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The Role of Attachment in the Relationship Between Maternal and Childhood

Depressive Symptomatology: The Test of a Mediational Model

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The Role of Attachment in the Relationship Between Maternal and Childhood

Depressive Symptomatology: The Test of a Mediational Model

by

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CHAPTER ONE: INTRODUCTION

In the past childhood depression has often been viewed as being qualitatively different from adult depression. The concept was sometimes trivialized as a type of transient sadness, and often went unrecognized as a serious disorder (Burbach & Borduin, 1986; Lyman & Hembree-Kigin, 1994; Speier, Sherak, Hirsch, & Cantwell, 1995). Children who exhibited symptoms that would be commonly recognized as depression in adults would often be overlooked or purposefully ignored by mental health professionals, who routinely took the perspective that children were not mature enough to experience such a deep, reflective emotion. Children were expected to maintain a sunny disposition and bouts of sadness were often interpreted as a temporary change in mood that would quickly pass.

In recent decades, however, the existence of depression in both child and adolescent samples has been well documented (Birmaher et al., 1996; Ferro, Carlson, Grayson, & Klein, 1994; Harrington, Rutter, & Fombonne, 1996; Lyman & Hembree-Kigin, 1994). The "myth" of childhood depression has evolved into a widely accepted recognition that children of all ages are capable of experiencing depressive states, some of them quite severe. In addition to documenting the existence of childhood depression, researchers have also devoted great efforts toward investigating the long-term effects of depression occurring at early ages. Research in the field has indicated that experiencing depression in childhood or adolescence is related to poor psychological outcomes in adulthood.

Early-onset depression may be particularly insidious because of its occurrence during critical developmental periods (Hammen, Burge, & Stansbury, 1990; Hammen & Rudolph, 1996). The childhood years encompass a period of great development in cognitive, physical, and social domains. Children who experience a major affective disorder during this critical time may experience an interruption in the normal, developmental process. Such an interruption may result in certain skills being left unacquired or adapted in a dysfunctional way. In terms of emotional development, this may take the form of children missing important steps in learning to regulate their emotions, experiencing delays in cognitive development that may affect problem solving abilities, or lacking social skills that allow for the accurate perception and interpretation of emotional information.

Childhood depression has been shown to lead to a higher risk of recurring depressive episodes throughout adulthood (Garland & Weiss, 1995; Harrington et al., 1996; Kovacs, 1996). Children who experience such an affective disorder early in life may be more likely to internalize the negative perceptions about themselves and the world around them that are commonly associated with a depressed state. Children who have been depressed at an early age may not have as many positive experiences in memory to contradict the permanence of these perceptions as adolescents or adults who experience depression later in life. Additionally, children's level of cognitive development and capacity for abstract thought may put them at a disadvantage in terms of the ability to understand their disorder and self-monitor the processes involved. This suggests that children may have a more difficult road in preventing the reoccurrence of

an early-onset depression. It is not surprising then that research suggests early-onset

depression may indeed represent a more chronic type of depression (Asarnow & Ben-

Meir, 1988; Kovacs, Feinberg, Crouse-Novak, Paulauskas, & Finkelstein, 1984a). With

the wealth of data indicating such a poor outlook for children who experience

depression, few would disagree about the urgency in addressing how to intervene in this

cycle.

With documented evidence of potential maladaptive outcomes for children

experiencing depression, researchers have begun to focus on the possible etiologies of

early depression. Well respected models of depression (e.g. Abramson, Seligman, &

Teasdale, 1978; Beck 1967, 1976) target distorted cognitive processes in adolescents

and adults to explain the etiology of depressive styles. When exploring the origins of

depression in young children, however, the focus naturally turns toward family

influences. When depressive symptomatology is evident in a young child, one

intuitively looks to the child's environment to see what modeling might be occurring

with the adults in his or her household and what messages the child might be receiving

about how to regulate his or her emotions.

Learning to regulate emotions is a critical process in emotional development for

children. This process includes learning to communicate effectively about emotions and

developing problem-solving skills to deal with negative emotions. The ways in which

parents respond to their children's emotional states in the early years sets the stage for

how children will learn to cope with their emotions independently. This process begins

as early as infancy when parents respond to their infants as they use emotional

expression to communicate their needs (Cassidy, 1994; Gianino & Tronick, 1988; Thompson, 1994).

One way in which children may develop an early disposition toward depression is that of being cared for by an adult who is depressed. Since most primary caregivers are mothers, the majority of the research examining this link has focused on maternal caregiving. Evidence of the relationship between maternal depression and increased risk for the development of psychopathology in their offspring has been well documented (Beardslee, Keller, Lavori, Staley, & Sacks, 1993; Beardslee, Versage, & Gladstone, 1998; Cummings & Davies, 1994; Hammen, 1991; Weissman, Gammon, John, Merikangas, Warner, Prusoff, & Sholomskas, 1987; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997).

By the age of 20, a child of a parent with an affective illness has a 40% chance of experiencing a period of major depression (Beardslee et al.,1998). The extensive literature base in this area has implicated biological, environmental, familial, and cognitive contributions, alone and in various combinations, to explain the transmission of depression from mother to child (Downey & Coyne, 1990; Hammen, 1992). Obviously multiple influences may affect the mother, the child, and the dyad together, making it difficult to determine specific causal contributions. Research across these areas, however, contributes crucial pieces of information that add to our understanding of this process.

This study is specifically focused on environmental contributions to the transmission of depressive tendencies from mother to child. Observations of depressed

mothers interacting with their children suggest certain characteristics are present that influence the child's emotional development. The unresponsive, self-absorbed characteristics and reduced energy levels often associated with mothers experiencing a depressed mood have been implicated as integral contributions to their children's development of a depressive style (Downey & Coyne, 1990; Hammen, 1992). Infants and young children who are helpless to meet their own needs rely on their caregivers to respond to them in a consistent manner.

Depressed mothers may find it unusually difficult to be available for their young children because of the hopelessness, lack of motivation, and reduced capacity for joy often experienced by depressed individuals. In turn, these infants and young children may begin to adjust their methods of eliciting help and attention from adults as they become accustomed to a depressed mother's way of interacting. Some children may even completely relinquish their attempts to communicate with a depressed mother if her ability to respond to the child's needs is drastically impacted by the disorder.

It is in the area of mother and child relations that attachment theory may become a useful lens through which to examine this developmental pathway of depression in young children. John Bowlby's theory of attachment (1969, 1973, 1980) proposes that certain "attachment behaviors," such as crying, clinging, smiling, or following the caregiver around to maintain proximity, serve a biological function to create a bond between parent and child. Children enlist these behaviors to elicit protection from the parent, often when a threat to security is perceived. The result of a parent's consistent, caring responding to these types of behaviors is a secure attachment, or the child's

feeling of safety and having a "secure base" from which to explore the world. To further explore Bowlby's theory, Mary Ainsworth and colleagues developed the Strange Situation in order to categorize the attachment behaviors seen in parent-child dyads (Ainsworth, Blehar, Waters, & Wall, 1978).

In the Strange Situation, a parent (most often mothers) and child approximately one year of age are observed in a series of brief separations and reunions in an unfamiliar setting. The infant's attachment quality is categorized according to observed behaviors toward the caregiver elicited by these stressful situations. Infants who are secure explore the new surroundings when the mother is present, become distressed when she leaves the room, and seek her comfort when she returns, often returning to exploration activities once the distress level has lessened.

Two types of insecure attachment were derived from the development of the Strange Situation. Insecure-avoidant infants are characterized by active exploration of the surroundings, low levels of distress exhibited during separation, and avoidance of the mother when she returns to the room. Insecure-ambivalent infants, also known as insecure-resistant, frequently seek proximity to their mothers while she is in the room, become extremely distressed when their mothers depart, and are often inconsolable when she returns. They often display anger toward their mothers and reject their offers of comfort. In addition to these three classifications, infants may alternatively be classified as disorganized (Main & Solomon, 1990). These children's behaviors in the Strange Situation are characterized by a mixture of avoidant and ambivalent behaviors or may exhibit a disoriented, incoherent strategy for alleviating the stress presented by

the situation. Infants with disorganized classifications are more often found in samples with higher levels of child maltreatment (Goldberg, 1997; Main 1996).

Bowlby's work in the area of attachment and loss suggests that an infant's reaction to the loss of a caregiver can lead to insecure attachments, whether it be an actual physical loss or a case of rejection and unavailabilityHaving a mother who is depressed may in some ways be similar to experiencing the loss of a caregiver in the sense that the mother may withdraw her attention and affection from the infant, leaving the child feeling unprotected and insecure. In this way, maternal depression may be related to attachment disorders. Research has demonstrated support for this concept, showing links between maternal depression and insecure attachment (Cicchetti, Toth, & Lynch, 1995; Cicchetti, Rogosch, & Toth, 1998; Cicchetti, Ganiban, & Barnett, 1991; DeMulder & Radke-Yarrow, 1991; Lyons-Ruth, Zoll, Connell & Grunebaum, 1986; Radke-Yarrow, Cummings, Kuczynski, & Chapman, 1985; Rutter, 1997; Teti, Gelfand, Messinger, & Isabella, 1995). These early cognitive representations are believed to generalize to other close relationships and general patterns of relatedness over time (Bowlby, 1980; Carlson & Sroufe, 1995; Greenberg, 1999; Rudolph, Hammen, & Burge, 1997; Shaw, Keenan, Vondra, Delliquadri, & Giovannelli, 1997).

Insecure attachment may also be linked to the later development of childhood behavior problems (Lyons-Ruth et al., 1993; Moss, Parent, Gosselin, Rousseay, & St. Laurent, 1996; Renken et al., 1989; Shaw et al., 1996), although a specific link to childhood depression is in need of further exploration (Greenberg, 1999). Given the research findings to date, it is reasonable to propose that security of attachment may act

as a mediational variable in the transmission of maternal depressive symptomatology to the child. Children who are able to establish a solid bond and a secure attachment with their mothers are known to have more positive outcomes than their insecurely attached counterparts. Given that not all depressed mothers produce depressed children, it is likely that some depressed mothers are able to manage their emotional states in a way that allows them to connect with their children to make them feel cared for, safe, and secure. The resulting secure attachment may in turn buffer the effects of maternal depression in terms of inter-generational transmission.

Investigations of attachment status as a mediator for depressive outcomes have largely been limited to adolescent studies where self-reported measures of perceived attachment are related to concurrent depressive measures (e.g. Papini, Roggman, & Anderson, 1991). The potential mediational role of secure infant attachment in households with depressed mothers has been largely neglected, particularly in pre-pubertal samples. With such import being placed on early detection and prevention of childhood depression (Cicchetti et al., 1998; Hammen et al., 1990; Hammen & Rudolph, 1996), this line of investigation should provide greater insight as to how depression is transmitted in a family setting, and what processes or characteristics of early relationships may provide a buffer or resilience to these influences.

The proposed study explores the application of a mediational model (Baron & Kenny, 1986) to describe the role attachment security in infancy may have in the transmission of depressive symptomatology from mother to child. The study presented is a follow-up investigation to the Partners and Parents project at the University of

Texas at Austin (see Hazen & Jacobvitz, 1997). This particular exploration will examine depressive symptomatology in 7-and 8-year-old children whose security of attachment with their mothers had been assessed in infancy during an earlier phase of this research project. It is hypothesized that attachment status in infancy will partially mediate the relationship between early maternal depressive symptomatology and later child depressive symptomatology (see Appendix A). Support for this model would suggest that a secure attachment between mother and child in infancy may act as a protective mechanism against the transmission of maternal depressive style in early childhood, providing implications for intervention and further research.

CHAPTER TWO: LITERATURE REVIEW

The following literature review provides an overview of the role mother-infant attachment may play in the developmental pathway leading to childhood depression. A review of the literature describing the history of the identification of depression in young children includes prevalence rates, commonly noted symptomatology for this age group, indicators of maladaptive outcomes for early-onset depression, and etiological models of depression. Parental transmission of depression is then examined, with particular attention paid to reported links between maternal depression and its role in the etiology of childhood depression. An overview of attachment theory and its relation to childhood outcomes is then discussed, with a focus on the potential role attachment may play in the development of childhood depression. After reviewing developmental theories of risk and resiliency, a model is then proposed in which security of attachment between mother and child in infancy mediates the maternal transmission of depressive symptomatology to the child.

Depression in Young Children

There has been some controversy as to whether or not young children's dysphoric states are truly depressive disorders. It was once thought that children of preschool and early elementary age did not possess sufficiently developed self-concepts to truly experience depression and, as a result, the occurrence of prepubertal depression

was treated as a type of transient sadness, and was rarely recognized before the early 1970's (Burbach & Borduin, 1986; Lyman & Hembree-Kigin, 1994; Speier et al., 1995). More recently, researchers have found that many of the same factors in terms of symptoms, onset, duration, and comorbidity found in adult studies are also present in studies of childhood depression, with some exceptions found for developmental differences across age-groups (Ferro et al., 1994; Harrington et al. 1996). Currently, child depression is usually diagnosed with the same guidelines provided for adults in the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association [APA], 1994), with the allowance that irritable mood may replace the requirement for depressive mood, significant weight loss may be conceptualized as "failing to make expected weight gains," and it is noted that somatic complaints and social withdrawal are more common in depressed children than adolescents.

<center>Prevalence and Characteristics</center>

Prevalence rates for depression range from 0.4% to 2.5% in children, and from 0.4% to 8.3% in adolescents (reviewed in Birmaher et al., 1996). Very little data exists on the occurrence of depression in early childhood because children younger than 7 are not typically included in large-scale community surveys of mental health (Hammen & Rudolph, 1996). The examination of depression in children below the age of 7 has lagged far behind studies of adolescent depression (Kashani, Allan, Beck, Bledsoe, & Reid, 1997). The lack of studies for younger children is understandable since younger children are limited in their abilties to conceptualize and verbally express their feelings

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of distress (Kashani & Carlson, 1987). Studies of depression in preschoolers indicate that the incident rate is rare (Stark et al., 2000), but little information is available concerning the frequency and characteristics of depressive symptoms in 6- to 8-year old children specifically.

Research indicates that the basic phenomenology of depression is shared across age-groups, but that different symptoms emerge during different developmental stages (Bemporad, 1994; Carlson and Kashani, 1988; Kazdin, 1990; Ryan et al., 1987; Speier et al., 1995). It has been noted in studies of depressed 4- to 6-year-olds that common characteristics of this age group include the expression of somatic complaints, and the presence of irritability and aggressive behaviors (Kashani et al., 1997; Kashani & Carlson, 1987). The expression of somatic complaints seems to decrease with age (Carlson & Kashani, 1988), suggesting this symptom might be a characteristic specific to early childhood depression and distinct from those found in older children or adolescents. Speier et al. (1995) note that depression in school-age children (when defined as age 6-12) may sometimes be expressed through disruptiveness, loss of motivation at school, and aggression, making it difficult to immediately identify.

Many studies of childhood depression either refrain from using young children as subjects (e.g. Kovacs, 1996; Rudolph, Hammen, & Burge, 1997; Turner & Cole, 1994), or have combined child and adolescent subjects (Fine et al., 1985; Ryan et al., 1987), providing inadequate information about developmental differences amongst specific age-groups of children (Gelfand & Teti, 1990). There is controversy as to whether incidence and prevalence rates of depression in children are accurate due to the

dearth of or limitations within measures of childhood depression (Kazdin, 1990; Speier et al., 1995). Most scholars in the field, however, agree that depression can be diagnosed as early as 5 or 6 (Cummings & Cicchetti, 1990).

Maladaptive Outcomes

Compared to adolescent onset depression, which may be less severe and more episodic, childhood-onset depression may be a more severe and chronic form of depression with less successful treatment outcomes (Garland & Weiss, 1995; Harrington et al., 1996; Kovacs, 1996), possibly signaling an early vulnerability in some children (Kovacs et al., 1984a). Children with depression often develop various types of disorders, but a further episode of an affective disorder is the most prevalent outcome (Kovacs, 1996; Speier et al., 1995). Depression early in childhood can be particularly threatening due to the potentially damaging impairment that may occur during critical development periods (Hammen et al., 1990; Hammen & Rudolph, 1996). If stages of a child's typical development are diverted by depressive episodes, the chance to learn certain skills may be lost, and the child may not be able to fully compensate for these missed opportunities.

Additionally, negative cognitive schema formed in early childhood may be particularly inflexible (Hammen & Rudolph, 1996), and may taint interpretations of life events from a very early age. Recent research also indicates that major depression is occurring at higher rates in children (reviewed in Speier et al, 1995), and at an earlier age in successive cohorts (Birmaher et al., 1996; Hammen & Rudolph, 1996), and that

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completed suicide in pre-pubertal children is increasing (Speier et al., 1995). These findings all suggest an urgency in identifying effective routes of intervention (Cicchetti et al., 1998).

<div align="center">Models of Depression</div>

Theories of depression have developed from biological, cognitive, life stress, and interpersonal perspectives, with each viewed by its proponents as the necessary contribution to depression (Cummings & Cicchetti, 1990; Hammen, 1992). Most models of childhood depression and systems of diagnosis are downward extensions of adult models (Hammen, 1992; Speier et al., 1995). Beck's (1967, 1976) cognitive theory suggests that depressed individuals structure their experience on the basis of cognitions that are often faulty and distorted. These cognitions in turn predispose the individual to misrepresent external events in such a way that loss and deprivation appear most evident in their interactions with the world. More recent studies emphasize that depressed children suffer from *distortions* of information processing, or misperceived and/or misinterpreted information, when evaluating situations related to the self, rather than a *deficit* in information processing (Kendall, Stark, & Adam, 1990).

Theories of attributional style and learned helplessness (Abramson, Alloy, & Metalsky, 1988; Abramson, Seligman, & Teasdale, 1978; Seligman, 1975) have suggested that attributions are seen as important motivators of behavior, and depressed individuals are seen as making more internal and stable attributions of failure and attributing their successes to more external and unstable forces. Kaslow, Brown, and

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Mee (1994) have suggested that depressed children may perceive a lack of control where important events of their lives are concerned. Studies have also suggested that individual patterns of interpreting the causes of events remain fairly stable over time (Kaslow et al., 1994).

Studying cognitive styles as they relate to the emergence of depression may be less relevant to younger children, considering the reduced capacity for formal operational thought and abstract reasoning (Turner & Cole, 1994). With the emergence of the field of developmental psychopathology, concepts of depression etiology have been proposed using theories of child development rather than downward extensions of adult depression models. Sroufe's (1997) developmental model of disturbance suggests that like normal development, behavioral and emotional disturbance should be considered as a developmental process. In this model the meaning of behavior is considered to be inseparable from context and disorders are seen as developing from deviation over time. Similarly, others have proposed that the etiologies of childhood disorders are transactional in nature, suggesting that prior competencies affect subsequent development, and social, emotional, and cognitive competencies interact to direct the path of the child's development (Egeland, Carlson, & Sroufe, 1993; Hammen, 1992; Harrington, et al. 1996; Renken et al., 1989).

Following this idea that early experiences are of critical importance in shaping the way later experiences are processed and interpreted (e.g. Egeland et al., 1993), one of the most important correlates of depression to be studied for young children is that of maternal depression. Applying the perspectives of developmental psychopathology and

the transactional model is useful for exploring the pathway of depressive symptomatology transmission between mother and child.

Maternal Depression and Child Depression

It has been well documented that offspring of depressed mothers have an increased risk of developing affective illness at some point in their lives, particularly depressive disorders (Beardslee et al., 1993; Beardslee et al., 1998; Cummings & Davies, 1994; Hammen, 1991; Weissman et al., 1987; Weissmanet al., 1997). The lifetime risk for children of depressed parents developing major depressive disorders are estimated as ranging from 15% (Orvaschel, Walsh-Allis, & Ye, 1988) to 45% (Hammen, Burge, Burney, & Adrian, 1990). Explanations for the pathway of the familial transmission of depression include a variety of perspectives that implicate genetics, biology, and contextual risks (Hammen, 1992), but a great deal of literature has focused on characteristics of depressed mothers and the resulting interactions they have with their children.

While the influence of depression in fathers undoubtedly influences child outcomes, an overwhelming majority of the literature examines the influences of mothers, as they are traditionally thought of as the primary caregiver. Furthermore, there is some indication that child depression is more strongly linked to maternal than paternal depression (Keller, Beardslee, Dorer, Lavori, Samuelson & Klerman, 1986).

Using established theory and research from the field, this study will also focus on the influences of mothers rather than fathers in the transmission of depression.

Early work in this area suggests that infants "mirror" the affect of their depressed mothers, and develop a passive style of coping with stressful situations very early in infancy (Field, 1984; Field, Healy, Goldstein, & Guthertz, 1990). More recent studies of the brain activity in infants of depressed mothers reveals reduced activity in the left frontal region, which is associated with happiness and interest, relative to the activity in the right frontal region, an area associated with withdrawal and sadness (Dawson, 1994; Dawson, Frey, Panagiotides, Yamada, Hessl, & Osterling, 1999). It is still unclear, however whether an early disposition to this type of activity is present at birth, or develops very early from interactions with the mother. The evidence does suggest, however, that a predisposition to a depressive style of thinking may be present very early, setting the stage for future difficulties.

<div align="center">Mother Characteristics and Caregiving Style</div>

Children of depressed mothers may be affected directly through their mothers' emotional unavailability, or indirectly through the disruption of healthy parent-child interaction (Cummings & Davies, 1994). Studies suggest that depressed parents may have inadequate parenting resources, resulting in a lack of consistency and poor limit-setting (Cicchetti et al. 1998; Downey & Coyne, 1990; Gelfland & Teti, 1990). Since depressed mothers may experience difficulty with consistent and successful parenting practices, they may also suffer from a reduced sense of efficacy, which may in turn

contribute to inappropriate responding to the child (Cummings & Davies, 1994). These mothers may find it difficult to sustain the effort and tolerance required to care for very young children, and may even view the role of being a parent less positively than mothers without depression (Downey & Coyne, 1990).

Results across several studies indicate that depressed mothers respond less positively, more slowly and less consistently to their children, and often show lower levels of contingent response (Leadbeater et al., 1996; reviewed in Gelfland & Teti, 1990) and higher levels of hostility towards their children, using coercion rather than negotiation to control behavior (Burbach & Borduin, 1986; Downey & Coyne, 1990). Parenting styles of depressed mothers can range from intrusive and hostile behavior on one hand, to a passive or withdrawn style on the other (Cummings & Davies, 1994; Zahn-Waxler et al., 1990). The negative effects of maternal depression may also be linked to the amount of chronic stress and depressed mood the mother experiences in combination (Hammen, 1991). Additionally, evidence indicates that depression in the first year postpartum may forecast a tendency to experience recurring episodes of depression in the following years (Leadbeater, Bishop, & Raver, 1996).

Clinically depressed children and their mothers have been shown to exhibit less affectionate relationships and poorer communication skills compared to normal controls (Puig-Antich, J., Lukens, E., Davies, M., Goetz, D., Brennon-Quattrock, J., & Todak, G., 1985) and medically ill dyads (Hammen, 1991). Abnormal early interactions between mother and child may contribute to maladaptive cognitions (Hammen, 1991) and patterns of handling stress that predispose the children to depression (Birmaher et

al., 1996; Downey & Coyne, 1990). Reciprocal relationships may also be established between mothers and their children that maintain negative interaction patterns (Hammen, 1990). Children of depressed mothers may experience their mothers as unpredictable, inconsistent, and unresponsive (Radke-Yarrow et al., 1985).

Since parents function as a major resource for young children's coping, a child may not receive enough assistance in dealing with stressful events from a mother who is unavailable due to a depressive state (Hammen, 1992) and may even perceive the mother as a threat to the child's own well-being (Cummings & Davies, 1994). Studies of children with depressed mothers have indicated that maladaptive affect regulation strategies may be modeled and negative outcome expectancies may be learned (Garber et al., 1991). It may be very difficult for young children to develop the capacity to regulate their own emotions after excessive exposure to the negative emotions of a depressed mother (Cummings & Davies, 1994). The impact of emotional unavailability and insensitivity or hostile, irritable parenting may be greatest in infancy when children are learning how to regulate their emotional arousal (Burbach & Borduin, 1986; Cummings & Davies, 1994). It has been hypothesized that when attempts at achieving emotional regulation repeatedly fail, this may contribute to the development of depression in children (Cole & Kaslow, 1988).

<u>Outcomes for Children of Depressed Mothers</u>

Children of depressed mothers may cope with their environments through social withdrawal, which may contribute to a pattern of dysphoria that puts them at risk for

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developing depressive symptoms, or they may develop strategies resembling externalizing disorders that mimic hostile or irritable behaviors modeled by their depressed mothers (Cummings & Davies, 1994; Downey & Coyne, 1990). Children of depressed mothers are reported as being at risk for both internalizing and externalizing problems in the toddler and preschool years (Cicchetti et al., 1998; Leadbeater et al., 1996; Radke-Yarrow et al., 1992), and in the early elementary school years (Beardslee et al., 1983; Downey & Coyne, 1990; Hammen et al., 1987; Radke-Yarrow et al., 1992; Weissman, Warner, Wickramaratne, Moreau, & Olfson, 1997; Zahn-Waxler et al., 1990) and are more likely to have an earlier onset of depression than their peers (Beardslee et al., 1993; Hammen et al., 1990; Weissman et al., 1987; Wickramaratne & Weissman, 1998).

While some studies have found a relationship between severity and chronicity of maternal illness and poor child outcomes (Campbell, Cohn, & Meyers, 1995; Hammen et al., 1990; Keller et al., 1986) others have challenged this idea, suggesting that more chronic and severe depression is more likely to be identified by the child as an illness rather than normal behavior, allowing the child to develop reliable coping strategies (reviewed in Beardslee et al., 1998). Young children of depressed mothers may exhibit anxious and sad affect (DeMulder & Radke-Yarrow, 1991) and/or noncompliance and aggression due to the variety of inattentive, coercive, and inconsistent parenting practices sometimes characteristic of depressed parenting (Cummings & Davies, 1994). Children of depressed mothers have also been shown to have impaired social and academic functioning compared to their peers (Hammen, 1991).

Although the contributions to the development of depression are many and complex, strong evidence exists for the familial transmission of the disorder (Cicchetti et al., 1998). While maternal depression influences caregiving style, and consequently, the child's adaptation, there are other influences that may operate independently, or may mediate or moderate the development of child depression (Cicchetti et al., 1998).

Attachment Theory and Depression

The importance of early caregiver-child relationships and the resulting impact on the child's future functioning has been extensively studied by Bowlby (1969,1980) and others in the context of attachment theory. Attachment theory proposes that the primary caregiver plays a crucial role in how children negotiate milestones of development through the early facilitation of self-regulation through sensitive responding to the child (DeMulder & Radke-Yarrow, 1991; Kopp, 1989; Shaw et al., 1997), which contributes to behavioral and emotional patterns of interaction throughout the child's life (Bowlby, 1980; Carlson & Sroufe, 1995; Greenberg, 1999; Renken et al., 1989).

Attachment to a preferred figure, usually a parent, develops during the first 7-9 months of the child's life (Bowlby, 1977; Main, 1996). Children first experience intensive affective states of different types within their early attachment relationships (Ainsworth, Blehar, Waters & Wall, 1978; Bowlby, 1977). If the caregiver responds to infant cues appropriately and keeps distress within manageable limits, the infant is more likely to experience success with attempts at regulation, and will thus develop an internal working

model with a feeling of security and certain expectations of efficacy (Bowlby, 1973; Carlson & Sroufe, 1995; Greenberg, 1999; Sroufe, 1997; Stark et al., in press). Security of attachment is not only associated with an internal working model that tells the child he/she will be taken care of, but also that the child is worthy of proper care (Cummings & Cicchetti, 1990). Kopp (1989) theorizes that the desire to be part of the caregiver-child relationship is a strong motivator for young children to develop skills of emotion regulation.

Typical rates of each attachment classification in low-risk infant samples are around 20%, 65%, and 15% for the categories of insecure-avoidant (A), secure (B), and insecure-resistant (C) respectively (Teti et al., 1995). More recent studies that use the disorganized classification (D) estimate that 15%-25% of infants fit this description (Main & Solomon, 1990). These percentages vary according to the sample being used with ratings of disorganization occurring in greater numbers in high risk samples.

As rated by the Strange Situation (Ainsworth, et al., 1978), insecure-avoidant infants usually show fewer attachment behaviors, such as showing distress during separation or seeking comfort from the caregiver after a separation. Insecure-resistant infants often become visibly more distressed upon separation and may simultaneously seek and resist comfort upon the caregiver's return. Disorganized infants show a variety of odd, disorganized, and sometimes conflicting behavior patterns in the caregiver's presence. Odd behaviors might include long stares, tripping, turning in circles, and fearful behaviors (Main & Solomon, 1986). Secure infants become appropriately distressed during separation, but seek comfort and are easily soothed by the caregiver. Studies have shown

that attachment status between mother and child in infancy is predictive of attachment status measured at age 6, indicating some continuity of early relationships (Main & Cassidy, 1988).

Teti et al. (1995) found that a preschool sample had higher rates of insecure classifications than an infant sample, suggesting that more coercive and aggressive behaviors may develop at this age to which some parents may not know how to adapt, thus creating problems in the parent-child relationship. Some parents may have sufficient competence to establish secure attachment with their child in infancy, but may not adapt when the need for limit-setting increases (Teti et al., 1995). Additionally, the new challenges that go along with new peer relationships and scholastic work may put children's coping skills to the test (Rutter, 1987).

The early studies of Bowlby examined attachment patterns in normal populations, but the trend of looking at attachment patterns to understand and treat disorders is fairly recent (Greenberg, 1999). Sadness in early childhood, and particularly infancy, is often associated with disruptions in the infant-caregiver bond (Bowlby, 1980; Trad, 1994). If a particularly threatening event occurs, the infant's fragile regulatory capacity may be disrupted. Since an infant's experiences are limited in number and environment, great significance may be placed on single events. The infant may generalize these limited experiences, causing a global interpretation of events, and the infant may characterize negative events as a global loss of control. Repeated experiences of loss of control may result in disengagement from the environment as a type of coping strategy, and may present as a state of withdrawal indicative of a depressive state (Trad, 1994).

Examining the role of mother-child attachment in the familial transmission of depressive symptoms may reveal a possible mediational effect. In other words, if a child is able to form a secure attachment with his or her depressed mother, then the quality of that relationship may buffer the effect of the mother passing on her depressive tendencies to her child. A review of the literature reveals links between maternal depression and child attachment security, as well as between child attachment security and childhood depressive symptoms.

<u>Maternal Depression and Insecure Child Attachment</u>

Emotional unavailability and insensitivity are highly associated with maternal depression, and are also strong predictors of insecure parent-child attachment (Cummings & Davies, 1994; Field, 1989). Psychological unavailabilitywhich is increased in depressed mothers, can produce an expectation that the caregiver is unreliable for care (Bowlby, 1980; Cummings & Cicchetti, 1990). Maternal depression has been associated with a higher prevalence of insecure attachment with infants and toddlers (Cicchetti et al., 1991; Cicchetti et al., 1995; Cicchetti et al., 1998; DeMulder & Radke-Yarrow, 1991; Lyons-Ruth et al., 1986; Martins & Gaffan, 2000; Radke-Yarrow et al, 1985; Rutter, 1997; Teti et al., 1995). Cicchetti et al. (1998) found that 43.5% of toddler offspring of depressed mothers in their study were rated as insecurely attached, compared to 18.2% of toddlers in normal comparison groups.

More specifically, Radke-Yarrow et al. (1985) found that insecure attachments were more common for those children whose mothers had a major depression, as

opposed to those with minor or no depression. In a meta-analytic study, Martins and

Gaffan (2000) found that children of depressed mothers were most likely to be

classified as either avoidant or disorganized. Disorganized infants are also often linked

to histories of maltreatment (Goldberg, 1997; Main, 1996). Characteristics commonly

associated with depressed mothers, such as inconsistent and chaotic care, have been

associated with insecure-resistant attachment, causing the child to doubt the certainty of

obtaining care or functioning without it (Renken et al., 1989).

Similar to the characteristics of depressed mothers, mothers of insecurely

attached children have been portrayed as expressing more negative and less positve

emotions than normal controls (Radke-Yarrow et al., 1985), and show less tenderness

and affection and more irritability (DeMulder & Radke-Yarrow, 1991). Parental over-

control and absence of autonomy promotion has been shown to predict internalizing

difficulties (Kobak, Sudler, & Gamble, 1991). DeMulder & Radke-Yarrow (1991)

found that mothers' downcast affect was the most significant factor that differentiated

secure from insecure children.

Mothers of children classified as insecure-resistant have been characterized as

unresponsive, under-involved, intrusive, and inconsistent in their caregiving, while

mothers of avoidant infants are often described as rejecting, controlling, intrusive, or

insensitive, but more consistent in their style (Ainsworth et al., 1978; Belsky et al.,

1984; Lewis & Fiering, 1989). Main and Hesse (1990) suggest that the disordered

strategies and limited coping skills observed in children characterized as disorganized

are related to caregivers who act frightened and/or frightening toward the infant. Radke-

Yarrow et al. (1985) noted that the addition of a depressed father to a home where maternal depression was present was not found to increase the likelihood of insecure mother-child attachment.

Research suggests that duration and severity of maternal depressive illness may also be key in contributing to increasing the risk for insecure attachments (Campbell, Cohn, & Meyers, 1995; Cicchetti et al, 1998; Radke-Yarrow et al, 1985), especially in the first years of the child's life (Teti et al., 1995), although some findings suggest that the relationship between severity of depression and child attachment is not significant (DeMulder & Radke-Yarrow, 1991). Depressed affect, persistent insecurity, and overdependence are commonly observed outcomes of separation and loss (Cummings & Cicchetti, 1990). The outcomes for children with insecure attachments as they relate to the development of depression will be explored further in following section.

<u>Insecure Attachment and Childhood Depression</u>

Although relatively little "methodologically sound and theoretically informed" studies on the role of attachment in the development of depression exist (Cummings & Cicchetti, 1990), research in the area of childhood attachment can provide useful information for investigating the developmental trajectory of childhood depression. Results across several studies suggest that establishing a secure attachment in the first two years of life is related to higher compliance, effective emotional regulation, and higher sociability, and serves as a protective factor against various forms of

psychopathology throughout life (Carlson & Sroufe, 1995; Main, 1996; reviewed in Greenberg, 1999; Rutter, 1997).

A child's insecure attachment with a depressed parent could be explained as the child's way of coping with the parent's impaired behaviors (Cummings & Davies, 1994). Nevertheless, insecure parent-child attachment in the first years of life is associated with maladaptive functioning (Cicchetti et al., 1998; Cummings & Davies, 1994; Field, 1989), and has been associated with both internalizing and externalizing disorders in preschool and early-elementary aged children (Lyons-Ruth et al., 1993; Moss, Parent, Gosselin, Rousseau, & St-Laurent, 1996; Renken et al., 1989; Shaw et al., 1996) even though it is not itself considered to be a measure of psychopathology (Greenberg, 1999). Disorganized infants in particular may have the most potential for future disorders (Goldberg, 1997; Main, 1996).

Internal working models for insecure attachment are associated with low self-esteem and feelings of uncertainty with respect to self-worth, and these concepts likely form early and are resistant to change (Cummings & Cicchetti, 1990). Easterbrooks et al. (1993) found that children rated as insecure at age 7 had higher externalizing problems even after accounting for family risk. They found that children with the attachment classification of insecure-avoidant have difficulty expressing negative affect, possibly because their internal working models include anticipation of rejection and they are therefore hesitant to expose these unpleasant emotions. They also proposed that children with the classification of insecure-ambivalent may possess in their internal working models the belief that caregivers are not capable of meeting their needs.

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Children with avoidant attachments in particular have been shown to have higher overall rates of disorder in adolescent follow-up studies, while children classified as ambivalent and secure did not differ significantly (Greenberg, 1999).

There has been a noted link between avoidant attachment and later internalizing symptoms (Lyons-Ruth, Easterbrooks, & Cibelli, 1997), suggesting that these children rarely directly express their distress or anger, and are less likely to acknowledge vulnerability and ask for help. Cicchetti et al. (1991) noted that avoidant infants exhibit dependent and helpless behaviors due to an internalized sense of doubt and uncertainty about a caregiver's availability. Several studies have also found a link between disorganized attachment and internalizing problems, suggesting that these children are more likely to exhibit more symptoms of anxiety and depression (Carlson, 1998; Moss, Rousseau, Parent, St-Laurent, & Saintong, 1998; Shaw, Keenan, Vondra, Delliquadri, & Giovannelli, 1997). Lyons Ruth and Jacobvitz (1999) also suggest that children classified as disorganized are more likely to suffer from psychopathology in general compared to other classifications. Children without the benefit of a secure attachment are reported as having more difficulties with emotional expression, emotion regulation and higher incidences of affective disorders than their securely attached peers, and may be more vulnerable to breaking down during stressful periods (Cicchetti, Cummings, Greenberg, & Marvin, 1990; Cummings & Cicchetti, 1990).

Hammen (1992) suggests that cognitive vulnerability to depression comes from underlying working models of the self and others that may arise in part from maladaptive attachment relations, which may in turn be reinforced through interactions

with other family and peers. Internal working models characteristic of children with

insecure attachments are quite similar to the cognitive and emotional patterns observed

in depressed individuals (Cummings & Davies, 1994). Symptoms found in depressed

children, such as a perception of the parent as being unreliable and of themselves being

undeserving of love and affection (Carlson & Kashani, 1988; Kashani & Carlson, 1987)

mirror characteristics associated with insecurely attached children (Cummings &

Cicchetti, 1990).

It has been suggested that an insecure attachment that is classified as anxious

may foster an internal working model of the self as unlovable, and is often linked to

caregivers who are unavailable or rejecting (Kobak, Sudler, & Gamble, 1991). Cicchetti

et al. (1998) suggest that associations between maternal depression and both insecure

attachment and higher risk of internalizing symptomatology may suggest an early

depressotypic style that may eventually lead to depressive illness. Stark et al. (2000)

propose that "insecure attachment is the context in which a negative sense of self, world

and future begins to develop" (p. 23).

Models of Risk and Resilience

Researchers who propose a developmental, transactional, or process-oriented

approach to understanding the development of depression suggest that depression is not

necessarily a disease within a person, but a disorder that interacts within a social context

(Cicchetti et al., 1998; Cummings & Cicchetti, 1990; Hammen, 1992), and that

children's characteristics also play a role in their own developmental trajectories (Carlson & Sroufe, 1995; Cummings & Cicchetti, 1990; Cummings & Davies, 1994; Egeland et al., 1993; Hammen, 1991; Sroufe, Egeland & Kreutzer, 1990). Likewise, attachment behavior is a relational construct that cannot be considered as an individual characteristic (Greenberg, 1999), and is often viewed as an ongoing process that results from the interaction of developmental history and environment, rather than a static characteristic (Bowlby, 1980; Carlson & Sroufe, 1995; DeMulder & Radke-Yarrow, 1991; Greenberg, 1999; Sroufe et al., 1990; Teti et al., 1995).

Dfferent combinations of risk factors can lead to the same disorder depending on the timing and interaction with other risk factors (Greenberg, 1999; Harrington et al., 1996) or protective factors. Not all children of depressed mothers exhibit the same difficulties as they mature (Zahn-Waxler et al., 1990). Likewise, while there is a recognized link between maternal depression and insecure attachment, it has also been documented that high percentages of infants and toddlers are able to form secure attachments with their depressed mothers (Cohn & Campbell, 1992; Cummings & Davies, 1994; DeMulder & Radke-Yarrow, 1991).

Identifying aspects of childrearing that are protective for the children in terms of psychosocial outcomes should be a priority for research (DeMulder & Radke-Yarrow, 1991; Harrington et al., 1996; Rutter, 1987), yet little research incorporates the contributions of family stressors and coping capabilities when investigating resilience to childhood psychopathology (Hammen, 1992; Radke-Yarrow et al., 1985). Whereas many investigators assume that protection lies in specific, identifiable variables, the

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concept of resilience can also be considered as a *process* subject to the interaction of person, environment and timing, rather than a static variable unto itself (Masten, Best, & Garmezy, 1991; Rutter, 1987). Rutter suggests that protection from risk does not necessarily require evading the risk, but having the competency to successfully interact with it. He suggests using the terms "protective mechanism" rather than protective factor to denote its dynamic properties. In terms of attachment, this perspective suggests that secure early attachments may provide protection in later high-risk environments (Carlson & Sroufe, 1995).

While feelings of self-efficacy and self-esteem established from a secure attachment are not seen as fixed attributes, they may be seen as elemental in bolstering children's competencies when facing future challenges (Carlson & Sroufe, 1995; Masten et al., 1991; see also Egeland et al., 1993). Indeed, a negative self-concept in childhood has been shown to be a significant predictor of future depression (Hammen, 1991). The effects of maternal depression on children have been studied almost exclusively in terms of negative impact, with little attention is given to positive characteristics that may reduce the risk of child maladjustment (Downey & Coyne, 1990). Studies of resilience often highlight the importance of supportive caregiving in the protective process (Egeland et al., 1993; Masten et al., 1990).

Attachment theory predicts that securely attached children will be less at risk for disorder later when encountering traumatic circumstances in later years (Greenberg, 1999). A secure attachment relationship in infancy has been shown to serve a protective function in high-risk environments (Egeland et al., 1993). The well established

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relationship between severity of affective disturbance and insecure attachment implies that mothers who do possess the ability to function despite such a disorder may possess a special characteristic that should be considered in terms of the impact on the child (Radke-Yarrow et al, 1985). Perhaps some mothers are indeed able to compartmentalize their depressed mood for long enough periods of time to exhibit sensitive caregiving towards their children.

Rationale for a Mediational Model

All children of depressed mothers do not necessarily exhibit depressive symptoms (Chiariello & Orvaschel, 1995; Zahn-Waxler et al., 1990). Considering the evidence presented in the literature, the study of the role of attachment as a mediator or moderator in the field of developmental psychopathology is warranted (Greenberg, 1999). Several authors suggest that it is necessary to take a process-oriented or transactional approach to understanding the risk for children of depressed parents, noting that effects could be additive, interactive, or multiplicative in the way they affect child outcomes (Cicchetti et al., 1998; Cummings & Cicchetti, 1990; Cummings & Davies, 1994; Greenberg, 1999). In homes where one or both parents are depressed, such an environment could simultaneously foster negative working models of the world associated with insecure attachment, and depressive cognitive/behavioral tendencies (Cummings & Cicchetti, 1990).

Warm relationships with adults inside or outside the family have been implicated in favorable outcomes for children with a mentally ill parent (Masten et al., 1991). Greenberg (1999) suggests that attachment theory contributes to the study of psychopathology in two ways: 1) in that it shows how risk factors interact with early relationships to produce patterns of relating that are disordered; and 2) the insights provided as to how attachment patterns can increase or buffer effects of later disorders. Insecure attachment patterns may indeed play a role in developing, maintaining, and transmitting depression across generations in the way that it shapes important elements of the mother-child interactions and the overall child-rearing environment (Cummings & Cicchetti, 1990).

Rutter (1987) suggests that it is protective to have a well-established feeling of self worth for coping with challenging situations, and that secure parent-child relationships provide some degree of protection against high risk environments. Attachment security may similarly mediate the relationship between maternal and child depression. It is evident that there is theoretical support for considering attachment behavior as a mediator in the relationship between maternal and childhood depressive symptomatology, with secure attachment serving as a protective mechanism.

Statement of the Problem

Longitudinal studies suggest that the detrimental effects associated with being raised in a home with a depressed parent persist over time (Hammen et al., 1990; Teti et

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al., 1995). When both a child and a parent are depressed, there is an increased risk for

for potential conflicts, resentment, disappointment and feelings of abandonment

(Hammen, 1991). Community-based studies report high rates of depression in young

women of child-bearing age (Ferro, Verdeli, Pierre, & Weissman, 2000), suggesting

that many young children may be exposed to depressed mothers. A review of the

literature to date clearly demonstrates a relationship between maternal depression and

child depression, and between maternal depression and insecure attachment in infancy.

The role attachment security may play in the transmission of depressive style from

mother to child, however, has garnered little attention (Greenberg, 1999).

Several studies indicate that adolescents' current perceptions of secure

attachment to their parents may serve as a buffer against poor social-emotional

outcomes (e. g. Papini, Roggman, & Anderson, 1991; Priel & Shamai, 1995; Salzman,

1996; Torquati & Vazsonyi, 1999). Some studies examine child depression as related to

concurrent or retrospective attachment ratings, but this makes it difficult to accurately

portray the role of early relationships (Greenberg, 1999). Studying disruptions in early

attachment systems that may interfere with the development of effective emotional

regulation is needed to fill the gaps in the current understanding we have of how

maternal depression affects children (Hammen, 1991). Children's relational models are

thought to become more resistant to change with age (Greenberg, 1999) suggesting an

impetus for studying relational models as they are formed at an early age.

It is hypothesized in this study that a secure attachment in infancy will partially

mediate the influence of maternal depression during the child's infancy on the

development of depressive symptomatology in early childhood. Since many factors undoubtedly contribute to a complex model of the development of childhood depression, full mediation, or complete elimination, of the relationship between maternal and child depression is not expected. However, evidence of partial mediation, or a reduced relationship, would provide more detailed information about the contributions of early mother-child interactions and potential critical periods. Additionally, findings may aid in defining specific directions for future research and practice.

CHAPTER THREE: RESEARCH STUDY

This study is an investigation of a hypothesized model of the relation between maternal depressive symptomatology 8 months postpartum and signs of depressive symptomatology in their 7- and 8-year-old children. A secure attachment formed in infancy between mother and child was expected to serve as a mediator or protective mechanism in the transmission of depression from mothers to their children. Research indicates that children of depressed mothers are at increased risk for developing depression themselves (Beardslee et al., 1998; Beardslee et al., 1993; Cummings & Davies, 1994; Hammen, 1991; Hammen et al., 1990; Orvaschel et al., 1988; Weissman, et al., 1987; Weissman et al., 1997), and that children with insecure attachments to their mothers are at-risk for poor psychological outcomes as compared to their securely attached peers (Cicchetti et al., 1995; Cicchetti et al., 1998; DeMulder & Radke-Yarrow, 1991; Radke-Yarrow et al., 1985; Teti et al., 1995).

Little research has been devoted to establishing a relation between infant attachment status and early signs of child depression (Cummings & Cicchetti, 1990; Greenberg, 1999). The current study explored this relationship, and additionally, aimed to investigate how secure attachment in infancy may partially mediate the influences of early maternal depressive symptomatology on young children's psychological well-being.

This study utilized security of attachment measures from infancy recorded in a previous stage of this research project. Previous measures assessed maternal depressive

symptomatology 8 months post-partum, and current measures assessed children's

depressive symptomatology at ages 7 and 8. Mothers completed self-report measures

for depression, and mothers, fathers, and teachers completed questionnaires about the

child's behaviors. Specific research questions and related hypotheses follow.

Research Questions and Hypotheses

Question 1

What is the relation between maternal depressive symptomatology measured at 8

months postpartum and child attachment status measured at the age of 12-15 months?

Hypothesis 1

Children's attachment to their mothers, as measured at the age of 12-15 months, will be

associated with measures of maternal depressive symptomatology reported at 8 months

postpartum.

Rationale

Research indicates that maternal depression has been associated with a higher

prevalence of insecure attachment with infants and toddlers, compared to normal

controls (Cicchetti et al., 1995; Cicchetti et al., 1998; DeMulder & Radke-Yarrow,

1991; Lyons-Ruth et al., 1986; Radke-Yarrow et al., 1985; Rutter, 1987; Teti et al.,

1995). The types of care associated with anxious/resistant attachment may include

insufficient support for autonomous functioning (Ainsworth et al., 1978), and

inconsistent and chaotic care (Renken et al., 1989), characteristics often found in

depressed mothers. Severity of maternal depression was associated with insecure

attachment, but the relationship was somewhat weaker than the overall relation between

maternal depression in general and attachment security (Cicchetti et al., 1998). Research

suggests that indicators of security of attachment at 12 months are present as early as

six months postpartum (Cohn, Campbell, & Ross, 1992).

Question 2

What is the relation between children's security of attachment measured at the age of

12-15 months and signs of depressive symptomatology when the children are 7 and 8

years old?

Hypothesis 2

Measures of depressive symptomatology in the 7- and 8-year-old subjects will be

associated with infant attachment status, as measured at the age of 12-15 months.

Rationale

Cicchetti et al. (1998) found there was an association between attachment security and

differences in child behavior problems. Few studies, however, have investigated

outcomes in terms of internalizing disorders in general or childhood depressive

outcomes specifically for this age-group (Greenberg, 1999). Avoidant attachment has

been associated with aggression in the preschool years, but less evidence exists for

specific antecedents of passive-withdrawal behaviors (Renken et al., 1989). Studies

have shown that attachment status between mother and child in infancy is predictive of

attachment status measured at age 6, indicating some continuity of early relationships (Main & Cassidy, 1988).

Children without the benefit of a secure attachment have been reported as having more difficulties with emotional expression and regulation, have higher incidences of affective disorder than their securely attached peers, and may be more vulnerable to breaking down during stressful periods (Cicchetti et al., 1990; Cummings & Cicchetti, 1990). Specificity of linkages between types of insecure attachment and internalizing behaviors is unclear (Greenberg, 1999). Therefore this study only examined the differences between securely and insecurely attached children.

Question 3

What is the relation between maternal depression measured at eight months postpartum and signs of depressive symptomatology in their children at 7 and 8 years old?

Hypothesis 3

Measures of depressive symptomatology in the 7- and 8-year-old subjects will be associated with measures of maternal depressive symptomatology measured at 8 months postpartum.

Rationale

Many studies have documented familial transmission of depression, indicating that the presence of maternal depression is predictive of childhood depression (Beardslee et al., 1998; Beardslee et al., 1993; Cummings & Davies, 1994; Hammen et al., 1990; Orvaschel et al., 1988; Weissman, et al., 1987). It has been documented that when

mothers' depressive symptoms lasted beyond the child's sixth month, they were less

positive in their interactions with their infants (Campbell, Cohn, & Meyers, 1995),

compared to observations at earlier times. Additionally, evidence indicates that

depression in the first year postpartum may forecast a tendency to experience recurring

episodes of depression in the following years (Leadbeater et al., 1996). Research

suggests children of depressed mothers are more likely to exhibit more anxious and sad

affect than children with non-depressed mothers (DeMulder & Radke-Yarrow, 1991),

and are more likely to have an earlier onset of depression than their peers (Weissman et

al., 1987).

Question 4

Does a secure attachment at 12-15 months mediate the relationship between maternal

depressive symptomatology measured at 8 months postpartum and signs of depressive

symptomatology in the same 7- and 8-year old children?

Hypothesis 4

The predictive effect of maternal depressive symptomatology measured at 8 months

postpartum on the child's depressive symptomatology at age 7 or 8 will be reduced after

controlling for the effects of attachment security as measured at 12-15 months,

suggesting that security of attachment in infancy serves as a partial mediator (Baron &

Kenny, 1986).

Rationale

Not all children of depressed mothers exhibit depressive symptoms later in life

(Chiariello & Orvaschel, 1995; Zahn-Waxler et al., 1990). Research indicates that

establishing a secure attchment in the first two years of life is related to effective

emotional regulation and serves as a protective factor against various forms of

psychopathology throughout the lifespan (Carlson & Sroufe, 1995; Main, 1996;

reviewed in Greenberg, 1999; Rutter, 1987). Researchers who take a transactional or

process-oriented perspective suggest that depression is a disorder that interacts within a

social context (Cicchetti et al., 1998; Cummings & Cicchetti, 1990; Hammen, 1992).

Theories of resilience (e.g. Egeland et al., 1993; Rutter, 1987) have emphasized that

secure attachment behaviors between mother and child may interact with the elements

of such a high-rik environment to bolster the child's competencies for facing

challenges.

Many studies have indicated that adolescents' current perceptions of secure

attachment to their parents may serve as a buffer for poor social-emotional outcomes

(e.g. Papini, Roggman, & Anderson, 1991; Priel & Shamai, 1995; Salzman, 1996;

Torquati & Vazsonyi, 1999). However, there is very little research that explores secure

attachment in infancy as a protective mechanism in the development of depression

specifically for young children (Greenberg, 1999). Egeland et al. (1993) found that

emotionally responsive caregiving mediates the effects of high-risk environments for

young children. Security of attachment in infancy may similarly mediate the

relationship between maternal and child depressive symptomatology.

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Method

Participants

Participants consisted of 125 families from the central Texas area who participated in the first phase of the "Partners and Parents" study funded by the National Science Foundation from 1992-1996 (see Hazen & Jacobvitz, 1997). Couples from the original sample were recruited from the greater Austin area when they were expecting their first child. They ranged in age from 18 to 43 years, with a mean age of 29 years. The families in the original sample were Caucasian (85%), Hispanic (10%), African-American (2%) and of other ethnic backgrounds (2%). Most couples were married (91%) and middle class (55% with household income of $45,000 and up; 41% with $15,000-$45,000; and 4% with less than $15,000). Data collected in the most recent follow-up phase of the study (Phase IV) included 85 families. Child outcomes were only collected for the first-born children who participated in the original study.

Instrumentation

Maternal depression

Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Maternal depression was assessed using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977), a widely used instrument for assessing general depressive symptoms in non-clinical samples, and is among the most frequently used and well-validated self-report measures of depressive symptoms (Santor, Zuroff,

Ramsay, Cervantes, & Palacios, 1995). The scale was designed for use in studies exploring relationships between depression and other variables across other subgroups. The scale consists of 20 statements such as "I felt depressed" and "I thought my life had become a failure." Participants were asked to indicate how often they've experienced the feeling described in each statement in the past week on a four-point scale from "Rarely or none of the time" to "Most or all of the time." The combined score for all the items represents the general depression experienced by the participant during the last week. The scale has shown high internal consistency, substantial evidence of construct validity, excellent concurrent validity (Radloff, 1977), and has superior scale discriminability (Santor et al., 1995). Internal consistency for Phase II mother data used in this study was .82.

Mothers completed the CES-D prenatally, when their children were 8 months old, and when their children were 24 months old. For the purposes of this exploration, the mother's rating for depressive symptomatology in the infancy phase of the study (the 8-month postpartum measurement) was used. This measurement occurred during the same phase in which attachment security data was collected. Leadbeater et al., (1996) found that measures of depression in the first year postpartum were strongly associated with symptomatology in the following three years. Depression has been defined as both a continuum of psychological disturbance and as a discrete diagnosis (Downey & Coyne, 1990). Questionnaire methods of depressive mood have a slightly different meaning from the diagnosis of depression (Harrington et al., 1996). Since the

CES-D measures depressive mood, the term symptomatology is used in this study, rather than the diagnosis of depression.

Child depressive symptomatology

Achenbach Child Behavior Checklist (CBCL; Achenbach, 1991). The CBCL is a questionnaire used to assess children's behaviors from ages 4 to 18. Both the parent and the teacher report forms contain 113 statements about the child's behavior and offer a 3-step response choice of *not true*, *somewhat or sometimes true*, or *very true or often true*. The parent and teacher forms vary slightly with more questions about behaviors most likely to be observed in the home occurring on the parent form (e.g. toileting and sleeping behaviors), and more questions about behaviors most likely to be observed at school occurring on the teacher form (e.g. performance in schoolwork, disruptive behaviors in class). The broad domains for assessment in the Achenbach assessment include scales for Internalizing Behaviors (including syndrome scales for Withdrawn, Somatic Complaints, and Anxious/Depressed), and Externalizing Behaviors (including syndrome scales for Delinquent Behavior and Aggressive Behavior). Additionally there are three other syndrome scales which are not grouped into either of these categories, which include Social Problems, Thought Problems, and Attention Problems.

Test-retest reliability for the CBCL scale scores in the standardization sample (Achenbach, 1991) showed that the mean r = .89 for the problem scales and TRF scale scores showed mean r = .92. Inter-interviewer and test-retest reliabilities for item scores were in the .90s, as demonstrated by intra-class correlations. Good inter-parent agreement was indicated by mean *r*s for the problem scales ranging from .65 to .75.

Construct validity has been supported by several correlates of CBCL scales, including significant associations with comparable scales on the Conner's Parent Questionnaire and the Quay-Peterson Revised Behavior Problem Checklist. Criterion-related validity has been demonstrated by the CBCL's ability to discriminate between referred and non-referred children. In the current sample, internal consistency for different raters was as follows: Mothers = .80, Fathers = .81, and Teachers = .90.

Behavior Assessment System for Children (BASC; Reynolds & Kamphaus, 1992). The BASC is a scale used for evaluating behaviors of children aged 4 to 18 years. In the proposed follow-up study, the child version (ages 6-11) will be used. The BASC measures several aspects of children's behavior and personality in terms of both clinical and adaptive dimensions. The Parent Rating Scales (PRS) and the Teacher Rating Scales (TRS) measure adaptive and problem behaviors in the home and community settings. The teacher's version of the scale includes more questions about how the child performs in the school setting. For each question about the child's behavior, the rater was given a choice of four responses, ranging from *Never* to *Almost Always*. The broad domains for clinical and adaptive assessment in the PRS and TRS include an overall Behavioral Symptoms Index, Externalizing Problems, Internalizing Problems, and Adaptive Skills. The TRS also includes a composite score for School Problems. The scales contain similar content across ages, although the behavioral manifestations of child problems are adjusted according to developmental level.

In the standardization sample (Reynolds & Kamphaus, 1992), PRS Internal-consistency reliability scores for the composites range from the middle .80s to the low

.90s for all age-levels in the general sample. The reliability scores for the overall Behavioral Symptom Index range from .88 to .94. Internal-consistency reliability scores for the clinical sample are generally higher than that of the general-population sample (.84 to .94). Test-retest reliability for the PRS showed that median values ranged from .70 to .88, with the adolescent group being the lowest. TRS internal-consistency reliability scores average above .80. Test-retest correlations ranged from .82 to91. Inter-parent reliability ranged from .46 to .67. In the current sample, internal consistency for each rater was as follows: Mothers = .80, Fathers = .80, and Teachers = .79. General measures of child maladjustment do not reveal the distinct consequences of maternal depression (Downey & Coyne, 1990). Therefore the depression scale in particular was used, rather than a broader measure of behavior. The construct validity of the depression scale for combined child and adolescent samples has been strongly supported (Reynolds & Kamphaus, 1992).

Mothers, fathers, and teachers completed the CBCL and the BASC for each child. Since mothers are traditionally the primary caregiver, they are more likely to have witnessed the child's behavior across a greater variety of situations and over extended periods of time, compared to other informants. If a preliminary analysis indicates that informants' ratings are significantly different, separate analyses will be run for the different sets of raters. Otherwise, mothers' reports will be used for the purposes of this study. Parents are the best sources of information about their child's behaviors across time and in different settings, but ratings from mothers and fathers are sometimes based on observation of different behavior samplings (Achenbach, 1991). Lancaster et al.

(1989) found that mothers' ratings of their preschoolers were the most reliable sources of information on their behaviors over time. Additionally, Earls (1980) has argued that fathers may often underestimate problematic behaviors in their children. This may be attributed to fathers spending less time in fewer settings with their children, or different characteristics of mothers and fathers influencing the behavior of the child.

Conflicting information exists pertaining to the reliability of child reports given by depressed mothers (Kazdin, 1990; Najman, Williams, Nikles, Spence, Bor, O'Callaghan, Le Brocque, & Andersen, 2000). Richter's review of the literature (1992), however, found that reports from mothers and from other informants about child behaviors showed agreement regardless of the mother's depressive status. Similarly, Cicchetti et al. (1998) found that level of agreement between mothers and fathers for child ratings was comparable between depressed and non-depressed groups. Gender differences for children's expression of depressive symptomatology are not expected, as they have not been noted in previous studies of pre-adolescent depressed children (Birmaher et al., 1996; Kazdin, 1990; Kovacs, 1996).

<u>Infant's security of attachment</u>

Security of attachment in infancy was assessed in the earlier infancy phase of the study using the Strange Situation (Ainsworth et al., 1978). In this commonly used measure of infant-caregiver attachment, the child is observed during two separations from his/her mother during increasingly stressful situations. The ways in which the children respond to their mothers, with particular attention given to reunion behaviors, are used to classify children's attachment to their mothers as secure, avoidant, or

resistant. More recently, Main and Solomon (1986) have added a coding scheme for a fourth category of disorganized attachment. Children received a score for each of these four categories.

According to Ainsworth et al. (1978), children with secure attachments (B) are characterized as having an appropriate balance between the attachment and exploratory behavioral systems and use their mothers as a secure base from which to explore. Children classified as insecure-avoidant (A) conspicuously avoid their mothers during reunions, and usually avoid eye contact and the mothers' bids for attention. Children classified as insecure-ambivalent or resistant (C) display anger towards their mothers during reunions, and are often inconsolable and reject their mothers' attempts to comfort and offer toys. A more recent category of disorganized attachment, outlined by Main and Solomon (1986, 1990), is characterized by children who do not readily fit into the original categories and exhibit behaviors such as disordered sequences, incomplete movements, and atypical postures. Attachment classification has been found to be particularly stable in middle-class samples (Lyons-Ruth, Repacholi, McLeod, & Silva 1991). Stability over a longer period of time has also been documented by Stevenson-Hinde and Shouldice (1995) at age 4 ½ using an adapted Strange Situation.

In Phase II of the study, families came to the University of Texas to be observed and videotaped in the Strange Situation setting when infants were between 12 and 15 months. Undergraduate and graduate students participated in conducting these videotaped episodes, where parents were given uniform directives pertaining to departing from and returning to a room where his or her child was playing. Children's

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behaviors in response to the parent's absence and presence were later classified into the four major categories by at least two experienced coders. When using 3-way coding (avoidant, secure, resistant), reliability between coders was .87. When using 4-way coding (adding disorganized as a category) reliability between coders was .88. A third coder was used for tapes that produced inter-rater disagreement. Children classified as disorganized were also given a secondary classification of secure, avoidant, or resistant.

Specificity of linkages between types of insecure attachment and internalizing behaviors is currently unclear (Greenberg, 1999), providing no specificrationale for studying these categories separately in the proposed investigation. Cassidy (1999) proposed that secure and insecure infants alike demonstrate directed attachment behaviors, but differ in their degree of success and security found in that relationship. Additionally, given the typical distribution of a middle-class sample, subjects classified in each non-secure category are likely to be small in number. Using these divisions in analyses would allow for less statistical power. In light of these factors, infant's security of attachment was divided only into two major categories, secure and insecure. This categorization also fits well with the objective of the current study to determine if a secure attachment, verses the lack thereof, serves as a protective mechanism or buffer against risk-factors. Radke-Yarrow et al. (1985) found no difference in distribution of classification of attachment across age, sex or race in their sample. Therefore no such differences were anticipated in this sample.

Procedure

<u>Approval by human subjects committee</u>

The earlier phases of this study were approved by the Institutional Review Board of the University of Texas. Terms of the proposal for the follow-up study were also approved by the Institutional Review Board, including the additional CBCL and BASC materials, and will comply with the standards of the American Psychological Association and the University of Texas.

<u>Recruitment of participants</u>

Participating families were originally recruited when they were expecting their first child through public service radio announcements, and through flyers distributed in birthing classes, obstetrician's offices, maternity stores, and birthing centers (Phase I). For the follow-up phase of the study (Phase IV), previous participants were notified of the new phase through a series of newsletters, and were then contacted by phone to solicit participation. A letter describing the follow-up phase of the study was sent, along with a consent form to be returned.

<u>Data collection</u>

One set of measures and demographic questionnaires was sent through the mail, and a second was delivered by home-visit, with the alternative option of being completed via a website on the Internet. Teacher measures were completed by phone interview or via the Internet after obtaining written permission from the parent/s. A phone number was provided with the materials mailed to parents should they have any questions about the measures or procedures.

Data Analyses

Preliminary Analyses

The rich data set from this project allows for the availability of information from multiple raters and more than one type of questionnaire for determining child depressive symptomatology. The need for preliminary analyses is twofold. It is necessary to determine if the CBCL and BASC differ in measurement of depressive symptomatology and to determine if there is a significant difference among the three raters: the mother, father, and teacher. A correlation matrix was calculated to see if these differences exist before proceeding with the mediational analyses (see Fig 1).

	1	2	3	4	5	6
1 CBCL Mom	1					
2 CBCL Dad	X	1				
3 CBCL Teacher	X	X	1			
4 BASC Mom	O	*	*	1		
5 BASC Dad	*	O	*	X	1	
6 BASC Teacher	*	*	O	X	X	1

(Fig 1)

Correlational matrix where X represents same measure different rater, O represents different measure same rater, and * represents different measure different rater.

The correlation matrix is constructed much like multitrait multimethod analyses, except this analysis involves *multiraters* and *multimeasures*. If correlations are moderate (.60 or above) in the areas designated by X's, the agreement between raters is acceptable and separate analyses for mothers, fathers, and teachers need not be run. In this case, the mother's rating will be selected for previously stated reasons. Likewise, if correlations are strong in the areas designated by the O's, the agreement between measures is acceptable and one questionnaire can be chosen without running separate analyses for each instrument. Should the correlations be low or moderate, it is possible that the CBCL and the BASC are measuring slightly different constructs and separate mediational models will be run.

Mediational Analyses

In addition to providing information about the individual relationships between each variable measured in this study, the testing of the proposed hypotheses also facilitates the use of the mediational model as explained by Baron & Kenny (1986). Before the final step in which mediation is tested can take place, it must be established that linear relations exist between the independent variable (maternal depressive symptomatology) and the proposed mediator (infant attachment status), and between the independent variable and the dependent variable (child depressive symptomatology at age 7 or 8).

Test of Research Question 1:

Research question 1 was tested with a simple linear regression analysis, in which

children's attachment status, as measured in infancy with the Strange Situation, and

coded as either secure or insecure, was regressed on maternal depressive

symptomatology at 8 months postpartum, as measured by the CES-D. It is hypthesized

that children's attachment to their mothers, as measured at 12-15 months, will be

associated with measures of maternal depressive symptomatology reported at 8 months

postpartum. If r^2 is significant at the $p<.05$ level for the regression equation, then it can

be assumed that a linear relationship exists between these two variables.

Test of Research Question 2:

Research question 2 was tested with a simple linear regression analysis, in which

children's depressive symptomatology at age 7 or 8, as measured by the CBCL or the

BASC, was regressed on children's attachment status, as measured at 12-15 months

with the Strange Situation. It is hypothesized that measures of depressive

symptomatology in the 7- and 8-year-old subjects will be associated with attachment

status. If r^2 is significant at the $p<.05$ level for the regression equation, then it can be

assumed that a linear relationship exists between these two variables.

Test of Research Question 3:

The hypotheses for question 3 was tested with a simple linear regression analysis, in

which children's depressive symptomatology at age 7 or 8, as measured by the CBCL

or the BASC, was regressed on maternal depressive symptomatology measured at 8

months postpartum, as measured by the CES-D. It is hypothesized that measures of

depressive symptomatology in the 7- and 8-year-old subjects will be associated with measures of maternal depressive symptomatology measured at 8 months postpartum. If r^2 is significant at the $p<.05$ level for the regression equation, then it can be assumed that a linear relationship exists between these two variables.

Test of Research Question 4:

It is hypothesized that the predictive effect of maternal depressive symptomatology measured at 8 months postpartum on the child's depressive symptomatology at age 7 or 8 will be reduced after controlling for the effects of attachment security measured at 12-15 months, suggesting that security of attachment serves as a partial mediator (Baron & Kenny, 1986). Assuming the previous hypotheses were supported, the hypothesis for question 4 will be tested with a multiple regression analysis, in which children's depressive symptomatology is regressed on attachment status and maternal depressive symptomatology. If the strength of the relationship between maternal depressive symptomatology and children's depressive symptomatology observed in question 3 is reduced after controlling for the effect of attachment status, the mediational model will be supported.

CHAPTER FOUR: RESULTS

The current study included 85 families. In this chapter, descriptive statistics for the sample and measures used will first be provided, followed by preliminary analyses used for instrument selection. Finally, results of analyses from proposed hypotheses will be presented, as well as exploratory analyses.

Descriptive Statistics

Child depression measures

Sample size, range, mean, and standard deviation for the Behavior Assessment System for Children (BASC) and the Child Behavior Checklist (CBCL) completed by mothers, fathers, and teachers are provided in Table 1. Scores are given in the form of T-scores, which are standard scores with a mean of 50 and standard deviation of 10.

Table 1

Descriptive Statistics- Child Depression Rating Scales

Measure and Rater	N	Min	Max	Mean	SD
BASC Mother	83	34	82	45.27	8.84
BASC Father	76	34	72	44.36	7.89
BASC Teacher	67	40	68	47.81	7.40
CBCL Mother	83	50	75	54.37	6.27
CBCL Father	75	50	77	54.72	6.34
CBCL Teacher	70	50	89	56.84	8.39

Results show that mean scores on both measures completed by all three raters were in the average range. Mother's ratings accounted for the largest numbers of respondents (BASC N=82, CBCL N=83). Number of fathers responding was slightly lower, and number of teachers responding was quite low in comparison (BASC N=67, CBCL N=70). Correlations among raters and instruments will be provided in the preliminary analyses section.

Child attachment

Children participating in the Strange Situation during Phase II of the study were given primary classifications of secure, avoidant, resistant, or disorganized. Children identified as disorganized also received secondary classifications. This sample contained an unusually high number of disorganized infants (44%) compared to other studies. When using the 3-way classification and using secondary classifications for disorganized subjects, the sample more closely approximated distributions found in other studies, although the percentage of resistant subjects is twice that found in low-risk samples. Table 2 shows the distribution of attachment categories using the 3-way classification.

Table 2

Attachment Distribution Using 3-Way Classification

Attachment Classification	N	Percent of Sample
Secure	60	53.6
Avoidant	18	16.1
Resistant	34	30.4

Distribution of attachment categories for those subjects not participating in Phase IV of the study was similar (Secure 59.4%, Avoidant 12.5%, Resistant 28.1%). Given the small size of avoidant and resistant groups in the current sample, they were then combined into one insecure group in order to preserve statistical power. Teti et al. (1995) have suggested that the identification of an organized attachment strategy is as clinically informative as identifying the level of security. For the purposes of this study, this categorization is appropriate, as the intention is examine the effects of the presence of a secure attachment vs. the absence of one, rather than differences particular to types of insecure or otherwise disordered attachments.

Maternal Depression

Maternal depression data from Phase II of the research project was used, when the children were approximately 8 months old, using the Center for Epidemiological Studies Depression Scale (CES-D). As Table 3 indicates, the number of participants remained high in the first three phases of data collection, but dropped dramatically in

Phase IV. The clinical cut-off generally used for the CES-D is 16. The mean for Phase II respondents used in this study (M=9.62) was below the cut-off, with 18.3% of the sample rating themselves at or above the clinical cut-off level. Characteristics of mothers who did not participate in Phase IV of the study were similar (mean = 12.66; 24% at or above clinical cut-off).

Table 3

Maternal Depression-Data Collection Phases

Measure and Phase (child's age)	N	Min	Max	Mean	SD
CES-D Phase I (prenatal)	125	1	32	11.47	6.21
CES-D Phase II (8 months)	120	0	29	9.62	6.42
CES-D Phase III (2 years)	108	0	32	10.03	6.79
CES-D Phase IV (7 years)	51	0	36	9.71	8.73

Correlations were calculated among the four phases of maternal depression data for the purpose of identifying trends over time. Intercorrelations between all phases were statistically significant (p<.01), with the exception of those between Phases IV and II, and Phases IV and III (see Table 4).

Table 4

Correlation Matrix – Four Phases of Maternal Depression

_____

Phase	N	1	2	3	4
1. CES-D I	125	1.0			
2. CES-D II	120	.33**	1.0		
3. CES-D III	108	.37**	.29**	1.0	
4. CES-D IV	51	.39**	.22	.24	1.0

_____

**p < .01.

Preliminary Analyses

Correlations were calculated among the two types of child depression questionnaires given to three different raters to determine the necessity for calculating separate analyses. As indicated in Table 5, correlations between BASC and CBCL measures were statistically significant for mothers, fathers, and teachers. Correlations were found to be statistically significant between different raters on the BASC, including those between mothers and fathers, and fathers and teachers. Correlations calculated using different raters for the CBCL were significant between mothers and fathers only. Significant correlations were also found between different-rater, different-measure pairings, including between Mother CBCL and Father BASC, and between Father CBCL and Mother BASC.

Table 5

Correlation Matrix – Child Depression Measures and Raters

Measure and Rater	N	1	2	3	4	5	6
1. Mother BASC	83	1.0					
2. Father BASC	76	.43**	1.0				
3. Teacher BASC	67	.20	.41**	1.0			
4. Mother CBCL	83	.71**	.39**	.08	1.0		
5. Father CBCL	75	.39**	.58**	.26	.36**	1.0	
6. Teacher CBCL	70	.22	.15	.51**	.24	.16	1.0

**$p < .01$.

The lowest correlations occurred between teachers and parent raters. While there were many statistically significant correlations among raters and measures, only one pairing, between Mother BASC and Mother CBCL, was at or above the prescribed level designated by the dissertation committee (.60) to justify selecting only one measure to represent a rater, rather than calculating separate mediational analyses for each questionnaire. Therefore separate models will be analyzed for both the BASC and the CBCL for fathers and teachers, while the BASC and the CBCL are considered to be interchangeable for mother-rated data.

Mediational Analyses

Research Questions 1, 2, and 3 will first be tested to determine if significant relations exist between maternal depressive symptoms, mother-child attachment, and child depressive symptoms. If these relations are established, the analysis will proceed with Research Question 4, which will test for the mediation effect of mother-child attachment between the other variables. Each hypothesis involving child depressive symptomatology will be tested using data from 3 raters and two measures, with the exception of the mother-rated data. As noted previously, there was a moderate correlation between mother-rated data for child depression on the BASC and the CBCL, suggesting that they are interchangeable for the purposes of this study. The mother-completed BASC was chosen for use in these analyses.

Research Question 1

The first hypothesis of the mediational model proposed that measures of self-reported maternal depression collected during Phase II of the project, when the child participants were approximately 8 months old, would significantly predict the children's quality of attachment as measured at 12-15 months of age using the Strange Situation. To test this hypothesis, a simple logistic regression was applied. Results for this analysis were not statistically significant (B=.055, p=.082).

Research Question 2

The second hypothesis proposed that children's depressive symptoms at age 7 and 8, as measured by the BASC and/or the CBCL, will be predicted by attachment

status measured at 12-15 months with the Strange Situation. Simple linear regression was used to test this hypothesis. Five separate analyses were calculated, using both measures for fathers and teachers and only the BASC for mothers. A summary of these analyses is provided in Table 6. No significant results were found for any of these equations, indicating that attachment status did not predict child depression symptoms, regardless of the rater or measure used. A non-significant trend indicated that prediction was strongest and approaching significance between attachment status and father-rated CBCL (p=.06). Teacher CBCL ratings proved to be inversely related to attachment status (Beta=-0.06), although not significantly so.

Table 6

Summary of Regression Analyses-Attachment Predicting
Child Depression Symptoms

_____

Child Depression Measure	N	F	Sig.	B	SE	Beta
Mother BASC	83	0.59	0.44	1.53	1.99	0.09
Father BASC	76	0.08	0.78	0.52	1.87	0.03
Father CBCL	75	3.53	0.06	2.77	1.48	0.22
Teacher BASC	67	0.33	0.57	1.06	1.86	0.07
Teacher CBCL	70	0.27	0.61	-1.07	2.07	-0.06

_____

Research Question 3

The third hypothesis proposed that children's depressive symptoms at age 7 and 8, as measured by the BASC and/or the CBCL, would be significantly predicted by self-

rated maternal depressive symptoms, as measured by the CES-D at 8 months. Simple linear regression was used to test this hypothesis. Five separate analyses were calculated, using both measures for fathers and teachers and only the BASC for mothers. A summary of these analyses is provided in Table 7. None of the analyses yielded significant results. Father BASC ratings proved to be inversely related to maternal depression ratings (Beta=-0.02), though not significantly so.

Table 7

Summary of Regression Analyses-Maternal Depressive Symptoms Predicting Child Depressive Symptoms

_____

Child Depression Measures	N	F	Sig.	B	SE	Beta
Mother BASC	83	0.46	0.50	0.12	0.17	0.08
Father BASC	76	0.04	0.84	-0.03	0.14	-0.02
Father CBCL	75	0.38	0.54	0.07	0.12	0.07
Teacher BASC	67	0.16	0.69	0.06	0.15	0.05
Teacher CBCL	70	0.22	0.64	0.08	0.16	0.06

_____

Research Question 4

In following with traditional mediational models (Baron & Kenny, 1986), significant relations among variables must first be established before proceeding with the testing of a mediational effect. As noted previously, results of research questions 1, 2, and 3 failed to yield significant results for any of the raters and/or measures used. Therefore the final step of the mediational analysis was not applied.

Exploratory Analyses

Additional exploratory analyses were performed to examine the relations between child depression symptoms and specific categories of attachment more closely. First, comparisons were made using the four major attachment classifications: Avoidant (A), Secure (B), Resistant (C), and Disorganized (D). Table 8 shows comparisons using the BASC and Table 9 shows comparisons using the CBCL. Mean scores across raters and measures were in the average range for all attachment categories. A consistent pattern did not emerge for the BASC ratings. For Mother BASC ratings, the highest mean score, indicating thatchild depressive symptoms were endorsed in higher frequency and/or intensity, was unexpectedly found for secure subjects. The highest mean scores for both the Father BASC and Teacher BASC ratings occurred in the disorganized category. For CBCL ratings, the disorganized category yielded the highest mean scores for all three raters. The Avoidant category had the lowest child depression ratings consistently across raters. These results represent observed trends rather than statistical significance. Observed differences among these raters were minimal, particularly given that the ratings are given as T-scores and most of these observed differences do not exceed the standard deviations.

Table 8

Mean BASC Scores by A,B,C,D Attachment Classifications

Classification	Mother BASC			Father BASC			Teacher BASC		
	N	M	SD	N	M	SD	N	M	SD
Avoidant	7	40.00	4.16	6	41.17	5.49	6	45.00	5.62
Secure	29	46.48	8.24	31	43.39	7.11	21	46.05	6.58
Resistant	10	45.10	14.37	8	42.50	8.91	7	43.00	4.69
Disorganized	32	45.88	8.40	26	46.88	8.78	29	50.34	7.62

Table 9

Mean CBCL Scores by A, B, C, D Attachment Classifications

Classification	Mother CBCL			Father CBCL			Teacher CBCL		
	N	M	SD	N	M	SD	N	M	SD
Avoidant	7	51.14	3.02	6	52.33	3.83	6	54.33	5.43
Secure	29	54.72	6.20	30	54.47	6.20	22	55.09	7.81
Resistant	10	54.90	7.31	8	53.50	5.93	9	53.78	5.78
Disorganized	32	55.09	6.81	26	55.58	7.23	29	59.66	9.56

One-way ANOVAs were calculated to explore statistical differences between the means of the child depression scores when grouped into these four attachment categories. As Table 10 shows, no significant differences were found for any of the different raters or measures between attachment categories with the exception of the

Teacher BASC ratings, $F(3,59)=3.24$, $p=.03$. Results should be interpreted with caution due to the small number of subjects in the avoidant and resistant categories, providing for lower statistical power.

Another series of means was calculated for attachment categories as they were classified for the current analysis, with children in the disorganized category placed in their secondary categories. Tables 11 and 12 display these results for BASC and CBCL measures. No consistent patterns emerged for either measure when the attachment categories were divided in this way.

Table 10

One-Way Analyses of Variance for Effects of A, B, C, D Attachment Groupings on Child Depression Ratings

Rater/Measure	df	SS	MS	F	p	η^2
Mother BASC						
Between groups	3	245.81	81.94	1.00	.40	.04
Within groups	74	6051.64	81.78			
Father BASC						
Between groups	3	283.89	94.63	1.53	.22	.06
Within groups	67	4148.84	61.92			
Teacher BASC						
Between groups	3	457.77	152.59	3.24	.03	.14
Within groups	59	2781.50	47.14			
Mother CBCL						
Between groups	3	92.77	30.92	0.75	.53	.03
Within groups	74	3050.27	41.22			
Father CBCL						
Between groups	3	65.84	21.95	0.53	.66	.02
Within groups	66	2741.15	41.53			
Teacher CBCL						
Between groups	3	419.23	139.74	2.04	.12	.09
Within groups	62	4253.26	68.60			

Note. η^2 = effect size.

Table 11

Mean BASC Scores by A,B,C Attachment Classifications

Classification	Mother BASC			Father BASC			Teacher BASC		
	N	M	SD	N	M	SD	N	M	SD
Avoidant	14	43.43	6.37	13	45.23	7.15	12	48.67	7.98
Secure	41	45.85	8.02	42	44.57	8.57	34	48.06	7.16
Resistant	25	45.52	11.59	18	44.00	7.38	18	45.89	6.76

Table 12

Mean CBCL Scores by A, B, C Attachment Classifications

Classification	Mother CBCL			Father CBCL			Teacher CBCL		
	N	M	SD	N	M	SD	N	M	SD
Avoidant	14	53.79	6.93	13	52.38	4.09	12	58.75	9.40
Secure	41	54.41	5.78	41	55.78	7.35	35	56.43	7.72
Resistant	25	55.08	7.03	18	53.83	4.90	20	56.15	9.32

A series of one-way ANOVAs was calculated to explore statistical differences between the means of child depression scores using different measures and raters when grouped into these three attachment categories. As Table 13 shows, no significant differences were found.

Table 13

One-Way Analyses of Variance for Effects of A, B, C Attachment Groupings on Child

Depression Ratings.

Rater/Measure	df	SS	MS	F	p	η^2
Mother BASC						
Between groups	2	62.76	31.38	.38	.68	.01
Within groups	77	6328.79	82.19			
Father BASC						
Between groups	2	11.49	5.74	.09	.92	.00
Within groups	70	4554.59	65.07			
Teacher BASC						
Between groups	2	73.42	36.71	.71	.50	.02
Within groups	61	3168.33	51.94			
Mother CBCL						
Between groups	2	15.84	7.92	.19	.82	.01
Within groups	77	3148.15	40.89			
Father CBCL						
Between groups	2	131.05	65.53	1.63	.20	.05
Within groups	69	2770.60	40.15			
Teacher CBCL						
Between groups	2	58.81	29.40	.41	.67	.01
Within groups	64	4647.37	72.62			

Note. η^2 = effect size.

Similar analyses were calculated for the groupings of secure vs. i nsecure used in the current study that were based on the 3-way A, B, C classifications (Table 14 & 15), as well as the division of disorganized vs. not disorganized, based on A, B, C, D classifications (Table 16 & 17). When categorized as secure or insecure, child depression scores looked quite similar on both the BASC and the CBCL. On the BASC, secure scores were slightly higher than insecure scores, indicating that depressive symptoms were endorsed with greater frequency and/or intensity, but CBCL patterns were inconsistent. When depression scores were compared by disorganized vs. not disorganized categorization, (Tables 16 & 17), disorganized scores were not consistently higher, as might be expected. There was an observed difference, however, between not disorganized and disorganized scores for Father BASC, Teacher BASC, and Teacher CBCL ratings, which were further investigated for statistical significance.

Table 14

Mean BASC Scores by Secure vs. Insecure Attachment Classifications

	Mother BASC			Father BASC			Teacher BASC		
Classification	N	M	SD	N	M	SD	N	M	SD
Insecure	40	44.55	9.96	32	44.25	7.23	31	47.03	7.15
Secure	40	46.10	7.97	41	44.78	8.57	33	48.06	7.27

Table 15

Mean CBCL Scores by Insecure vs. Secure Attachment Classifications

	Mother CBCL			Father CBCL			Teacher CBCL		
Classification	N	M	SD	N	M	SD	N	M	SD
Insecure	40	54.50	6.88	32	53.13	4.53	33	57.30	9.20
Secure	40	54.53	5.81	40	55.93	7.38	34	56.24	7.75

Table 16

Mean BASC Scores by Disorganized vs. Not Disorganized Attachment

	Mother BASC			Father BASC			Teacher BASC		
Classification	N	M	SD	N	M	SD	N	M	SD
Not Disorganized	43	45.65	9.70	42	43.00	7.31	31	45.51	6.24
Disorganized	34	45.38	8.40	28	46.39	8.71	31	49.90	7.56

Table 17

Mean CBCL Scores by Disorganized vs. Not Disorganized Attachment

	Mother CBCL			Father CBCL			Teacher CBCL		
Classification	N	M	SD	N	M	SD	N	M	SD
Not Disorganized	43	54.42	6.28	41	54.24	5.96	34	54.35	6.36
Disorganized	34	54.91	6.66	28	55.25	7.07	31	59.81	9.68

One-way ANOVAs were again calculated to explore statistical differences between the means of child depression scores when grouped into insecure vs. secure attachment categories (Table 18), and then disorganized vs. not disorganized categories (Table 19). These analyses maintain greater statistical power due to larger numbers of subjects in each grouping. Results indicate no significant differences in child depression scores when divided into insecure vs. secure categories, although Father CBCL ratings emerged with a non-significant trend for mean differences, $F(1,70)=3.53$, $p=.06$. When grouped into disorganized vs. not disorganized categories, both child depression measures completed by teachers showed a significant difference between attachment categories, Teacher BASC: $F(1,60)=6.21$, $p=.02$; Teacher CBCL: $F(1,63)=7.33$, $p=.01$.

Table 18

One-Way Analyses of Variance for Effects of Insecure vs. Secure Attachment
Groupings on Child Depression Ratings

Rater/Measure	df	SS	MS	F	p	η^2
Mother BASC						
Between groups	1	48.05	48.05	.59	.44	.01
Within groups	78	6343.50	81.33			
Father BASC						
Between groups	1	5.06	5.06	.08	.78	.00
Within groups	71	4561.02	64.24			
Teacher BASC						
Between groups	1	16.90	16.90	.33	.57	.01
Within groups	62	3224.85	52.01			
Mother CBCL						
Between groups	1	.012	.012	.00	.99	.00
Within groups	78	3163.98	40.56			
Father CBCL						
Between groups	1	139.38	139.38	3.53	.06	.05
Within groups	70	2762.28	39.46			
Teacher CBCL						
Between groups	1	19.09	19.09	.265	.61	.00
Within groups	65	4687.09	72.11			

Note. η^2 = effect size.

Table 19

One-Way Analyses of Variance for Effects of Disorganized vs. Not Disorganized
Attachment Groupings on Child Depression Ratings

Rater/Measure	df	SS	MS	F	p	η^2
Mother BASC						
Between groups	1	1.37	1.37	.02	.90	.00
Within groups	75	6275.80	83.68			
Father BASC						
Between groups	1	193.39	193.39	3.10	.08	.04
Within groups	68	4236.68	62.30			
Teacher BASC						
Between groups	1	298.32	298.32	6.21	.02	.09
Within groups	60	2882.45	48.04			
Mother CBCL						
Between groups	1	4.62	4.62	.11	.74	.00
Within groups	75	3117.20	41.56			
Father CBCL						
Between groups	1	16.84	16.84	.41	.53	.01
Within groups	67	2768.81	41.33			
Teacher CBCL						
Between groups	1	482.26	482.26	7.33	.01	.10
Within groups	63	4142.60	65.76			

Note. η^2 = effect size.

Correlations were also run between maternal CES-D measures from different phases of the project and attachment classification to explore possible relationships between maternal depression and attachment status in phases other than Phase II. As shown in Table 20, correlations were quite low and sometimes negative, regardless of phase of data collection or method of classification.

Table 20

Correlations of Four Phases of Maternal CES-D Data with Different Attachment Classifications

CES-D Phase	N	A, B, C	A, B, C, D	Ins. vs. Sec.	Disorg. vs. Org.
Phase I	125	-.11	-.12	.08	-.12
Phase II	120	.05	-.04	.17	-.08
Phase III	108	-.03	.13	.14	.11
Phase IV	51	.11	-.07	.03	-.07

Summary of results

Descriptive statistics indicated that all ratings for child depression had mean scores in the average range, and all self-report maternal depression mean scores were below the clinical cut-off. Maternal depression scores across all four phases had significant correlations, with the exception of Phase IV correlations with Phases II and III. Preliminary analyses showed several significant correlations between same-raters and different measures of child depression, using the BASC and the CBCL, and same-

measure and different rater pairings, using mother, father, and teacher data. Teacher data yielded much lower correlations with other raters. Only mothers' ratings on different measures had a moderate correlation that reached the prescribed level to allow for choosing one measure to represent the rater's data rather than running separate analyses.

Separate analyses were calculated for each child depression measure, the BASC and the CBCL, for fathers and teachers, while the BASC was chosen to represent mother's ratings. None of the hypotheses were supported leading up to the test of mediation using any of these rater/measure combinations. Analyses demonstrating a non-significant trend included Research Question 1, where attachment status was regressed on self-reported maternal depression, and in Research Question 3, where fathers' ratings of their child's depressive symptoms using the CBCL was regressed on attachment status.

Exploratory analyses were also calculated to examine trends across mean scores of child depressive symptoms when grouped by their attachment classification. Mean depression scores were generally higher for disorganized children, but not consistently so, indicating higher frequency or intensity of depressive symptoms. Child depression means were tested for statistical differences using four different methods of attachment classification. No significant differences were found when subjects were grouped by the 3-way A, B, C categorization. Significant differences were found for Teacher BASC ratings when grouped by the 4-way A, B, C, D categorization. A non-significant trend emerged for differences in Father CBCL ratings when subjects were categorized as

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either secure or insecure. Significant differences were found to exist on both Teacher

BASC and CBCL ratings for subject groupings when divided between those who were

disorganized vs. those who were not. And finally, no significant correlations were found

between different phases of maternal depression data and different classifications of

attachment status.

CHAPTER FIVE: DISCUSSION

It was predicted that findings from this study would have the potential to provide greater insight about the familial transmission of depression and possible routes of prevention or intervention. While none of the main hypotheses aimed at addressing these questions were supported in this study, other results of interest were found. Of particular interest was the finding that grouping subjects according to disorganized vs. not disorganized status proved to be the most effective method for detecting differences in child depressive symptomatology. This is in comparison to 4-way (secure, resistant, avoidant, disorganized), 3-way (secure, resistant, avoidant), and insecure vs. secure methods of classification, the latter being the classification used for the main analyses of this study. Also of interest were rater trends, including the finding that teachers endorsed higher levels of depressive symptomatology in children compared to their parents, and the finding of a non-significant trend for fathers rating their children with more depressive symptomatology than mothers for insecure vs. secure groupings when using the CBCL, and for disorganized vs. not disorganized groupings using the BASC. Moderate correlations were also found between BASC and CBCL data when comparing mother and father ratings, suggesting that these measures are comparable for assessing child depressive symptomatology for these raters. These pertinent findings and their implications, as well as study limitations and questions for future research, wīl be discussed in this chapter.

Attachment Classification

Some of the most interesting findings in this study were related to different

outcomes for variations in attachment classifications. When planning the main analyses

for this study, a division of insecure vs. secure attachment was chosen, given that

specificity of linkages between types of insecure attachment and internalizing behaviors

has been unclear (Greenberg, 1999), and dividing subjects into more than two groups

would reduce statistical power. This particular 2-way division, however, did not yield

significant results in mediational analyses, nor was it effective in delineating differences

among child depression ratings, with the exception of a non-significant trend on CBCL

father data. In fact, the only statistically significant differences between group means

for child depression were found when the disorganized category was included in group

divisions. Significant differences were found for teacher data using both the BASC and

the CBCL when attachment was categorized as either disorganized or not disorganized,

and when using the Teacher BASC for the 4-way A, B, C, D classifications. In these

instances, children classified as disorganized were rated as having more depressive

symptoms than children in other categories.

These findings support current theoretical conceptualizations that considering

whether a child has an organized attachment strategy in place may be more relevant

than examining outcomes linked to types of insecurity (Lyons-Ruth & Jacobvitz, 1999).

Studies have shown that infants who are classified as disorganized are more susceptible

to later problems than those in other categories (Carlson, 1998; Moss et al., 1996), and

are more likely to suffer from internalizing behaviors, oppositional defiant disorder, and aggression toward peers (Lyons-Ruth & Jacobvitz, 1999). Even in a low-risk, middle class sample, such as was used here, the disorganized designation proved to be the most salient for detecting significantly higher levels of depressive symptomatology in children, lending further support to the link between disorganized attachment and higher incidence of child psychopathology.

It is particularly noteworthy that in the current study, where data collection occurred over the course of 8 years, the differences in levels of depressive symptomatology between groups of disorganized and not disorganized children remain detectable and statistically significant when teacher ratings are used. The fact that this detectable difference remains over time in a low-risk, middle-class sample only underscores the relevance of identifying disorganized attachment as a marker for risk. This result lends support to the concept that disorganized attachment puts young children at a much higher risk for poor mental health and behavioral outcomes than their otherwise classified peers.

Different capacities for adaptive problem-solving and coping skills may play a role in differentiating outcomes between children with insecure and disorganized attachments. Insecurely attached children may often experience their caregivers negatively and demonstrate coping and comfort-seeking strategies that are less than optimal, but their strategies are nonetheless somewhat consistent and goal-directed compared to those with disorganized strategies. When discussing resilience, Rutter (1987) has suggested that protection from risk factors may be related to successfully

interacting with risk rather than avoiding it altogether.   The insecurely attached child

may attempt to compensate for his or her caregiver's shortcomings and can, in some

sense, be viewed as adaptive. More specifically, Cummings and Davies (1994) have

suggested that insecure attachment patterns with depressed caregivers could actually be

considered adaptive in the sense that they allow for limited involvement with an

impaired parent.

In contrast, children with disorganized attachments may not be equipped with

internal models that are quite as adaptive. Main and Hesse (1990) have suggested that

children with disorganized attachments often have a parent who acts frightened or

frightening toward the infant, producing conflicting internal models of reacting in fear

and simultaneously seeking comfort. The resulting haphazard or chaotic approach at

seeking comfort or coping with stress belies an underlying working model which is less

adaptive when compared to even insecurely attached peers. It stands to reason that this

reduced capacity to adapt to or successfully interact with risk factors would make

children with disorganized attachments more susceptible to later psychopathology.

The high rate of infants classified as disorganized in this sample, and the low

rate of mothers classified as depressed, suggests that there are other caregiver

characteristics beyond a simple mood disorder model that resulted in many children

having this maladaptive style. If a disorganized designation assigned in infancy can

detect differences in functioning that are maintained over a long period of time, and

particularly within a fairly healthy sample as was studied here, one may indeed

conclude that disorganized attachment is a more salient construct for investigating

linkages to child psychopathology than insecure attachment categories.

Rater Trends

Also of interest in the current study are findings related to rater trends in the

evaluation of childhood depressive symptomatology. Behavior checklists were

distributed to mothers, fathers, and teachers with the intention of gaining a more

complete picture of child functioning, as well as determining differences in perspective

between raters that may be salient for analyses. This study revealed significant

differences in levels of child depressive symptomatology between disorganized and not

disorganized attachment groups when using teacher ratings on both the BASC and the

CBCL, as well among attachment groups using a 4-way classification on the BASC

only. Teacher ratings were generally higher than those for both parents, indicatingthat

depressive symptoms were endorsed more frequently, or at a higher level of intensity by

teachers.

This demonstrated tendency for teacher ratings to distinguish behaviors among

groups may suggest that teachers serve as more objective observers, perhaps because

they have a readily available peer group from which to compare their students and

estimate deviations from typical behavior. Parents may not have such a perspective,

particularly if some of the same behaviors are shared by the parent. These differences

could suggest that parents are more likely to rate their children more favorably and

teacher ratings are less biased in this way, or the contrast could also simply be attributed to different behaviors being displayed in different environments. Children may demonstrate different behaviors depending on variations in environmental stimuli. Considering behaviors of depressed children, who often display not only sadness but also low frustration tolerance and high irritability, it is understandable that the pressures of a highly structured, achievement-oriented environment such as a school classroom may bring about noticeable, negative behaviors. In contrast, the demands of a home setting may be much less stressful in this way, and depressed children may display fewer of the same "problem behaviors" that can be disruptive at school. Thus different environments may elicit variable behaviors related to a disorder such as depression, providing for different presentations to different observers.

Even though mother and father ratings were moderately correlated on both child depression measures, fathers tended to rate their children as having more depressive symptoms than did mothers. Non-significant trends for detecting differences in child depressive symptomatology were detected only for father-rated data using the CBCL when children were grouped into secure vs. insecure categories, and with the Father BASC when children were grouped into the disorganized vs. not disorganized categories. No such trend was found for mother-rated data. Similar to the differences found for teacher reports, it could be suggested that fathers can sometimes more objectively evaluate their children's behaviors. Fathers may not have the same type of protective instinct to normalize or even hide their child's atypical behaviors as mothers may exhibit.

These findings related to rater trends could be viewed as challenging to previous assumptions that mother's ratings are the most reliable sources of information on their children's behaviors (Lancaster et al., 1989), and that fathers may underestimate problematic behaviors in their children (Earls, 1980). It is, however, difficult to argue where the truth lies when reporting on observed behaviors of children. In light of attachment theory, which is based on describing interactive characteristics of a dyad, child behavior in later years could also be considered as an entity that exists between the child and another person, rather than strictly as an individual attribute. Considering the transactional model (Cummings & Cicchetti, 1990), the development of a depressive cognitive style is seen not merely as an individual attribute of the child, but as a dynamic process that that involves reciprocal influences amongst parent, child, environment, and circumstances.

Viewing current rater trends through the lens of this model, it could be argued that these differences among parent and teacher observations represent such a varied and dynamic process, whereby the child's behavior is continuously influenced by multiple participants, and the child reciprocates in different ways based on environment. Observations of school behaviors are routinely collected to gain a more complete picture of child functioning. However, the practice of considering school environment, peer, or even dyadic teacher-child elements as *contributions* or *influences* rather than outcomes when exploring developing cognitive styles seems to be given far less weight than considering parenting influences. And certainly little attention is paid to reciprocal influences brought about by what the child contributes to this interaction.

It is evident from the findings in this study that teachers consistently experienced the subjects quite differently from their parents, and fathers and mothers sometimes experienced their child differently, although these differences were much slighter. It is difficult to verify which rater, if any, is best able to provide an accurate representation of a child's functioning across environments and situations. Rather than offering criticism of the reliability of different raters in studying child behavior, it may be more useful to acknowledge that all such observations truly represent a piece of the child's functioning, and are valuable contributions in studying the complex pathway of child outcomes.

Mediational Analyses

It was hypothesized that data analyses in the current study would reveal links between maternal depression, attachment, and child depressive symptomatology, yielding information about how these qualities might be related and what role attachment plays in buffering the transmission of depressive style. However, no statistically significant results were found for these analyses. When attempting to predict attachment from early maternal depressive symptomatology, a non-significant trend was found. While not a strong link, this gives some support to previous research indicating that maternal depression is associated with insecure attachment in infancy (Cicchetti et al., 1991; Cicchetti et al., 1995; Cicchetti et al., 1998; DeMulder & Radke-Yarrow, 1991; Lyons-Ruth et al., 1986; Rutter, 1987; Teti et al., 1995).

Analyses predicting childhood depression from insecure attachment were not significant and failed to provide evidence of a specific link between insecure attachment and depressive symptomatology in young children that is lacking in the literature (Greenberg, 1999; Renken et al., 1989). And finally, analyses predicting childhood depressive symptomatology from early maternal depressive symptomatology were not statistically supported. This finding was not consistent with the well-established literature showing that maternal depression is associated with childhood depressive symptoms (Beardslee et al., 1993; Beardslee et al., 1998; Cummings & Davies, 1994; Hammen, Burge, Burney, et al., 1990; Orvaschel et al., 1988; Weissman et al., 1987).

Rather than making a case for challenging such well-established research linking maternal depression with insecure attachment and child depression, these contrary findings most likely indicate different pathways and outcomes that are particular to the type of sample studied here. The current sample was comprised of mostly well-educated, middle-class families who volunteered to participate. Descriptive data revealed that maternal depression means were well within the average range, with only 18% of the sample giving responses that placed them at or above the clinical cut-off level. With such a healthy sample, it is understandable that detecting a strong relationship between maternal depression and child characteristics would be difficult, given that there may not be enough presence of pathology to provide the range of functioning needed to detect differences.

This becomes particularly challenging in a longitudinal study that uses a healthy, high-functioning sample. Turning again to the transactional model (Cummings &

Cicchetti, 1990), it is useful to consider how multiple participants, varied environments, and life events work simultaneously and reciprocally throughout the life of an individual to shape cognitive styles and, ultimately, behavioral outcomes. In a high-risk sample, many of these contributing factors may have a negative impact on functioning, including elements such as exposure to domestic violence, economic hardship, and substance abuse. The cumulative effect of such influences as they interact and affect each other can be devastating to an individual and the way that he or she perceives the self, others, and the world. Thus in a higher risk sample, the presence of mental health issues may be more prominent to start, and the higher rate of negative contributions over time are likely to help maintain the pathology or even increase the intensity.

Contrasting the same transactional model when applied to a low-risk and relatively healthy sample, the pathway of a mental health issue, such as a depressive style, may take a completely different course. Rather than necessarily experiencing life events and environmental influences as cumulatively negative as many high-risk samples might, there may be more opportunity and increased likelihood for middle class populations to experience positive and supportive events. Such contributions might include increased support from family and friends in times of need, increasing financial stability as careers progress, and seeking education and assistance from professionals as needed. While it would not be accurate to simply characterize the experiences of high-risk samples as negative and those of low-risk samples as positive, it is nonetheless important to consider how different these paths could be.

Returning to the sample at hand, it is of interest to consider that there was a non-significant trend when attempting to establish a link between maternal depression and insecurity of attachment. This was the only one of the mediational analyses that demonstrated a trend close to statistical significance, and is also the analysis that involved the closest data points in time. With maternal depression being measured at 8 months post-partum and attachment being measured when the children were 12-15 months, one sees a relationship, although weak, between a mother's depressive style and a child's relational model. In contrast, no relationship was established between maternal depressive symptomatology and child depressive symptomatology after 8 years had passed, even though this is a finding that has been replicated many times in the literature. Considering how the transactional model may take effect in high-functioning samples, it may be reasonable to speculate that the minor link thatwas present between depressed mothers and negative child outcomes in the early years has been diminished over time, due to the cumulative and reciprocal effects of positive contributions such as perceived support, increased stability, and proactive behaviors.

It was hypothesized that significant findings for a mediational model would support existing theory that suggests responsive, supportive caregiving in general (Campbell et al., 1995; Chiariello & Orvaschel, 1995; Masten et al., 1990), and secure attachment in particular (Carlson & Sroufe, 1995; Greenberg, 1999; Main, 1996; Rutter, 1997), foster protective psychological processes for children in stressful environments. However, it was not possible to establish such a relationship due to non-significant findings in preliminary analyses required to test this model. Therefore no specific

conclusions can be made in this particular area. There are a number of complex factors that might contribute to these processes.

A Complex Pathway

Contributions to the development of childhood psychopathology are many and complex (Cicchetti et al., 1998; Greenberg, 1999; Speier et al., 1995) and it is impossible to conclude that a parent's mental illness alone is responsible for poor child outcomes (Beardslee et al., 1993; Chiariello & Orvaschel, 1995). Contributions to parental behaviors themselves are complex (Goldberg, 1997). Variables implicated as contributing to childhood depression include marital difficulties and family stress (Beardslee et al., 1998; Cicchetti et al., 1998; Gelfand & Teti, 1990; Hammen, 1991), interactive effects of the timing of life stress events and personal cognitive style (Hammen, 1992), personality disorders (Downey & Coyne, 1990), and economic stressors (Masten et al., 1990).

Incidences of mother and child depression have been shown to occur in association with each other (Ferro et al., 2000) or to exhibit a reciprocal nature in which one participant's depression may exacerbate or maintain the other's symptoms (Chiariello & Orvaschel, 1995; Hammen, 1991; Hammen, 1992; Hammen, Burge, & Adrian, 1991). It is nearly impossible to disentangle the contributions of heredity and environment in such families (Burbach & Borduin, 1986). Comorbidity of other

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disorders, such as anxiety, conduct disorders, and somatic complaints also make it difficult to accurately diagnose childhood depression (Speier et al., 1995).

Different levels of risk in various domains may predict a range of disorders in children (Greenberg, 1999; Harrington et al., 1996), and children in the same family where parental depression exists may not be equally at risk, due to individual characteristics that promote resilience (Rutter, 1987). There is no conclusive evidence to identify specific pathways between types of insecurity and differing forms of child psychopathology (Greenberg, 1999), nor can insecure attachment alone be considered as a simple cause of later disturbance (Bowlby, 1988; Cummings & Cicchetti, 1990; DeMulder & Radke-Yarrow, 1991; Sroufe, 1997; Sroufe et al., 1990).

The difficulty in tracing such a complex pathway is evident in the current study. Mothers in this sample were not found to be particularly depressed, yet there was a high rate of disorganization found for mother-infant dyads. In contrast to previous research, no relationship was found between maternal and child depressive symptoms, and yet there was a link between disorganized attachment and child depressive symptoms. Therefore, in community samples, the presence of a disorganized attachment in infancy may represent a different pathway for predicting childhood depressive styles compared to the well-documented pathway through maternal depressive influences. It is evident that the contributions to all of the constructs measured in this study are quite complex, making if difficult to identify a single mechanism that will alter a certain chain of events. The failure to confirm the predicted results may also suggest that limitations exist with respect to the research design and the measures used.

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Limitations

Depressive Symptomatology in Young Children

While the existence of childhood depression is now commonly acknowledged, it is sometimes more difficult to identify and uniformly describe in younger children (Harrington et al., 1996; Speier et al., 1995) due to developmental differences. Since the range of behaviors in children is smaller compared to that of adults, there tends to be a symptom overlap for disorders presenting in childhood (Speier et al., 1995). It has been noted that Dysthymic Disorder has an earlier age of onset than Major Depressive Disorder (Kovacs, 1996; Kovacs et al., 1984a), increases the risk of recurrence (Kovacs, Feinberg, Crouse-Novak, Paulauskas, & Finkelstein, 1984b), has symptoms identified as less melancholic than are associated with major depression (Kovacs, Akiskal, Gatsonis, & Parrone, 1994), and is more often identified with externalizing disorders than in peers with major depression (Asarnow & Ben-Meir, 1988; Ferro et al., 1994). These findings suggest that a lower-level of depressive style might be present in this age-group that is more difficult to detect, and may indicate an early stage of depressive disorder (Kovacs et al., 1984b).

Limitations of Depression Measures

The limitations of measures used may also contribute to the failure to find expected results. While childhood behavior checklists, such as the BASC or CBCL have been shown to have desirable properties, they are limited screening tools. Behavioral observations for young children are often inconclusive as to whether the behavior is a

precursor to depression or a stress reaction without long lasting implications (Downey & Coyne, 1990). While a more thorough diagnostic interview with the child may have provided more information in many areas, these types of assessments are typically used most successfully with older children (Kashani et al., 1997). Researchers question whether or not a way of accurately assessing depressive disorders for young children has actually been determined (Kashani et al.). Even though raters such as parents and teachers offer the benefit of providing well-informed information from a close source, they also bring with them certain, sometimes undetectable, biases. While this study has limited information about maternal depressive states, it is difficult to speculate about what influence paternal affective states or teacher attributes may have had on the children in this study or the way the were rated.

The CES-D has similar limitations. It is a brief assessment of current depressive mood rather than a diagnostic tool, and carries with it the risk of obtaining socially desirable responses, since the mothers were rating themselves. The mean depression scores for mothers in this study were below the clinical cut-off in all four phases. A more comprehensive assessment of maternal depressive symptomatology over time and with input from other observers would provide a better picture of the influence chronicity and severity of symptoms may have on the child. The inability of the instrumentation in this study to assess different types of depression in mothers is also limiting, as research has indicated varying child symptomatic outcomes related to particular maternal diagnoses (Hammen, Burge, Burney, et al., 1990; Radke-Yarrow et

al., 1992) and differing attachment outcomes for the children of mothers with different

diagnoses (DeMulder & Radke-Yarrow, 1991; Radke-Yarrow et al., 1985).

<u>Classifying Attachment Status</u>

The analyses in this study were largely limited to evaluating attachment as secure

or insecure only, due to the low numbers of children representing each insecure category

and the effect on statistical power. In exploratory analyses, the most significant

differences between attachment styles when comparing child depression scores occurred

when groupings were divided into disorganized and not disorganized categories. The lack

of range when using categorical as opposed to continuous variables in the regression

analyses may have also reduced the likelihood of finding a strong relationship.

Issues have been raised with regard to traditional application of the Strange

Situation (Ainsworth et al., 1978) in terms of tendencies to over-interpret classifications

from limited observations (Goldberg, 1997; Lieberman & Zeanah, 1995; Rutter, 1997).

Bowlby (1988) has suggested that focusing only on separation and reunion behavior as a

measure of relationship between mother and child is insufficient. Teti et al. (1995) have

also suggested that the identification of an organized attachment strategy, whether secure

or insecure, is as clinically informative as identifying the level of security. Additionally,

Cummings & Cicchetti (1990) suggest that internal working models can sometimes be

reworked or modified through various interpersonal relationships over time. This study

does not account for changes that may influence relationships between infancy and early

childhood.

Limitations of the Sample

The sample used in this study is a community sample of relatively low-risk, which characteristically provides little power to detect significant relationships due to the low incidence of psychopathology (Greenberg, 1999). Much of the information known about the relationship between maternal depression and related child outcomes has come from clinical and hospital samples, making it difficult to consistently generalize to community samples (Downey & Coyne, 1990). Descriptive statistics indicated that ratings of child depressive symptoms, regardless of the rater, had means in the average range. Similarly, means for self-reported maternal depression were all below the clinical cut-off point, regardless of research phase. These figures indicate a fairly healthy sample, which reduces the opportunity for identifying differences between groups or a course of pathology.

With that being said, it cannot be overlooked that primary classifications of infant attachment yielded a high percentage of disorganized infants that is uncommon to community samples, which is why secondary classifications, which were much more in line with previous studies, were used. At face value, this information would suggest a highly pathologized sample, which is in contrast to current findings. More than one conclusion could be drawn from this data. It is possible that there was a fair amount of error in the coding of this data. It is also possible that this was a true representation of dyadic functioning at that point in time and current child ratings solidly in the normal range for depressive symptoms suggest that improvements have occurred in the system. This seems unlikely, but it is difficult to speculate about these particular findings with

such a large span of time between the data points of attachment status and current functioning and so little information gathered in-between.

Directions for Future Research

The failure to find predicted results in this study suggests further work to be done to more accurately identify the specific pathways of the well-documented relationship between maternal and child depression. This is particularly in need relative to non-clinical, community samples, where the presence and transmission of psychopathology in general and depressive styles in particular may be much more subtle, and may even take an entirely different path. Better measures of relational behavior between mother and child are necessary in order to understand the development of childhood psychopathology beyond a simple mood-disorder model (Lyons-Ruth, 1995). Further documentation of paternal contributions to childhood depression is also required (Burbach & Borduin, 1986; Gelfand & Teti, 1990; Zahn-Waxler et al., 1990).

There is a lack of convincing evidence that parenting difficulties exhibited by depressed mothers are a specific consequence of depression, and it will be important to identify common correlates or pathways amongst those parents experiencing difficulties that may affect children's adjustment (Downey & Coyne, 1990; Radke-Yarrow et al., 1985). Even among secure relationships, many differences exist in terms of caregiver qualities, disciplinary features, playmate characteristics and other aspects (Rutter,

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1997). The categorical labels of attachment security may merely serve as a clue as to what components contribute to resilience, rather than the label itself. It would be important to partial out environmental contributions that may have an additive or independent influence on the formation of a secure attachment.

Of great interest in this study was the finding that classifying attachment as disorganized or not disorganized was more useful for detecting differences in child outcomes than using an insecure or secure classification. Identifying disorganized attachment may be particularly relevant when studying low-risk, middle-class samples, as it appears to be a level of pathology that remains detectable over time in such a sample. It is also of critical importance to continue studying links between disorganized attachment in particular and child outcomes, as this designation has been linked to a higher incidence of child psychopathology in general. Given that children with disorganized attachment in infancy are often linked to both externalizing and internalizing behaviors, future studies investigating maternal depression, attachment, and child outcomes would do well to document more than the link between maternal depression and internalizing symptoms.

Other outcomes of interest in this study pertained to the issue of data collected from multiple raters, and the validity of those reports. The demonstrated trend of teachers identifying more depressive symptoms and making greater distinctions between children in different attachment categories could suggest a number of different things. It could suggest that teachers are more objective reporters of child behavior while parents are more invested in portraying their children positively. It could also
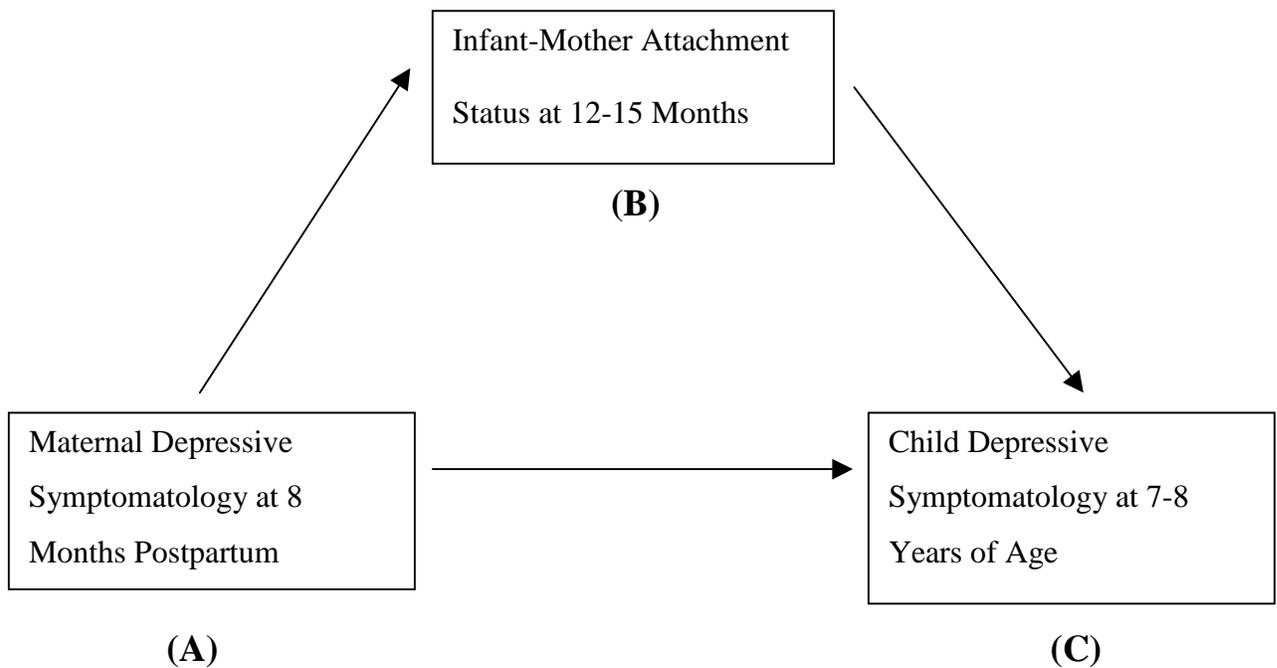
suggest that teachers are more likely to be negative and critical of their students and parents are actually the more accurate reporters. The most accurate representation of the child's functioning is difficult to determine, given that parents and teachers observe different behaviors in different settings. In clinical practice, it is always useful to have input from multiple raters from different environments to get a complete picture of a child's functioning, but this remains a difficult issue to resolve when selecting data for research analyses. In future studies, it would be interesting to consider ratings from all informants as relevant to child functioning, so that child behavior might be viewed as more dynamic, rather than occurring in isolation in one environment or another. The question of accurate representation of functioning also exists with self-report data, as was used with maternal depression scores here. Future studies would benefit from adding observational data, more thorough interviews, or additional reporters to assess maternal functioning.

Given the complexity of studying the topic at hand, and the potential limitations of accurately studying some of these constructs, more complex research designs are needed that take a developmental approach and address ongoing interactive processes (Hammen & Rudolph, 1996; Rudolph et al., 1997), and issues of accurate reporting of child and parent functioning. The transactional model (Cummings & Cicchetti, 1990) suggests that reciprocal influences on development occur within a social context and have a cumulative effect. The pathway of these interactive contributions may look quite different in high- and low-risk samples, and it will be important to identify these differences to better understand how families may successfully interact with and adapt

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to risk factors over time. More frequent data collection over time will be necessary to identify these trends. While longitudinal studies with large samples require great effort and ample funding, it will be necessary to identify the continuity and long-term effects of interpersonal and environmental mechanisms to fully understand a depressed mother's early influence on her child (Burbach & Borduin, 1986; Sroufe, 1997; Turner & Cole, 1994), and what role quality of attachment may play.

Appendix A

Diagram of Mediational Model

Infant-Mother Attachment Status at 12-15 Months

(B)

Maternal Depressive Symptomatology at 8 Months Postpartum		Child Depressive Symptomatology at 7-8 Years of Age

(A) **(C)**

According to Baron and Kenny (1986), in order for the mediational model to hold, relationships must first be established between the independent variable (A) and the proposed mediator (B), between the proposed mediator (B) and the dependent variable (C), and between the independent variable (A) and the dependent variable (C). A partial mediational relationship is then established if the relationship between (A) and (C) is reduced when controlling for the effects of (B).

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