in Chapter 1.

Social-based failure: Social-disappointment task. This procedure was designed to assess helpless attributions following social-based failure in early childhood. For a full description of this measure, please refer to pages 36 to 39 in Chapter 1.

Table 13 provides an overview of all measures used in the present study, including the construct being assessed, the coding procedures used and the corresponding score to represent that construct.

Table 13

Overview of All Measures and Variables to be Used in Study 2

Construct Assessed	Measure Used	Age at Administration	Coding Procedure	Outcome Scores to be Used in Analyses
<i>Attachment in Preschool</i>	Separation-Reunion Procedure (Cassidy & Marvin, 1992)	3.5 years	Classifications are assigned by trained coders based on Cassidy and Marvin's (1992) preschool attachment classification system	Categorical Attachment Classification: <i>Secure</i> or <i>non-Secure</i>
<i>Perceived Cognitive Competence</i>	Perceived Cognitive Competence Sub-Scale - Pictorial Scale of Perceived Competence and Acceptance (Harter & Pike, 1984)	5.5 years	Total scores are determined by adding scores for all 6 <i>Perceived Cognitive Competence Items</i> (For each item scores range from 1 to 4)	Total Score on <i>Perceived Cognitive Competence</i> (Scores range from 6 – 24)
<i>Perceived Physical Competence</i>	Perceived Physical Competence Sub-Scale - Pictorial Scale of Perceived Competence and Acceptance (Harter & Pike, 1984)	5.5 years	Total scores are determined by adding scores for all 6 <i>Perceived Physical Competence Items</i> (For each item scores range from 1 to 4)	Total Score on <i>Perceived Physical Competence</i> (Scores range from 6 – 24)
<i>Perceived Social Acceptance</i>	Perceived Acceptance Sub-Scale - Pictorial Scale of Perceived Competence and Acceptance (Harter & Pike, 1984)	5.5 years	Total score is determined by adding scores for all 6 Perceived Acceptance Items (For each item scores range from 1 to 4)	Total Score on <i>Perceived Acceptance</i> (Scores range from 6 – 24)
<i>Global Self-Esteem</i>	Global Self-Worth Sub-	5.5 years	Total score is determined by	Total Score on <i>Global Self-Worth</i>

	Scale: Self-Perception Profile for Children (Harter, 1982)		adding scores for all 6 Global Self-Esteem Items (For each item scores range from 1 to 4)	(Scores range from 6 – 24)
<i>Maternal Report of Child Self-Esteem</i>	Rosenberg Self-Esteem (RSE) Scale	5.5 years	Total score is computed by summing responses to all 10 items (Each item scores range from 0 to 3)	Total scores for <i>Maternal-Reported Self-Esteem</i> (Score range from 0 to 30)

Procedure

At the 3.5 year visit, the child visited the university with his/her mother and participated in a series of tasks assessing various aspects of development, including a separation/reunion procedure designed to assess the attachment relationship with his/her mother. Approximately two years later at age 5.5, children returned to the university to complete various assessments of self-representations and responses to achievement- and social-based failures, among several other activities. At both visits, mothers also completed a series of questionnaires on various aspects of their child's behaviours and socio-emotional functioning and a short interview to obtain updated demographic information. Each visit took approximately 2 hours to complete, and families were compensated for their time with a modest honorarium.

Results**Descriptive Statistics**

A total of 70 mother-child dyads participated in both the 3.5-year and 5.5-year assessments. At the 3.5-year assessment, there were missing attachment data for one child as a result of a technical failure during recording of the separation and reunion procedure. At the 5.5-year time point, all children completed the scales of perceived competence, acceptance and global self-worth. Missing data points for all other measures are the same as those described for Chapter 1 (see page 43). For analyses, data were available for 69 children for attachment classifications, 68 children for the challenging puzzle task, 66 children for the social disappointment task, 69 children for intellectual capacity, and 70 children for the perceived competence, acceptance, and global self-esteem scales.

Attachment classifications. The distribution of attachment classifications is presented in Table 7 on page 45 in Chapter 1. In accordance with the study's hypotheses, the groups were dichotomized into secure and non-secure for all analyses.

Representations of the self. Descriptive statistics for all scales representing self-concept are presented in Table 14. Overall, means and standard deviations for the PSPCSA scales were consistent with those reported from other community samples (Cassidy, 1988; Garrison, Earls, & Kindlon, 1983; Jambunathan & Burts, 2003).

Table 14

Descriptive Statistics for Harter's Scales of Self-Concept

	Mean	SD	Minimum	Maximum
<u>Pictorial Scales of Competence/ Acceptance</u>				
Cognitive Competence	18.90	3.84	9.00	24.00
Physical Competence	19.34	2.78	12.00	24.00
Peer Acceptance	18.78	4.08	9.00	24.00
Total Competence/Acceptance	57.02	8.34	41.00	72.00
<u>Self-Perception Profile</u>				
Global Self-Esteem	21.28	3.08	11.00	24.00

Note. Possible scores on all scales ranged from 6 (very low) to 24 (very high).

Table 15 presents the results of a principal components analysis of the PSPCSA items using an oblimin rotation. The analysis revealed two primary factors that together accounted for 39% of the total variance. The first factor accounted for 27% of the variance and almost all items loaded positively on this factor suggesting it represented overall competence and acceptance. The second factor accounted for 12% of the total variance and all items loading positively on this factor were from the cognitive competence domain. Factor 2 provides no suggestion that the physical and cognitive competence domain are a shared construct and should be combined, something that has been done in many other studies. Moreover, although neither the physical nor peer domains loaded onto a specific factor apart from overall competence and acceptance, there is no conceptual rationale for combining these subscales together. Thus, it was determined that each of the domains would be analyzed separately in addition to examining an overall competence and acceptance score.

Table 15

Factor Analysis for all items in the PSPCSA

Scale and Item	Factor 1: Overall Competence and Acceptance	Factor 2: Cognitive Competence
Cognitive Competence		
Good at Numbers	.43	.50
Knows a lot in school	.61	.30
Can read alone	.60	.40
Can write words	.53	.37
Good at spelling	.60	
Good at adding	.41	.38
Physical Competence		
Good at swinging		
Good at climbing	.33	
Good at bouncing ball	.58	
Good at skipping		
Good at running	.54	-.38
Good at jump rope	.36	
Peer Acceptance		
Has lots of friends	.47	-.56
Others share toys	.65	
Has friends to play with	.70	-.41
Has friends on playground	.45	-.66
Gets asked to play	.70	
Others sit with him/her	.72	

Note: Only items loading > .30 or < -.30 were included in table for ease of interpretation; All numbers represent factor loadings.

Normality of Distribution

Data on self-representations were examined for skewness and kurtosis. Values for both statistics were converted to standard scores (z scores) to determine whether the distribution was significantly different from a normal distribution (Fields, 2009; Tabachnick & Fidell, 2007). While all variables showed a slight negative skew, i.e., scores tended to cluster at the high end of the range, they were not significantly different from a normal distribution for the domains of competence and acceptance (e.g., *cognitive competence*, *physical competence* or *peer acceptance*) (i.e., $z < 1.96$). However, scores for *global self-worth* were significantly negatively skewed ($z = 4.00$, $p < .001$). In attempt to correct for this, several transformations were applied (i.e., log, square root and reciprocal transformations), however none of these significantly improved the normality of the distribution. Issues with this assumption are considered most serious when there are corresponding issues with homogeneity of variance (Tabachnick & Fidell, 2007), and assumptions for homogeneity of variance were met for all analyses. Thus, the ANOVA statistics used in the following analyses should still provide a robust examination of the untransformed data (Fields, 2009; Tabachnick & Fidell, 2007).

Control Variables

Three family demographic variables were examined as possible confounds that might be subject to statistical control: annual household income, maternal marital status and level of education. Previous research has identified links between these socio-demographic factors and self-esteem (Birndorf, Ryan, Auinger, & Aten, 2005; Fantuzzo, McDermott, Manz, Hampton, & Burdick, 1996; Veselska et al., 2009; Veselska, Geckova, Reijneveld, & van Dijk, 2011), and these relationships were not of interest for

analyses in the current study. Associations were examined between each of these variables and all self-concept scales (e.g., Cognitive competence, physical competence, peer acceptance and global self-esteem) and no significant associations were found for marital status or household income. A significant association was found between maternal education and the child's reported cognitive competence ($r = .26, p < .05$). This relationship made sense given that a child's confidence in his/her academic abilities would logically be related to the mother's academic abilities and accomplishments as reflected by her level of education. However, since this association was not of interest in the present study, and maternal education was not related to the IV (Attachment Security), it was controlled for in subsequent analyses examining cognitive competence.

Characteristics of the children themselves were also examined as potential confounding variables. First, children's age was considered based on previous research reporting changes in self-reported competence and acceptance over the first few years of childhood (Harter, 1982; Harter & Pike, 1984); however no associations were found between children's age at the time of the assessment and any of the self-concept scales.

Children's intellectual functioning was also examined as a potential confound given that comprehension of the task itself could influence patterns of responding; Research has shown that very young children (e.g., Under the age of 5) may have difficulties following the instructions for Harter's scales. Associations between self-concept and intellectual functioning are presented in Table 16. There were no significant associations among any aspect of IQ and cognitive competence, peer acceptance or global self-esteem. This finding is generally consistent with previous research (Garrison et al., 1983; Harter & Pike, 1984). There was, however, a significant negative association

between physical competence and both non-verbal and overall IQ - children with lower intellectual abilities reported higher physical competence. This association was unexpected. Although a post-hoc explanation, it may be that children with higher cognitive abilities are able to more accurately assess their competence and thus recognize their limitations. Further analyses revealed that overall IQ ($r = .26, p < .05$), but not non-verbal IQ ($r = .21, ns$), was significantly associated with the predictor variable, attachment security. Thus, based on the criteria described previously, non-verbal IQ but not overall IQ was included as a covariate in subsequent analyses examining associations between attachment and physical competence.

Table 16

Associations Among Self-Views and Intellectual Functioning

	Intellectual Functioning		
	Verbal IQ	Non-Verbal IQ	Global IQ
<u>Cognitive Competence</u>	-.02	-.17	-.13
<u>Physical Competence</u>	-.06	-.45***	-.33**
<u>Peer Acceptance</u>	.02	-.23	-.15
<u>Global Self-Esteem</u>	.08	-.09	-.02

*p < .05; **p < .01; ***p < .001

Finally, associations between gender and both self-esteem (Birndorf et al., 2005) and domains of self-concept (Burnett, 1996) have been cited in the literature, however it is unclear at what age these gender differences first emerge (Birndorf et al., 2005). To examine, the possibility that gender might have an impact on self-views at this early age, associations were examined with all aspects of self-concept - there were no significant relationships between gender and any aspect of self-concept. Following these examinations of appropriate variables to control for, associations among attachment security and self-concept were examined.

Associations between Attachment Security and Self-Concept

Attachment security and perceived competence and acceptance. Associations between attachment security and domains of self-concept were examined using a Multivariate Analysis of Variance (MANOVA). A MANOVA was run with attachment classification as the independent variable and the three self-concept scores as the dependent variables. Multivariate assumptions for homogeneity of variance were met using Box's test of Equality of Covariance Matrices, Box's $M = 10.11$, $F(6, 14440.17) = 0.15$, $p > .05$. There was significant variation in reports of perceived competence and acceptance between children in secure and non-secure attachment relationships, Pillai's Trace = .14, $F(3, 65) = 3.45$, $p < .05$, $\eta_p^2 = .14$ (*observed power = .75*).

Univariate analyses (see Table 17) revealed a significant association between attachment security and perceived physical competence - children in non-secure relationships reported higher perceived physical competence than those in secure attachment relationships. An ANCOVA revealed that this association remained significant after controlling for non-verbal intelligence, $F(1, 68) = .08$, $p < .05$, $\eta_p^2 = .06$

(Observed Power = .51). There were no significant differences in perceived cognitive competence or peer acceptance for children with different attachment classifications. A separate ANOVA was run to examine variation in overall competence and acceptance scores: There was no significant difference between those with secure ($M = 56.61$, $SD = 7.81$) and non-secure ($M = 57.63$, $SD = 9.40$) attachment histories, $F(1, 68) = .23$, $p > .05$, $\eta_p^2 = .00$ (Observed Power = .08).

Table 17

Univariate Analyses Examining Variation in Perceived Competence and Acceptance Across Attachment Classifications

	<u>Attachment Classifications</u>		<i>F</i> (1,67)	Effect Size (η_p^2)	Observed Power
	Secure Attachment	Non-Secure Attachment			
<u>Domain of Self-Concept</u>					
Cognitive Competence	19.31 (3.50)	18.29 (4.42)	1.10	.02	.18
Physical Competence	18.73 (2.80)	20.38 (2.45)	5.86*	.08	.67
Peer Acceptance	18.56 (4.14)	18.92 (4.06)	.12	.00	.06

Note. Possible scores on all scales ranged from 6 (very low) to 24 (very high).

* $p < .05$; ** $p < .01$; *** $p < .001$

Attachment security and global self-worth. In addition to domain-specific analyses, an ANOVA was conducted to assess associations between attachment security and an emerging sense of global self-worth. However, there was no significant difference in global self-worth between children in secure ($M = 21.51$; $SD = 2.70$) and non-secure ($M = 20.77$; $SD = 3.79$) attachment relationships, $F(1, 67) = 0.88$, ns , $\eta_p^2 = .01$, (Observed power = .15). In summary, individuals in non-secure attachment relationships reported higher physical competence than those in secure attachment relationships but the two groups did not significantly differ on reports of cognitive competence, peer acceptance or global self-worth.

Maternal reports of child's self-views. In an effort to identify converging evidence for the validity of children's views of themselves, maternal reports of children's self-esteem were also obtained. Mother's reports of children's self-views on the Rosenberg Self-Esteem (RSE) questionnaire were significantly associated with children's self-reports of cognitive competence ($r = .33$, $p < .01$) and global self-worth ($r = .25$, $p < .05$) but not physical competence ($r = .22$, ns) or peer acceptance ($r = .13$, ns).

Patterns and Profiles of Responding on Self-Concept Scales

Previous research has found that the *pattern* of responding to assessments of self-concept in early childhood can be just as informative as the *content* of the responses themselves (Cassidy, 1988; Verschueren et al., 1996). Thus, in addition to examining total scores for the self-concept scales, patterns and corresponding profiles of responding were also analyzed.

Q-factor analysis of self-views. A q-factor analysis was conducted to identify patterns of responding within the sample across the scales of competence and acceptance.

This methodology uses a person-centred approach to factor analysis by examining the patterning of *participants* in a data set as opposed to the variables. The resulting factors represent groups of children who displayed similar patterns of responding across all items on the self-concept measure.

The data from Harter's Pictorial Scale of Perceived Competence and Acceptance was q-factor analyzed using a principal components analysis. The initial analysis revealed three primary factors that cumulatively accounted for 46% of the total variance, which were then rotated using the Oblimin method.

The first factor accounted for 23% of the variance after rotation. This was the only factor that had a significant positive correlation with the total score on this measure ($r = .35, p < .01$), suggesting that individuals loading highly on this factor reported positive self-views overall. Ten children had high positive loadings ($> .40$) on this factor, and five had moderate positive loadings ($> .30$). An examination of the responses of children who loaded most highly on this factor revealed that their responses on all three scales were positive, but that they tended to respond less positively on physical competence relative to the other domains. One child had a high negative loading ($< -.40$) on this factor, and three had moderate negative loadings ($< -.30$). These children's responses were less positive overall, with physical competence scores that were higher than, or at least as high as scores in the other domains. Given the pattern of responding identified through this factor, it was labeled "Positive with relatively lower physical competence".

The second factor accounted for 13% of the variance after rotation. This was the only factor that did not show a significant correlation with the total score on this measure

($r = .02, ns$), reflecting the fact that there was considerable variability in the positivity of overall self-views for children loading highly on this factor. Six children had high positive loadings and an examination of their responses revealed a pattern of lower cognitive competence relative to the other domains, regardless of the overall positivity of their scores. One child had a moderate negative loading, and showed a pattern of higher reported cognitive competence in comparison to the other domains. Given the pattern of responding identified through this factor, it was labeled “Variable with lowest cognitive competence”.

The third and final factor accounted for 11% of the variance after rotation. This was the only factor that had a significant negative correlation ($r = -.29, p < .05$) with the total score on this measure, reflecting the fact that children who loaded highly generally had poorer self-views overall. Six children had high positive loadings, and one had a moderate positive loading. An examination of their responses revealed low scores on all three scales, with lowest scores on peer acceptance relative to the other domains. No children had high or moderate negative loadings. Given the pattern of responding identified through this factor, it was labeled “Overall negative with lowest peer acceptance”.

Associations between Self-Views and Attachment Classifications

Q-factor findings. All participants were assigned a loading on each of the three factors that reflected how similar their manner of responding was to the patterns identified by that factor. Associations between factor loadings and attachment classifications were then examined to determine whether children in secure vs. non-

secure attachment relationships showed different patterns of responding across the self-concept scales.

No significant associations were found between attachment security and Factor 1 ($r = .07, ns$) or Factor 3 ($r = .07, ns$). Thus, the tendency to respond either positively with relatively lower physical competence *or* negatively with particularly low peer acceptance, was not associated with attachment security. There was, however, a significant negative association between attachment security and Factor 2 ($r = -.28, p < .05$). That is, children in non-secure attachment relationships were significantly more likely to show a pattern of responding characterized by lower cognitive competence relative to the other domains.

Profile analyses. To further explore these patterns and provide converging evidence for the results of the Q-factor analyses, a profile analysis was run to examine specific profiles of responding across the domains of self-concept for individuals in secure vs. non-secure attachment relationships. The Q-factor analysis explored emergent distinctive patterns of responding within the entire sample. In contrast, a profile analysis can be used to test specific hypotheses arising from the findings of the Q-factor analysis by comparing profiles of responding between each level of the independent variable, i.e., children in secure vs. non-secure attachment relationships, across all dependent variables. Based on the findings from the univariate and Q-factor analyses, it was predicted that children in non-secure attachment relationships would show a profile characterized by higher physical competence and relatively lower cognitive competence, and the opposite would be true for those in secure attachment relationships.

A profile analysis was conducted to examine patterns of responding across the three domains of the PSPCSA for children in secure vs. non-secure attachment

relationships. Assumptions regarding normality of sampling distributions, linearity and multilinearity were met. Given the unequal sample sizes between attachment groups, Box's M test was run to evaluate homogeneity of variance (Tabachnick & Fidell, 2007) and indicated that this assumption had not been violated, Box's $M = 10.11$, $F(6, 14440.17) = 1.59$, $p > .05$.

The primary test of interest from the current profile analysis was *parallelism*, or the examination of the patterns of results across all dependent variables between each level of the independent variable. The profile analysis revealed that there was a significant difference in the pattern of responses across the three domains of self-concept for children in secure vs. non-secure attachment relationships, Pillai's Trace = .11, $F(2, 66) = 4.03$, $p < .05$, $\eta_p^2 = .11$. Figure 1 reveals a pattern whereby children in non-secure relationships reported higher physical competence relative to the other domains, with particularly lower cognitive competence, whereas those in secure relationships showed a more consistent pattern across all domains, with slightly higher reported cognitive competence.

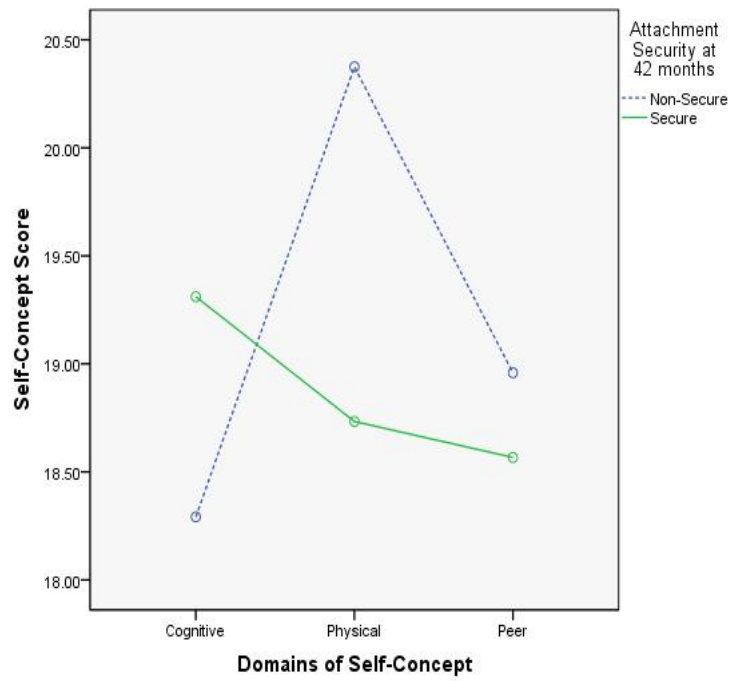


Figure 1. Profile Analysis Examining Patterns of Responding Across Self-Concept Domains for Children in Secure and non-Secure Attachment Relationships

To further explore the specific profiles of self-concept identified for children in secure vs. non-secure attachment relationships, follow-up 2 x 2 interaction contrasts were run to examine simple effects (Tabachnick & Fidell, 2007). Three interaction contrasts were conducted using Bonferroni adjusted alpha levels of .017 (.05/3) per test. A 2 x 2 ANOVA revealed a significant interaction between self-concept and attachment security when cognitive competence and physical competence were included in the analysis, Pillai's Trace = .11, $F(1,67) = 8.03$, $p < .017$, $\eta_p^2 = .11$. Thus, children in secure attachment relationships showed significantly higher cognitive competence but lower physical competence than those in non-secure attachment relationships. The other contrasts revealed no significant interactions between attachment security and self-concept when cognitive competence and peer acceptance (Pillai's Trace = .02, $F(1,67) = 1.64$, $p > .017$) or physical competence and peer acceptance (Pillai's Trace = .03, $F(1,67) = 1.82$, $p > .017$) were entered in the equation.

These findings are generally consistent with the results of the Q-factor analysis, and also provide a more descriptive account of the pattern of responding across all three domains - overall, these findings suggest that while neither group showed a more positive or negative self-concept overall, there were significant differences in the patterns of responding for children in secure vs. non-secure attachment relationships. While those in non-secure relationships showed lower cognitive and higher physical competence, the opposite pattern was observed for children in secure relationships.

Given the descriptive nature of these analyses, it was important to follow-up and examine evidence for the predictive validity of these patterns of responding. More specifically, do these patterns of responding that are associated with early attachment

relationships have implications for later socio-emotional outcomes such as vulnerability to depression? These questions were explored in the following section.

Associations between Self-Views and Helplessness

Analyses were run to examine associations between children's self-views and helpless responses on the failure tasks. Analyses were run separately for helplessness in the achievement and social domains, and first examined associations with global self-worth, and then with the patterns of responding on the self-concept scales identified through the Q-factor analysis.

Self-views, factor loadings and achievement-based helplessness. There were no significant associations between either reports of global self-worth ($r = -.09$, ns) or the patterns of self-views identified by the Q-factor analysis (see Table 18) and helpless attributions reported during the challenging puzzle task. Thus, views of self-concept did not predict helplessness following achievement-based failure.

Self-view factor loadings and social-based helplessness. There was a significant association between global self-worth and social-based helplessness. Children who reported higher self-worth also showed less helplessness during the social disappointment task, $r = -.25$, $p < .05$. There was also a significant association between Factor 2 identified through the Q-factor analysis and helplessness on the social disappointment task: Greater social-based helplessness was associated with self-views characterized by lower cognitive competence in comparison to other domains. There were no significant associations between helplessness on the social disappointment task and the other factors identified by the Q-factor analyses of the self-concept scales (see Table 18).

Table 18

Associations between Self-View Factors and Helplessness

	Social-Based Helplessness	Achievement- Based Helplessness
Factor 1: (Overall positive; Lower Physical Competence)	-.17	.06
Factor 2: (Overall variable; Lower Cognitive Competence)	.25*	-.01
Factor 3: (Overall negative; Lowest peer acceptance)	.02	.01

*p < .05

Associations between Attachment, Self-Views and Helplessness

Given associations between the tendency to respond with lower cognitive competence in comparison to other domains (Factor 2) and both attachment security and helplessness on the social disappointment task, a mediation model was examined whereby self-views mediated the association between early attachment security and social-based helplessness. For a variable to act as a mediator (M), the model must show significant relationships between the IV and both the DV and M, and the latter relationship must remain significant even after controlling for the IV (Tabachnick & Fidell, 2007). Once these conditions have been established, in order to determine that there is *significant* mediation within a model, there needs to be a significant difference between the *total effect* of the model (i.e., including self-views as the mediating pathway) and the *direct effect* (i.e., only the association between attachment security and helplessness) (Hayes, 2009). In other words, the *indirect effect* needs to be significant. As recommended for smaller samples, nonparametric bootstrapping analyses were run to test the model of self-views as a mediator of the relationship between attachment security and social-based helplessness. Mediation is significant if the 95% confidence intervals for the indirect effect do not include zero. Results based on 1000 bootstrapped samples indicated that the indirect effect was not significant (Lower 95% CI = -.38, Upper 95% CI = .01). Thus, self-views characterized by lower cognitive competence in comparison to other domains did not mediate the association between attachment security and social-based helplessness.

Discussion

The current study examined the contribution of early relationship quality to emerging representations of the self in childhood. The prediction that children with a history of secure attachment would report higher levels of competence and acceptance on Harter's scales was not supported by the univariate analyses. In fact, children in non-secure attachment relationships reported significantly higher levels of physical competence than those in secure relationships, although this same pattern was not observed in the other domains. These findings are in contrast to several previous studies that have identified higher levels of perceived competence using Harter's scales among children in secure attachment relationships (Verschueren et al., 2012; Verschueren & Marcoen, 1999). However, much of the previous work in this area has combined scores on the cognitive and physical domains to create an overall "perceived competence" score, which may have masked important variation across the two domains. One of the few studies that did examine associations between attachment security and unique aspects of perceived competence found that children in secure attachment relationships reported significantly higher cognitive, but not physical competence (Cassidy, 1988). This latter finding is similar to results from the profile analysis in the current study that revealed an interaction between attachment security and perceived competence. While non-secure attachment was associated with higher physical competence, greater cognitive competence was found among those with a history of secure attachment. Several explanations are proposed for these unanticipated domain-specific findings.

Previous research on the validity of the PSPCSA has revealed important differences in the validity of the cognitive and physical competence domains (Garrison et

al., 1983; Mantzicopoulos et al., 2004; Martorano, 1998; Priel, Assor, & Orr, 1990; Raikes & Thompson, 2008). In particular, several studies have indicated that while young children's reports of cognitive competence are significantly associated with their actual competence in this domain, the same is not true for perceptions of physical competence. Multiple studies with low-risk samples of kindergarten and grade 1 students have revealed that self-reports of cognitive competence are significantly related to parent (Martorano, 1998) and teacher (Garrison et al., 1983; Mantzicopoulos et al., 2004; Priel et al., 1990) reports of analogous constructs, in addition to objective assessments of academic performance (Anderson & Adams, 1985; Mantzicopoulos et al., 2004). Moreover, Garrison et al. found that cognitive competence was the only domain on the PSPCSA not associated with a "lie scale" that assessed children's tendencies to distort the truth. In contrast, the majority of these studies have found weaker or non-significant associations between perceived physical competence and external assessments of the same construct (Garrison et al., 1983; Mantzicopoulos et al., 2004; Martorano, 1998; Priel et al., 1990). For example, one study examined differences in perceptions of physical competence between children with significant visual processing deficits and a typically-developing control group (Engel-Yeger, 2008). They found no differences between groups on self-reports of physical competence using Harter's scales, despite significantly poorer gross motor skills and abilities displayed among children with visual processing deficits.

Together, these findings suggest that high scores in the cognitive competence domain generally reflect strong competence in this area, while high reports of perceived physical competence seem unrelated to actual abilities in this domain. Thus, high

physical competence scores may be driven by a process unrelated to actual competence; it is possible that this domain captures the near-perfect, defensive response patterns displayed by non-secure individuals in several previous studies (Cassidy, 1988; Clark & Symons, 2000). In line with this reasoning, it is important to note that the “lower” scores in this domain reported by secure individuals were still quite high overall, and consistent with reports from other low-risk samples. However, the responses of individuals with a history of non-secure attachment were extremely high and near perfect. Thus, it is possible that responses on the cognitive competence domain more accurately captured children’s levels of competence, while responses in the physical domain represent the tendency for some children to try and present themselves without flaws. This proposition is also consistent with the finding in the present study that children’s self-reports of cognitive competence were significantly related to maternal assessments of children’s global self-esteem, while reports of perceived physical competence were not. Thus, the domain-specific interaction found with regard to self-competence and attachment history may be best explained by differences in the ability of each domain to accurately capture children’s competence in that area.

Alternatively, it may be that this interaction captured true disparities in the self-concept of children with different relationship histories. That is, it is possible that while children in secure relationships develop a stronger sense of competence related to cognitive abilities, the same is true of physical competence for children in non-secure attachment relationships. With regard to cognitive competence, results of both the profile and Q-factor analyses pointed to the importance of this domain in secure children’s self-views. Not only did children with a history of non-secure attachment report lower levels

of cognitive competence than their secure counterparts, they also displayed a pattern of responding characterized by lower cognitive competence compared to the other domains. According to Meins (1997, 1998), children's cognitive development is a critical aspect of secure mother-child attachment relationships. Meins (1998) proposes that in contrast to mothers who develop non-secure relationships with their infants, secure mothers are more attuned to their infants' mental state and tailor their interventions to promote the child's cognitive development. Empirical findings support this notion, revealing that mothers of secure infants use feedback from their child's performance –or “scaffold” - on cognitive tasks to ensure their interactions are within the child's “zone of proximal development” (Meins, 1997). In accordance with this theory, multiple studies have reported higher levels of academic performance and cognitive abilities among children with a history of secure attachment (Meins, 1998; West, Mathews, & Kerns, 2012), and maternal scaffolding has been found to mediate this association (West et al., 2012). Meins proposes that the harmonious, engaging and supportive interactions characteristic of secure attachment relationships allow children to develop perspectives on the world and “think of themselves as thinkers” (Meins, Feryhoughm Russell, & Clark-Carter, 1998, p. 21) – a finding entirely consistent with the importance of cognitive competence in the self-views of children in secure attachment relationships found in the current study.

There is little evidence to suggest that individuals in secure attachment relationships with their mother's would also display greater physical competence than their non-secure counterparts. In fact, there may be reason to believe that individuals with certain non-secure classifications may be more adept in the physical domain. While children in secure attachment relationships exhibit a balance between exploration (“Secure Base”) and

attachment-related behaviours (“Safe Haven”) early in life, those with certain non-secure strategies tend to inhibit their attachment-related needs and more consistently engage in exploratory behavior in their environment (Marvin & Britner, 2008; Sroufe, Egeland, Carlson & Collins, 2005). Put another way, securely attached infants tend to demonstrate a joint reliance on themselves and their caregiver, whereas those in non-secure relationships may show a less equal balance with more reliance on themselves (Lewis, Brooks-Gunn, & Jaskir, 1985). This may be particularly true for those with a history of avoidant attachment in infancy since these individuals have been found to focus on developing self-sufficiency from an early age in attempt to avoid rejection from their mothers (Murray Parkes, Stevenson-Hinde, & Marris, 1991). It has been proposed that infants such as this who have less support and protection during exploration may more rapidly develop certain skills necessary for coping (Lewis et al., 1985). Thus, it is possible that this self-reliance leads to earlier acquisition of developmental abilities such as crawling and walking, which could subsequently result in greater physical competence for these non-secure individuals. This hypothesis is admittedly post-hoc and speculative at this point, and more research would be necessary to explore this possibility.

These findings with regard to attachment and domain-specific self-competence add important information to the literature on the development of the self since few previous studies have examined these associations in such detail. However, it remains unclear from these findings alone *why* children with different quality attachment histories reported higher self-competence in distinct domains. There are a variety of possible reasons for this pattern of results, two of which have been described above. To help further understand the nature of these differences, future research should examine these

same associations between attachment and perceived competence with concurrent assessments of actual cognitive and physical competence. This would allow for an examination of whether discrepancies between perceived competence and actual abilities are more common among individuals with non-secure attachment histories, or rather, if individuals with different quality attachment histories actually possess different levels of competence across these domains (Assor, Tzelgov, Thein, Ilardi, & Connell, 1990).

Associations were also examined between early attachment and the emergence of a global sense of self. Scores for the global self-worth scale from the SPPC were higher than those typically reported for children ages 9 to 14 – the age group for which the measure was originally normed on (Harter, 1982; Michaels, Barr, Roosa, & Knight, 2007; Schumann et al., 1999). These findings are consistent with longitudinal research examining changes in self-esteem over time, i.e., self-reports of global self-worth are highest in early childhood, and decrease over the elementary school years (Birndorf et al., 2005; Harter, 1982). Contrary to expectations however, children with a history of secure attachment did not report higher global self-worth than those with a history of non-secure attachment. This is inconsistent with several previous studies that did find higher levels of global self-esteem among children in secure attachment relationships. For example, various researchers have previously reported associations between attachment quality and global representations of the self as assessed through an interview with a friendly puppet (Clark & Symons, 2000, 2009; Verschueren & Marcoen, 1999; Verschueren et al., 1996). It may be that Harter's pictorial assessment format used in the current study was not able to capture global representations in the same way as the interactive interview. The majority of children scored very high on this subscale – much higher than scores on the

scales of perceived competence and acceptance – highlighting the fact that most children chose the most positive option on all items within this scale. Additionally, this was the only sub-scale that some children appeared to have difficulty understanding and occasionally asked for clarification with certain items (e.g., What does ‘pleased with yourself’ mean?). Thus, it may be that the interview format is a more appropriate method of assessing global self-views in this young age group, and the current methods were not able to capture aspects of children’s global self-concept that are associated with early attachment experiences.

The hypothesis that lower global self-worth would be associated with greater helplessness was partially supported; Children who reported lower global self-worth exhibited greater helplessness on the social disappointment task, but not the challenging puzzle task. In contrast to the results with regard to self-esteem and attachment, this does provide some validity for the self-reports of global self-worth in this young age group. These findings in the social domain are consistent with well-developed theory on cognitive vulnerability to depression that highlights the contribution of low global self-views to helpless explanatory styles following failure (Baldwin & Sinclair, 1996; Dweck & Leggett, 1988; Ingram, 2001; Schueller & Seligman, 2008). While much of this research has been conducted with older participants, these findings suggest that even in very early childhood global feelings of self-worth have important implications for cognitive processes that constitute a risk for depression.

An examination of patterns of responding on the self-concept scales and performance on the helplessness tasks also revealed an association between responses across the domains and social based helplessness. Children who reported lower cognitive

competence in comparison to other domains displayed higher helplessness on the social disappointment task. This finding provides further support for the validity of children's self-reports of cognitive competence, and suggests that in addition to low global self-worth, self views characterized by relatively low cognitive competence (compared to other domains) may also be associated with depressive vulnerability. Further research examining this possibility is needed, as this may be an important area to target for clinical interventions aimed at decreasing risk for depression. The fact that no aspect of children's reported self-worth – or attachment quality for that matter - was associated with helplessness in the achievement domain suggests that there must be other developmental processes apart from those outlined in the current studies contributing to performance on this task. Future research should continue to explore antecedents and sequel of negative responses during this task to determine what places children at-risk for negative attributions following achievement related failure.

A mediational pathway from attachment to helplessness through global self-views was not examined since children's reports of global self-worth were unrelated to attachment security. However, given that early attachment quality was associated with a pattern of responding on the self-concept measures characterized by lower cognitive competence compared to other domains, and this same pattern was related to social based helplessness, a model examining this pattern of responding as a mediator between attachment security and social helplessness was run. While there was no significant support for this mediated pathway, the indirect effect was extremely close to approaching significance. Thus, future research with larger sample sizes should re-assess these associations to determine whether the lack of association was a result of limited power in

the analysis. Nevertheless, based on the findings from the present study we cannot conclude that any aspect of self-views mediated associations between early attachment security and later helplessness. This was unexpected given theoretical assertions connecting these processes (Dykman, 1998; Rusk & Rothbaum, 2010; Smiley & Dweck, 1994). It may be that constructs other than self-views are important in mediating the association between early attachment and helplessness in the social domain. Future studies should examine other aspects of development that may play a role in the association between attachment and social-based helplessness, such as peer relationships, social skills and self-confidence.

The current study built on previous work examining these associations by employing a prospective longitudinal design using the most valid assessments available of both early attachment and self-views in early childhood to help clarify the nature of the link between these processes. The findings suggest that rather than children with a history of secure attachment reporting *either* more positive or more realistic assessments of their self-concept as most previous studies have found, it may in fact be a combination of these processes depending on the domain in which self-concept is assessed. This helps advance research in this area by prompting further investigation into specific aspects of self-concept associated with early attachment experiences, which also has important implications for clinical work identifying risk and protective factors for children with different quality attachment histories.

To more comprehensively understand the contribution of early relationship experiences to socio-emotional functioning in early childhood, it is important to look at the trajectory of attachment experiences over the first few years of life. Bowlby proposed

that attachment relationships between mother and child begin in infancy and continue to develop into toddlerhood and preschool. Findings from the first two studies in this dissertation have not yet addressed how experiences in attachment relationships prior to preschool age may have impacted self-views and vulnerability to depression at age five. The next study will include an exploration of attachment at an earlier time period to examine contributions of relationship quality across the first few years of life to emerging self-views and helpless responses to failure.

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Chapter 3: The Contribution of Toddler and Preschool Attachment to Socio-Emotional Outcomes in Early Childhood

Bowlby (1973) proposed that an individual's developmental pathway "turns at each and every stage of the journey on an interaction between the organism itself as it has developed up to that moment and the environment in which it then finds itself" (p .412). This reflects his belief that experiences at each stage in development will subsequently influence experiences at later points in time. The first two studies in this dissertation explored associations between attachment relationships in preschool and socio-emotional outcomes in early childhood; however, it remains to be seen how children's attachment experiences even earlier in life may have contributed to these processes.

While attachment representations are believed to remain relatively stable and persistent over time, both Bowlby and Ainsworth acknowledged that IWMs of relationships would be open to change in light of new experience (Waters, Weinfield, & Hamilton, 2000). In fact, attachment theory provides for both stability and change in that disruptions in the caregiving environment would be expected to result in corresponding changes in the developing attachment relationship (Bar-Haim, Sutton, Fox, & Marvin, 2000; Fish, 2004; Sroufe, 2005). Thus, both change and continuity in attachment over time can reflect lawful processes associated with theoretically-relevant constructs. Early research on the continuity of relationships across infancy suggested that patterns of attachment were highly stable over time, with 81 – 96% of infants maintaining their original attachment classification in the SSP between 12 and 18 months (Ainsworth et al., 1978, as cited in Fish, 2004). Research since that time has been unable to replicate evidence of such striking stability, and several more recent studies have found only

moderate stability of attachment classifications across the first two years of life (Howes & Hamilton, 1992; Sroufe, 2005). For example, Sroufe and colleagues (Sroufe, Egeland, Carlson & Collins, 2005) reported that 62% of their sample maintained the same major classification (A, B or C) between 12 and 18 months. Other research further suggests that IWMs of attachment may be quite susceptible to modification as the result of environmental change: Numerous researchers have reported consistently high rates of change in attachment over the first two years of life (Belsky, Campbell, Cohn, & Moore, 1996; Vondra, Shaw, Swearingen, Cohen, & Owens, 2001). For example, Vondra et al. found that less than half of the children in their sample maintained the same attachment classification from 12 to 18 months or 18 to 24 months.

Moreover, research examining the stability of attachment from infancy into the preschool period, with few exceptions (Howes & Hamilton, 1992), has found particularly low rates of stability in attachment security (Bar-Haim et al., 2000; Fish, 2004; NICHD, 2001). In their examination of attachment trajectories over the first five years of life, Bar-Heim et al. found no significant stability between either 14 or 24 month attachment and 58 month classifications. Similarly, Fish reported no significant stability in major classifications between 15 months and 4 years. In addition, across all studies examining attachment trajectories across the first few years of life – even those that report overall low rates of change – significant instability has consistently been reported for children who start off as non-secure in infancy (Bar-Haim et al., 2000; Fish, 2004; Howes & Hamilton, 1992; NICHD, 2001). For example, although Howes and Hamilton reported overall stability between 12 and 48 months at 72%, this was a result of 89% stability for secure classifications, and only 24% for those who started off as avoidant. Thus,

numerous authors have concluded that change in attachment early in life may be much more common than originally theorized.

Several explanations have been proposed for these high rates of instability in relationship quality early in life. Primarily, higher numbers of significant life events have consistently been reported by mothers of infants who changed classifications over the first few years of life compared with those whose infants did not (Bar-Haim et al., 2000; Waters et al., 2000). Such experiences can either improve or impede the developing relationship depending on the nature of the event itself. Accordingly, studies have reported both positive and negative changes in relationship quality associated with significant life events (Bar-Haim et al., 2000). Changes in maternal sensitivity have also been linked to shifts in attachment security (NICHD, 2001). Both increases and decreases in sensitivity over the first two years of life have been associated with corresponding changes in the quality of the attachment relationship (Fish, 2004; NICHD, 2001). It has been proposed that such changes in mother-child interactions are particularly likely to occur during developmental transitions when advancing capabilities of the child result in a change, or increase, in demands on the caregiver (Crittenden, 2000; Vondra et al., 2001). In fact, Crittendon suggests that some instability in relationship quality during the preschool period is expected given new demands on parent-child relationships that correspond with entry to school, language development and emerging autonomy. For some parents, these changing demands and increasing autonomy may result in improved parent-child interactions, while for others it may be a difficult transition from the role they had become accustomed to during the infancy period.

Thus, while change in attachment quality over the first few years of life may be more the norm than the exception, these shifts largely appear to result from lawful processes that are theoretically predicted to impact the developing relationship. However, it remains to be seen how these dynamic processes impact developmental outcomes. Relatively little research has examined the contribution of change in attachment to later functioning (Vondra et al., 2001). Moreover, theoretical assertions are mixed in their prediction of how such changes would contribute to subsequent development. One line of reasoning proposes that IWMs of attachment relationships established most early in life will persist throughout development and provide a template for the perception of subsequent experiences (Bar-Haim et al., 2000; Sroufe, 2005). In accordance with this hypothesis, Sroufe et al. suggest that developmental change does not erase early history, and life's earliest experiences and adaptations will influence later events. They highlight several examples in their own work of early experiences acting as risk or protective factors for much later outcomes despite intermediate adaptation or change. At least one other study has found results consistent with this hypothesis. In an examination of concurrent and previous attachment quality on socio-emotional competence during a challenging puzzle task at age four, Fish (2004) found a main effect for 15-month attachment security but not for concurrent 4-year classifications. Thus, experiences in relationships very early in life appeared to have a significant impact on developmental outcomes, despite subsequent change in relationship quality. However, others suggest that more proximal assessments of the attachment relationship are better predictors of later outcomes. For example, Vondra et al. (2001) found that by 3.5 years, attachment at 12 and 18 months no longer provided meaningful information for predicting emotional

and behavioural regulation, whereas more recent assessments of the relationship did. This study concluded that infant attachment is important for understanding contemporaneous aspects of development, however, outcomes at later ages are better predicted by more proximal assessments of the quality of the attachment relationship.

A better understanding of the role of infant vs. preschool attachment in subsequent development may follow from an exploration of the interaction between attachment experiences at both time points in predicting developmental outcomes. It may be that while attachment at one point in time sometimes fails to predict significant variation in later outcomes, the combination of relationship experiences over the first few years of life *together* may be more impactful. A couple of studies have investigated these processes. In one examination of infant vs. preschool attachment predicting socio-emotional competence at age 4, Fish (2004) found a main effect of infant attachment but no interaction with preschool classifications. However, in another examination, Vondra et al. did find a meaningful role of attachment trajectories in predicting emotional and behavioural regulation at age 4: Children who changed attachment classifications between 12 and 24 months – either from secure to non-secure or vice versa - generally fell between the stable secure and stable non-secure groups on all outcome measures. This work, in contrast to that of the previous study, suggests that the combination of infant and preschool attachment experiences does have some bearing on socio-emotional competence in early childhood. To our knowledge, no other research has specifically examined longitudinal change in attachment quality over the first few years of life on socio-emotional outcomes in early childhood. Thus, relatively little is currently

understood about how attachment trajectories early in life influence developmental outcomes, leaving many important questions related to these processes unanswered.

The Present Study

The purpose of the current study is to add to the limited literature on change and stability in early attachment predicting socio-emotional competence in early childhood by examining both 27-month and 42-month attachment and the possible interaction between the two as predictors of emerging self-views and responses to failure at age 5.5. Based on theory and empirical findings reviewed in this study, and also the previous two studies in this set, the following hypotheses were made with regard to associations between attachment security at 27 and 42 months and both emerging self-views and helpless responses to failure.

Hypothesis 1a. It was predicted that children classified as secure in the Interesting but Scary (IbS) procedure at 27 months would report higher competence and acceptance on Harter's scales at age 5.5 than those classified as non-secure.

Hypothesis 1b. It was predicted that children classified as secure in the separation and reunion procedure at 42 months would report higher competence and acceptance on Harter's scales at age 5.5 than those classified as non-secure.

Hypothesis 2a. It was predicted that children classified as secure in the IbS procedure at 27 months would show less helplessness on the Challenging Puzzle Task and Social Disappointment Task at age 5.5 than those classified as non-secure.

Hypothesis 2b. It was predicted that children classified as secure in the separation and reunion procedure at 42 months would show less helplessness on the Challenging

Puzzle Task and Social Disappointment Task at age 5.5 than those classified as non-secure.

There is currently no clear theoretical framework for predicting how an interaction between early and later attachment would influence developmental outcomes, and empirical findings in this area are both limited and mixed. Thus, no specific hypotheses regarding the interaction between infant and preschool attachment were made. Instead, the current study provides an exploratory assessment of how change in attachment may impact emerging self-views and socio-emotional competence in early childhood.

Methods

Participants

Participants were part of Wave 1 of the ongoing longitudinal study described in Study 1 of this dissertation. Since the purpose of the current study was to examine the trajectory of attachment over the *first few years of life*, the Wave 2 participants who did not begin the study until 3.5 years of age were not included. Rather, the current study used only those families who were already in the study when infants were 27 months old.

Three time points were of interest for the current study: 27 months, 3.5 years and 5.5 years. At 27 months of age, 61 mother-child dyads completed the first assessment. Approximately one year later when children were 3.5 years of age, all dyads were contacted by phone and invited to return to the laboratory for another assessment. Fifty of these dyads returned. Finally, when children were 5.5 years of age, all participants were again contacted by phone and invited to come back to the university. Forty-three dyads completed this final assessment. Table 19 provides a breakdown of demographic

information at each of the three time points for the Wave 1 participants. Gender was evenly represented across the sample (56% male) and all of the children were first-born in their family.

Table 19

Demographic Information from 27 months, 42 months and 5.5 years

Demographic Information						
Visit	Child's Age ¹	Mother's Education ³	Mother's Work ⁴	Hours Away ⁵	Married/ Common-Law	House Income
27 Month	2.34 (0.12)	14.68 (1.61)	F/T 51% P/T 8% N/A 40%	30.44 (17.94)	81%	50,000 – 59,000
3.5 Years	3.82 (0.18)	14.76 (1.37)	F/T 44% P/T 20% N/A 36%	26.00 (15.87)	83%	60,000 – 69,000
5.5 Years	5.75 (0.12)	14.91 (1.67)	F/T 64% P/T 24% N/A 12%	38.85 (14.63)	85%	60,000 – 69,000

Note. All numbers in table represent averages reported across the entire sample.

¹ Child's age reported in years. ² Mother's age reported in years. ³ Average number of years in school. ⁴ F/T indicates percentage of mothers working full time; P/T indicates percentage of mothers working part time; N/A represents mothers who are not working outside of the home.

⁵ Average number of hour mother spends away from the child per week.

Descriptive analyses were run to compare demographic characteristics of families who completed all three phases of the current study with those who withdrew prior to the 5.5 year assessment. There were no significant differences between the study and attrition groups with regard to maternal education, work status, hours spent away from the child or annual household income. However, mothers who completed the study were significantly more likely to be married or in common-law relationships than those who withdrew, $\chi^2 = 5.07, p < .05$ (see Table 20).

Table 20

Descriptive Statistics of Demographic Information by Mothers who Completed the Study and Mothers who Withdrew from the Study

	Participation in Study	
	Withdrew ^a	Completed ^b
Maternal Education	14.43 (1.36)	14.81 (1.71)
Mothers Married/ Common-Law	66.70%	88.10%
Mothers Working	61.90%	54.80%
Hours Away from Child per week	29.73 (15.63)	30.78 (19.12)
Annual Income	6.24 (2.10)	7.24 (2.20)

^aN = 61; ^bN = 43

Note: Mean differences were analyzed using one-way ANOVA and categorical differences were analyzed using chi-square; Annual income is scored on a scale from 1 (Less than 10,000) to 9 (Greater than 80,000).

Materials

Interesting but Scary procedure (IbS) (De Oliveira, 2002). This procedure was developed to assess attachment beyond infancy, to account for children's changing competencies and increasing independence at a slightly older age than that for which the SSP had been designed. Following a similar protocol to the infant SSP, the IbS began with a 10-minute separation and subsequent 5-minute reunion and free play session, at the end of which a toy spider was placed in the room with the mother and child. This experience was intended to incite some apprehension in children ("scary") but also to provoke curiosity and an inclination to explore this unusual toy in the mother's presence ("interesting"). The manner in which the child used the mother to assist in balancing these two competing systems was taken as an important indication of the nature of their attachment relationship. The IbS uses scales analogous to those in the infant SSP (Contact Maintenance, Proximity Seeking, Resistance and Avoidance) to assign one of three organized classifications: Secure, Avoidant or Ambivalent. Scoring procedures identical to those in the infant SSP were used to assign a score for Disorganization, however, only the organized classifications were of interest in the current study. This procedure has provided a valid assessment of attachment at approximately 2 years of age in at least two other studies (De Oliveira, 2002; Forbes, Evans, Moran, & Pederson, 2007).

Separation-reunion procedure (Cassidy & Marvin, 1992). This procedure was used to assessment the mother-child attachment relationship in the pre-school years. For a full description of this measure, please refer to page 30 in Chapter 1.

Pictorial scale of perceived competence and social acceptance (PSPCSA) (Harter, 1982; Harter & Pike, 1984). This measure was designed to assess domain-specific representations of the self in early childhood (e.g., Cognitive competence, academic competence and peer acceptance). For a full description of this measure, please refer to pages 90 to 94 in Chapter 2.

Achievement-based failure: Challenging puzzle task - attributions (Kistner et al., 2001; Ziegert et al., 2001). This procedure was designed to assess helpless attributions following achievement-related failure in early childhood. For a full description of this measure, please refer to page 31 to 35 in Chapter 1.

Social-based failure: Social-disappointment task. This procedure was designed to assess helpless attributions following social-based failure in early childhood. For a full description of this measure, please refer to page 36 to 39 in Chapter 1.

Table 21 provides an overview of all measures used in the present study, including the construct being assessed, the coding procedures used and the corresponding score to represent that construct.

Table 21

Overview of All Measures and Variables to be used in Study 3

Construct Assessed	Measure Used	Age at Administration	Coding Procedure	Outcome Scores to be Used in Analyses
<i>Attachment in Toddlerhood</i>	Interesting but Scary (IBS) Procedure (Deoliveira, 2002)	27 months	Classifications are assigned by trained coders based on Ainsworth's infant attachment classification system	Categorical Attachment Classification: <i>Secure</i> or <i>non-Secure</i> .
<i>Attachment in Preschool</i>	Separation-Reunion Procedure (Cassidy & Marvin, 1992)	3.5 years	Classifications are assigned by trained coders based on Cassidy and Marvin's (1992) preschool attachment classification system	Categorical Attachment Classification: <i>Secure</i> or <i>non-Secure</i> .
<i>Perceived Cognitive Competence</i>	Perceived Cognitive Competence Sub-Scale - Pictorial Scale of Perceived Competence and Acceptance (Harter & Pike, 1984)	5.5 years	Total scores are determined by adding scores for all 6 <i>Perceived Cognitive Competence Items</i> (For each item scores range from 1 to 4)	Total Score on <i>Perceived Cognitive Competence</i> (Scores range from 6 – 24)
<i>Perceived Physical Competence</i>	Perceived Physical Competence Sub-Scale - Pictorial Scale of Perceived Competence and Acceptance (Harter & Pike, 1984)	5.5 years	Total scores are determined by adding scores for all 6 <i>Perceived Physical Competence Items</i> (For each item scores range from 1 to 4)	Total Score on <i>Perceived Physical Competence</i> (Scores range from 6 – 24)
<i>Perceived Social Acceptance</i>	Perceived Acceptance Sub-Scale - Pictorial Scale of Perceived Competence and Acceptance (Harter & Pike, 1984)	5.5 years	Total score is determined by adding scores for all 6 <i>Perceived Acceptance Items</i> (For each item scores range from 1 to 4)	Total Score on <i>Perceived Acceptance</i> (Scores range from 6 – 24)
<i>Achievement-Based Failure: Helpless Attributions</i>	Challenging Puzzle Task (Kistner et al., 2001; Ziegert et al., 2001)	5.5 years	A composite score is determined based on 6 indicators. For each indicator a "0" is assigned for a mastery response and a "1" is assigned for a helpless response. All 6 scores are totaled to compose a total score ranging from 0 – 6, with 6 denoting the highest level of helplessness	Total Score on <i>Helplessness Composite</i> (0 – 6)
<i>Social-Based Failure:</i>	Social-Disappointment	5.5 years	A composite score is determined based on 6	Total Score on <i>Helplessness</i>

<i>Helpless Attributions</i>	Task	indicators. For each indicator a "0" is assigned for a mastery response and a "1" is assigned for a helpless response. All 6 scores are totaled to compose a total score ranging from 0 – 6, with 6 denoting the highest level of helplessness	<i>Composite (0 – 6)</i>
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Procedure

Mother-infant dyads were initially recruited from a London-area hospital during the mother's post-partum stay, and were subsequently seen on eight separate occasions during the first 6 years of the child's life. Three assessment points were of interest for the current study. When the child was around 27 months of age, s/he was brought to the university with his/her mother to complete the Interesting but Scary assessment of the attachment relationship. Families were contacted again when the child was 3.5 years of age. At this time they visited the university to complete assessments of various aspects of development including a separation/reunion procedure between the mother and child to assess their attachment relationship. Approximately two years later at age 5.5, children returned to the university again to complete several tasks assessing self-representations and responses to achievement- and social-based failures, among other activities. On all visits, mothers also completed a series of questionnaires related to various aspects of their child's behaviour and socio-emotional functioning, in addition to providing updated demographic information. Each visit took approximately 2 hours to complete and families were compensated for their time with a modest honorarium.

Results

Attachment Classifications

The distribution of attachment classifications at 27 and 42 months are presented in Table 22 and 23 respectively. In accordance with the study's hypotheses, the groups were dichotomized into secure and non-secure for all analyses.

Table 22

Distributions of Attachment Classifications at 27 Months

All Attachment Classifications				
Secure N (%)	Avoidant N (%)	Resistant N (%)	Disorganized N (%)	Total N (%)
38 (62.30)	9 (14.80)	1 (1.60)	13 (21.30)	61 (100)

Dichotomized Classifications		
Secure N (%)	Non-Secure N (%)	Total N (%)
38 (62.30)	23 (37.70)	61 (100)

Note: Attachment classifications were determined using Interesting but Scary classification procedure; Attachment data was unavailable for one participant.

Table 23

Distributions of Attachment Classifications at 3.5 years

All Attachment Classifications						
Secure N (%)	Avoidant N (%)	Resistant N (%)	Disorganized N (%)	Control N (%)	I-O N (%)	Total N (%)
29 (60)	0 (0)	8 (17)	1 (2)	8 (17)	2 (4)	48 (100)

Dichotomized Attachment Classifications		
Secure N (%)	Non-Secure N (%)	Total N (%)
29 (60)	19 (40)	48 (100)

Note: Attachment classifications were determined using the Cassidy-Marvin Preschool Attachment Classification System. I-O = Insecure-other.

Control Variables

Given that the current sample was comprised of only a sub-set of participants used in the previous two studies, all control variables previously considered were re-examined. Demographic variables (e.g., Maternal education, household income, hours spent away from the child) and child characteristics (e.g., IQ, age and gender) that have previously been associated with either helplessness or self-concept were examined as potential variables to control for. There were no significant associations between helplessness on the puzzle task or social disappointment task and any of these variables. In terms of self-concept, there was a negative association between physical competence and non-verbal IQ ($r = -.38, p < .05$), suggesting children with lower non-verbal IQ's reported greater physical competence. Thus, any associations between attachment history and physical competence were examined with non-verbal IQ as a covariate. In addition, peer competence was associated with the age of the child in the present sample: Older children reported greater peer acceptance ($r = .31, p < .05$) perhaps reflecting the fact that more time in a school setting likely increases a child's confidence in their social abilities. Thus, child's age was used as a covariate in analyses examining associations between attachment history and peer competence.

Toddler and Preschool Attachment as Predictors of Helplessness

Children's attachment in both toddlerhood and preschool were considered together in order to examine socio-emotional outcomes in early childhood when relationship quality over the first few years of life was taken into account. Multivariate analyses with outcomes at 5.5 years as the dependent variables, and both 27-month and 42-month attachment security as the independent variables were conducted. This allowed

for parallel examination of the main effects of both toddler and preschool attachment and of any possible interactions between early and later attachment security in predicting helplessness and self-concept at 5.5 years. Given the small sample size and exploratory nature of these analyses, a more liberal cut-off value of $p < .10$ was applied for multivariate analyses; however all univariate analyses were examined at the more conservative $p < .05$.

Associations between helplessness and both toddler and preschool attachment were examined using a Multivariate Analysis of Variance (MANOVA), with 27 month and 42 month attachment as the grouping variables and the two helplessness composite scores as the dependent variables. Multivariate assumptions for homogeneity of variance were met using Box's test of Equality of Covariance Matrices, Box's $M = 3.87$, $F(6, 4195.46) = 0.57$, $p > .05$. There was a significant multivariate effect for both 27-month attachment, $F(2, 34) = 2.95$, $p < .10$, $\eta_p^2 = .15$ (*observed power* = .54), and for the interaction between 27 and 42 month attachment, $F(2, 34) = 2.82$, $p < .10$, $\eta_p^2 = .14$ (*observed power* = .52), in predicting helplessness at age 5.5 years.

Univariate analyses revealed a significant interaction between toddler and preschool attachment security in predicting helplessness in the social-domain. None of the other univariate results were significant at $p < .05$. The impact of attachment security at 42 months varied as a function of early attachment security: Those children classified as non-secure at 42 months showed higher helplessness only if they had a history of secure ($M = 3.00$, $SD = 1.87$) as opposed to non-secure ($M = 1.00$, $SD = 0.82$) attachment at 27 months, $F(1,36) = 8.70$, $p < .01$, $\eta_p^2 = .20$ (*observed power* = .82) (See Figure 2).

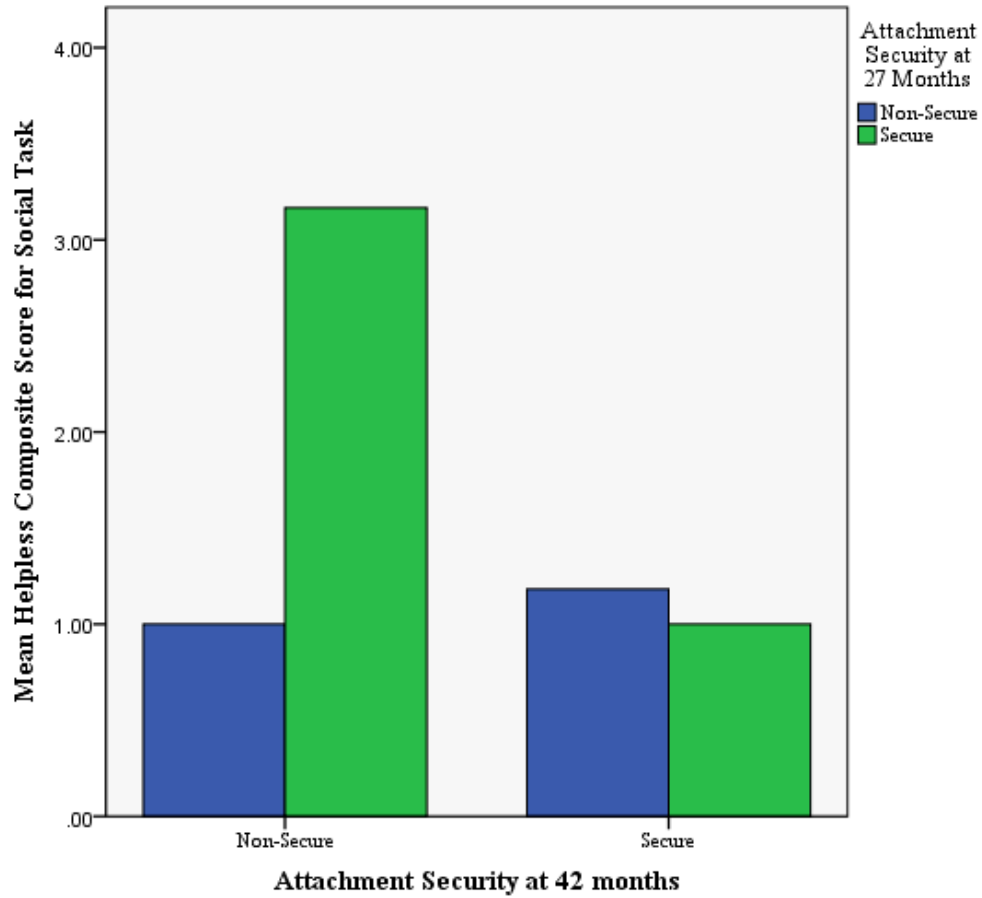


Figure 2. Interaction Between 27 and 42 Month Attachment Predicting Social Helplessness

Thus, children who changed from a classification of secure to non-secure over the first few years of life showed higher helplessness than those who remained secure or non-secure, or changed from non-secure to secure.

Toddler and Preschool Attachment as Predictors of Self-Views

Associations between self-views and both toddler and preschool attachment were examined using a MANOVA with 27 month and 42 month attachment as the grouping variables and the three self-concept scales (i.e., cognitive competence, physical competence and peer acceptance) and the three profiles of responding identified through the Q-factor analysis (i.e., overall high but relatively lower physical competence, lower cognitive competence in comparison to other domains and overall low with particularly low peer acceptance) as the dependent variables. Multivariate assumptions for homogeneity of variance were met using Box's test of Equality of Covariance Matrices, Box's $M = 66.22$, $F(42, 1245.33) = 1.03$, $p > .05$. There were significant multivariate main effects for both 27-month attachment, $F(6, 31) = 4.55$, $p < .01$, $\eta_p^2 = .47$ (*observed power = .96*), and 42 month attachment, $F(6, 31) = 3.96$, $p < .01$, $\eta_p^2 = .43$ (*observed power = .93*) in predicting self-views at age 5.5 years. There was also a significant multivariate effect for the interaction between 27 and 42 month attachment, $F(6, 31) = 2.41$, $p = .05$, $\eta_p^2 = .32$ (*observed power = .73*).

Univariate analyses indicated that children classified as secure at 27 months reported significantly higher cognitive competence ($M = 20.38$, $SD = 3.54$) than those classified as non-secure at the same age ($M = 17.16$, $SD = 3.62$), $F(1,36) = 5.61$, $p < .05$, $\eta_p^2 = .14$ (*observed power = .64*). This same effect was also observed for attachment at 42 months: Children classified as secure at 42 months reported significantly higher cognitive

competence ($M = 19.96$, $SD = 3.53$) than those classified as non-secure ($M = 16.25$, $SD = 3.55$), $F(1, 36) = 7.99$, $p < .001$, $\eta_p^2 = .18$ (*observed power* = .79). There were no significant differences between attachment groups at 27 or 42 months on reports of physical competence of peer acceptance.

Contrasting univariate findings were found for 27 and 42-month attachment when predicting patterns of responding on the self-concept scales. Children classified as secure at 27 months were more likely to show a pattern of responding characterized by lower cognitive competence compared with other domains ($M = .05$, $SD = .27$) than were children classified as non-secure ($M = .02$, $SD = .15$), $F(1,36) = 4.64$, $p < .05$, $\eta_p^2 = .11$ (*observed power* = .55). However, children classified as secure at 42 months were significantly less likely to demonstrate this same pattern of responding ($M = -.04$, $SD = .14$) than their non-secure counterparts ($M = .22$, $SD = .27$), $F(1, 36) = 22.70$, $p < .001$, $\eta_p^2 = .39$ (*observed power* = .99). The interaction between 27 and 42 month attachment revealed that the impact of preschool attachment on patterns of self-views varied as a function of earlier attachment classifications: Children classified as non-secure at 42 months were only more likely to show this pattern of responding if they had previously been classified as secure at 27 months ($M = .39$, $SD = .30$) as opposed to non-secure ($M = .09$, $SD = .16$), $F(1,36) = 8.70$, $p < .01$, $\eta_p^2 = .20$ (*observed power* = .82) (See Figure 3). There were no significant differences between attachment groups on the other two factors representing patterns of responding on the self-concept measures.

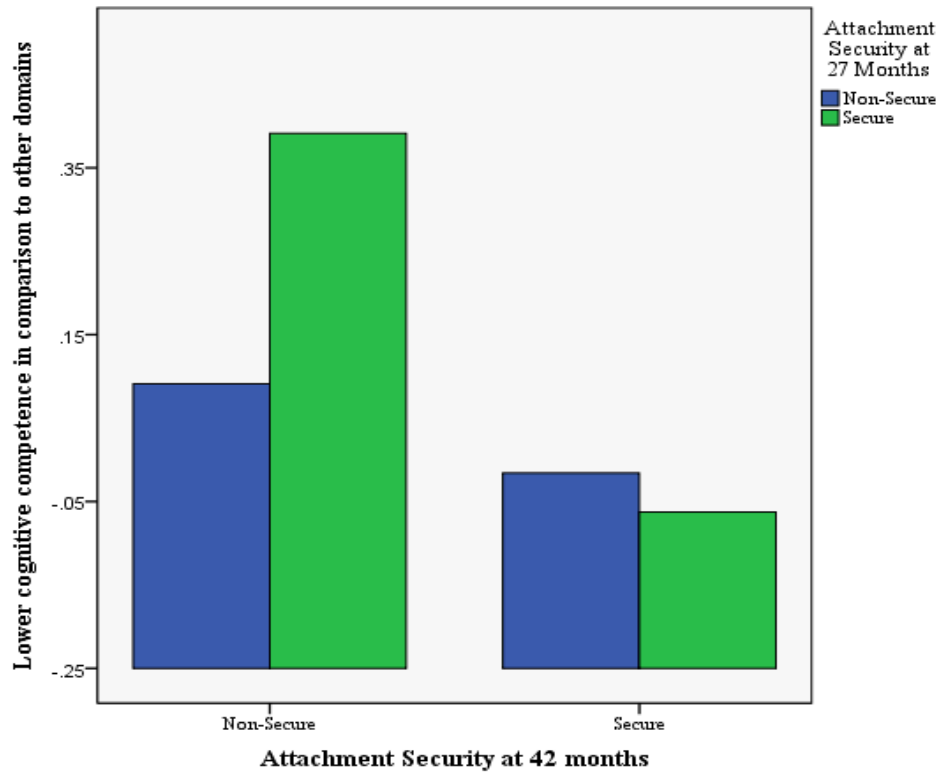


Figure 3. Interaction of 27 and 42 Month Attachment Predicting Responding Characterized by: Lower Cognitive Competence Relative to Other Domains

Thus, a change from secure to non-secure attachment over the first few years of life was most strongly associated with reports of lower cognitive competence in comparison to other domains.

Discussion

The primary purpose of the present study was to explore the role of attachment quality over the first few years of life in socio-emotional competence in early childhood. Findings from this study overall did not lend support to either the notion that either early or more proximal assessments of the attachment relationship alone are predominate predictors of developmental outcomes. Rather, the results suggest that change in attachment over time may be the most important predictor of later socio-emotional functioning.

With regard to associations between attachment and helplessness, the hypotheses were partially supported: Children classified as secure at 42 months showed less helplessness on the social disappointment task at 5.5 years than their non-secure counterparts. However, no significant impact of 27 month attachment was found and attachment at neither time point predicted helplessness on the challenging puzzle task. An examination of the interaction between early and later attachment provided a more detailed account of the influence of attachment quality on responses to social-based failure: Children classified as secure at 42 months showed greater helplessness on the social disappointment task only when they had previously been secure at 27 months. Thus, a change from secure to non-secure attachment over the first few years of life was associated with higher social-based helplessness. These findings are in contrast to those of the only two previous studies to examine similar processes in early childhood. In one

assessment of how early attachment influenced socio-emotional competence during a challenging puzzle task, Fish (2004) found that only infant and not preschool attachment significantly predicted later outcomes and there was no interaction between classifications at the two time points. Another study did find that *both* early and later attachment had implications for developmental outcomes, however the pattern of results differed from those in the present study. Vondra et al. (2001) found that children who changed classifications between 12 and 24 months generally fared better than those in stable non-secure relationships but poorer than those in stable secure relationships on various assessments of emotional and behavioural regulation. Thus, in contrast to the present findings, children in their study who changed from secure to non-secure attachment still exhibited better socio-emotional functioning than those who remained non-secure at both time points. There are several possible reasons for this discrepancy in findings between the present study and previous research. Primarily, neither Fish nor Vondra et al. captured the same specific aspect of socio-emotional functioning that was the focus of the present study – helpless responses to failure. Rather, both of these studies looked at overall competence on challenging tasks rather than failure. Therefore, it may be that the impact of negative change in attachment quality is more specific to helpless attributions following social based-failure, and possibly other associated indicators of depressive vulnerability. Additionally, these other studies also focused on changes in attachment classifications at different developmental stages. While Fish examined changes in attachment from infancy to preschool, Vondra et al. examined trajectories from infancy to toddlerhood and our study focused on toddlerhood and preschool. It is

possible that these findings from the present study are specific to children who shift from secure to non-secure attachment between the ages of two and three.

While there is little available in the developmental literature to provide converging support for our findings, at least one study from the adult literature supports this association between a deterioration in attachment quality and vulnerability to psychopathology. In an examination of how change in attachment over the first year of college influences socio-emotional functioning, Hiester and colleagues (Hiester, Nordstrom, & Swenson, 2009) found a pattern of results in line with those from the present study; participants who experienced a negative change in attachment with parents over the first year of college reported significantly more anxiety and depression than students whose relationship improved or remained unchanged.

This pattern of results is at odds with Sroufe and colleagues' (2005) proposal that early attachment security should act as a protective factor against maladaptive developmental outcomes later in life regardless of subsequent shifts in attachment quality. Instead, our findings suggest that losing a secure relationship may actually be more detrimental than never having one at all. The experience of losing a secure relationship early in life was discussed at length by Bowlby as potentially being a psychologically traumatic and disturbing event for many children. Bowlby focused on the experience of loss through death of a primary attachment figure, however it is possible that the loss of a supportive relationship when shifting from secure to non-secure with a primary attachment figure could lead to similar outcomes. Bowlby believed this loss would predispose children to a variety of detrimental outcomes, including depression. Thus, the notion that individuals who have experienced a decline in the quality of their

relationship with their primary attachment over the first few years of life would be predisposed to the greatest helplessness may be consistent with this early work on attachment and loss. Additionally, it may be that children who develop and maintain a non-secure attachment relationship over the first few years of life develop compensatory coping mechanisms associated with their non-secure strategy that help them manage through challenging situations. A similar idea was proposed by Bowlby (1980) when he suggested that some individuals in non-secure relationships, particularly those characterized by an ‘independence of affectional ties’ may develop a strong sense of self-sufficiency that allows them to handle emotional situations effectively on their own.

At first glance, results from the examination of profiles of responding across the scale of self-concept appear to contradict one another: secure attachment at 27 months and non-secure attachment at 42 months were both associated with the same pattern of responding across the self-concept scales. These findings were clarified by the discovery of an interaction between toddler and preschool attachment security; Children classified as non-secure at 42 months were only more likely to show a pattern of responding characterized by lower cognitive competence compared to other domains if they had previously been classified as secure at 27 months.

Given that this pattern of responding was previously associated with both social-based helplessness and non-secure attachment, it appears to reflect some maladaptive aspect of self-views. Thus, it may be that similar to the findings for the social based helplessness task, a change from secure to non-secure attachment over the first few years of life has a negative impact on aspects of self-concept. However, more research into the nature of this pattern of responding is necessary before such a conclusion can be drawn.

While very little research has so specifically examined the impact of change in attachment on self-views, at least one study from the adult literature provides some converging support for this notion. Hiester et al. (2009) found that students who reported a negative change in attachment with their parents over the first year of college had lower perceived self-worth and scholastic competence than students whose relationships remained unchanged.

The one outcome variable that showed a different pattern of prediction was children's self-reports of cognitive competence alone; At both 27 and 42 months children in secure attachment relationships reported significantly higher competence in this domain than those in non-secure attachment relationships. There were no significant differences between reports of physical competence or peer acceptance. This further supports the notion discussed in the second study of this set that cognitive competence may be a particularly important aspect of emerging self-views for children in secure attachment relationships. Numerous theorists have pointed to the impact of a supportive and secure attachment relationship on a child's cognitive development (Abramson et al., 2002; Meins, 1997, 1998; Meins, Fernyhough, Russell, & Clark-Carter, 1998; West, Mathews & Kerns, 2012) and this may also be one aspect of early attachment security that persists throughout development despite intermediate change.

These findings reveal the importance of assessing attachment at multiple time points across childhood to gain a clear picture of how relationship quality influences developmental outcomes. It appears that a negative change in attachment security between toddlerhood and preschool may have particularly detrimental consequences for various aspects of socio-emotional functioning. However, early attachment security may

positively influence other outcomes despite intermediate change, as was the case for cognitive competence in the present study. This study provides an initial glimpse into dynamic developmental processes that deserve further research attention. Clinical implications of this work will be further discussed in the following section, along with specific directions for future research.

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General Conclusion

The three studies included in this dissertation add important information to the existing literature on attachment and socio-emotional functioning. Very little previous research has examined these processes from a longitudinal perspective using ecologically validated measures, and this was a primary goal of all three studies included in this set. Together, these studies have provided a unique examination of children's development over a three year period to help gain a clearer understanding of the contribution of early attachment to various aspects of socio-emotional functioning in early childhood. While some aspects of the well-developed theory on attachment and both self-views and depressive vulnerability were supported, others have been brought into question in light of the present findings.

Attachment security in the preschool years was found to have a positive influence on multiple aspects of functioning in early childhood. In particular, children in secure attachment relationships displayed less social based helplessness and greater cognitive competence than their non-secure counterparts. These findings are in line with theoretical predictions and highlight the benefit of having a positive and supportive relationship with a primary attachment figure early in life. These results are also consistent with other longitudinal studies of attachment that have reported multiple benefits of having a secure attachment relationship early in life (Sroufe et al., 2005).

However, there were several other findings that were surprising in light of both theory and previous research. First, the lack of association between either attachment or self-views and any aspect of achievement-based helplessness was unexpected. This finding contradicts theoretical propositions on attachment and depressive vulnerability

and was contrary to the hypotheses of the present study. While several possible explanations for this lack of association have been proposed, this area deserves further research attention to gain a clearer understanding of the origins of depressive vulnerability in an achievement-based context, and the role – if any – attachment plays in such processes.

In addition, although the literature did not provide sufficient evidence for firm prediction, the negative impact of changing from a secure to non-secure attachment relationship was unexpected. However, a post-hoc examination of these findings suggests this may in fact be in line with what attachment theory would predict for individuals who experience a decline in the quality of their attachment relationship. This is a particularly important finding since much of the theoretical work in this area presumes that having a secure attachment relationship at any time point throughout childhood would have a positive influence on later development. Rather, the present findings suggest that it is the children who develop a secure relationship and then lose that support that are at the highest risk. It will be important for future research to first replicate these findings and then further explore processes associated with change in attachment to gain a clearer understanding of how this experience may lead to maladaptive functioning later on.

The findings from this set of studies have important implications for clinical work with children and families. Primarily, children in non-secure attachment relationships may be at-risk for developing self-views characterized by a lack of competence in the cognitive domain and also vulnerability to depression following social rejection. Given that both cognitive competence and peer rejection become regular aspects of a child's experiences upon entrance to school, it will be important to identify children in non-

secure relationships that may require support and intervention around these issues. In particular, providing positive feedback and adopting a strengths based approach to academic work from an early age could help bolster cognitive competence for children who do not have the opportunity to develop positive views in this domain through interactions at home. Additionally, introducing children to the notion of peer rejection and encouraging positive self-attributions and confidence related to these occurrences will be important for children in non-secure relationships who may be prone to a helpless explanatory style following such events.

Moreover, the present findings suggest that the development of a secure attachment relationship alone may not act as a protective factor for later socio-emotional competence, but the *maintenance* of a secure relationship will. Thus, clinicians should be aware that even following interventions aimed at fostering the development of secure attachment relationships it will be important to monitor the maintenance of these attachments given the detrimental consequences associated with the decline of a secure relationship observed in the present study. Finally, the present study also supports the notion that self-views from an early age have important implications for concurrent aspects of functioning as children's reports of global self-worth and self-concept in certain domains were associated with helplessness in a social context. Thus, talking with children about their self-views at this young age may be an important avenue of information for both assessment and intervention around self-esteem.

The present study examined processes that have rarely been studied using a prospective longitudinal design, and as a result it will be important for future research to replicate these findings. It will also be worthwhile to examine similar associations using

samples from other populations to determine the generalizability of these associations. The community sample used in the present study was considered low-risk and previous research has shown that attachment related processes differ along with risk-status (Sroufe et al., 2005). It will thus be important for future research to examine the contribution of attachment to early socio-emotional functioning in higher-risk samples as well. The majority of children in this sample were also first-born in their families. Attachment relationships can become more complicated when parents have other children's needs to attend to (Touris, Kromelow, & Harding, 1995), so future research examining similar processes with second and third born children would be beneficial to determine whether birth order has an impact on these associations.

Due to the intensive nature of the data collected as part of this study it was difficult to obtain a larger sample size. Additionally, the distribution of attachment classifications was unexpected, as some classifications were overrepresented, with others not appearing at all⁵. If future research is able to follow larger samples of children across childhood this would help to more specifically examine trajectories for children in different non-secure classifications, and test associated hypotheses. It may be that children with different non-secure attachment histories show different profiles of self-views and levels of depressive vulnerability following failure, however we were unable to explore these possibilities in the current study. It will also be important for future research to address *why* children in secure and non-secure relationships displayed the different patterns of self-views that

⁵ This pattern of classifications however, particularly the low prevalence of avoidant attachment and higher representations of ambivalent/controlling classifications, is consistent with previous research assessing attachment in this age group (Milan et al., 2009; NICHD, 2001). In particular, the high prevalence of Controlling classifications is in line with theoretical conjecture that the preschool period is a stage where children with non-Secure attachment histories exert a more coercive role in the relationship and compel the caregiver to comply with their attachment-related needs (Crittenden, 2000; NICHD, 2001).

emerged across the domains. Several possible reasons have been offered, but no definitive conclusions could be drawn from the present study.

Finally, even in areas where attachment did predict later functioning, there was still a significant amount of variation unaccounted for. It will therefore be important to continue to examine other potential predictors of children's emerging self-views and responses to failure. For example, exploring the role that genetics has in these associations will be a fruitful area for further research. Genetic vulnerabilities to depression have been found to act as a modifier of early childhood experiences to produce depressive symptomatology following negative life experiences (Caspi et al., 2003; Taylor et al., 2006). Thus, further research is necessary to determine how genetics and environment may interact to influence socio-emotional outcomes for children with different attachment histories. Additionally, examining other environmental factors that may contribute to socio-emotional competence in early childhood, or moderate the association between early attachment and such outcomes is also necessary; exploring relationships other than the mother-child attachment relationship such as those with fathers, peers and teachers, in addition to other child characteristics such as confidence, personality traits and resilience would be fruitful areas for such research.

Findings from these studies support the notion that experiences in early attachment relationships place individuals on a pathway where certain developmental outcomes are more likely than others. However, this pathway is not fixed or predetermined; experiences at each stage of development will subsequently influence experiences at later points in time. As Bowlby himself noted, development is a dynamic and continuous process influenced by a vast array of experiences throughout the lifespan - "...a slow,

subtle and continuous process, beginning when he [the infant] first learns to walk and feed himself, and not ending completely until maturity is reached” (Bowlby, 1951, p. 53, as cited in Bretherton, 1992).

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Appendix A: Challenging Puzzle-Task Script

	Questions:	Response:
	<p>Look at these faces. This one is very happy and this one is very sad. This one is a little happy and this one is a little sad. This one is in the middle. Which face shows how you are feeling right now?</p>	
	<p>Here is the first puzzle for you to complete. [Do dog puzzle together]. Good – now that you know how to do them, let's do some more.</p>	Time to completion:
	<p>Here is the first one [Bring out tiger puzzle] – let's see if you can do it in 2 minutes. If you want, you can talk to me about how you're doing the puzzle. Ready? Ok – go!</p> <p>[Hint phrase: Just do your best.]</p>	
	<p>[When 3 pieces are left or 2 minutes have passed] Time's up! You didn't finish in time. You didn't finish that one. It's time for the next puzzle [Bring out zebra puzzle]. Let's see if you can do this one in 2 minutes. Ready? Go!</p> <p>[If children make irrelevant comments, acknowledge them but refocus their attention on the puzzles — Keep working]</p>	
	<p>[When 4 pieces are left or 2 minutes have passed] Time's up! You didn't finish that one, either.</p>	
	<p>Now I want to ask you some questions about the puzzles.</p> <p>[Push both unfinished puzzles close to child.]</p> <p>Using these smiley faces, tell me, how do you feel when you think about these puzzles that you didn't finish, and you have all these pieces that you couldn't finish?</p>	

	[point to smiley face pictures and use additional prompts if necessary]		
	If you had lots of time right now, do you think you think you could finish these two puzzles, or are you just not good enough at solving puzzles?	G	NG
	If you tried very hard right now, your very hardest, do you think you could solve these first two puzzles?	Y	N
	When you think about what happened with these first two puzzles, does it make you feel like you are a smart boy or not a smart boy?	S	NS
	It's time for you to do this puzzle. [Cat Puzzle]. Let them finish puzzle.		
	[When puzzle is finished.] If we have time later and you could work on one of these puzzles again [point to all three puzzles], which one would you like to do?	1	2 3
	Good choice. Why did you choose that puzzle?		
	If I gave you 3 more puzzles to solve, how many do you think you would finish?	0	1 2 3

Appendix B: Social Disappointment Task Script

CE = Child Examiner ME = Mother Examiner C = Child

[ME enters room]

ME: “(Child’s name) we have some other children who were here doing activities today, just like you, and now that they are done they are playing a really fun game together. Why don’t I ask them if you can join them when you are finished all of your activities?”

C: “Ok”

[If child says NO refer to other script]

ME: Ok, I will go and tell the other kids about you, and see if you can join them. [ME leaves]

[Start to set up next task] [ME knocks on door, CE lefts them in]

ME: (Child’s name), the other children aren’t sure if you can come join them → they want to know more about you first.

CE: [To child] Oh, that’s too bad. Thanks [ME] – why don’t I talk a little bit to [child’s name] about that and we will get back to you. [To child] Why don’t we talk a little bit about that...

Question	Response
1) Look at these pictures. This face is <i>very</i> happy and this face is <i>very</i> sad. This face is a <i>little</i> happy, and this face is a <i>little</i> sad. This other face is in the <i>middle</i> . When you think about the other children not asking you to join them yet, do you feel happy or sad? [point to pictures]. Do you feel a <i>little</i> (happy/sad), in the middle, or <i>very</i> (happy/sad)?	1 2 3 4
2) Do you think if we told the children more about you, they would want you to come and play with them?	Y N
3) Would you like us to tell the children more about you and then ask them again if you can join them?	Y N

<p>4) What about the other children not asking you to join them→</p> <p>a. Does it make you feel like you are good at making friends or not good at making friends?</p>	<p>G NG</p>
<p>b. Does it make you feel like you were a good (boy/girl) or not a good (boy/girl)?</p>	<p>G NG</p>
<p>c. Did it make you feel like you were a nice (boy/girl) or not a nice (boy/girl)?</p>	<p>N NN</p>

[ME knocks on door]

ME: “(Child’s name) I am so sorry! The other children had to go home because their moms had to go back to work , but they were *really* disappointed that you didn’t get to join them because you seemed *so* nice and they really wanted to play with you. They wanted to leave this toy for you so you could still play the game that they were playing!”

Appendix C: Social Disappointment Task “No” Script

CE = Child Examiner ME = Mother Examiner C = Child

[ME enters room]

ME : “(Child’s name) we have some other children who were here doing activities today, just like you, and now that they are done they are playing a really fun game together. Why don’t I ask them if you can join them when you are finished all of your activities?”

C : “no”

[If child says no] CE: Are you sure? It looks like a really fun game! You could go join them for some fun before you go home.

[If Child still says No]:

CE: [To child] OK - thanks [ME] – I’ll talk with [childs name] more about this and we can talk about this later. [ME leaves].

[CE Asks child questions about why they didn’t want to go with the other kids]

ME: [ME knocks on door again shortly after] You know what [child’s name]? I talked to the kids about you joining them and they said they wanted to know more about you before you joined anyway. Do you want me to tell them more about you?

If “Yes”: Ok, I will go and check

If “No”: Ok, have fun with the rest of your games

[CE asks attributions questions from original script (See Appendix B)]

[ME knocks on door once questions are finished and they have started to set up the next game]

ME : “(Child’s name) I am so sorry! The other children had to go home because their moms had to go back to work , but they were *really* disappointed that you didn’t get to join them because you seemed *so* nice and they really wanted to play with you. They wanted to leave this toy for you so you could still play the game that they were playing!”

Appendix D: Letters of Information**27 Month Assessment**

Letter of Information and Consent Form

**Western**

Exploring the Nature and Origins of Parent Child Relationships

Dear Parent

We are conducting a study with new mothers and their firstborn babies to learn more about how babies develop social and emotional relationships with their mothers. We want to understand how a mother's past and present experiences influence the growing relationship with her baby. We will be asking parents about many different types of experiences which may or may not apply. You are always free to not answer any questions should you not feel comfortable.

Our study will last 2 years and will involve 6 visits. Some of the visits will be in your home; others will be at the university. We are interested in your opinions about why your baby behaves as he/she does in different situations with you. We are also interested in the demands and rewards of parenting.

If you agree to participate in the study:

- **Visit One:** The first visit will be about two hours in your home when your baby is about 3 months old. At that time we will interview you, asking questions about your childhood experiences, your early relationship with your parents, any experiences of major separation, loss, or trauma, and your thoughts about how these experiences have affected your role as a mother. Some mothers may find aspects of the interview sad or upsetting because some of the questions are about sad or stressful events. Should you feel uncomfortable with any of the questions, you will not have to answer them. The interview will be audiotaped and later transcribed. We would also like to videotape you and your baby playing. After this we have a questionnaire about parenting experiences for you to fill out.
- **Visit Two:** When your baby is 3-4 months of age, (maximum 2 hours in total): We will visit you and your baby when your baby is awake. For about 20 minutes, we will ask you to play with your baby. The play session will be videotaped. After the play session we will have you watch the video and ask you about what you think your baby is feeling. Afterwards, we will ask you to fill out questionnaires about your experiences as a parent, any stresses associated with being a mother and the people you turn to for help and support. We would also like to ask you specific questions about your parenting experience so far, what your baby can do and who is helpful to you. This interview will be audiotaped.

- Visit Three: When your baby is between 9 and 10 months old, (maximum 2 hours): We will again visit you at home. We would like to observe how your baby plays with you. We will arrange this visit to take place at a feeding time so that we will be able to see how your baby communicates his/her wants. Certain parts of this visit will be videotaped. We are also interested in seeing how different people tell stories about relationships. You will be given the title of the story and then lists of words to help you make up a story. We will ask you about your early experiences in other relationships. This portion of the visit will be audio taped. Once again we have questionnaires for you to complete about your experiences as a parent.
- Visit Four: When your baby is 13 months old, (about 1 hour): You will visit us at the Child Development Centre at UWO. For this visit, we are interested in how your baby plays in new surroundings both when you are with your baby and when you are away. We will ask you to leave your baby for two brief periods (no more than 3 minutes each) during this part of the procedure. If your baby becomes upset, we will send you back in immediately. This visit will be videotaped. Parking costs at the university will be covered, or we can provide transportation for you and your baby.
- Visit Five: When your baby is about 21 months of age, (maximum 2 hours): We will visit you at home. We will give the baby some activities to do with the visitor to observe how your baby interacts with strangers and observe how he/she plays with you. We will interview you about your experiences as a mother (the interview will take about one hour, and will be audiotaped). Certain parts of this visit will be videotaped. We will also ask you to fill out questionnaires about your experiences.
- Visit Six: When your baby is 24 months of age, (maximum 90 minutes): You will visit us at the Child Development Centre at UWO. We will observe how your toddler interacts and plays in different surroundings and how he/she reacts to an interesting but unusual remote-controlled toy. This visit will be videotaped. We will ask you about your experiences with your toddler since we last saw you and ask you to fill out some questionnaires.

All information collected from you for the study will be kept confidential. All written, audiotaped, and videotaped records and questionnaires will be assigned numbers to maintain confidentiality. Audiotapes are erased after transcription. Any identifying information such as names and place of birth will be changed to maintain confidentiality. Only those directly involved in the study will see the transcripts and videotapes unless you agree that fragments can be used for professional training. The family names will only be available to direct members of the research group. Absolute confidentiality cannot be guaranteed as we may have to disclose certain information as required by law according to provisions under the Child and Family Services Act. This includes any suspicion that a child under the age of 16 years is or has been abused or if you are in imminent danger of hurting yourself or another person. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published.

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time. Even if specific questionnaires request that you answer every question you do not have to do so. There are no known risks associated with any of the procedures. This study will not result in any direct benefit to you or your baby but may help us to further understand factors that may have an impact on the social and emotional development of infants and how relationships develop. In appreciation for your assistance with the study you will receive \$25.00 for each visit or \$150.00 over the course of the study.

If you wish, you will have the opportunity to receive the results of the study. You may receive a copy of the videotape of the home visits if you wish. Throughout the study we will ask you if you have any questions about any of the procedures. We would also appreciate any ideas or advice about your experience as a participant. We hope that participating in this study will be an interesting time for you and your baby. If at any time you have questions or concerns, please do not hesitate to let the researcher know or you can contact the principal investigators or research coordinator listed below:

Dr. Greg Moran
Department of Psychology

Dr. David Pederson
Department of Psychology

Sandi Bento
Research Coordinator

Dr. Heidi Bailey
Department of Psychology

If you have questions about the conduct of this study or your rights as a research subject you may contact:

The Director
Office of Research Ethics
The University of Western Ontario

Letter of Information: 3.5 Year Assessment

Exploring Parent-Child Relationships, Emotion Regulation, Children's Thinking and Heart and Respiration Responses at the Preschool Age

Dear Parent,

We are conducting a study with 3 ½ year olds and their parents to learn more about preschoolers' development in the areas of relationships, emotions and thinking. We want to understand how children's relationships with their parents develop at this age, how they talk about emotions and how they learn to think about different things. We will be asking you and your child to do a variety of activities both together and apart. The visit will last approximately an hour and a half and will be videotaped. If you do not wish to be videotaped you should not participate in the study. You are always free to choose not to participate in an activity or answer a question.

In this visit, we will have both you and your child wear some special equipment. You will have a small sensor clipped to your waist and your child will wear a light-weight vest with the sensor inside. These will monitor and record your heart rate and your breathing as you go through the activities. All of the equipment is safe to wear and the electrodes feel a lot like putting on and then removing a sticker. A new area of research has been looking at how mothers and their children regulate at a physiological level, that is, how their heart rates are often in "sync", so we are interested to see how this relates to other areas of preschoolers' development.

- After you are both set up with the special equipment, we will ask your child to do two quick activities that tell us about his/her thinking. In the first activity, your child will be instructed to provide one of two words depending on the picture card presented. In the second task, your child will be asked to find the correct targets on a page of different pictures. We are interested to see if preschoolers can remember and correctly employ the rules of the game and if they can successfully focus their attention to find the correct targets. While your child is doing those activities, we will give you a package of questionnaires to begin filling out. These will help us to further understand your child's development.
- Then, because we are interested in how your child plays in new surroundings both when you are present and when you are not, we will then ask you to leave your child for two brief periods (approximately 4 minutes each) during this part of the visit. If your child becomes upset, we will send you back in immediately.
- Following that, when you and your child are in the room together, we will observe how your child reacts to an interesting, but unusual mask. The mask will speak to your child and your child may find this a bit scary. If you feel that your child has become too upset, we will stop the task. We would like to observe what your child does in response to the unusual mask as a way of better understanding preschoolers' emotion regulation skills.

- You and your child will then separate again, and your child will be asked to make up some stories involving dolls. Your child will not be alone: someone from our research team will be with him/her during this time. In the meantime, you will be completing some questionnaires and brief activities in an adjacent room. The questionnaires and activities that you complete will parallel the things that your child does, and will help us to understand where children learn different skills and abilities.
- Next, you and your child will get together for a snack and you will be asked to talk about some past experiences involving various emotions. This will help us to understand preschoolers' behaviour in relationships with parents and will provide more information about their emotion regulation skills.
- Finally, we will ask you some questions about demographic information while your child is asked to tell us the names of some pictures and objects. If, at this point, you haven't had a chance to complete all of the questionnaires in the package that you received at the start of the visit, we will provide you with a self-addressed, stamped envelope and ask you to complete them at home and mail them back to us.

All information collected from you for the study will be kept confidential. All written and videotaped records and questionnaires will be assigned numbers to maintain confidentiality. Any identifying information such as names and place of birth will be changed to maintain confidentiality. Only those directly involved in the study will see the transcripts and videotapes unless you agree that fragments can be used for professional training. The family names will only be available to direct members of the research group. Absolute confidentiality cannot be guaranteed as we may have to disclose certain information as required by law according to provisions under the Child and Family Services Act. This includes any suspicion that a child under the age of 16 years is or has been abused or if you are in imminent danger of hurting yourself or another person. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published.

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time. Even if specific questionnaires request that you answer every question you do not have to do so. There are no known risks associated with any of the procedures. As mentioned above, the electrodes, feel a lot like putting on and then removing a sticker. If you feel that this is too upsetting for your child, we will discontinue this part of the visit. This study will not result in any direct benefit to you or your child, but will help us to further understand the development of preschoolers. In appreciation for your assistance with the study you will receive \$30.00 and a DVD with selected excerpts from your visit.

Throughout the study we will ask you if you have any questions about any of the procedures. We would also appreciate any ideas or advice about your experience as a participant. We hope that participating in this study will be an interesting time for you and your child. If at any time you have questions or concerns, please do not hesitate to let the researcher know or you can contact the principal investigators or research coordinator listed below:

Dr. Greg Moran
Department of Psychology
University of Western Ontario

Dr. Heidi Bailey
Department of Psychology
University of Guelph

Dr. Jean-Francois Bureau
Department of Psychology
University of Ottawa

Dr. David Pederson
Department of Psychology
University of Western Ontario

Sandi Bento
Research Coordinator
Child Development Centre

If you have questions about the conduct of this study or your rights as a research subject you may contact:

The Director
Office of Research Ethics
The University of Western Ontario

Letter of Information: 5.5 Year Assessment



Exploring Parent-Child Relationships and Children's Emerging Representations of Self

Dear Parent,

We are conducting a study with 5 ½ year olds and their parents to learn more about children's development in the areas of relationships, emotions and thinking. We want to understand the early development and expression of the child's sense of self, their expectations about their abilities, their understanding and expression of emotions as well as how they respond to challenging tasks and disappointing situations. We will be asking you and your child to do a variety of activities both together and apart. The visit will last approximately 2 hours and will be videotaped. If you do not wish to be videotaped you should not participate in the study. You are always free to choose not to participate in an activity or answer a question.

In this visit, we will have both you and your child wear the physiological equipment you both wore at the last visit. All of the equipment is safe to wear and the electrodes feel a lot like putting on and then removing a sticker. After you have both put on the equipment, your child will go with the researcher to another room to do some activities.

- Your child will be asked how much they like different letters and words.
- Your child will be shown pictures and given descriptions of different children, for example: "this child is good at reading alone, this child has trouble reading alone, which child is most like you.
- Your child will be told stories about people with positive characteristics (e.g. they are friendly) and negative characteristics (e.g. they are easily distracted) and asked questions to help us understand if their thinking is wishful or realistic.
- Your child will be asked to participate in a jumping game where they will tell us how far they think they can jump. This will also help us understand if their expectations are the same as their abilities.
- Your child will be asked to complete a series of puzzle tasks. Some puzzles may be easy, and others will be too difficult for them to solve. We will then ask them questions about why they found the puzzles difficult and their thoughts about their abilities.
- A puppet task and a picture task will be used to help us understand how your child thinks and feels about close relationships.
- We would like to find out how your child might deal with disappointing situations with peers. To do this, we will present a scenario where another group of children

may not want to include your child. Following this they will be asked questions about how they feel, and why they think they may not have been included. At the end of the task, we will reassure your child that the other children did want to include them.

- After you and your child are reunited we will ask that you play for a few minutes. We will then have you present emotion words to your child and jointly discuss your child's experiences related to these emotions.
- Finally, we have a vocabulary task for your child to complete. This task is similar to the vocabulary task your child completed at 3 1/2 years

Your child will not be alone; someone from our research team will be with your child during this time. If your child becomes upset, we will come and get you immediately. In the meantime, you will be completing some questionnaires and brief activities in an adjacent room.

- The questionnaires and activities that you complete will help us to understand where children learn about different thoughts, feelings and behaviours.
- Finally, we will ask you some demographic questions. If you haven't completed the questionnaires, we ask that you complete them at home and mail them back to us.

All information collected from you for the study will be kept confidential. All written and videotaped records and questionnaires will be assigned numbers to maintain confidentiality. Any identifying information such as names and place of birth will be changed to maintain confidentiality. Only those directly involved in the study will see the transcripts and videotapes unless you agree that fragments can be used for professional training. The family names will only be available to direct members of the research group. Absolute confidentiality cannot be guaranteed as we may have to disclose certain information as required by law according to provisions under the Child and Family Services Act. This includes any suspicion that a child under the age of 16 years is or has been abused or if you are in imminent danger of hurting yourself or another person. If the results of the study are published, your name will not be used and no information that discloses your identity will be released or published.

Participation in this study is voluntary. You may refuse to participate, refuse to answer any questions or withdraw from the study at any time. Even if specific questionnaires request that you answer every question you do not have to do so. There are no known risks associated with any of the procedures. As mentioned above, the electrodes, feel a lot like putting on and then removing a sticker. If you feel that this is too upsetting for your child, we will discontinue this part of the visit. This study will not result in any direct benefit to you or your child, but will help us to further understand children's emerging views of themselves and others. In appreciation for your assistance with the study you will receive \$30.00 and a DVD with selected excerpts from your visit.

Throughout the study we will ask you if you have any questions about any of the procedures. We would also appreciate any ideas or advice about your experience as a participant. We hope that participating in this study will be an interesting time for you and your child. If at

any time you have questions or concerns, please let the researcher know or you can contact the principal investigators or research coordinator listed below:

Dr. Greg Moran
Department of Psychology
University of Western Ontario

Dr. Heidi Bailey
Department of Psychology
University of Guelph

Dr. Kali Trzenicewski
Department of Psychology
University of Western Ontario

Tara Morley Ph.D. student
Department of Psychology
University of Western Ontario

Dr. Jean-Francois Bureau
Department of Psychology
University of Ottawa

Dr. David Pederson
Department of Psychology
University of Western Ontario


Sandi Bento
Research Coordinator
Child Development Centre

If you have questions about the conduct of this study or your rights as a research subject you may contact:

The Director
Office of Research Ethics
The University of Western Ontario

Appendix E: Ethics Approval Forms

UWO RESEARCH ETHICS 001/001



Office of Research Ethics
 The University of Western Ontario
 Room 00045 Dental Sciences Building, London, ON, Canada N6A 5C1
 Telephone: (519) 881-3036 Fax: (519) 850-2468 Email: ethics@uwo.ca
 Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. G. Moran
 Review Number: 10390S
 Revision Number:
 Protocol Title: Exploring the Nature and Origins of Parent Child Relationships

Department and Institution: Psychology, University of Western Ontario
 Sponsor:
 Approval Date: 27-Apr-04
 End Date: 30-Apr-08

Documents Reviewed and Approved: UWO Protocol, Letter of Information, Consent Forms

Documents Received for Information:

This is to notify you that the University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (REB) which is organized and operates according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario has granted full board approval to the above named research study on the date noted above.

This approval shall remain valid until end date noted above assuming timely and acceptable responses to the REB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the REB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the REB:

- a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) all adverse and unexpected experiences or events that are both serious and unexpected;
- c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the REB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the REB.

Karen Kuennenan, BA (Hons), Ethics Officer REB

Chair of REB: Dr. Ben Forster

For
Date


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 UWO REB Ethics Approval 10390S

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01/10/2005 11:56 FAX 519 850 2466 UWO RESEARCH ETHICS 001



Office of Research Ethics
 The University of Western Ontario
 Room 00045 Dental Sciences Building, London, ON, Canada N6A 5C1
 Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
 Website www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. G. Moran
Review Number: 10390S
Revision Number: 1
Protocol Title: Exploring the Nature and Origins of Parent Child Relationships

Department and Institution: Psychology, University of Western Ontario
Sponsor:
Approval Date: 07-Jan-05
End Date: 30-Apr-08
Documents Reviewed and Approved: Revised Letter of Information, Revised Visit 2 Interview

Documents Received for Information:

This is to notify you that the University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (REB) which is organized and operates according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario has granted full board approval to the above named research study on the date noted above.

This approval shall remain valid until end date noted above assuming timely and acceptable responses to the REB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the REB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the REB:

- a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) all adverse and unexpected experiences or events that are both serious and unexpected
- c) new information that may adversely affect the safety of the subjects or the conduct of the study

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the REB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the REB.

Karen Kueneman, BA (Hons), Ethics Officer REB
 Chair of REB: Dr. Jerry Paquette
 Fax:
 Dan

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 UWO REB Ethics Approval 10390S
 Page 1 of 1


Office of Research Ethics

The University of Western Ontario
 Room 4180 Support Services Building, London, ON, Canada N6A 6C1
 Telephone: (519) 661-3036 Fax: (519) 850-2466 Email: ethics@uwo.ca
 Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. G.A. Moran
 Review Number: 10390S
 Review Date: May 18, 2010

Revision Number: 17
 Approved Local # of Participants: 363
 Review Level: Expedited

Protocol Title: Exploring the Nature and Origins of Parent Child Relationships
 Department and Institution: Psychology, University of Western Ontario

Sponsor:

Ethics Approval Date: July 29, 2010

Expiry Date: April 30, 2014

Documents Reviewed and Approved: Revised study methods, study instruments and eligibility of subjects. Letter of Information and Consent. Telephone script. Poster.

Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the study or consent form may be initiated without prior written approval from the NMREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the NMREB:

- changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- all adverse and unexpected experiences or events that are both serious and unexpected;
- new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the NMREB.

Chair of NMREB: Dr. Rissy Hanson
 FDA Ref. #: IRB 0000941

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UWO NMREB Ethics Approval - Revision
 V.2007-10-12 (rev/Approve/Notice/NMREB_RS.V)

10390S

Page 1 of 1

Curriculum Vitae: Tara Elise Morley**Post-Secondary Education**

- 2009 – 2014 **PhD., Clinical Psychology**, University of Western Ontario
Dissertation Title: The Role of Early Attachment Experiences in Emerging Self-Views and the Onset of Cognitive Vulnerability to Depression in Childhood
Supervisor: Dr. Greg Moran
- 2007 - 2009 **MSc., Clinical Psychology**, University of Western Ontario
Thesis Title: From Maternal Sensitivity to Maternal Interactive Behaviour: Exploring the Development of Attachment in Infants of Adult and Adolescent Mothers
Supervisor: Dr. Greg Moran
- 2001 – 2005 **B.A., Psychology (Honours)**, University of Victoria
Thesis Title: The Effects of Company Responses to Complaints on Consumer Satisfaction and Post Purchase Behaviours
Supervisor: Dr. Robert Gifford

PEER-REVIEWED PUBLICATIONS

Morley, T., Cataudella, D., Fernandez, C., Sung, L., Johnston, D., & Zelcer, S. (in press). Development of the Pediatric Advanced Care Quality of Life Scale (PAC-QoL): Evaluating comprehension of items and response options. *Pediatric Blood and Cancer*.

Cataudella, D., **Morley, T.**, Nesin, A., Fernandez, C., Johnston, D., Sung, L., & Zelcer, S. (in press). Development of a Quality of Life Instrument for Children with Advanced Cancer: The Pediatric Advanced Care Quality of Life Scale (PAC - QoL). *Pediatric Blood and Cancer*.

Morley, T., & Moran, G. (2011). The origins of cognitive vulnerability: Mechanisms linking early attachment to later depression. *Clinical Psychology Review, 31*, 1071 – 1082.

PEER REVIEWED CONFERENCE PRESENTATIONS

Morley, T., Ludmer, J., & Moran, G. (July 2012). Behavioural measures and helpless attributions following failure: An assessment of cognitive vulnerabilities to depression in 5 year-olds. Poster presented at: *International Society for the Study of Behavioural Development (ISSBD) Biennial Meeting 2012*, Edmonton, AB.

Ludmer, J., **Morley, T.**, & Moran, G. (June 2012). Parental contributions to domain-specific cognitive vulnerability to depression. Poster presented at: *Canadian Psychology Association Convention 2012*, Halifax, NS.

Morley, T., Cataudella, D., Nesin, A., Johson, D., Fernandez, C., Sung, L., & Zelcer, S. (November, 2011). The Pediatric Supportive Care Scales (PSCS): An Instrument to Assess Quality of Life in Children with Poor Prognosis Malignancy. Poster presented at: *2011 Multidisciplinary Symposium on Childhood Cancer - Paediatric Oncology Group of Ontario Conference (POGO)*, Toronto, ON.

Morley, T., Bailey, H., Pederson, D., & Moran, G. (April, 2011) Exploring the development of adolescent mother-infant attachment relationships: The contribution of ecological factors. Poster presented at: *Society for Research on Child Development (SCRD), 2009 Biennial Meeting*, Montreal, QC.

Cataudella, D., Zelcer, S., **Morley, T.**, Johnston, D., Fernandez, C. & Sung, L., (Nov., 2010). Development of the Paediatric Supportive Care Scale (PSCS): An instrument to assess quality of life in children with terminal malignancy. Poster presented at: *Paediatric Oncology Group of Ontario Conference*, Toronto, ON.

Morley, T., Moran, G., Pederson, D., Bailey, H., & Bento, S. (March, 2010). Exploring the development of organized attachment in infants of adult and adolescent mothers. Paper presented as part of a symposium at: *International Conference on Infant Studies (ICIS)*, Baltimore, MD.

Morley, T., Xue, Y., O'Connor, K., Moran, G., Pederson, D., & Bento, S. (March, 2010). Beyond sensitivity: The role of domains in the maternal contribution to attachment. Poster presented at: *International Conference on Infant Studies (ICIS)*, Baltimore, MD.

Morley, T., Moran, G., Pederson, D., & Bento, S. (March, 2010). The development of disorganized attachment in infants of adult and adolescent mothers. Poster presented at: *International Conference on Infant Studies (ICIS)*, Baltimore, MD.

O'Connor, K., Xue, Y., **Morley, T.**, Moran, G., Pederson, D., Bento, S., & Bailey, H. (March, 2009). Sibling mother-infant relationships: Different patterns of interaction lead to similar relationships. Poster presented at: *Society for Research on Child Development (SCRD) 2009 Biennial Meeting*, Denver, CO.

Guenette, F., **Morley, T.**, & Marshall, A. (May, 2007). Career experience and choice processes for secondary science students. Paper presented at: *Connections 2007*, University of Victoria, Victoria, B.C.