The Dissertation Committee for Elizabeth Rae Kaufmann Certifies that this is the approved version of the following dissertation:

The Intergenerational Transmission of Anxiety:
A Prospective Study

Committee:

_________________________________
Deborah Tharinger, Co-Supervisor

_________________________________
Deborah Jacobvitz, Co-Supervisor

_________________________________
Cindy Carlson

_________________________________
Bill Koch

_________________________________
Christopher McCarthy
The Intergenerational Transmission of Anxiety

A Prospective Study

by

Elizabeth Rae Kaufmann, B.S.; M.A.

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Chapter One:

Introduction

Anxiety is an affective quality that influences every child in everyday life. It is unique from other emotional states in that some anxiety is necessary for daily functioning, while too much is detrimental to functioning and to health. For example, most children feel some anxiety about tests. An adaptive amount of anxiety motivates them to study for the test, while too much can make them physically ill or not able to think clearly. Anxiety includes cognitive, behavioral, and emotional components that can be manifested in ways that are apparent or concealed, functional or dysfunctional, and enabling or debilitating (Albano, Chorpita, & Barlow, 1996). What constitutes the difference between healthy anxiety and maladaptive anxiety is relatively subjective and differs depending on the child and the situation (Lyman & Hembre-Kigin, 1994). Researchers have made great strides in their study and understanding of children’s normative fears as well as childhood anxiety disorders in the last few decades. However, research and knowledge about the continuum and course of child anxiety is still needed (Stallings & March, 1995).

A theory that aids in examining the development, function, and purpose of anxiety, as well as the difference between healthy and maladaptive anxiety is attachment theory. Anxiety played a central role in John Bowlby’s original conceptions of attachment and in his three volume series: Attachment.
Separation, and Loss (Bowlby, 1969/1983; 1973; 1980). In this seminal writing, Bowlby discussed anxiety as an evolutionary predisposition that serves the purpose of ensuring proximity to caregivers for safety and survival of infants. In the modern study of attachment, the role of anxiety has been examined as both an antecedent to and a consequence of attachment development (Sroufe, 1996). Likewise, researchers have focused on the effects of attachment relationships (Muris, Mayer, & Meesters, 2000; Warren et al., 1997) and caregiving style (Arrindell et al., 1989; Arrindel, Emmelkamp, Monsma, & Brilman, 1983; Bennet & Stirling, 1998; Chambless et al., 1996) on the development of anxiety and the developmental course of anxiety disorders. In the multitude of research relating attachment to various child outcomes, quality of the attachment relationship has shown to have very high predictive value (Greenberg, 1999).

The current study serves to address the relationship between anxiety and attachment more closely and proposed a model for an intergenerational transmission of anxiety. Its roots are primarily theoretically based, as it is relatively exploratory in nature. Empirical support from both the attachment literature and anxiety literature support a model of anxiety development focusing on the early parent/child relationship. The focus of the model and study are on the effects of maternal anxiety, caregiving qualities, attachment styles associated with the development of child anxiety. The contribution of temperament will also be examined, as an alternate explanation for the development of anxiety. The
attachment classifications, secure, insecure/avoidant, insecure/resistant, and
disorganized, from Mary Ainsworth’s research using the Strange Situation
(Ainsworth, Blehar, Waters, & Wall, 1978), were used. The caregiving qualities,
sensitivity versus insensitivity, cooperation versus interference, and acceptance
versus rejection, are central to attachment theory (Ainsworth et al., 1978). These
same caregiving characteristics have indirectly been the focus of several anxiety
studies (Gerlsma, Emmelkamp, & Arrindell, 1990; Parker, 1981; Siqueland,
Kendall, & Steinberg, 1996). Caregiving characteristics were measured when the
children were eight months old, using observational methods. Child anxiety was
measured when the children were seven years old by child rating using the
Berkley Puppet Interview (BPI Ablow & Measelle, 1993) and by parent rating
using the Behavior Assessment System for Children (Reynolds & Kamphaus,

The current study utilizes data from an eight year, longitudinal attachment
study involving children and their parents, beginning when the parents were
pregnant with their first child. As mothers are still most commonly the primary
caregivers, they are the focus of the current study. The following questions are
addressed: (1) Does maternal anxiety, measured before the birth of the child,
predict level of child anxiety at age 7? (2) How do measures of caregiving style
when children are 8 months and maternal anxiety measured before birth predict
child anxiety level at age 7? (3) Is higher child anxiety at age 7 associated with
different attachment classifications in infancy? (4) Is caregiving measured at 8 months a mediator between maternal anxiety before birth and child anxiety at age 7? (5) Is child attachment a mediator between caregiving and child anxiety? (6) Does temperament at 6 weeks influence the development of child anxiety? Two secondary questions that do not directly relate to this model will also be examined. (7) Does current level of maternal anxiety correspond to current level of child anxiety? (8) Do mothers and children’s reports of child anxiety correspond? If the primary relationships were supported, they would lend theoretical support for the following model of an intergenerational transmission of anxiety:

![Intergenerational Model](image)

Results in the predicted direction would support a proposed model of an intergenerational transmission of anxiety. The model proposes a new component both to the study of anxiety development and in attachment research. It explains the influences of maternal anxiety, maternal caregiving, and attachment on child
anxiety development. The study also addresses a gap in the attachment literature - the role of anxiety in attachment theory. It is likely that interactions between these predictor variable exist as well but are not addressed in the current study. To lend theoretical support to the model, the literature is first reviewed. Then, the proposed study and data analysis are provided. The results are then given, and finally, the findings are discussed.
Chapter Two:

Review of the Literature

The symptomology, prevalence, and outcomes of child anxiety disorders, as well as characteristics of non-disordered anxiety have been fairly well researched. The multiple determinants of anxiety have had less focus. The current study examines some of the determinants of anxiety that are related to attachment theory. Existing research indirectly supports an intergenerational transmission of anxiety, but it has not been explicitly examined or addressed. A model of an intergenerational transmission of anxiety is proposed. It includes maternal anxiety, maternal caregiving, and child attachment as directly contributing to child anxiety development. It also includes maternal caregiving as a mediator between maternal anxiety and child anxiety and child attachment as a mediator between maternal caregiving and child anxiety.

To support the proposed intergenerational transmission of anxiety, the literature is reviewed. First, relevant aspects of attachment theory are reviewed. Then, the role of anxiety in attachment theory is examined. This includes both theoretical links as well as the continuum of anxiety manifestation. Finally, the role that attachment relationships have in the development of anxiety is reviewed, including the risk of maladaptive attachments, the contribution of attachment-related parenting styles, and the role of maternal anxiety. The possible contributions of temperament are also considered.
The Theory of Attachment

Attachment theory is an integral theory of development that incorporates social, emotional, and cognitive components. It explains functioning as rooted in the childhood relationship with significant caregivers and lasting throughout the lifespan. Contemporary attachment theory and research, along with John Bowlby (Bowlby, 1969/1983; 1973; 1980) and Mary Ainsworth's (Ainsworth et al., 1978) original work, provide a conceptual perspective to the social development of childhood anxiety. While other contributing factors such as biological predispositions and traumatic experiences are important, they are not addressed in the current study. The concept of anxiety is central to attachment theory, and therefore examining original attachment theory constructs such as the need for an attachment figure, the importance of the early influence, internal working models, and quality of the attachment relationship, is a necessary first step in the study of the development of anxiety.

Origins of Attachment Theory

Attachment theory has roots in the multiple disciplines of evolutionary biology, ethology, developmental psychology, cognitive science, and control systems theory (Bowlby, 1969/1982). John Bowbly drew from these fields to explain biological phenomena such as imprinting of geese (Lorenz, 1935) and attachment of rhesus monkeys to cloth-covered mothers (Harlow, 1958) that secondary-drive theories held at the time did not explain (Cassidy, 1999). Bowbly
realized that there was more to the relationship between a child and parent than
the need for food, and that through the process of natural selection, individuals
have become biologically predisposed to desire proximity and develop a strong
emotional tie to the primary attachment figure (Bowlby, 1969/1982).

**The Need for an Attachment Figure**

From an evolutionary perspective, the need to form a relationship with a
primary caregiver is vital for the survival of the infant. The caregiver provides not
only feeding and protection from predators, but also social interaction, comfort,
and learning. To ensure closeness to the attachment figure, infants possess
attachment behaviors that keep the caregiver close such as crying, cooing,
grasping, crawling, and other vocal and motor behaviors (Bowlby, 1969/1982). A
balance between attachment behaviors and exploratory behaviors is shown in the
use of the attachment figure as a secure base from which to explore and provides
for optimal growth and development of independence (Bowlby, 1973). The most
critical time period for this bond to form and for attachment needs to be met is
during early infancy (Bowlby, 1969/1982).

**The Significance of the Early Influence**

Most aspects of development, whether social, cognitive, or emotional, are
rooted in early infancy. The significant early influence of the attachment
relationship has been considered throughout attachment research (Ainsworth,
1978, 1989; Bowlby, 1969/1982, 1973) because of the context it provides for the
emergence of the self and representations of others (Bowlby, 1973). This early relationship consequently serves as a foundation for a broad range of developmental aspects such as affect regulation (Isabella, 1993), behavior regulation (Pastor, 1981), neural development (Schore, 1994), and expectations and representations of the world (Bowlby, 1969/1982). Attachment relationships crystallize within the first year of life, and even in the presence of modified caregiving are difficult to change (Bowlby, 1973; Main, Kaplan, & Cassidy, 1985). Not only is this early relationship influential on current anxiety development, but patterns of caregiving and of the relationship are rooted early on and are resistant to change, setting patterns for later anxiety development as well (Sroufe, 1983). The primary mechanism for which relationships and patterns of interaction are interpreted, stored, and used is referred to as an internal working model.

**Internal Working Models**

Mental representations of the world and relationships, or internal working models, are molded by early experiences with others. These models influence how people interpret and predict others' behaviors and tend to generate experiences in line with the existing working models, making them resistant to change (Bowlby, 1969). Internal working models based in the early attachment relationship influence the development of trust, communication, adaptability, defensiveness, and self concepts (Bretherton & Munholland, 1999). Internal
working models of insecurely attached children are characterized by fear, anger, and mistrust and may put children at risk for psychopathology (Greenberg, 1999).

The internal working model of the attachment relationship, or quality of the attachment relationship, has been studied and described in depth by Mary Ainsworth.

**Quality of the Attachment Relationship**

Mary Ainsworth added significantly to the field of attachment by empirically examining and describing the quality of parent/child attachment relationships. She described several characteristics of the attachment relationship: it is persistent, it involves a specific person, it is emotionally significant, it involves proximity and security seeking, and it involves distress upon separation from the attachment figure (Ainsworth, 1989). She developed three categories describing an attachment relationship: secure, anxious avoidant and anxious resistant/ambivalent. The two latter categories describe relationships that are considered insecure; those which do not successfully use the primary caregiver as a secure base from which to explore. Both secure and insecure infants’ attachments follow the characteristics of the attachment relationship, but they differ in the degree of success and security found in the relationship (Cassidy, 1999). The quality of the attachment relationship is resistant to change, as found by Main et al. (1985) who examined the persistence of the attachment relationship and found a correlation of .76 between the ages of 1 and 6 years. The four
currently used attachment categories have distinct differences in maternal and child behaviors and in child outcomes.

**Secure attachment.** The attachment style that seems to be the most beneficial is secure attachment (Ainsworth et al., 1978; Masia & Morris, 1998). Secure infants use the primary caretaker as a secure base from which to explore. These infants trust that when needed, they can successfully elicit the mother’s attention by evoking attachment behaviors. The attachment figure is consistently sensitive, accepting, and cooperative (Ainsworth et al., 1978). The superior quality of this relationship puts the infant at an advantage in later adjustment. In follow-up studies one year after the strange situation was assessed, secure infants showed greater compliance, enthusiasm, and positive affect (Frankel & Bates, 1990) and longer and more complex levels of symbolic play (Slade, 1987). In preschool, securely attached children developed closer relationships with teachers (Sroufe, 1983), siblings (Teti & Ablard, 1983), and peers (LaFreniere & Sroufe, 1985). Insecurely attached infants do not fare as well.

**Avoidant attachment.** The caregivers of avoidant infants have been described as rejecting, intrusive, controlling, and insensitive (Ainsworth et al., 1978; Belsky et al., 1984; Lewis & Fiering, 1989). Avoidant infants learn to ignore the mother and reject her attention in unfamiliar situations rather than using her as a secure base from which to explore. In familiar environments, avoidant infants often erupt in gratuitous attacks against their mothers (Ainsworth
et al., 1978). As avoidant children develop, this rejection and anger is often directed towards other people as well (Ainsworth et al., 1978; Bowlby, 1973; Fagot & Kavanagh, 1990; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989).

**Resistant attachment.** A primary difference between primary caregivers of avoidant infants and resistant infants is that the former are often consistently unresponsive while the latter are often inconsistently responsive (Sroufe, 1996). Resistant attachment has been related to unresponsive, underinvolved, intrusive, and inconsistent caregiving, (Ainsworth et al., 1978; Belsky et al., 1984; Lewis & Fiering, 1989). George and Solomon (1989) found that mothers of resistant infants promoted dependency, used strategies to keep their children close, and were insensitive to infant cues. They concluded that mothers of resistant infants appear to display heightened but ineffective caregiving. Due to the inconsistency of care and the resulting mistrust and ambiguous expectations of the caregiver, resistant infants develop a pattern of simultaneously seeking and avoiding attention (Isabella, 1993). In the strange situation, they become extremely distressed upon separation, but they are not easily calmed by the mother on her return (Ainsworth et al., 1978). In childhood, the pattern of avoiding attention is manifested in social withdrawal (Ainsworth, 1978) and chronically vigilant attempts to gain attention and comfort (Bowlby, 1973; Cassidy & Berlin, 1994).
Disorganized attachment. Main and Solomon (1986) have since added a fourth category of attachment which they termed disorganized attachment. Disorganized infants exhibit seemingly odd behaviors such as long stares, turning in circles, tripping, and other fearful behaviors only in the presence of their mothers. It appears that these behaviors are a result of the infant being frightened by a caregiver who acts frightened or frightening towards the infant (Main & Hesse, 1990). Research has shown that disorganized infants hold the greatest risk for later problems due to their lack of organized strategies, conflicting internal working models, and their limited coping skills (Carlson, 1998; Lyons-Ruth & Jacobvitz, 1999). Of greatest concern is the link between disorganized attachment and dissociation, leading to the possibility that disorganized attachment may precede schizophrenia (Liotti, 1992). It is evident that effects of disorganized attachment last through adulthood. The quality and stability of the attachment bond is also evident in the intergenerational transmission of attachment (Benoit & Parker, 1994; Fonagy, Steele, & Steele, 1991; Grossman, Fremmer-Bombik, Rudolph, & Grossman, 1988).

Stability of the Attachment Bond

The attachment relationship has both short and long term stability. When measured 2 to 6 months apart, the strange situation has shown a high level of stability (50% to 96%). For middle class samples, attachment classification is especially stable (Lyons-Ruth et al., 1991). Long-term stability of the attachment
representation has been shown at age 4 ½ using an adapted strange situation
(Stevenson-Hinde & Shouldice, 1995) and at age 16 using the adult attachment
interview (Zimmerman, 1994). The Adult Attachment Interview (AAI; George,
Kaplan, & Main, 1985) is the most often used measure to explore adults’ working
model of attachment and classifies adults into three categories: secure/
autonomous, dismissing, preoccupied, and unresolved (Main et al, 1985). Not
only is the attachment bond stable intrapersonally from childhood to adulthood,
but also interpersonally between parent and child.

Intergenerational Transmission of Attachment

A correlation has been found between infant attachment classifications
and adult attachment classifications so that there is an apparent intergenerational
transmission of attachment from parent to child (Main, 1995). A meta-analysis
using 18 samples, found significant correlation between child strange situations
and parent adult attachment interviews (van Ijzendoorn, 1995). Rather than the
content and experience of the parent-child relationship, it seems to be the
organization of these experiences that is transmitted from generation to generation
(Main et al, 1985). This organization of experiences affects the parent’s self-
reflectiveness which impacts parenting quality (Fonagy, Steel, Moran, Steele, &
Higgitt, 1993).

In summary, children are evolutionarily predisposed to form early and
lasting bonds with their caregivers primarily based on qualities of caregiving such
as sensitivity, acceptance, cooperation, consistency, and the ability to relinquish control. The quality of the attachment bond is resistant to change and is related to many aspects of later functioning including the development of anxiety. The stability of this bond is evidenced in the intergenerational transmission of attachment that exists from mother to child and from childhood to adulthood.

The Role of Anxiety in Attachment Theory

Normative Fears in Children

The point at which attachment theory and anxiety research most converge is in regards to the construct of normative and developmental fear in children. The developmental progression of fears described in anxiety literature parallels that of attachment research, including fears of novel situations and loss of physical support in infancy, fear of strangers at about 8 months, and fear of separation at about 12 months (Lyman & Hembree-Kigin, 1994). According to Bowlby, fear is the primary cause of anxiety (Bowlby, 1969/1982; 1973). In anxiety literature, excessive fear is considered along with unregulated anxiety as a psychopathological condition (Albano et al., 1996).

Separation Anxiety

Distress of an infant upon separation from a caregiver is of fundamental interest in attachment theory but is only somewhat related to the concept of separation anxiety in anxiety research. As observed in the Strange Situation and in everyday separations between parents and children, most infants and young
children become visibly distressed upon separation from their attachment figures (Ainsworth et al., 1978). This distress resulting from separation from the caregiver is the earliest form of anxiety experienced by infants (Sroufe, 1996) and is exhibited most often in resistant infants (Ainsworth et al., 1978). Some distress and protesting is considered a normal and adaptive response, serving to maximize proximity to the caregiver and ensure safety, but excessive and developmentally inappropriate responses to separation are associated with later psychopathology. Fear and anxiousness, particularly regarding separation, is considered the underlying cause of insecure attachment (Bowlby, 1969/1982), yet little attention has been paid to normative anxiety development or childhood anxiety disorders in the study of attachment. No empirical studies were found examining attachment relationships in childhood populations with anxiety disorders. Not only have anxiety disorders been neglected in attachment studies, but, attachment has had equally little impact on the conceptualization or treatment of childhood anxiety disorders (Greenberg, 1999).

Anxiety and its Relation to Anxious Attachment

From the beginnings of attachment theory, anxiety has been a primary issue and at the core of insecure attachment. The evolutionary based fear of being alone propels infants to seek proximity and comfort from their caregivers. Anxiously attached infants are constantly afraid of being alone and vulnerable, because their caregivers are not reliably available to their needs (Bowlby, 1973).
This pattern of inconsistent reliability occurs most often for infants with resistant attachments (Ainsworth et al., 1978; Cassidy & Berlin, 1994). Whereas avoidant infants learn not to expect comfort from the caregiver and externalize their discomfort and anger, resistant infants do not know what to expect from the caregiver and therefore are more likely to internalize their distress, conflicting feelings, and confusion about the relationship (Sroufe, 1983). As a result of this type of inconsistent and conflicting dyadic interaction, resistant infants are overwhelmed by the constant anxiety of getting their needs met.

**Development and Childhood Anxiety**

Anxiety is a normal and necessary part of development and occurs in all children and adults. It is characterized by a sense of apprehension and a variety of autonomic symptoms such as rapid heart beat and activation of the sweat glands. Anxiety is a basic emotion and an adaptive function that serves to alert individuals to dangerous situations, allowing them to confront the situation or flee when necessary. Experiencing feelings of anxiousness is a necessary part of development in that it allows for the transition from dependent infant who is relatively unaware of dangers to autonomous adult who is able to detect and react to dangerous situations. (Albano et al., 1996). When anxiety becomes intractable, pervasive, and interferes in daily activities, it is no longer beneficial and becomes a pathological and debilitating condition. Exactly what constitutes the difference between developmentally appropriate anxiety and pathological anxiety is still not
clear (Albano et al., 1996), perhaps because the transient nature of anxiety makes it difficult to conceptualize and study (Lyman & Hembree-Kigin, 1994). Every individual experiences some anxiety symptoms, and people with anxiety disorders experience variation in the development of the same disorders. Thus, to study the continuum of anxiety experiences, it is necessary to turn to community samples of children.

**Anxiety symptoms in nonclinical samples.** The developmental nature of anxiety disorders, as well as the stress-diathesis model of development, suggests that it is likely that some young children showing significant symptoms of anxiety are on a pathway towards later anxiety disorders. For example, symptoms of separation anxiety disorder in children were found to be a risk factor for anxiety syndromes in adulthood (Lipsitz et al., 1994). In addition, studying non-clinical samples could also lead to a better understanding of where there is continuity in the development of anxiety disorders and where there is discontinuity. For example, in a community study of anxiety, Kashani and Orvaschel (1990) discovered that patterns of nonanxious psychopathology and comorbidity, such as depressive symptoms and conduct disorder, were qualitatively similar but quantitatively different in anxious and nonanxious children. Both groups experienced similar kinds of symptoms, but anxious children experienced higher levels of depressive and conduct disorder symptoms. It is therefore necessary to study nonclinical samples and the developmental course of anxiety.
A wide variety of anxiety symptoms were found to be normal in children of all ages and both sexes (Bell-Dolan, Last, & Strauss, 1990). The number of anxiety symptoms is similar across age groups, but types of symptoms change over age, with worry and phobias being more common in younger children and social and interpersonal anxiety more common in adolescence (Kashani & Orvaschel, 1990). Adolescents were found to be affected more severely than younger children, as they rated the symptoms as more severe and as having a broader impact. These studies suggest that there is developmental progression of anxiety symptoms, yet no longitudinal studies were found that examine this developmental course of anxiety through adolescence or adulthood.

Childhood anxiety disorders. In both community samples and clinical samples, anxiety disorders are the most common form of psychopathology in childhood (Albano et al., 1996; Kashani, Orvaschel, Rosenberg, & Reid, 1989). The most common childhood anxiety disorder is Separation Anxiety Disorder (SAD) (Albano et al., 1996). Distress upon separation from a caregiver is a sign of normal development and occurs in all young children to some extent. When the distress is severe or it lasts into later childhood, it is no longer considered normal and is a sign of SAD (APA, 2001). The core feature of SAD is excessive anxiety regarding leaving the home or being away from attachment figures and often includes efforts to avoid separation such as refusing to go to school, be left alone, or sleep apart from the caregivers. SAD tends to be more common and more
severe in prepubertal children (Francis, Last, & Strauss, 1987). Onset is often tied to a stressful event, and the course and duration seem to vary (Albano et al., 1996). Children who experience SAD were found to be more likely as adults to suffer from Agoraphobia (Lipsitz et al., 1994) or Panic Disorder (Black, 1995).

Children can also be diagnosed with eight other anxiety disorders: panic disorder, agoraphobia, generalized anxiety disorder, obsessive-compulsive disorder, post traumatic stress disorder, acute stress disorder, social phobia, and specific phobia (APA, 2001). In most cases, the diagnostic criteria are the same for adults, with some stipulations added. For example, to be diagnosed with generalized anxiety disorder, adults must have anxiety and worry associated with at least three symptoms, while only one is required for children. To be diagnosed with specific phobia, an adult must realize that the fear is excessive or unreasonable, while children do not. These added stipulations allow more accurate diagnoses for children and adolescents. These eight anxiety disorders share core elements but differ in the focus and manifestation of the child's anxiety (Albano et al. 1996). Each anxiety disorder is expressed through specific cognitive, physiological, emotional, and behavioral reactions. For example, in panic disorder, anxiety is primarily manifested in physiological symptoms such as elevated heart rate and heat flashes, while in obsessive-compulsive disorder, anxiety is more often revealed through very specific cognitive and behavioral
reactions such as obsessive thoughts and dependency on rituals or avoidant behavior.

Anxiety disorders are not uncommon in both clinical and community samples of children. Twenty-one percent of children in a random sample were found to meet the criteria for a diagnosis of an anxiety disorder (Kashani et al., 1989). A review of community studies on the epidemiology of childhood anxiety disorders by Costello and Angold (1995) revealed prevalence rates between 7.4 and 17.7%. There is inadequate research on sex differences of specific anxiety disorders, and those that exist have shown mixed results (Albano et al., 1996). In addition, few ethnicity differences have been found (Albano et al., 1996).

Perceptions of lack of control, of the self, or the environment, are core features of anxiety (Barlow, 1988). Therefore, early relationships characterized by inconsistency and uncontrollability, as are common in resistant attachments are likely to contribute to the development of excessive anxiety. The early parent-child relationship, including effective communication and negotiation, teaches children how to regulate their own affect and arousal. When this process is unsuccessful, children develop a sense of not having control (Sroufe, 1990), which can then develop into unregulated anxiety. In addition to the attachment relationship, other predispositions to anxiety such as attributions, social comparisons, self-knowledge, and self-efficacy also stem from the parent-child
relationship and early social experiences and contribute to perceptions of control
(Costanzo, Miller-Johnson, & Wencel, 1995).

The Measurement of Child Anxiety

There are several ways to measure child anxiety including rating scales, self-report scales, semi-structured interviews, and observation (Teeter & Semrud-Clikeman, 1997). Ratings can be given by children, parents, and teachers. Teachers have been found to report internalizing symptoms less accurately than parents and children, and children have been found to report more symptoms of anxiety than parents and teachers (Edelbrock, Costello, Dulcan, Kalas, & Conover, 1986). Therefore, the current study uses both mothers’ and children’s perceptions of child anxiety.

Young children are not typically accurate reporters of their own symptoms due to level of awareness and complicated by difficulty reading self-report measures. The Berkley Puppet Interview was specifically developed to assess young children’s perceptions of their own symptoms (Ablow & Measelle, 1993). Instead of relying on written measures, children are interviewed by two puppets.

In summary, anxiety and fear of separation are at the core of attachment theory, which provides a partial explanation of anxiety development. Anxiety symptoms are common occurrences in childhood, and anxiety disorders are not uncommon. Both are partially explained by attachment theory as originating in the security of the attachment relationship with the primary caregiver. It is
necessary to look more closely at how the attachment relationship affects the development of anxiety.

The Role of Attachment in the Development of Anxiety

As Bowlby originally theorized, anxiety and fear of abandonment are the driving forces behind attachment formation (Bowlby, 1973). When the attachment relationship is threatened, or the attachment figure is not consistently available, insecure attachment can often result. The child’s working model of attachment, maternal caregiving, and maternal anxiety all contribute to the way in which attachment influences anxiety development. Insecure attachment puts children more at risk for negative outcomes such as various psychopathological symptoms and disorders.

Attachment as a Risk Factor for Psychopathology

There are two primary theories about the ways that early attachment relationships may affect developmental psychopathology. One possibility is that insecure and disorganized attachment patterns are actually early forms of certain disorders. Lieberman and Zeanah (1995) proposed that while not all anxiously attached infants necessarily suffer from a disorder, anxious infants who show hypervigilant responses toward one or more adults or who do not discriminate in their attachment behaviors may suffer from an attachment disorder. While the DSM-IV TR does not support this conceptualization, the International Classification of Diseases (ICD-10: World Health Organization, 1992)
incorporates three major categories of attachment disorders: disorders of nonattachment, disordered attachments, and disorders of disrupted attachments. In addition, the Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood (National Center for Clinical Infant Programs, Zero to Three, 1994) includes parent/child relationship disorders.

A more popular and more likely possibility for the manner in which quality of attachment affects developmental psychopathology is that early attachment relationships act as risk or protective factors for later psychopathology (Sroufe, 1988). Greenberg (1999) describes seven conclusions for child disorders that have come from research on risk factors. First, development is complex, and therefore a disorder is not likely caused by one event. For example, Lewis et al. (1984) found that attachment classification at one year was significantly related to psychopathology in boys at age six, yet attachment status was only partly predictive of later problems. Other factors such as life-stress and family demographic variables interacted with attachment classification to predict psychopathology in this sample. Second, there are multiple pathways to disorders, leading to the belief that there must be many risk and protective factors. Kochanska (1995) examined emerging internalization in children and found that even within the attachment relationship, there are multiple pathways to internalization depending on mothers' discipline, security of attachment, and children's temperament. Third, children must be considered in their context of
self, family, peers, school, and community which includes infinite influences and risks. Fourth, there is a nonlinear relationship between risk factors and disorders indicating the presence of other variables. Fifth, most risk factors tend to be related to many disorders rather than a specific disorder. For example, disorganized attachment was found to be related to many different disorders (Lyons-Ruth & Jacobvitz, 1999). Finally, risk factors affect children differently at different developmental stages. In conclusion, risk factors such as insecure and disorganized attachment relationships interact with many forces in children's lives and make the possibility of psychopathology in general more likely but do not directly cause a specific disorder.

One particular condition that is affected by attachment as a risk factor is unregulated anxiety. There is preliminary data that suggests that resistant attachment (Warren et al., 1996) and disorganized attachment (Carlson, 1998) can be considered risk factors, or as initiating a developmental pathway to anxiety disorders (Greenberg, 1999). The attachment relationship can influence the development of anxiety in two ways: the quality of the attachment relationship and the quality of parental caregiving that precipitates the attachment relationship. Certain caregiving styles are associated with subsequent attachment styles (Ainsworth et al., 1978; Isabella, 1993; Sroufe, 1996), indicating that these two variables share significant variance. However, because of the unique and qualitative nature of the attachment bond (Ainsworth et al., 1978; Bowlby
1969/1983, 1973) and the widespread effects of caregiving on children’s development in multiple domains besides the attachment relationship (Sroufe, 1996), it is believed that these two influences have unique contributions to anxiety development.

The Influence of the Internal Working Model of Attachment

Disorganized attachment and anxiety. Since disorganized attachment was first conceptualized (Main & Solomon, 1986), research has consistently shown that this form of attachment over other styles leaves an infant more susceptible to later problems (Carlson, 1998; Moss et al., 1996). In a review of research concerning outcomes of disorganized attachment, Lyons-Ruth and Jacobvitz (1999) found that disorganized infants are more likely to suffer from psychopathology in general, internalizing and dissociative behaviors, behavior problems, diagnoses of oppositional defiant disorder, low social competence, and aggression toward peers. Three studies have found disorganized infants susceptible to childhood internalizing problems, (Carlson, 1998; Moss, Rousseau, Parent, St-Laurent, & Saintong, 1998; Shaw, Keenan, Vondra, Delliquadri, & Giovannelli, 1997), leading to the hypothesis that children classified as disorganized may have higher levels of both anxiety and depression. However, these studies used either the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) or the Preschool Socio-Affective Profile (PSP; Lafreniere, Dubeau, Janosz, & Capuano, 1990), which do not separate anxious symptoms
from depressive symptoms. The Behavioral Assessment System for Children (BASC; Reynolds & Kamphaus, 1992) is a newer and less used instrument that has shown adequate validity and reliability and separates anxious symptoms from depressive symptoms.

**Resistant attachment and anxiety.** While disorganized infants are more prone to psychopathology in general, attachment theory supports that resistant infants may be more susceptible to developing anxiety disorders specifically. Mothers of resistant infants are more likely than other mothers to behave in an anxious manner (Ainsworth et al., 1978). A concordance rate of 65% in attachment styles of mothers and children in a clinical population (Mannassis et al., 1994) and even higher rates (69% to 87%) in nonclinical populations (Ward & Carlson, 1995) demonstrates the existence of an intergenerational transmission of attachment and indicates that resistant infants will develop into anxious caregivers. Anxious mothers' availability and behavior towards their infants are more inconsistent and frenetic, leading the infants to experience fear of separation and abandonment. The infants' working models of attachment include fear and anxiety around this attachment relationship. Resistant infants consistently show this stress by attempting to minimize the distance from the caregiver while simultaneously trying to seek comfort from her. In addition, they are more emotional, more difficult to soothe, and less comfortable exploring their environment (Ainsworth et al., 1978). Bowlby hypothesized that resistant
attachment can cause later agoraphobia by three possible patterns: An anxious parent is fearful of the child being gone and keeps the child home, teaching the child to fear leaving the home; inconsistent care and availability causes the child to be afraid that something bad will happen to the parent if the child is not there; or the child fears that something horrible will happen to him or her while away from home. Bowlby hypothesized that these threats of abandonment, separation, and suicide are antecedents of agoraphobia (Bowlby, 1973).

Few empirical studies have examined the link between resistant attachment and anxiety in children, yet the results in the existing studies are compelling. One reason for the relative lack of empirical support is that internalizing disorders are covert and difficult to detect in childhood. The link between avoidant or disorganized attachment and externalizing disorders (Fagot & Kavenagh, 1990; Moss, Parent, Gosselin, Rousseau, & St.-Laurent, 1996; Renken et al., 1989; Solomon, George, & De Jong, 1995) or depressive symptoms (Lyons-Ruth, Easterbrooks, & Cibelli, 1997; Moss et al., 1996) in nonclinical samples has been more clearly established because they are easier for parents and teachers to identify (Lyman & Hembre-Kigin, 1994). In addition, externalizing behaviors are common in childhood and generally dissipate in adulthood, while internalizing disorders may have roots in childhood but often are not expressed until adolescence (Greenberg, 1999).
The most compelling finding, by Warren et al. (1997) in the Minnesota Parent-Child Project, linked infant resistant attachment specifically and uniquely to anxiety disorders at age seventeen using the Strange Situation and the Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS-MPE; Orvaschel, Puig-Antich, Chambers, Tabrizi, & Johnson, 1982). Twenty-eight percent of resistant infants later had diagnosable anxiety disorders, as compared to 16% of avoidant infants and 12% of secure infants. This finding is particularly important because the data was longitudinal, and the results were significant even when controlled for temperament. Erickson et al. (1985) conducted a follow-up study of 267 infants observed in a strange situation and found that preschool teachers rated anxious resistant children as more nervous than securely attached children. Similarly, teacher ratings in middle childhood distinguished avoidant children as aggressive and resistant children as socially withdrawn (Lewis et al., 1984). Muris, Mayer, and Meesters (2000) found that insecurely attached children had higher levels of anxiety and age 12, but because they had few insecurely attached children in their study, they did not separate resistant and avoidant children.

In a longitudinal study involving 191 preschool children, Renken et al. (1989) found that resistant attachment was related to passive withdrawal, a core symptom of anxiety. Social withdrawal and resistant attachment were found to be related to behavioral inhibition (Calkins & Fox, 1992), a temperament
characteristic shown to be a predictor of anxiety (Biederman et al., 1993). One difficulty of these studies is that they did not account for the disorganized attachment pattern that was discovered after these studies had begun (Greenberg, 1999). More support is needed using longitudinal samples that include disorganized attachment separated from other forms of attachment.

Additional support for the relationship between resistant attachment and anxiety is found in the research conducted on adult samples. Faravelli, Webb, Ambonetti, Fonnesu, and Sessarego (1995) found that adults with agoraphobia were more likely to have experienced early separations or disruptions in care as infants as is common in infants classified as resistant (Ainsworth et al., 1978). Adults with anxiety disorders have been found to be classified most often as preoccupied, the adult attachment style that most commonly relates to child anxious resistant attachment (Fonagy et al., 1996). Finally, adolescents classified as preoccupied were rated as having high anxiety by peers (Kobak & Sceery, 1988).

The Influence of Parental Caregiving Style on Child Anxiety

As previously discussed, certain patterns of parental caregiving are associated with each attachment style (Ainsworth et al., 1978; Isabella, 1993). The three primary caregiving patterns examined in attachment literature and described below are sensitivity, acceptance, and cooperation (Ainsworth et al., 1978). Similar caregiving dimensions have been found to be associated with
childhood anxiety (Masia & Morris, 1998), yet few studies have compared the relative contribution of caregiving style in the relationship between attachment style and childhood anxiety (Greenberg, 1999).

The primary source of studies that examine caregiving and anxiety development come from anxiety research rather than attachment research and therefore do not include the quality of the attachment relationship. Most anxiety studies that measure caregiving style are retrospective, and thus require subjects to describe early parenting experiences from memory (Gerlsma et al., 1990). In addition, most people describe parenting experiences from middle childhood rather than the sensitive time period when attachments are formed (Albano et al., 1996). The Parental Bonding Instrument (PBI: Parker et al., 1979) has been the primary tool for the retrospective measurement of caregiving. An additional problem with this measure is that it is often used with patients diagnosed with anxiety disorders and therefore often provides a distorted report from distressed subjects trying to understand and explain their disorders (Chambless, Gillis, Tran, & Steketee, 1996). Examining the consequences of early caregiving such as insensitivity, interference, and rejection, in a prospective manner is one of the most promising new areas of study in the social development of anxiety (Costanzo et al., 1995).

**Sensitivity.** Sensitivity refers to the parent's ability to accurately perceive and interpret a child's signals and communication and to respond to them.
appropriately and promptly (Ainsworth et al., 1978). Given that sensitivity is vital to the attachment relationship and that unsuitable parenting is a cause of anxiety, it is a theoretical conclusion that insensitivity can lead to anxiety (Bowlby, 1973). Because of the difficulty of retrospective measurement of sensitivity and the ambiguity of the construct, no studies were found that included sensitivity when examining parenting styles and anxiety.

**Interference.** Interference in attachment research refers to the inability to take the child's feelings, moods, interests, and preferences into account. It is a form of control that occurs when a parent does not respect the baby’s autonomy and separateness and instead intrudes in the baby’s activities (Ainsworth et al., 1978). Bowlby proposed that a mother who desires to control her infant will invoke feelings of anxiety in the child (Bowlby, 1973). The opposite of interfering caregiving is cooperative caregiving (Ainsworth et al., 1978). To be cooperative, parents must be flexible in order to strike a balance between their own needs and desires, including the desire to protect, and the needs of their infants (Solomon & George, 1996).

In the study of caregiving and child anxiety, anxiety researchers most often focus on the effect of parental control, especially “affectionless control” (Gerlsma et al., 1990). Anxiety literature has focused on two forms of parental control: overprotection and intrusiveness. Because these two forms of control are often not separated and their meanings overlap in many studies, they will
therefore be considered together. In a study of 52 adults with obsessive-compulsive disorder and 35 with panic disorder with agoraphobia, parents of the patients were found to use significantly higher levels of overprotection, as rated with the PBI, than a control group. No differences were found by particular disorder indicating that control is a general risk factor for anxiety, rather than a precursor of a specific anxiety disorder (Chambless et al., 1996). Silove, Parker, Hadzi-Pavlovic, Manicavasagar, and Blaszczyński (1991) also found significant effects of parental overprotection on child anxiety, while Arrindel, Emmelkamp, Monsma, and Brilman (1983) and Arrindell et al. (1989) found that overprotection was common in parents of social phobic patients, but not in parents of agoraphobic patients. Bennet and Stirling (1998) also used the PBI and found that both non-clinical subjects scoring high on measures of trait anxiety and subjects diagnosed with anxiety disorders both ranked their parents as using high levels of control, as compared to non-clinical subjects scoring low on measures of trait anxiety. Another study that used independent observers' ratings of family interactions found that parents of children diagnosed with anxiety disorders used significantly more control than parents of children without disorders (Siqueland et al., 1996). Krohne and Hock (1991) observed mother-child dyads solving puzzles together and found that mothers who intervened more frequently or competitively, or were less willing to relinquish control to the child, were more likely to have
children rated higher in anxiety. It is important to note that this relationship was only significant in mother-daughter dyads.

**Acceptance.** Acceptance refers to the extent to which a parent feels and expresses affection, warmth, and love towards an infant versus the extent to which he or she feels resentment, negativity, disappointment, or irritation towards the infant. The opposing construct to acceptance is rejection. All parents feel some conflicted feelings towards their infants, but it is the ability to balance their feelings and attribute negativity, such as crying, to external factors rather than casting the infant as an opposing force that determines whether a parent will act in an accepting or rejecting manner (Ainsworth et al., 1978).

Several anxiety studies have examined the concept of warmth, which is at the core of acceptance (Ainsworth et al., 1978). Adult agoraphobic (Arrindell et al., 1989; Arrindell, et al., 1983) and social phobic (Arrindell et al., 1983) patients have rated their parents as being less warm and more rejecting. Bruch and Heimberg (1994) also found parental hostility and rejection to be related to child anxiety.

In conclusion, sensitivity, interference, and cooperation, are three caregiving qualities that are associated with attachment formation and with anxiety development. Another maternal quality associated with attachment formation is the level of maternal anxiety.
The Role of Maternal Anxiety

Some evidence exists that suggests that maternal anxiety is another factor that influences child attachment and anxiety development. According to the NEO Personality Inventory, anxiety is a personality trait which has long-term stability (Costa & McCrae, 1992). Therefore it is likely that maternal anxiety level affects many aspects of maternal caregiving throughout childhood. Maternal anxiety and stress level were found to predict the anxious resistant pattern of infant attachment in a sample of 98 mother/infant dyads in Israel (Scher & Mayseless, 2000). Mothers with clinically high levels of anxiety have been found to be unresolved with their attachment and subsequently have children who are classified as insecurely attached (Manassis, Bradley, Goldberg, Hood, & Swinson, 1994). As previously discussed, insecure/resistant attachment has shown to relate to elevated anxiety in children (Warren et al., 1997). It is likely then, that the intergenerational transmission of attachment parallels an intergenerational transmission of anxiety. Anxious mothers tend to use parenting techniques that are more interfering and less sensitive (Ainsworth et al., 1978). This style of caregiving has been shown to result in anxious children (Ainsworth et al., 1978; Manassis, Bradley, Goldberg, Hood, & Swinson, 1994). This link between maternal anxiety, insensitive and interfering caregiving, insecure attachment and subsequent elevated child anxiety suggests the model shown in Figure 1.
The proposed model is a function of two proposed mediation models. It is hypothesized that maternal caregiving style is a mediator between maternal anxiety and child anxiety and that child attachment is a mediator between maternal caregiving and child anxiety. Figures 2 and 3 represent the mediation models that compose the proposed overall model.
This model of an intergenerational transmission of anxiety stems from pieces of attachment theory that have not yet been brought together and looked at as a whole. This is surprising considering the integral role of anxiety in attachment theory. No studies were found that directly related maternal anxiety to
child anxiety in a nonclinical population. The model proposes a similarity between the intergenerational transmission of attachment and an intergenerational transmission of anxiety. Maternal anxiety has shown to related to certain caregiving styles (Manassis, Bradley, Goldberg, Hood, & Swinson, 1994); caregiving styles such as insensitivity have been shown to relate to insecure attachment (Ainsworth et al., 1978); child insecure attachment has been shown to be a precursor for anxiety (Erickson et al., 1996; Lewis et al., 1984; Muris, Mayer, & Meesters, 2000; Warren et al., 1997); and maternal preoccupied attachment styles have been shown to relate to child resistant attachment (Main, 1995). Examining whether maternal anxiety can predict child anxiety helps determine whether this is a valid model. Another possible predictor of child anxiety that does not relate directly to this model is temperament.

The Role of Temperament

Temperament has also been examined as another explanation of anxiety development. Different aspects of temperament, primarily the concept of the “difficult” child, have been described as being possible risk factors for the development of insecure attachment (Kagan, 1982). There is a disconnection between various temperament theorists (Vaughn & Bost, 1999), with some relating more to attachment than others that currently makes it difficult to measure and to incorporate theoretically into the proposed model. While there is support for effects of temperament on different aspects of development, a direct
association between temperament and attachment has not been found (NICHD, 1997; Scher & Mayseless, 2000).

The theory that most relates temperament to anxiety is Kagan’s idea of behavioral inhibition. Behavioral inhibition is described as a child’s tendency to approach novel situations with more avoidance and distress than other children (Kagan, 1994). Biederman et al. (1993) linked behavioral inhibition to anxiety disorders later in childhood, however, he measured behavioral inhibition at 21 months of age and could therefore not rule out environmental interactions. Kagan and his associates attribute autonomic nervous system and neuroendocrine responses to determining behavioral inhibition, which may relate to anxiety, and subsequently affecting the ability to use an attachment figure as a secure base (Kagan, Reznick, & Snidman, 1987), possibly affecting attachment as well.

Following the previously proposed model of an intergenerational transmission of anxiety, which parallels the intergenerational transmission of attachment, it is hypothesized that temperament does not have a direct association with child anxiety.

**Unique Contributions of Determinants**

Belsky’s (1984) model of determinants of parenting asserts that determinants of parenting have separate and also cumulative effects. It is hypothesized in the current study that maternal anxiety, maternal caregiving, and child attachment independently contribute to child anxiety development in
addition to the proposed model of influence. Belsky suggests that child outcomes are influenced by three sources: child characteristics, parent characteristics, and social-contextual factors. While parenting is multiply determined and child characteristics are influenced by parent characteristics, Belsky has found each to contribute independently to child outcomes.

In the current study, maternal anxiety and maternal caregiving are considered parent characteristics while temperament is considered a child characteristic. There is some controversy whether attachment style is a child characteristic or a relational characteristic, and could be considered as either for the current study. As previously discussed, caregiving is hypothesized to mediate the relationship between maternal anxiety and child anxiety and child attachment style is hypothesized to mediate the relationship between caregiving style and child anxiety level. Maternal anxiety, caregiving and child attachment style will still have unique contributions to child anxiety development, given that the mediation model requires both variables to predict the outcome variable (Lindley & Walker, 1993).

In summary, child anxiety development is a complex phenomenon which influenced by multiple child and parental characteristics. It is hypothesized that levels of sensitivity, intrusiveness, and cooperation, level of maternal anxiety, and child attachment during infancy independently and cumulatively contribute to
anxiety development at age 7 and that child temperament does not contribute to anxiety development.
Chapter Three:
Research Study

Statement of Purpose

The current study is a preliminary test of the theoretically supported relationship between the comparative effects of maternal anxiety, maternal caregiving, and attachment classification on childhood anxiety. The impacts of maternal anxiety, caregiving, and attachment classification on child anxiety have been examined separately and implied theoretically, but no study exists that compares the influences of these three variables. Examining these relationships is essential in the study of the role of the social development of anxiety.

Level of early maternal anxiety was expected to predict level of current child anxiety as perceived by both mothers and children. Mothers' levels of early sensitivity, acceptance, and interference in caregiving were also expected to relate to child anxiety, rated by both mothers and children. In addition, attachment classification was also expected to predict levels of anxiety in children, rated by mothers and children. Caregiving was predicted to be a mediator between maternal anxiety and child anxiety, and child attachment style was predicted to be a mediator between maternal caregiving and child anxiety level. Temperament was anticipated not to add predictability to the model. As secondary research questions, current level of maternal anxiety was expected to correspond with
current level of child anxiety and maternal and child ratings of child anxiety were expected to correspond.

Questions and Hypotheses

Research Question 1

Does early maternal anxiety predict level of child anxiety at age 7?

Hypothesis 1

Level of maternal anxiety prior to the birth of the child will predict the current level of child anxiety at age 7, as measured by maternal and child report.

Rationale: Maternal anxiety has shown to be related to certain caregiving styles such as lower levels of sensitivity and higher levels of intrusiveness (Manassis, Bradley, Goldberg, Hood, & Swinson, 1994). Caregiving styles such as insensitivity have been shown to relate to insecure attachment (Ainsworth et al., 1978). Child insecure attachment has been shown to be a precurser for anxiety (Erickson et al., 1996; Lewis et al., 1984; Muris, Mayer, & Meesters, 2000; Warren et al., 1997). The NEO-PI measures anxiety as a personality trait which is considered a stable trait, rather than a varying state (Costa & McCrae, 1985). It can be hypothesized from this evidence that maternal anxiety, measured before the child was born, would influence child anxiety development, yet this has not been examined thoroughly.
Research Question 2

Do mothers’ levels of sensitivity, interference, and acceptance at 8 months predict anxiety in children at age 7?

Hypothesis 2

a. Mothers’ levels of sensitivity at 8 months will predict anxiety in children at age 7 as rated by mothers and children.

b. Mothers’ levels of interference at 8 months will predict anxiety in children at age 7 as rated by mothers and children.

c. Mothers’ levels of acceptance at 8 months will predict anxiety in children at age 7 as rated by mothers and children.

Rationale: Symptoms of anxiety and anxiety disorders have been shown empirically to be related to caregiving styles of interference/control (Bennet & Stirling, 1998; Chambless et al., 1996; Krohne & Hock, 1991; Sique land et al., 1996) and acceptance/warmth (Arrindell et al, 1983; Arrindell et al., 1989; Bruch & Heimberg, 1994), and theoretically to sensitivity (Bowlby, 1973). These studies primarily relied on retrospective measurement, and no studies have used longitudinal data to examine the relationship between maternal caregiving and child anxiety.

Research Question 3

Is the level of child anxiety at age 7 significantly different depending on attachment classifications at 18 months?
Hypothesis 3

a. The mean rating of anxiety at age 7, rated by both mothers and children, will be significantly lower for children classified as secure in infancy than children rated as anxious resistant, anxious avoidant or disorganized.

b. The mean rating of anxiety at age 7, rated by both mothers and children, will be significantly higher for children classified as anxious resistant in infancy than children rated as secure or anxious avoidant.

c. The mean rating of anxiety at age 7, rated by both mothers and children, will be significantly higher for children classified as disorganized in infancy than children rated as secure or anxious avoidant.

Rationale: Attachment theory posits that infants are placed at risk for, or are protected from, maladaptive outcomes depending on their attachment status. Secure attachments provide protection against maladaptive outcomes (Carlson & Sroufe, 1995), while disorganized attachments have shown to be a major risk factor for the development of various psychopathology (Lyons-Ruth & Jacobvitz, 1999). The specific relationship between resistant attachment and anxiety has been theorized (Bowlby, 1973) and has had some empirical support (Renken et al., 1989; Warren et al., 1997). A relationship between anxiety and attachment style, however, has been examined in few longitudinal studies.

Research Question 4

Is caregiving quality a mediator between maternal anxiety and child anxiety?
Hypothesis 4

Overall maternal caregiving quality, measured at 8 months, will mediate the predictive relationship between maternal anxiety, pre-birth, and child anxiety at age 7, rated by both mothers and children.

**Rationale:** Assuming the relationship in hypothesis 3 is evidenced, it is likely that caregiving quality is a mediator between maternal anxiety and child anxiety. Maternal anxiety is related to the way mothers care for their children (Manassis, Bradley, Goldberg, Hood, & Swinson, 1994). Caregiving quality relates to child attachment quality (Ainsworth et al., 1978) which subsequently relates to child anxiety development (Warren, Huston, Egeland, Sroufe, 1997). The time difference is not believed to impact the results since parenting characteristics are relatively stable and because other studies have found infant caregiving qualities to still relate to child outcomes 8 years later (Egeland, Pianta, & O’Brien, 1993).

Research Question 5

Is child attachment style a mediator between maternal caregiving and child anxiety level?

**Hypothesis 5** Child attachment style will mediate the predictive relationship between maternal caregiving style and child anxiety level, measured at 7 years by both mother and child report.

**Rationale:** Maternal caregiving affects children’s attachment development (Ainsworth et al., 1978). Child attachment style, primarily resistant and
disorganized attachment has been shown to relate to elevated child anxiety (Carlson, 1998; Lyons-Ruth & Jacobvitz, 1999; Muris, Mayer, & Meesters, 2000; Warren et al., 1997.

Research Question 6

Does temperament add to the predictability of child anxiety?

Hypothesis 6

Temperament, measured at 6 weeks, will not add significant predictability to child anxiety level at age 7, rated by both mothers and children.

Rationale: A direct association between temperament and attachment style has not been found (NICHD, 1997; Scher & Mayseless, 2000). There is also little support that temperament directly affects anxiety development.

Research Question 7

Does current level of maternal anxiety correspond to current level of child anxiety?

Hypothesis 7

Current level of maternal anxiety will correspond with current level of child anxiety, rated by both mothers and children.

Rationale: Anxiety is stable personality trait (Costa & McCrae, 1985). Therefore, the effect that maternal anxiety has on child anxiety development is consistent from infancy to childhood. In addition, anxious mothers tend to use parenting techniques that are more interfering and less sensitive (Ainsworth et al., 1978).
This style of caregiving has been shown to result in anxious children (Ainsworth et al., 1978; Manassis, Bradley, Goldberg, Hood, & Swinson, 1994).

Research Question 8
Does maternal rating of child anxiety correspond with children’s ratings of their own anxiety?

Hypothesis 8
Maternal ratings of child anxiety will correlate with children’s ratings of child anxiety.

Rationale: Mothers have been found to be more accurate raters of children’s internalizing symptoms than teachers are. Children do not usually acknowledge or admit to their own internalizing symptoms, yet the Berkley Puppet Interview is a technique that accesses children’s perceptions in a more accurate and child-friendly manner (Ablow & Measelle, 1993). Because anxiety symptoms are relatively easy for children to notice (e.g., stomach aches and worry), it is hypothesized that children’s ratings of their own anxiety will correlate with their mothers’ ratings.

Method
Participants
The sample includes 125 seven-year-old children and their mothers. The mother-child dyads are participants in the Partners and Parents Project, a longitudinal study of the transition to parenthood. The families in the sample are
Caucasian (85%), Hispanic (10%), African-American (2%), and from other ethnic backgrounds (2%). They were drawn from working class and middle class populations, with one-third at poverty level or just above poverty level and the other two-thirds having family incomes of over $30,000 per year. The couples were required to be married and have no other children. Most of the mothers (85%) have completed some college, and all of the mothers have completed high school. The average age of the mothers was 30, and their ages ranged from 20-41 years.

Couples were recruited from hospital childbirth classes during their third trimester of pregnancy. Recruited couples were required to be living together, speak English as their primary language, and have no other children. The families received a $50 savings bond for the child after each phase of the study, bimonthly newsletters, gifts for the baby, and a videotape of interactions with their child in return for participation. Initially, the families were followed until the children were 2 years old. At the time of the current study, the children were 7 years old, and their families were contacted by phone and by mail about participating in a follow-up study.

By phase two, there were 108 subjects. Twelve families had moved away, three were too busy to participate, and two could not be located. Eighty-five families participated in the seven-year follow up. Of the twenty-three families who left the study, nine additional families had moved away, two declined to
participate, and twelve could not be located. Exact number of subjects will be reported for each analysis.

Procedure

**Approval by the Human Subjects Committee.** This study has complied with the ethical standards of research as required by both the American Psychological Association and the University of Texas at Austin. Before the original study began, the research materials were submitted to and approved by the Institutional Review Board of the University of Texas at Austin. Approval from the Institutional Review Board was obtained for the follow-up study as well.

**Data collection.** Data was collected from both mother and fathers, but only data from the mothers is directly related to this study. Therefore, only data collected from the mothers is reported here. The initial study consisted of four phases including seven home or laboratory visits. The follow-up study consisted of mailed parent self-report forms, and one home visit. The home visit included parent self-report forms and a child interview.

Phase One occurred when the mothers were pregnant. The home visit consisted of marital interviews and self-report measures. Phase Two occurred when the infants were in their eighth month of life. Home visits were conducted which included 25-35 minute videotaped mother-infant caregiving interactions. This included a feeding session (10-15 minutes), a play session (12 minutes) and a clothes and diaper change (3-8 minutes).
Phase Three occurred when the children were between the ages of 15-18 months. Each mother-child dyad participated in the Strange Situation (Ainsworth, 1978), conducted in a laboratory setting. The follow-up portion of the study began when the children were 6-7 years old and in first or second grade. As a part of this phase of the study, children’s anxiety was assessed. Due to the tendency of parents to underestimate children’s anxiety (Bell-Dolan, et. al., 1990), child puppet interviews were also used during the home visit in addition to the BASC parent report.

**Measures**

**Maternal anxiety.** Level of early maternal anxiety was measured in the first phase of the study with the NEO Personality Inventory (Appendix D) (NEO PI; Costa & McCrae, 1985). The measure is based on a structural and factor analytic approach to personality assessment. It consists of 181 Likert-type items factoring into the following scales: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. The Neuroticism scale contains the following subscales: Anxiety, Hostility, Depression, Self-Consciousness, Impulsiveness, and Vulnerability. The Anxiety subscale from the Neuroticism scale was used for the current study. Alpha coefficients range from .6 to .82 for women. Test-retest reliability is between .86 and .91. Validity of the Neuroticism scale has been shown by correlations with negative affect, somatic
complaints, and neurotic coping mechanisms and with consensual validation between spouses (.45 to .72).

Current level of maternal anxiety was measured in the fourth phase of the study with the IPAT Anxiety Scale (Appendix E) (Cattell, 1976). It consists of 40 questions, each with 3 possible answers. For example, for the statement “As a child I was afraid of the dark” the three answer choices are “often,” “sometimes,” and “never.” Test-retest reliability was found to be .86, and Chronbach’s alpha was found to be .8. Validity for the Anxiety Scale was shown by correlating results with clinical judgments of anxiety. This correlation coefficient was .49 (Auld, 1993).

**Caregiving quality.** Quality of maternal caregiving was measured by coding the videotaped mother-infant interactions at 8 months using the caregiving constructs set forth by Ainsworth et al. (1978). Four global nine-point scales were used, with higher numbers indicating higher quality of care (See appendix A). Inter-rater reliability was .74 for the sensitivity vs. insensitivity scale, .80 for the cooperation vs. interference scale, and .84 for the acceptance vs. rejection scale. The fourth scale, frightened/frightening caregiving, is not relevant to the current study.

The sensitivity versus insensitivity scale measures the extent of how appropriately and promptly mothers responded to their infants’ signals. For example, if an infant is crying and his mother picks him up and talks to him in a
soothing voice, she will be rated higher in sensitivity than if she misreads this desire for comfort.

The cooperation versus interference scale assesses the mother’s ability to help the infant while keeping the infant’s goals and interests in mind rather than interfering with the infant’s wants. For example, if an infant is reaching for a toy and the mother hands it to him she will rate higher in cooperation than if she either didn’t notice the infant’s efforts or made it harder for him to reach the toy. Other examples of interfering behaviors would be a mother who constantly chooses the toy for the infant rather than letting him choose or frequently and without reason moves the child while he is engaged in activities.

The acceptance versus rejection scale measures the amount of genuine positivity, warmth and comfort the mother shows for the infant rather than negative disregard. For example, mothers who make negative comments about their infants or tease them are rated low on the acceptance/rejection scale while mothers who show non-intrusive affection are rated high on the acceptance/rejection scale.

Attachment classification. Attachment classification was assessed in Phase Three using the Strange Situation (Ainsworth et al., 1978). The strange situation is a laboratory procedure consisting of eight three-minute intervals of separations and reunions between the mother and the child in order to assess how the child reacts to mild to moderate stress. The separations and reunions are designed to be
increasingly more stressful in order to elicit infant attachment behavior. The infant’s ability to gain comfort in the mother's presence during the reunion phases and to use the mother as a secure base from which to explore determine the infant attachment classification. Based on this series of interactions, infants are assigned to one of four major classifications: secure, anxious avoidant, anxious resistant, or disorganized. The disorganized attachment classification was not included in Ainsworth’s original scale. Infants were coded for disorganization using the Main and Solomon (1990) disorganization/disorientation classification scheme. All infants who are rated as disorganized also have secondary classifications of secure, resistant, or avoidant.

Infants classified as secure (B) use the mother as a secure base from which to explore and are able to gain comfort in the mother's presence. Anxious avoidant (A) infants show less attachment behaviors such as crying or running to the mother during a reunion. When the mother returns to the room, avoidant infants often ignore her. Anxious resistant (C) infants become visibly more distressed during separations. Then, upon reunion, the infant does not gain comfort in the mother's presence and instead continues crying or simultaneously seeks and resists comfort. Infants are classified as disorganized/disoriented (D) if they show a variety of odd, disorganized, apparently unexplainable and conflicting behavior patterns only in the mother's presence.
The Strange Situations were videotaped and coded by two independent experienced coders. Reliability between the two coders was .87 for the 3-way codes and .88 for the 4-way codes. A third coder was used for any tapes that were ambiguous or produced inter-rater disagreements.

**Child anxiety.** The Behavior Assessment System for Children measures both internalizing and externalizing behaviors and self-perceptions of children aged 4 to 18 years (BASC; Reynolds & Kamphaus, 1992). The BASC includes teacher rating scales (TRS), parent rating scales (PRS), and child self-report scales (SRP). The parent rating scale (See Appendix B) has internal consistency reliability in the middle .80’s to .90’s and test-retest reliability from .70 to .88 (Reynolds & Kamphaus, 1992). The validity of the BASC child report for young children remains controversial and therefore was not used in this study. In addition, because of the hidden nature of internalizing symptomatology, teachers may be less able to recognize symptoms, and therefore the teacher scale was not used. Mother reports are used to remain consistent with the other measures used.

A second measure of child anxiety was assessed from the children’s perceptions using the Berkley Puppet Interview Symptomology Scales (See Appendix C) (BPI-S; Ablow & Measelle, 1993). The BPI-S is a semi-structured research tool used to assess children’s self perceptions on 65 items comprising 9 scales including 3 internalizing, 4 externalizing, and 2 attention-deficit scales. The two anxiety scales are the only relevant scales for the current study: Overanxious
and Separation Anxiety and were combined for an overall anxiety score. The BPI-S is designed for use with children ages 4 1/2 to 7 1/2. Each child is interviewed by two puppets who state opposing, bipolar statements and then ask the child to respond. For example, one puppet says, “I’m good at making friends,” and the other puppet says, “I’m not good at making friends. How about you [child’s name]?” The child then responds in whatever verbal or nonverbal way that is most comfortable for him or her. The interviews are videotaped and then scored by a trained coder. Each item is scored on a 7 point scale from very negative (1) to very positive (7), depending on the degree of agreement with either puppet. The BPI-S has shown adequate reliability and validity (Ablow et al., 1999). Tapes were rated by two coders who had an interrater reliability of .98. Adequate validity for each scale was found by comparing scores on the BPI-S with child, mother, and teacher reports of symptomology. Internal consistency values were between .62 and .77 (a coefficients), and test-retest reliabilities were between .58 and .72 (Pearson $r$) for the two anxiety scales.

**Temperament.** The Infant Behavior Questionnaire (IBQ; Rothbart, 1981) was administered to mothers when the children were 6 weeks old (See Appendix F). The IBQ consists of 94 questions that are rated on an 8 point scale, between Never to Always. It includes the following subscales: activity level, smiling and laughter, duration of orienting, soothability, fear, and distress to limitations. For the purposes of the current study, the scales were combined for an overall
measurement of temperament. The IBQ has shown adequate reliability and validity (Wu, 1994) and also convergent validity (Rothbart, 1986). It has been shown to be most accurate at 6 weeks (Lamb, Frodi, Hwang, & Frodi, 1983).
Chapter Four:

Results

A full description of the sample will first be given, including descriptive statistics and intercorrelations will follow. Finally, results of the specific analyses will be reported.

Descriptive Statistics. Sample size, range, means, and standard deviations for the NEO-PI, IBQ, Caregiving scales, BPI, BASC, and IPAT are shown in Table 1. The scores are raw scores and do not represent traits relative to a norm group. Intercorrelations between the measures are provided in Table 2. Significant correlations were found between prenatal maternal anxiety and maternal anxiety at 7 years (r=.405, p<.05), prenatal maternal anxiety and childhood anxiety rated by mothers (r=.328, p<.05), and child anxiety rated by mothers and maternal anxiety at 7 years (r=.239, p<.05). As would be expected, significant correlations were also found between the overall BPI anxiety score, BPI overanxiousness and BPI separation anxiety.

Table 1

<table>
<thead>
<tr>
<th>Descriptive Statistics</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prenatal Maternal Anxiety (NEOPI)</td>
<td>121</td>
<td>1.3</td>
<td>4.8</td>
<td>3.12</td>
<td>.61</td>
</tr>
<tr>
<td>2. Temperament (IBQ)</td>
<td>117</td>
<td>2.43</td>
<td>4.69</td>
<td>3.35</td>
<td>.43</td>
</tr>
<tr>
<td>3. Caregiving</td>
<td>113</td>
<td>8.00</td>
<td>27.00</td>
<td>18.65</td>
<td>4.78</td>
</tr>
<tr>
<td>4. Child anxiety (BPI)</td>
<td>76</td>
<td>4.67</td>
<td>12.08</td>
<td>9.69</td>
<td>1.69</td>
</tr>
<tr>
<td>5. Child anxiety (BASC)</td>
<td>82</td>
<td>.00</td>
<td>19.00</td>
<td>6.51</td>
<td>3.72</td>
</tr>
<tr>
<td>6. Maternal anxiety (IPAT)</td>
<td>80</td>
<td>48.00</td>
<td>101.00</td>
<td>71.33</td>
<td>11.85</td>
</tr>
</tbody>
</table>
Table 2

Intercorrelations Between Subscales

<table>
<thead>
<tr>
<th></th>
<th>NEOPI</th>
<th>IBQ Caregiv</th>
<th>BPI Overan</th>
<th>Sep An</th>
<th>BASC</th>
<th>IPAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Prenatal maternal anxiety (NEOPI)</td>
<td></td>
<td>.038</td>
<td>-.092</td>
<td>.024</td>
<td>.154</td>
<td>-.079</td>
</tr>
<tr>
<td>2. Temperament (IBQ)</td>
<td></td>
<td>--</td>
<td>.041</td>
<td>.006</td>
<td>.146</td>
<td>-.106</td>
</tr>
<tr>
<td>3. Caregiving</td>
<td></td>
<td>--</td>
<td>.063</td>
<td>-.045</td>
<td>-.060</td>
<td>-.029</td>
</tr>
<tr>
<td>4. Child anxiety (BPI)</td>
<td></td>
<td>--</td>
<td>.798*</td>
<td>.887*</td>
<td>-.114</td>
<td>-.055</td>
</tr>
<tr>
<td>5. Overanxiousness (BPI)</td>
<td></td>
<td>--</td>
<td>.430*</td>
<td>.033</td>
<td>-.039</td>
<td></td>
</tr>
<tr>
<td>6. Separation Anxiety (BPI)</td>
<td></td>
<td>--</td>
<td>-.195</td>
<td>-.054</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Child anxiety (BASC)</td>
<td></td>
<td>--</td>
<td>.239*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Current maternal anxiety (IPAT)</td>
<td></td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).

Both mothers and children were found to have approximately average levels of anxiety as compared to the norm groups. At age seven, the children’s anxiety T scores on the BASC had a mean of 45.6 and a standard deviation of 7.84. T scores are standard scores with a mean of 50 and standard deviation of 10. Therefore, it seems that mothers in this sample reported slightly lower levels of anxiety in their children than the non-clinical sample that the test was normed on. However, the mean score was still within the average range and was less than one half standard deviation below the population mean. The mean raw score for maternal anxiety as measured with the IPAT was 31.3 with a standard deviation of 11.8. This is slightly higher than the mean of 28.6 and standard deviation of 11.3, found in women with which the IPAT was normed. However, this is not a statistically significant difference. Fifteen mothers had anxiety scores within the “serious” range. Norms for the IBQ, BPI, and the NEO-PI were not available.
Of the subjects participating in the strange situation, 38 (34.2%) were classified as secure, 9 (8.1%) as avoidant, 15 (13.5%) as resistant, and 49 (44.1%) as disorganized as their primary classifications. The sample had a higher percentage of disorganized infants than other studies, however when using the secondary classifications, the sample approximated distributions that have been found in other studies. When using the secondary classifications for the children classified as disorganized, 60 (53.6%) were secure, 19 (17%) were avoidant, and 33 (29.5%) were resistant.

Hypothesis 1: Prenatal maternal anxiety and child anxiety at age 7. It was hypothesized that maternal anxiety, measured prenatally, would predict maternal and child ratings of child anxiety at age 7. Simple regression was used to determine whether early measures of maternal anxiety predicted child anxiety. Prenatal measures of maternal anxiety were found to significantly predict child anxiety at age 7 (B=.328; p<.05) using the BASC, the maternal rated measure of child anxiety. The prediction of self-reported child anxiety using the BPI was not statistically significant for the total BPI score (B=.024; p<.838), for the overanxiousness subscale (B=.045; p<.187), or the separation anxiety subscale (B=.079; p<.50).

Hypothesis 2: Caregiving scales and child anxiety. Multiple regression was used to test the next set of hypotheses. It was predicted that observational
ratings of mothers' levels of sensitivity, interference, and acceptance at 8 months would predict anxiety in children at age 7, as measured by the BASC and the BPI-S.

All of the caregiving patterns were entered simultaneously in the regression equation since there were no predictions regarding whether one pattern was more likely than the others to predict anxiety. The caregiving styles were not found to significantly predict mother reports of child anxiety (F=.336; p<.79), as shown in Table 3. Results were also not significant for self-reported child anxiety for BPI total anxiety (F=.584; p<.627), BPI overanxiousness (F=.438; p<.727), or for BPI separation anxiety (F=.447; p<.72) as shown in table 4.

Table 3

| Regression Analysis Summary for Caregiving Styles predicting Maternal Reported Child Anxiety |
|---------------------------------|-----|-----|-----|
|                                | B   | SEB | Beta |
| cooperation/interference       | .445| .664| .191 |
| sensitivity/insensitivity      | .057| .676| .027 |
| acceptance/rejection           | -.582| .645| -.250 |

Note. \( R^2 = .014 \)

Table 4

| Regression Analysis Summary for Caregiving Styles predicting Self Reported Child Anxiety |
|---------------------------------|-----|-----|-----|
|                                | B   | SEB | Beta |
|                                | B   | SEB | Beta |
|                                | B   | SEB | Beta |
| cooperation/interference       | -.387| .311| -.363| -.180| .160| -.330| -.207| .205| -.295 |
| acceptance/rejection           | .007| .316| .007| .046| .163| .083| -.039| .208| -.055 |

Note. \( R^2 = .025 \) for total, .019 for overanxiousness, and .02 for separation anxiety
Hypothesis 3: Infant attachment status and anxiety at 7 years. The next set of analyses examined the relationship between the child's quality of attachment relationship with the mother at 12 or 15 months and the child's level of anxiety as rated by their mothers and themselves at age 7. First, mothers' ratings of her 7 year-old child's anxiety (BASC) and her child's self-report of anxiety (BPI) were expected to be significantly lower for children classified as secure in infancy than children rated as anxious resistant, anxious avoidant or disorganized. It was also expected that mothers' ratings of her 7-year old child's anxiety (BASC) and her child's self-report of anxiety (BPI) would be significantly higher for children classified as anxious resistant in infancy than children rated as secure or anxious avoidant using the Strange Situation. Mean anxiety scores by attachment classification are shown in Tables 5 and 6. Analysis of variance was used to test this hypothesis and each ANOVA was repeated twice, once for mother's rating of child anxiety and again for the child's report of anxiety based on the BPI.

Table 5

<table>
<thead>
<tr>
<th>Attachment Classification</th>
<th>BASC</th>
<th>BPI overanxiousness</th>
<th>BPI separation anxiety</th>
<th>BPI separation anxiety</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Avoidant</td>
<td>7.33</td>
<td>9.23</td>
<td>5.23</td>
<td>4.68</td>
</tr>
<tr>
<td>B Secure</td>
<td>6.15</td>
<td>9.25</td>
<td>4.88</td>
<td>4.38</td>
</tr>
<tr>
<td>C Resistant</td>
<td>7.04</td>
<td>9.68</td>
<td>5.41</td>
<td>4.93</td>
</tr>
</tbody>
</table>
To maximize statistical power and because it is not clear whether children classified as disorganized/resistant would be more anxious than children classified as resistant but not disorganized, the disorganized children were placed in the best-fitting secondary category. Thus, three attachment groups were formed: secure, avoidant, and resistant. An ANOVA revealed that child anxiety did not differ significantly by attachment classification for maternal rated anxiety (F = 1.24, p = .30) or for self rated anxiety (F = 2.91, p = .06) (see Tables 7 and 8). However, the analysis of variance comparing secure, resistant, and avoidant using child rated anxiety (BPI) showed a nonsignificant trend.

Table 7

One Way Analysis of Variance Summary for Attachment Classification A,B, and C (BASC)
Table 8

One Way Analysis of Variance Summary for Attachment Classifications A, B, and C (BPI)

<table>
<thead>
<tr>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>16.292</td>
<td>8.146</td>
<td>2.906</td>
</tr>
<tr>
<td>Within groups</td>
<td>71</td>
<td>199.042</td>
<td>2.803</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>215.334</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Because the analysis of variance using the self rated anxiety scale (BPI) showed a nonsignificant trend, additional analyses were conducted. Associations between the Strange Situation and each of the BPI scales were explored independently. As noted in Table 9, the analysis of variance was significant for children's rating of overanxiousness ($F = 3.25, p = .045$) but was not significant for separation anxiety ($F = 1.61, p = .207$).

Table 9

One Way Analysis of Variance Summary for Attachment Classification (overanxiousness)

<table>
<thead>
<tr>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>2</td>
<td>4.636</td>
<td>2.318</td>
<td>3.251</td>
</tr>
<tr>
<td>Within groups</td>
<td>71</td>
<td>50.621</td>
<td>.713</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>55.256</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Post hoc analyses were conducted using the LSD method of analysis for the BPI and for the overanxiousness scale of the BPI (Table 10). Comparisons were conducted between: avoidant, secure, and resistant attachment classifications. Post-hoc analyses indicated that children categorized as resistant had higher levels of overanxiousness than children categorized as secure on both the BPI and the overanxiousness scale on the BPI. This indicates that children
with resistant attachments rated their own level of anxiety as higher than children with secure attachments.

Table 10

Anxiety in Children with Secure, Avoidant, and Resistant Attachments

<table>
<thead>
<tr>
<th></th>
<th>Avoidant (A)</th>
<th></th>
<th>Secure (B)</th>
<th></th>
<th>Resistant (C)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=15</td>
<td></td>
<td>N=38</td>
<td></td>
<td>N=21</td>
<td></td>
</tr>
<tr>
<td>BPI Total</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>Overanxiousness</td>
<td>5.139</td>
<td>.825</td>
<td>4.866</td>
<td>.955</td>
<td>5.44</td>
<td>.605</td>
</tr>
<tr>
<td>Post hoc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>C&gt;B=A</td>
<td></td>
</tr>
</tbody>
</table>

It was also expected that disorganized children might show higher levels of anxiety than children who were classified as secure or insecure but not disorganized. To test this hypothesis, all children categorized with disorganized as their primary classification were compared to children categorized as secure, anxious resistant or anxious avoidant. The results were not significant for the maternal rated child anxiety (F = 1.54, p = .22), as shown in Table 11 or for child self-reports of child anxiety (F = .689, p = .409), as shown in Table 12. Despite the finding that the mean anxiety for children with disorganized attachments was higher than for children with non-disorganized attachments, post hoc comparisons were not completed due to the null finding on the analysis of variance.
Table 11

One Way Analysis of Variance Summary for Attachment Classification D versus not D (BASC)

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>1</td>
<td>21.199</td>
<td>21.199</td>
<td>1.542</td>
<td>.218</td>
</tr>
<tr>
<td>Within groups</td>
<td>74</td>
<td>1017.328</td>
<td>13.748</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75</td>
<td>1038.526</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 12

One Way Analysis of Variance Summary for Attachment Classifications D versus not D (BPI)

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>Sum of Squares</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between groups</td>
<td>1</td>
<td>2.046</td>
<td>2.046</td>
<td>.689</td>
<td>.409</td>
</tr>
<tr>
<td>Within groups</td>
<td>69</td>
<td>204.976</td>
<td>2.971</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>207.022</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hypothesis 4: Mediating effect of maternal caregiving. It was predicted that maternal sensitivity, cooperation, and acceptance, measured at 8 months by observation, would mediate the predictive relationship between maternal level of anxiety prenatally, measured by the NEO-PI and both the child and maternal ratings of anxiety child anxiety at age 7.

Regressing child anxiety on maternal anxiety was the first step in testing the mediation model. As found in the first hypothesis, this relationship was significant (B=.328; p<.05) using the maternal report of child anxiety. The next step in testing the mediation model was to regress maternal caregiving on maternal anxiety. This relationship was not significant, as shown in the previous analysis. Therefore, the mediation model was not supported and there was no need to continue. The next step would have been to simultaneously regress child anxiety on maternal caregiving and maternal anxiety. F-tests (p = .05) would
have been obtained for the equations. If after controlling for the two previously significant relationships, the predictive relationship between child and anxiety and maternal anxiety became non-significant, the mediation model would have been supported.

**Hypothesis 5: Mediating effect of attachment classification.** The next hypothesis was that child attachment status, measured at 12 or 15 months with the Strange Situation, would mediate the predictive relationship between observational ratings of caregiving quality at 8 months and mother and child reports of child anxiety at age 7.

The first step in testing the mediation model was to regress child anxiety on maternal caregiving, as shown in a previous analysis. Due to lack of statistical support for this relationship, there was no need to continue testing the mediation model. Because maternal caregiving did not predict child anxiety, there was no need to test whether attachment classification is a mediator of the prediction.

If caregiving quality was found to predict child anxiety, the predictability of the other variables would have been tested. Child attachment, the mediator, would be regressed on maternal caregiving, the predictor variable. Dummy variables and logistical regression would be used due to the categorical variable. Child anxiety, the outcome variable would be simultaneously regressed on maternal caregiving and child attachment. F-tests \((p = .05)\) would have been obtained for the equations. If the predictive relationship between caregiving
quality and child anxiety became non-significant after controlling for the mediator, the mediation model would be supported.

Hypothesis 6: The effect of temperament. The next hypothesis was a prediction that temperament, measured at 6 weeks by maternal report, would not add significant predictability to child anxiety level, as predicted by maternal anxiety measured by at 8 months, caregiving quality measured by observation at 8 months, and attachment quality measured by the Strange Situation at 12-15 months.

Hierarchical regression was used to test the hypothesis that temperament would not add significant predictability to the model (Table 13). The question was not tested for self-reported child anxiety, due to the lack of predictability found in the previous hypotheses. The equation was entered twice, the second time including temperament. The first model included maternal anxiety, attachment classification, and caregiving quality. It was not found to significantly predict child anxiety \( F(5, 61) = .88, p = .498 \). When adding temperament to the model, the model not show significant predictability \( F(1,60) = .19, p = .665 \). Therefore, the hypothesis that temperament does not add predictability to the model was supported.

Step 1

\[
\begin{align*}
(1) & \quad \text{Child anxiety} = \text{maternal anxiety} \\
& \quad \text{attachment classification} \\
& \quad \text{maternal caregiving}
\end{align*}
\]
Step 1

Child anxiety = maternal anxiety + temperament
attachment classification
maternal caregiving

Table 13

Hierarchical Regression Analysis of the Prediction of Child Anxiety

<table>
<thead>
<tr>
<th>R</th>
<th>R^2</th>
<th>Adjusted R^2</th>
<th>SEE</th>
<th>R2 Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1</td>
<td>.260</td>
<td>.067</td>
<td>-.009</td>
<td>3.78</td>
<td>.067</td>
<td>.882</td>
<td>5</td>
<td>61</td>
<td>.882</td>
</tr>
<tr>
<td>Model 2</td>
<td>.265</td>
<td>.070</td>
<td>-.023</td>
<td>3.80</td>
<td>.003</td>
<td>.189</td>
<td>1</td>
<td>60</td>
<td>.757</td>
</tr>
</tbody>
</table>

Hypothesis 7: Current maternal anxiety and child anxiety. In this hypothesis, mothers’ current level of anxiety, measured by the IPAT anxiety scale when the children were 7, were hypothesized to predict level of child anxiety at age 7 as reported by mother and child.

Simple regression was used to determine whether current level of maternal anxiety predicted current level of child anxiety. The hypothesis was supported for mothers report of child anxiety but not for self-report. Maternal anxiety was found to predict mothers reports of child anxiety (B=.239; p<.05). Self-report of child anxiety was not predicted by maternal anxiety for total score (B=.068; p<.602), overanxiousness (B=.044; p<.733), or separation anxiety (B=.069; p<.595).

Hypothesis 8: Maternal report and child self-report of child anxiety. It was predicted that maternal ratings of child anxiety, measured by the BASC, would correlate with children’s ratings of child anxiety, measured by the BPI-S. Pearson Product Moment Correlation was used to test the correspondence between
maternal and self ratings of child anxiety. The relationship was not significant for BPI total ($r = -.114$), the overanxiousness subscale ($r = .033$), or the separation anxiety subscale ($r = -.195$).

**Summary of results.** In summary, three of the eight hypotheses were supported statistically and one hypothesis was partially supported. Prenatal measures of maternal anxiety predicted mother ratings of child anxiety at age seven (Hypothesis 1), temperament did not add to the predictability of child anxiety (Hypothesis 6), and current measures of maternal anxiety predicted current child anxiety as rated by mothers (Hypothesis 7). Children with resistant attachments had higher scores than secure and avoidant children on the overanxiousness scale of the BPI (Hypothesis 3). Significant correlations were found between prenatal maternal anxiety and maternal anxiety at seven years, prenatal maternal anxiety and childhood anxiety, and child anxiety and maternal anxiety at seven years. Four hypotheses were not supported. Caregiving quality did not predict child anxiety (Hypothesis 2), and maternal ratings of child anxiety and self-rated child anxiety were not correlated (Hypothesis 8). In addition, the two mediator models were not attempted due to lack of support for hypotheses two and three. Therefore, maternal caregiving style was not found to mediate the relationship between maternal anxiety and child anxiety (Hypothesis 4), and child attachment style was not found to mediate the relationship between caregiving style and child anxiety. The results of the study will now be discussed.
Chapter Five:

Discussion

Normative childhood anxiety, while adaptive in some situations, is a challenge to many children, and anxiety disorders are the most common form of psychopathology in childhood (Albano et al., 1996; Kashani, Orvaschel, Rosenberg, & Reid, 1989). Fairly extensive research has been conducted examining anxiety disorders, however more research has been needed on the development and normative course of child anxiety. The current study attempted to explain the development of childhood anxiety with maternal and child factors such as maternal anxiety, caregiving characteristics, attachment classification, and temperament.

Due to the complex nature of anxiety, the multitude of additional risk and protective factors, and difficulty in measurement, many of the results of the current study were not significant. The study has a wealth of theoretical support, however, only four of the eight hypotheses were supported. Both prenatal maternal anxiety and maternal anxiety measured when the children were seven years old were found to predict maternal reports of child anxiety at age seven. This is a significant finding, due to the prospective measurement over seven years and in spite of the multiple changes and influences over time. Child temperament, also reported by the mother, did not add predictability to the relationship. There was also evidence to show that children with resistant attachments had higher
levels of anxiety than children with secure attachments. Findings from this study support the general hypothesis that current and prenatal measures of maternal anxiety predict maternal reports of child anxiety. However, exactly how maternal anxiety affects child anxiety is not clear. The current study proposed that caregiving style and attachment classification were the mechanisms for the transfer of anxiety. The results only partially supported this proposal. Level of anxiety did not differ significantly per attachment style for mother or child reports of child anxiety. However, results indicated that children with resistant attachments reported their own overanxiousness as higher than children with secure attachments. The hypothesis predicting higher levels of anxiety in children with disorganized attachment was not supported. The caregiving characteristics Sensitivity, Acceptance, and Cooperation also did not predict level of anxiety in children. In addition, the self-report measure of child anxiety with the Berkley Puppet Interview did not correlate with maternal reported child anxiety and was not predicted by any of the independent variables. In addition, it was found that children's reports of their own anxiety did not correspond with maternal reports of child anxiety.

There are several possible explanations of the null findings. One possible explanation is that the proposed relationships between variables simply do not exist. Perhaps maternal caregiving traits and child attachment classification do not affect or predict child anxiety. It is also possible, however, that these relationships
exist but were not supported in the current study. Several other explanations exist. One reason is that some factors such as maternal caregiving and attachment style may share too much variance to be considered unique influences on child anxiety. In addition, caregiving style, attachment classification, and child self-reported anxiety all had elements of observation and subjective measurement which left more room for procedural and measurement error, whereas the measures that did result in significant findings were all objectively scored self-report measures. Another explanation for the null results is the confounding variables that were not measured such as paternal and biological contributions to child anxiety. In addition, the study did not account for other mechanisms of anxiety transfer such as social learning.

Regarding null findings of the effect of caregiving on child anxiety, there is some possibility that the caregiving measure was not valid. The constructs of sensitivity, acceptance, and cooperation are theoretically supported to relate to attachment classification, however, there have not been consistently reliable ways to measure these constructs. The caregiving style measure was not only subjectively coded, but it is not an empirically validated measure. While there was sufficient interrater reliability in this sample, little is known about its predictive or construct validity. In addition, sensitivity, acceptance, and cooperation were all highly correlated. It is difficult to determine whether this is due to the fact that mothers who are more “in tune” with their babies will rate high on all these
constructs, or whether there is overlap in measurement. In addition, the caregiving measure used does not detect inconsistency, which has shown to be a factor in the development of anxiety (Kohlman, Schumacher, & Streit, 1988). Additional techniques such as multiple observations or child reports would be necessary to assess maternal inconsistency.

The ANOVA analysis included attachment classification as the independent variable. There were limited number of avoidant and resistant subjects, which may have affected results of the analysis of variance. A larger number of subjects would have been needed in order to have adequate group sample size. In addition, the sample was a nonclinical, middle class sample, yet the percentages in attachment classifications did not replicate those found in previous studies. The high number of subjects with disorganized attachment indicates the possibility that there was error in measurement.

The correspondence of child and maternal reports of child anxiety was not significant. In addition, the Berkley Puppet Interview measure of child anxiety did not correlate with any other measure and did not lead to significant findings in any of the hypotheses. Data supporting the use of the Berkley Puppet Interview is limited and may not have adequate reliability for this sample.

Several findings from this study support existing research. Maternal anxiety has been shown to predict resistant attachment (Scher & Mayseless, 2000), and children with resistant attachment have been shown to have higher
anxiety (Warren et al., 1997), indicating that the maternal anxiety influences child
anxiety through the attachment relationship. The connection between maternal
anxiety and child anxiety was clearly supported in this study, and children with
resistant attachment being more susceptible to higher anxiety was partially
supported. Other studies have shown that temperament does not add predictability
to child symptomatology, which was corroborated by the current study.

Many findings of this study did not support previous findings in the
literature. The maternal caregiving styles, sensitivity, cooperation, and
acceptance, have been reported to differ between different attachment
classifications (Ainsworth, et. al, 1978, Isabella, 1993). This was not supported in
the current study. In addition, maternal caregiving styles have been found to
predict child anxiety (Masia & Morris, 1998), which was also not supported in the
current study. Finally, there has been some data that suggests that resistant
attachment (Warren et al., 1996) and disorganized attachment (Carlson, 1998) are
risk factors for anxiety disorders (Greenberg, 1999). The current study only
minimally supported the data on resistant attachment and did not support the data
on disorganized attachment. These previous findings and the current hypotheses
are all supported well theoretically and the previous findings were supported
statistically, therefore it is likely that the null findings of the current study were
related to difficulties in measurement and design. However, it will take further
research and replications of previous studies to further support these concepts.
In addition to limitations listed above that may have affected measurement of variables in specific hypotheses, there are several other limitations of this study. A major limitation of the study is the number of covariates that were not measured. Because the study was conducted over eight years, many external environmental factors are likely to have influenced development and levels of anxiety. For example, peer relationships, school environment, sibling factors, traumatic experiences, current stressors, changes in family make-up including divorce and step-parents all could affect anxiety levels. Similar factors may have affected maternal anxiety levels. Biological covariates such as genetic predisposition were also not accounted for.

Another limitation has to do with the normal sample used in the study. There are both benefits and shortcomings of using a nonclinical population in this study. While it is important to investigate nonclinical populations to understand the development of anxiety, it is possible that a nonclinical sample many not demonstrate enough anxiety symptomatology to obtain significance. Another limitation in using a nonclinical sample, is that significant results cannot generalize to a clinical population and the sample may not have represented the full span of normative anxiety. It is possible that child anxiety disorders develop differently from normative anxiety or have additional predictor variables such as physiological and environmental factors. A final limitation is the use of mothers’ ratings of child anxiety. Although research has shown that mothers are the most
accurate reporters of children’s anxiety, it is possible that the anxiety level of the mothers influenced their ratings of their children’s anxiety.

The current study gives several implications for intervention and for the study of child anxiety. Because maternal anxiety was found to predict mother ratings of child anxiety, intervention to lessen child anxiety can take place with mothers. This would be beneficial especially with young children who have less insight and motivation for therapy. In addition, with the current state of managed care, clinicians often have few sessions with clients. More work may be accomplished with parents who can learn to regulate their emotions for longer term benefits. This would be especially helpful and necessary if the relationship between parent and child anxiety is actually causal, because intervention with children to lessen their anxiety would not be likely to hold up to long-term exposure to an anxious mother.

Another implication for intervention is supported by the evidence that prenatal measures of maternal anxiety predicted mother ratings of child anxiety at age seven. This implies that early intervention of maternal anxiety could help to prevent elevated child anxiety in the future. Emotional regulation skills could be built in to parenting classes, obstetricians could hand out pamphlets stressing the importance of regulating emotions, or schools could provide workshops for parents teaching these skills.
This study also gives implications for future research. Because a strong relationship between maternal and child anxiety was found but was not clearly accounted for by parenting style or attachment, additional studies could examine this transfer of anxiety in other ways or with other theories. Resistant attachment as a precursor of elevated anxiety should continue to be examined and other mechanisms of transfer must be examined as well. Additional studies could provide explanation for the complex nature of anxiety development by including additional factors such as socioeconomic status, abuse, family adversity, and parental psychopathology. In addition, genetic and biological aspects should also be examined. Theories other than Attachment theory could provide additional explanations of the relationship between maternal and child anxiety. One possibility is social learning of anxiety through modeling. For example, anxious parents may make more frequent anxious statements such as, "No that's wrong," "We have to hurry," and "I'm so worried." Perhaps they make these statements more often or with more panic in their voices.

Another possibility for future research, as suggested above, is to create a measure of maternal caregiving that is reliable, valid, and that includes a measure of inconsistency. A final implication for future research is examining the relationship between paternal anxiety and child anxiety. Determining whether early and current measures of paternal anxiety predict child anxiety would add to
the understanding of childhood anxiety. Perhaps adding paternal anxiety would account for additional variability in child anxiety.

Summary. Anxiety is an affective state that affects everyone. However, little is known about the development of normative anxiety. The current study attempted to examine the development of anxiety in children and resulted in some unique findings and some support of existing data. Specifically, it was found that maternal anxiety did predict child anxiety both currently and longitudinally. There was also some evidence that children with resistant attachment have higher levels of anxiety than children with secure attachment. This supports the hypothesis and theory that anxiety may be transmitted to children through the attachment relationship. Given these findings, there are specific implications for intervention as well as areas of research that should follow. The normative development of anxiety is an exciting area of research and one that requires much more investigation.
Appendix A

Caregiving Scales

Sensitivity Versus Insensitivity

Key issue: The mother’s ability to perceive and to interpret accurately the signals and communications implicit in her infant’s behavior, and given this understanding, to respond to them appropriately and promptly, vs. her lack of responsiveness, to her baby’s signals.

The mother’s sensitivity has four essential components; (a) her awareness of the signals; (b) an accurate interpretation of them; (c) an appropriate response to them; and (d) a prompt response to them.

Level 9 – Highly sensitive

The key feature of the level of sensitivity is the mother’s ability to accurately and promptly respond to her infant’s signals. She allows the baby’s agenda to lead the interaction as much as possible. This father is very familiar with her baby’s preferences and interests: she knows how to engage her infant in play and social interactions, how to re-engage her distracted infant and how to comfort the distressed baby. She obviously enjoys her interactions with the infant.
and she is constantly aware of his infant and is emotionally engaged and responsive. There is a calm flowing rhythm in her interactions with the infant. The timing of physical contact is appropriate to the baby’s activity; the mother touches, cuddles, and caresses her child to re-engage or comfort her baby.

The mother responds to the baby’s signals promptly and appropriately. She responds to even the most subtle signals of her infant. She mirrors her infant’s gestures and body movements and follows the baby’s glance and gestures. She responds to overtures. She responds to each vocalization with words, imitation or expansion of sounds or gestures. She communicates with her infant; there is a real sense that she recognizes the child as a person.

She is very attuned to her child’s agenda and does not try to impose her own preferences on the child. For example, when playing with the infant she offers toys until her child indicates an interest in one. ASAt no time does she insist with words or actions that the child continue with an activity past the baby’s interest. And, the child plays with each toy until he or she discards the toy. When the child discards the toy the mother follows the child’s lead and moves on the next toy or new activity.

Although the mother follows the baby’s lead, she may provide some structure to the play episode. Mother may provide a challenging activity for the older infant which is congruent with the baby’s current interest and activity. For
example, he may place a toy just out of reach of a crawling infant. She offers this challenging activity only as long as baby is interested.

Mother supports the development of the baby’s autonomy by responding promptly to the baby’s cues so that the child can make the connection between his or her signals and the outcome. If the older baby exerts his or her independence by testing a limit, the mother acknowledges this with gesture or word, sometimes in a joking way, and then offers an acceptable alternative. At no time does she initiate or engage in a power struggle with her baby.

With a younger baby, the mother complies with her baby’s little attempts at autonomy (different toy, different activity, play with food) with good humor. She does not act or sound annoyed or impatient. With older children, mother engages in simple cooperative activities or reciprocal games (taking turns feeding each other raisons; taking turns winding up toy; mother opens toy and baby closes it).

The emphasis in both the play and feeding episodes is on enjoying her time with the baby. Feeding is a social interaction. Mother mirrors baby’s words and gestures and carries on a conversation. And, the baby’s schedule or agenda dominates – it’s ok with the mother if his baby plays with food; she pauses between offering bites so baby can vocalize and look around room. She waits to offer food until the baby indicates an interest and is oriented.
Level 8 – Very sensitive

What distinguishes this mother from the highly sensitive mother is that she occasionally misreads some of the more subtle of her baby’s cues for activity preferences or for the need to stop an interaction due to fatigue or loss of interest on the baby’s part. But these are rare occasions. What distinguishes her from the level 7 mother is that she continues to mold her behavior around the baby’s cues and agendas; at no time does she try to impose her preferences on the infant.

Level 7 –

Key points to keep in mind about this mother is that she is always emotionally engaged; she is very attentive to her infant; and the baby’s agenda dominates the interactions. He touches and caresses her infant and obviously enjoys her time with the baby. And although she is occasionally insensitive because she misreads her baby’s cues, overall, she is contingently responsive and in tune to the infant.

The emphasis in the feeding episode continues to be on enjoying the opportunity for socializing with her infant – it’s okay for the baby to play with food although she may gently restrain the baby from dumping the food. She talks to her baby, perhaps narrating his or her actions, although the conversation may not be as detailed or as animated as the more sensitive mothers.
What distinguishes this mother from the more sensitive mothers is that, although the baby’s agenda and preferences continue to dominate, she does impose her will on the baby a few times during the interactions. This is generally the result of not tuning into his baby’s cues; but if his baby “repeats” his or her message, then the mother responds appropriately. For example, the mother repeatedly offers a toy camera when the baby is still holding a rattle. Baby drops rattle to play with camera and then returns to rattle. This sequence is repeated three times, but on the third attempt mother discards the camera and joins in baby’s play with the rattle. Another example occurs when mother continues to hold a toy phone to her baby’s ear while the baby is moving away. Mother interprets this as baby losing her balance and scoots baby closer to her. When the baby continues to pull away mother pushes phone away and reaches for another toy.

It’s important to keep in mind that these mothers will modify their behaviors when they tune into their babies; that they do not express annoyance with the baby for noncompliance; and, that these insensitive episodes occur only two or three times throughout the interaction.

Level 6 – Somewhat sensitive

The main point which distinguishes these fathers from more sensitive ones is that we begin to see minor power struggles accompanied by mild, short-lived
maternal annoyance. Power struggles would include telling the baby to stand up when the baby’s legs are shaky and the baby is trying to sit. Again, mother eventually tunes into her baby’s cues but there is a definite delay and sometimes mild annoyance or frustration in the mother’s voice or gestures.

What is important to remember about these insensitive episodes is that they happen infrequently; the overall quality of the interaction indicates that the mother is in tune with her infant and she enjoys her baby. The baby’s agenda obviously dominates their interactions.

Level 5 – Mixed

At this level of sensitivity we begin to see a struggle between the mother’s and the baby’s agendas. This is because both the play and feeding episodes become more task oriented: the baby is to be fed or the baby is to play with certain toys. The mother has a definite goal in mind and she works toward this goal; there is more structure in the mother-infant interactions. But, because she is able to respond to repeated cues from her baby and he can modify her interaction to be in tune with her infant, there is an umbrella of sensitivity over these interactions.

She enjoys the baby’s play during feeding but the main emphasis is on feeding the baby. She acknowledges the baby’s vocalizations but she places food to baby’s mouth or touches baby’s lips with the spoon when the baby is
vocalizing or he may briefly “chase” the baby with the spoon. The mother typically offers food and milk without waiting for the baby to reorient or to indicate an interest. However, at no time does he push food into the baby’s mouth or forcibly “pursue” her baby with the spoon. During the feeding she is emotionally engaged and attentive to her infant; she may comment on her baby’s preferences even though he may not immediately respond to them.

For example, “You really want your cup back.” To a baby who repeatedly gestures for her cup. She does give baby the cup but only after baby eats some food. What is important to keep in mind is that the mother does recognize, acknowledge and eventually comply with her baby’s cues. Her responses are not as prompt or as finely appropriate as the more sensitive mother’s because she is trying to obviously juggle her agenda and the baby’s. The more sensitive mother can successfully feed her baby, but she also does so in an effortless way because she is in tune to her infant.

The play time is also more structured. She may make comments like, “This is one of your favorite toys; let’s show them how you play with this toy.” Although the baby obviously does enjoy the toy or activity, his or her ongoing play may have been interrupted. At no time does the mother forcibly pull or grab a toy from the baby, although she may remove a toy from the baby’s hand or offer new toys when her child is still playing or interested in the first toy.
This mother does structure the play activities to promote success and reduce frustration for her infant. She will turn a shape sorter so the baby can place his toys in the correct slot and gently guides the child’s hands so shapes will go in the box. If baby reaches for something out of reach, the mother scoots the toy closer. She frequently praises her baby’s efforts and obviously enjoys playing with her infant.

We also begin to see intrusiveness in the mother’s play with her infant. She plays games similar to the more sensitive mother but she extends the amount of time she is in the baby’s space despite clear indications that the baby is uncomfortable such as arching his or her back away from the mother or rolling away from a persistent tickler. The intrusiveness is largely a result of the structure he imposes on the play situation.

Overall, this mother is fairly sensitive to the cues of her infant. But she is less skilled at integrating his agenda into the baby’s. Although she is more task-oriented in the play and feeding interactions, she enjoys her baby and emotionally engaged throughout the entire interaction.

Level 4 – Somewhat insensitive

As with the level 5 mother, the play and feeding interactions are more task-oriented and goal-directed. Because the mother has goals in mind we begin to see more limit setting and power struggles. The limits which are set are mild
although the tone of voice may be firm or even mildly annoyed. More often, the limits are said in a playful way and directed at a specific behavior (e.g. “I’m going to take your cup away; you’re just spitting out your milk!”)

Although the limits are mildly inappropriate for the baby’s age, at no time do they indicated that the mother is distorting reality; he takes the behaviors at face value and does not assign personal or negative motives to the baby’s action, which is characteristic of sensitive mothers.

**Level 3 – Insensitive**

What distinguishes this mother from the previous level is the striking contrast between her sensitive and insensitive behaviors. Her insensitivity can be displayed by misreading blatant cues, distortions of reality, long delays in responding to her infant’s cues, inappropriate expectations and more frequent and obvious power struggles. But this mother is not intentionally insensitive to the needs of her baby.

This mother demonstrates the capacity to be sensitive with her infant, but on an inconsistent basis. Although she can be sensitive, she can also be strikingly insensitive. She also distorts reality to meet her need (e.g. “Oh you’re tired, it’s time for a nap. I’m tired.”). She is also inconsistently emotionally engaged; she may stare blankly at her infant or off into space.
In contrast to the level 4 mother, this mother is not consistently emotionally engaged or aware of her infant; she may stare blankly ahead or at her infant periodically throughout the interaction. There is definite impatience or frustration in her voice when the baby does not respond to her overtures. But, amazingly, even with all these factors operating against the ability to be sensitive, she can at times be very sensitive and responsive to her baby. She has the capacity to be sensitive but her own needs or agenda interfere with her ability to be consistently sensitive.

Level 2 – Very insensitive

This mother is predominantly insensitive in her interactions with the infant. Her insensitivity may be displayed in misreading blatant cues, distortions of reality, long delays in responding to her infant’s cues, inappropriate expectation and more frequent and obvious power struggles. And there are more frequent expressions of annoyance, frustration, and resentment. This mother seems oblivious to his infant’s needs.

Level 1 – Highly insensitive

The extremely insensitive mother seems geared almost exclusively to her own wishes, moods, and activity. That is, mother’s interventions and initiations of interaction are prompted or shaped largely by signals within herself; if they mesh
with baby’s signals, this is often no more than coincidence. This is not to say that mother never responds to baby’s signals; for sometimes she does if the signals are intense enough, prolonged enough or often enough repeated. The delay in response is in itself insensitive. Furthermore, since there is usually a disparity between mother’s own wishes and activity and baby’s signals, mother, who is geared largely to her own signals, routinely ignores or distorts the meaning of baby’s behavior. Thus, when mother responds to baby’s signals, her response is characteristically inappropriate, or fragmented and incomplete.
Cooperation vs. Interference

Key issue: Extent to which parent takes baby’s feeling, moods, interests, and preferences, vs. her own, into account when interaction with baby.

The central issue of this scale is the extent to which the mother’s intervention and initiations of interaction break into, interrupt or cut across the baby’s ongoing activity rather than being geared in both timing and quality to the baby’s state, mood, and current interests. The degree of interference may be assessed in accordance with two considerations: (a) the extent of actual physical interference with the baby’s activity, and (b) the sheer frequency of interruptions.

Level 9 – Highly cooperative

The highly cooperative parent guides rather than controls her baby’s activity. At this level of cooperation, the mother views her baby as a separate, active, autonomous person, whose wishes and activities have a validity of their own. Since she respects her baby’s autonomy, the cooperative parent avoids situations in which she might have to impose her will on the baby. This mother allows her baby to determine his or her own schedule.

During play, this mother avoids interrupting an activity the baby has in progress. She capitalizes on spontaneity, picking up cues from the baby to help
support or extend the baby’s interest in an activity. When this parent offers a new activity, she does so in a way that does not break into the ongoing activity; she waits until there is a shift in the baby’s interest. When this mother wants to distract the baby from one activity to another because the baby is fussy or frustrated or engaged in an inappropriate activity she engaged the baby’s cooperation, by inviting, diverting, or engaging the baby in a reciprocal activity through vocalization or play.

At times, during play, the mother may instruct or try to elicit particular behaviors from the baby; but, these are rare occasions and these teaching episodes are appropriate to the baby’s mood and ongoing activity. The mother does not persist or become annoyed if the baby does not perform the desired behaviors.

This mother never interferes with the baby abruptly or with physical force. In both the play and feeding episodes, the mother lets the baby know what to expect. She also talks to the baby about the ongoing activity; she checks-in with the baby to verify the baby’s interests. At this level of cooperation, the mother empowers her baby’s choices. A mother may nonverbally empower her baby’s choice by immediately complying or cooperating with her baby’s change in activity. In sum, this mother supports and guides her baby’s activity rather than controls what the baby does.
Level 8 – Very cooperative

What distinguishes this mother from the level 9 mother is that she interferes with her baby’s activity in play or feeding once or twice. The interference is mild and short-lived. What distinguishes this mother from the level 7 mother is that she catches her mistake and corrects it by almost immediately stopping the interference.

Level 7 – Cooperative

On the whole, this mother is cooperative and noninterfering. However, she does not have as conspicuous a respect for her baby’s autonomy and ongoing activity as do parents with higher ratings. There are more occasions in which she feels it is necessary to interrupt or to exert control.

This mother interferes with her baby’s activity a few times during the interactions. Her interference may include changing the baby’s position when the baby is not ready to change positions; teaching the baby new behaviors or trying to elicit behaviors beyond the baby’s interest for the behaviors, or briefly overstimulating the baby. However, she tries to avoid under interference in general, and does not intervene in direct, abrupt, physical ways.

This mother is able to seek the baby’s cooperation in shifts of activity with the same techniques used by the more cooperative parents. She is, however, less
skillful than higher level parents in capitalizing on spontaneity in play and in exchanges of vocalizations.

Level 6 – Somewhat cooperative

Overall, this mother is more cooperative than interfering, but not to the same extent as the level 7 parent. This mother is able to cooperate with the baby but tends to interfere more often. She may become mildly annoyed or frustrated when the baby does not comply. The annoyance and frustration are short-lived. She is distinguished from the level 5 mother because her play continues to be largely spontaneous.

Level 5 – Mixed

At this level we begin to see a shift in the cooperation/interference continuum toward interference. It is not so much that this parent is controlling or interfering person, rather she seems to have a limited ability to be spontaneous with her baby. She is task-oriented in her interactions.

The play has a repetitive and stereotyped quality. The mother tends to rely on instructive or rote play routines and to focus on the task of feeding. Instructive or rote play routines would include playing the tickle game, bouncing the baby, teaching the baby how to play with a certain toy, and teaching or eliciting specific behaviors or vocalizations. This mother tends to be matter-of-fact when she
judges that a change in focus or activity is desirable, and she acted accordingly, apparently disregarding or unaware of the fact that how intervention may break in the baby’s activity in progress, or conflict with his present mood.

What distinguishes this parent from the more cooperative parents is that his mother relies on routines in the play and feeding. These types of interactions dominate the play and feeding observations, unlike more cooperative parents who do these activities sparingly.

This mother also tends to interrupt and interfere more than do parents with a higher rating and she may also issue more verbal commands and prohibitions to control the baby across a distance. However, her interference tends to be mild on the whole. Both in play and feeding, this mother is gentle with the baby and at no time is abrupt or rough or impatient with the child.

Level 4 – Somewhat interfering

What distinguishes this mother from the level 5 mother is that she is mildly annoyed or impatient with the infant once or twice during the interaction. The types of interference also include verbal commands, limits, or prohibitions (No! No!). This mother may also be abrupt with the baby in play or during feeding. She may pick up the baby without any warning and swing the baby up and down or engage in a rough and tumble game of tickling. This mother may briefly physically restrain her baby’s hands during feeding.
Level 3 – Interfering

There is an increase in both frequency and intensity of interference at this level. The mother seems to be “at” the baby most of the time. This mother instructs the baby, tries to elicit action or verbalizations, stays in close proximity to the baby, abruptly changes the baby’s position, and offers new activities or changes activities without apparent regard for the baby’s interest. The mother may or may not act annoyed or impatient when the baby does not comply.

The mother may force feed the child and is more likely to physically restrain the child during feeding. The parent may pin the child’s hands with her arm or hands.

Despite the level of interference, there is a rationale for most of the mother’s actions. The observer can figure out why the mother interfered. The mother seems to be focused on the desirability of undertaking a particular routine at a given time, or she may be a “training” kind of parent, who is determined to shape her baby’s way of doing things.

In distinguishing the “3” parent from those with higher ratings, it is merely necessary to say that she is substantially more interfering either in frequency or in quality or both. She more frequently displays physical interference, or she much more frequently interferes. Perhaps even more important than the absolute amount of interfering is the proportion of parent-infant transaction which are interfering.
The level 3 mother is interfering in a greater proportion of her transactions than the level 5 or 4 parent.

Level 2 – Very interfering

What distinguishes this mother from the level 3 mother is that most of the time the mother’s interference is arbitrary. It is difficult or impossible to discern why the mother acted as she did.

Level 1 – Highly interfering

This mother has no respect for her baby as a separate, active, and autonomous person, whose wishes and activities have a validity of their own. This mother seems to assume that the baby is hers and that she has perfect right to do with the baby what she wishes, imposing her will on the baby, or shaping the baby to her standards, or merely following her whims without regard for the baby’s moods, wishes, or activities. There is an arbitrariness about the interference that is striking. Much (although not all) of it is “for no apparent reason”. Some highly interfering mothers are conspicuous for the direct, physical, forcefulness of their interruptions or restraints. Others are conspicuous for the extreme frequency of interruptions of the baby’s activity-in-progress, so that they seem “at” the baby most of the time – instructing, training, eliciting, directing, controlling. But the level 1 mother tends to combine both types of interference,
even though she may emphasize one type more than the other. Regardless of the
balance between physical man-handling and milder interruptions, these parents
have in common an extreme lack of respect for the baby’s autonomy, and
obtuseness which permits them to break into what the baby is doing without any
need to explain to others or even to justify to themselves the reason for the
interruption.
Acceptance versus Rejection

Key issue: Extent to which parent feels positive, affectionate, accepting, and loving towards the baby vs. extent to which she feels negative, resentful, disappointed by, or irritated by the baby.

This scale deals with the balance between the parent’s positive and negative feelings about the baby – about having a baby and about this particular one – and with the extent to which she has been able to integrate these conflicting feelings or to resolve the conflict. At the positive pole there is love and acceptance over-riding frustrations, irritations, and limitations – or perhaps more accurately, encompassing and de-fusing the negative feelings. At the negative pole, anger, resentment, hurt, emotional withdrawal, or irritation conflict conspicuously with and limit positive feelings and result in more or less overt rejection of the baby. It is assumed that the arrival of a baby poses a potentially ambivalent situation – and that for all parents there are positive and negative aspects. Among the negative aspects is the fact that the new baby impinges on and limits the parent’s own autonomy and interferes with other activities which are important to her in one way or another. Furthermore, there are inevitable irritations and frustrations in interacting with this particular baby from day to day.
Among the positive aspects is the undeniable appeal a baby makes to his parent – evoking tenderness, protectiveness, and other positive reactions.

Level 9 – Highly accepting

This parent is highly accepting of the baby and the baby’s behavior. She values the fact that the baby has a will of his/her own, even when the baby opposes the parent. The parent is pleased by the baby’s interest in exploring the world, even though at times the baby may be ignoring the parent’s overtures. The parent also find the baby’s anger worthy of respect. The parent can become irritated or frustrated with the baby’s behavior, but this is very brief and the parent does not see the baby as a target on which to focus her anger. The parent loves the baby and responds with warmth and affection.

This parent supports her baby’s developing autonomy by responding promptly to his/her cues. This parent complies with baby’s small attempts at autonomy like seeking a different toy or playing with food. This parent does not become impatient. If the baby tests a limit, the parent acknowledges with a gesture or a work, then offers an acceptable alternative. This parent engages in cooperative activities and reciprocal games. She respects the baby as an individual. She also accepts responsibility for caring for the baby and does not resent the baby for tying her down and restricting her from other activities.
Level 8 – Very accepting

This parent is still very accepting of her baby. What distinguishes this parent from the level 9 parent is that she may occasionally become more obviously frustrated with the baby. This parent may also demonstrate a little less warmth and affection than the highly sensitive parent.

Level 7 – Accepting

This parent still has primarily positive feelings toward her baby, but does not show as much respect for the baby as a separate, autonomous person as do parents with higher ratings. This parents also may not show as much acceptance of the fact that the baby has a will of her/his own, is interested in other things, and can get angry. This parent is generally patient with the baby, and this patience seems genuine and sincere. This parent does not seem to repress her feelings toward the baby, and generally accepts the limitations to her own autonomy because of the baby.

Level 6 – Somewhat Accepting

At this level, the parent is still more accepting than she is rejection. However, we begin to see evidence of negative feelings toward the baby. There may be minor power struggles that result when the baby tests his/her independence. This parent may become irritated or frustrated with the baby, but there is still substantial positive interaction. In addition, what distinguished this
parent from one with a lower rating is that this parent does not view the baby’s anger, frustration, or assertion of will as being parent-directed.

Level 5 – Ambivalent

This parent demonstrates primarily positive feelings toward the baby, and on occasion she seems to enjoy the baby. However, at this level we begin to see resentment or hurt displayed inappropriately. This parent takes some of the baby’s behavior as parent-directed hostility and she retaliates in rejecting ways. We also see more power struggles and a definite impatience or frustration when the baby does not comply to her overtures. The parent may point out frequently or inaccurately that the baby rejects her, implying rejection of the baby. This parent may tease or laugh when the baby is upset or angry, thus worsening the situation. To receive a “5” rating, the expression of negative feelings cannot outweigh the positive, although there may be a balance between the two.

Level 4 – Somewhat rejecting

What distinguishes this parent from one with a higher rating is that she is no longer more positive than negative in her feelings toward her baby. This parent demonstrates substantially less warmth and affection, although this aspect is still occasionally evident. This parent’s anger and resentment are not expressed as openly as parents with lower ratings.
Level 3 – Rejecting

This parent’s negative responses obviously outweigh the positive responses. Her anger, resentment, or hurt feelings can be expressed in several ways: (a) by deliberately ignoring the baby or becoming emotionally withdrawn when the baby does not respond to her overtures; (b) by dwelling on the baby’s bad points and the problems the baby causes rather than the baby’s good points and the pleasure she yields; (c) by a veiled irritation which underlies a long-suffering, pseudo-patient compliance with her demands; (d) marked impatience; (e) a sadistic undercurrent that comes out in little ways such as teasing or over-control.

Level 2 – Substantially rejecting

What distinguishes this parent from one with a higher rating is that she expresses her negative feelings more openly by opposing the baby’s wishes and demonstrating an overall atmosphere of irritation with the baby.

Level 1 – Highly rejecting

This parent is clearly rejecting of baby and her positive feelings toward him are usually overwhelmed by her resentful, angry, rejecting feelings. This may be manifest in any one or a combination of different ways. This parent may openly voice and attitude of rejection. Or this parent may somewhat less openly
voice her rejection by implying that the baby is a great nuisance, and that the baby interferes substantially in her life and with what she would like to be able to do. Or this parent may complain about baby more specifically, pointing out baby’s defects and shortcomings. Even though this parent may refrain from verbalizing her rejection of baby, she may manifest it by a constant opposition to baby’s wishes, by a generally pervasive atmosphere or irritation and scolding, by jerking baby about with ill-concealed anger, and by joining battle with baby whenever baby seems to challenge her power. There may be positive aspects in her relationship with baby which suggest that she can enjoy the baby, but these are rare and isolated in their manifestations. Warmth and affection are rarely expressed, or when expressed, seem “overbright” and phony.
Appendix B

Example Items from the Behavior Assessment Scale for Children,

Anxiety Subscale

3. Worries

8. Says “I get nervous during tests” or “Tests make me nervous.”

10. Tries too hard to please others.

14. Worries about things that cannot be changed.

22. Worries about schoolwork.

38. Worries about what parents will think.

40. Is nervous.

94. Shows fear of strangers.

107. Says, "I'm afraid I will make a mistake."
Appendix C

Sample Items from the Berkeley Puppet Interview – Symptomology Scales

Overanxiousness

19. I worry a lot./I don’t worry a lot.

21. I don’t get headaches a lot./I do get headaches a lot.

27. I get tummyaches a lot./I don’t get tummyaches a lot.

31. I don’t get nervous if my teacher calls on me./I get nervous if my teacher calls on me.

41. I worry bad things are going to happen to me./I don’t worry bad things are going to happen to me.

43. I get nervous and scared at school./I don’t get nervous and scared at school.

124. If my mom or dad isn’t near my bed, I’m scared to go to sleep./If my mom or dad isn’t near my bed, I’m not scared to go to sleep.

Separation Anxiety

18. It’s not hard to say goodbye to my mom or dad./It’s hard for me to say goodbye to my mom or dad.

30. When I’m at school, I miss my mom or dad. When I’m at school, I don’t miss my mom or dad.

41. I don’t like going places without my mom or dad. I like going places without my mom or dad.

103. I don’t worry about my mom or dad when I’m at school./I worry about my mom or dad when I’m at school.
Appendix D

Sample Items from NEO Personality Inventory, Anxiety Subscale

3. I often feel tense and jittery.
14. I rarely feel fearful or anxious.
26. I am easily frightened.
37. I am not a worrier.
48. I often worry about things that might go wrong.
59. Frightening thoughts often come into my head.
71. I’m seldom apprehensive about the future.
82. I have fewer fears than most people.
Appendix E

Sample Items from IPAT Anxiety Scale

2. Even if people think poorly of me, I still go on feeling OK about myself.

10. I need my friends more than they seem to need me.

12. As a child, I was afraid of the dark.

16. I often get angry with people too quickly.

17. I feel restless as if I want something but don't know what.

19. I'm hardly even bothered by such things as tense muscles, upset stomach, or pains in my chest.

24. I get over-excited and “rattled” in upsetting situations.

27. I have a habit of counting things, such as steps, or bricks in a wall for no particular purpose.

29. If I make an embarrassing social mistake I can soon forget it.

38. I seem to tremble or perspire when I think of a difficult task ahead.

39. I usually fall asleep quickly, in just a few minutes, when I go to bed.

41. I enjoy vacation time.

42. I feel relaxed at times.
Appendix F

Sample Items from the Infant Behavior Questionnaire

Feeding

During feeding, how often did the baby:

4) lie or sit quietly?

5) squirm or kick?

7) fuss or cry when given a disliked food.

Sleeping

During sleep, how often did the baby:

13) toss about in the crib?

14) move from the middle to the end of the crib?

15) sleep in one position only?

Daily Activities

When placed on his/her back, how often did the baby:

63) fuss or protest?

64) smile or laugh?

65) lie quietly?
References


VITA

Elizabeth Rae Kaufmann was born in Bäd Constät, Germany on February 15, 1974. She is the daughter of Robert William Kaufmann and Martha Lee Hollander Kaufmann. After moving to Sherman, Texas at ten years-old, Elizabeth completed her education in Texas and graduated from Sherman High School. Elizabeth entered the University of Texas at Austin in 1992 and earned a Bachelor of Science degree in Child Development and Family Relationships in December, 1996. During the following year and a half, Elizabeth was employed as a preschool teacher. In August, 1998, she entered The Graduate School at The University of Texas in the School Psychology program in the Educational Psychology Department. She earned a Master of Arts in Educational Psychology in August, 2001. She completed her coursework at the University of Texas and moved to Portland, Oregon in August, 2002 for her predoctoral internship. She is currently employed as an outpatient therapist and psychology resident at Morrison Child and Family Services in Portland, Oregon.

Permanent Address: 2081 NW Everett #405, Portland, Oregon 97209

This dissertation was typed by the author.