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**Mother's representation of her infant and infant's temperament
rating**

Williams, Trudy B., Ph.D.

City University of New York, 1991

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A

MOTHER'S REPRESENTATION OF HER INFANT
AND INFANT'S TEMPERAMENT RATING

by

TRUDY WILLIAMS

A dissertation submitted to the Graduate
Faculty in Psychology in partial fulfillment of
the requirements for the degree of Doctor of
Philosophy, The City University of New York.

1991

c 1991

TRUDY WILLIAMS

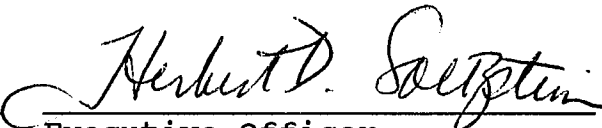
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This manuscript has been read and accepted for the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

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Abstract

MOTHER'S REPRESENTATION OF THE INFANT

AND

INFANT TEMPERAMENT RATING

by

Trudy Williams

Advisor: Dalton Miller-Jones

The intent of this research is to contribute to the current reformulation of infant developmental theory in terms of the role of mother's representation of the infant within the mother-infant system. This study examined the relationship between mother's representation of her infant and infant temperament rating. Thirty-eight middle-class primiparous mother-infant dyads were studied longitudinally: data gathered consisted of measures of maternal representation and infant temperament rating at 6 weeks, 4 months and 12 months. Scores for maternal representation were obtained for each of the three time periods by judges' ratings of clinical interviews, which included mothers' descriptions of their infants with

specific examples. Infant temperament rating was determined by use of the Revised Infant Temperament Scale (Carey & McDevitt, 1978) or the Toddler Temperament Scale (Fullard, McDevitt, & Carey, 1984) at each of the three time periods.

Using a multiple regression analysis, scores for maternal representation and infant temperament rating were assessed for their predictive power relative to each other at each of the three time periods as well as between time periods. Results provide support for the hypothesis that mother's representation of the infant predicts infant temperament rating at succeeding time periods. These findings offer empirical support for the explanatory power of maternal representation of the infant as a critical factor in infant behavior; specifically, that the infant's temperament rating viewed by temperament theory as either innate or interactively determined, may be interpreted as reflecting the impact of mother's representation on infant behavior.

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CHAPTER I

STATEMENT OF THE PROBLEM

Representation has been seen as a central organizing principle in the development of the cognitive processes necessary for the acquisition of knowledge, including perception, memory, language, communication, the ability to abstract, and the production of emergent mental structures (Bruner, 1966, 1983; Case, 1978; Klahr & Siegler, 1978; Mandler, 1983; Nelson & Gruendel, 1981; Nelson, 1986; Piaget, 1952; Stern, 1989). Recently, the concept of representation has also gained prominence as the basis for theoretical reformulation and advance in several major areas of developmental investigation.

In particular, representation has been invoked as an explanatory construct in the context of a growing body of theory and research on interaction and social relationships in infancy. Representation is seen as central to the dynamic process by which interpersonal experience becomes internalized and transformed by the developing infant (Stern, 1985). In addition, the parent's representation of

the infant is viewed as organizing the quality of the parent-infant relationship, which in turn provides the context for the infant's development (Fraiberg, 1980; Fraiberg, et al, 1975; Haft & Slade, 1989; Main, Kaplan, & Cassidy, 1985; Main & Goldwyn, 1984; Sameroff, 1982; Sroufe, 1985; Stern, 1989).

Responding to advances in the investigation of developmental representational processes, researchers in attachment theory have re-cast attachment theory in terms of representation. Current theory and research on attachment specifically concerns the impact of maternal representation on the infant-caregiver interaction system (Bretherton et al, 1989; Crowell & Feldman, 1989; George & Solomon, 1989; Main et al, 1985; Stern-Bruschweiler & Stern, 1989; Zeanah & Barton, 1989). Individual differences in quality of infant attachment are now conceptualized as resulting from individual differences in mothers' mental representations (Bowlby, 1980; Crockenberg, 1986; Crockenberg & Smith, 1986; Main et al, 1985; Sroufe, 1985).

Current research in infant temperament has not fully utilized theoretical advances in representation as a paradigm for the organization of development. Despite twenty years of research following Thomas and Chess' New York Longitudinal Study (1968), it is noted by researchers within the field of temperament that the construct of temperament has not been confirmed by a wide range of

empirical studies (Goldsmith & Campos, 1982; Lamb, 1980). Consistent correlations have not been found between temperament categories and other significant developmental indices such as maternal behavior, infant behavior, or attachment classification (Bates et al, 1979, 1982; Hubert et al, 1982; Lee & Bates, 1985; Sroufe, 1985).

In an effort to account for the poor predictive, concurrent, and construct validity of temperament studies, some researchers have criticized the psychometric instruments used to measure temperament. An alternate explanation for the inconclusive findings in temperament research to date is that the theoretical construct of temperament itself may be lacking in explanatory power (Sroufe & Fleeson, 1986). Current research on the relationship between maternal representation and attachment rating suggests that infant behavior patterns result from the impact on the infant of the mother's representation (Bretherton, 1985, 1987; Cramer, 1986; Main & Goldwyn, 1984; Main et al, 1985; Sameroff, 1982; Sroufe, 1985). These findings question the view that differences in infant temperament by themselves as traditionally defined explain individual differences in infant behavior patterns.

Given the significant role of mother's representation in organizing the quality of the relationship with the infant and determining developmental outcome (Main et al, 1985; Fraiberg, 1980; Haft & Slade, 1989; Stern, 1989), this study investigates the relationship between the

infant and determining developmental outcome (Main et al, 1985; Fraiberg, 1980; Haft & Slade, 1989; Stern, 1989), this study investigates the relationship between the mother's representation of the infant and infant temperament rating according to the classic dimensions of temperament established by Thomas, Chess, and Birch (1968), elaborated by Carey and McDevitt (1978), and in wide use currently.

In particular, this study addresses the question, is there a relationship between mother's representation of the infant, and infant temperament rating? Thirty-eight mother-infant dyads were studied; scores of maternal representation of the infant and infant temperament rating at six weeks, four months, and twelve months were analysed in terms of their respective predictive power.

The intent of this study is to contribute to current reformulation of infant developmental theory in terms of the role of mother's representation of the infant within the mother-infant relationship system. The outcome of this research may provide empirical support for the explanatory power of maternal representation of the infant as a critical factor in infant development; specifically, that the infant's temperament rating viewed by temperament theory as innate or interactively determined, may be explained as emerging from the impact of mother's representation on infant behavior.

CHAPTER II

REVIEW OF THE LITERATURE

Recent research on the significance of representation for infant and parent has led to the reformulation of major aspects of developmental theory including attachment theory (Bowlby, 1980; Bretherton, 1985, 1987; Main et al, 1985); clinical approaches to mother-infant interaction (Main & Goldwyn, 1984; Sroufe, 1988; Stern-Bruschweiler & Stern, 1989); self- and object representations (Beebe & Lachmann, 1988); and the development of cognitive structures in infancy (Stern, 1985, 1989).

Representation

The mother's representation of the developing infant is currently seen as a critical factor in infant development, as dyadic interaction is increasingly redefined in terms of an ongoing relationship between caregiver and child. In this context, representation has both an affective and a cognitive component. The affective component was emphasized originally by Bowlby and other

ethologically based theorists interested in attachment. Bowlby posited the existence of an internal working model of the self, the other, and the relationship, which is an "integral component of the attachment behavioral system: it guides appraisals of experience, and guides behavior" (Bowlby, 1982, p. 69). The cognitive component of representation has been explored by Nelson and others interested in the processes by which events are remembered, generalized and abstracted to form "generalized event representations" that synthesize experience into cognitive structures (Nelson & Gruendel, 1981).

Stern (1985) and others have explored the process by which affective and cognitive components of experience are fused into a unified representation of an interaction that has been generalized, which in turn becomes a building block of consciousness in the developing infant. Bretherton (1985) also examined the synthesis of affective and cognitive working models of the self and of the attachment figure. She saw the internal working model as originating in event schemas that develop in interaction with specific people; this internal working model of the self and the attachment figure consists of a "multilayered hierarchical network of representations" (Bretherton, 1985, p.6).

A major grouping of developmental psychologists investigating representation is working to clarify the

internal working models thought to be operating on processes of attachment. Specific to early mother-infant interaction, the infant's representations are seen as the structures derived from the experience of the attachment figure which is "abstracted into a collective perceptual record of the affective and behavioral components of transaction" (George & Solomon, 1989, p. 223). Attachment theorists have drawn on constructs from other areas investigating representation, such as the information-processing concept of generalized event schemas (Mandler, 1979); scripts (Nelson & Gruendel, 1981); and generalized memory (Ackerman, 1987), in order to explain the representational structures underlying attachment relationships. The representational structures of attachment are considered to develop during infancy, be relatively stable once formed, yet able to change from experience. Representations are constructed from information initially derived from the attachment relationship and gradually differentiated into complementary representations of self and others.

Mother's Representation of the Infant

Maternal representation of the infant is explained by Main (Main, et al, 1985; Main & Goldwyn, 1988) as derived from the mother's representation of her attachment relationship to her own mother. This forms the basis for

both her representation of her relationship to her child and her perception of the child's personality (Main, 1985; Sroufe & Fleeson, 1988). Infant characteristics are perceived through maternal representations that pre-date the child's birth, and are shaped by the mother's behaviors (Crockenberg, 1986; Crockenberg, & Smith, 1986) which conform to her historically dominated representations (Bowlby, 1980; Sroufe, 1985).

According to this view, the mother's representation of the infant has continuity and stability; it originates in her own infancy and childhood attachment experience, resists change, and continually organizes current experience (Bowlby, 1980; Campbell, 1979; Cramer, 1986; Crowell & Feldman, 1989; Main et al. 1985; Zeanah et al, 1985, 1986, 1987). Representations of both the infant and of the relationship with the infant have psychological reality for the mother prior to the baby's birth (Haft & Slade, 1989; Main et al, 1985; Mebert, 1989; Zeanah et al, 1985, 1986, 1987). After the birth of the baby, the historical representation becomes a veil through which the infant is perceived and a medium through which social relations occur (Cramer, 1986; Haft & Slade, 1989; Main et al, 1985).

Zeanah (Zeanah et al, 1985; 1986; 1987; 1989), studying mothers' perceptions of their infants' personalities, asked women at 37 weeks prenatally and at

six months postnatally to describe their infants' personalities. They found that mothers' perceptions of their infants were essentially stable from late pregnancy through six months of age, and concluded that "parents develop reasonably stable mental representations or working models of their infants prenatally and that these models are only partially transformed by experiences with the infant" (Zeanah et al, 1987, p. 358).

According to Main, the mother's childhood experiences with her own mother lead to "the construction of mental structures or representations which continue to guide experience in adulthood" (Main & Goldwyn, 1984, p. 214). In clinical work with mothers and infants, Fraiberg (Fraiberg et al, 1975) observed that the parent's perception of the child is heavily influenced by the quality of her representation of her own experience of being a child in relation to her parents. Cramer (1986) reports that what the parent relates to is primarily a mental construct of the infant that is based on the parents' expectations from historic relationships. This construct precedes the birth of the baby itself. As such, "A baby is never born in a psychological vacuum. A baby's first birth is in the parents' heads, in their past histories, and in their psychological make-up" (Cramer, 1986, p.36).

The mother's representation is critical for the baby's development in that it organizes and directs her behavior toward the infant, which in turn affects the baby's developmental outcome. Main (1985) examined parents' representations of their early attachment relationships, and found correlations between the content of mothers' representational models and the quality of their infants' attachment to them. The quality of the parent's response to the infant, mediated by her relationship history, results in patterns of behavior which form the basis for the quality of attachment characteristic of that particular dyad. By twelve months, mother-infant relationship history is reflected in the quality of the infant's attachment, assessed from observed behavior, specifically the child's behavior following separation from the mother.

Quality of infant attachment has been shown to be an extremely significant predictor of developmental outcomes with ramifications for social and cognitive functioning in later infancy and childhood. Despite dramatic changes in infant development, attachment relationships show strong stability from twelve to eighteen months of age (Sroufe & Waters, 1977). Twelve to eighteen month attachment assessments predict later social behavior with peers (Sroufe, 1979; 1983); as well as quality of play and problem-solving behavior at age two (Matas et al, 1978);

and capacity for empathy and overall social competence in the nursery school years (Sroufe, 1983). To date, mother-infant attachment patterns have been found to be relatively stable from twelve months through five years (Main et al, 1985), giving evidence of the strength and continuity of the early relationship system.

Recently, Main and her colleagues have reconceptualized attachment theory in terms of the centrality of representation to both the infant's and the parent's attachment relationships. In this framework, the significance of any behavior or interaction is determined by how the history of the relationship has structured the representation of that behavior or interaction in the experience of both infant and parent (Stern, 1989; Zeanah & Barton, 1989).

Research Methodology in Maternal Representation

In an effort to clarify the role played by the mother's representation, Main developed the Adult Attachment Interview (AAI), a questionnaire designed to elicit the mother's representation of her own attachment relationships (Main et al, 1985). The mother's representations thought to guide her behavior are accessed using responses to interview questions. The interview procedure has been validated by correlations between the

mother's mental representation of her own childhood experience, the attachment security rating of the child, and interaction between mother and child (Main et al, 1985; Ricks, 1985). Main found that unresponsive and insensitive caregiving, thought to be related to the mother's representation of her historic attachment relationships, produced insecurely attached infants at one year (Main et al, 1985). In another study using the interview technique, mothers who represented their own mothers as rejecting were likely to reject and abuse their infants; these infants were rated as anxious/avoidant at age one, and were hostile, isolated, and disconnected from peers at age 4 to 6 (Main & Goldwyn, 1984).

Maternal Representation and Infant Behavior

The strength of the mother-infant relationship system as a determinant of developmental outcome has been seen as transcending and subsuming individual differences in endogenous infant characteristics traditionally viewed as innate infant temperament (Sroufe, 1985; Sroufe & Fleeson, 1986). Evidence that early dyadic experience accounts for differences in attachment classification, has been provided by major studies. Responsive maternal care was found to predict secure attachment at 12 months (Ainsworth et al, 1978). This correlation between maternal sensitivity during the first year and secure infant attachment at one

year has been replicated a number of times (Bates et al, 1985; Smith & Pederson, 1983).

Vaughn found that when quality of interaction changes as a result of a change in degree of stress in the caregiver, attachment pattern also changes (Vaughn et al, 1979). A study by Egeland and Sroufe (1981) revealed that infants with normal Apgar and Brazelton Neonatal Assessment scores, whose mothers were rated by hospital nurses as emotionally unavailable, showed progressive decline toward maladaptation and anxious attachment over a period of two years. The infants' decline in functioning, first visible at six months, became increasingly notable: at 12 months nearly half were characterized by avoidant attachment patterns, by 18 months 86% were avoidant, and by 2 years all the infants in the sample were "unenthusiastic in engaging challenges, easily frustrated, and excessively angry and negativistic" (Egeland & Sroufe, 1981, p.89). This type of maladaptive personality trait, similar to those described by temperament theorists as attributed to innate "difficult" temperament, was in this study systematically associated with the impact, over time, of non-optimal caregiving.

Sroufe and Fleeson (1986) posit that if endogenous infant differences exist, even those that are extensive are

thoroughly transformed within the caregiving relationship system:

An earlier view of the developmental process was that, as the infant moved out from the attachment relationship to the larger social world, he or she took forward congenital temperamental dispositions plus aspects of the relationship history, like suitcases in each hand. But what the child brings to new relationships (with peers, teachers, and others) is not an additive combination of dispositions plus relationship history. The child brings forward only an organization of feelings, needs, attitudes, expectations, cognitions, and behavior; that is, only the relationship history as processed and integrated by the developing individual, i.e. everything is in the same suitcase.

Stroufe & Fleeson, 1986, p.52

The process by which the caregiving relationship transforms what may appear to be innate infant characteristics has been explored in a variety of ways. Attachment theory, positing a universal, biologically-based drive in the infant to seek proximity to the caregiver, sees the caregiver's response to the infant as critical in organizing infant attentional and behavioral systems. The caregiver's response is mediated primarily by her representation of the infant, which is derived from her own historical attachment relationships; the infant in turn is motivated to adapt to the mother's representation and the caregiving style derived from it (Main et al, 1985).

Crowell and Feldman (1988), researching the relationship between mothers' internal models and their children's behavioral and developmental status, found that the primary direction of influence appears to be from mothers' models of relationship to child behavior. Children of mothers whose early attachments had been secure were affectionate, oriented toward their mothers, and positive in affect; children of detached mothers were cold toward their mothers, anxious, and subdued or blunted in affect. These findings were interpreted by the authors as suggesting that the mother's model of relationships tends to be somewhat stable and to supercede what could be seen as the influence of inherent child variables.

The means by which mother's internal representation becomes reflected in child behavior has been of particular interest to clinicians studying the ways in which mothers control interaction with their infants in the direction of conformity to their preconceived representational models. Cramer (1986) posits that parents interpret children's behavior according to their own representations. Based on these interpretations, or "meaning attributions", parents have an effect on modalities of infant behavior by either reinforcing or discouraging them. This process is an essential aspect of both normal and distorted cognitive and social development.

According to Cohen & Tronick (1983), as early as three months of age infants give evidence of being able to attune to the mother's affective quality and alter their behavior to correspond to it; this ability is quite sophisticated, including an understanding of the meaning of the mother's behavior within an interactive context. Furthermore, the behavioral changes infants make in response to maternal changes carry over to subsequent interactions. By six months, infant behavior directed toward maintaining connection with the mother is organized into stable patterns that have become the infant's identifying characteristics (Tronick & Gianino, 1986).

Haft & Slade (1989) examined the influence of the mother's representation of attachment on her ability to attune, or share affective state, with her infant. By attunement or misattunement, the mother permits or prohibits the expression of various affective states in the infant; the infant responds by recreating those states which are shareable with the mother because they do not challenge her representational models. In this way, "babies have learned what is shareable and are shaping their relationships in accordance with that knowledge" (Haft & Slade, 1989, p. 171).

Clinicians have found that disturbed mother-infant relationships can be repaired, with improved developmental outcome, by expanding and/or altering the mother's

representation of her historic attachment relationship, and her representation of her infant (Fraiberg, 1980, George & Solomon, 1989; Main & Goldwyn, 1984; Main et al, 1985; Stern-Bruschweiler & Stern, 1989). Clinicians have found that changes in mothers' representations brought about by therapeutic intervention result in changes in maternal behavior and consequently in changes in infant mood and behavior (Cramer & Stern, 1988; Fraiberg et al, 1975; Fraiberg, 1980; Main & Goldwyn, 1984).

The mother's representations are resistant to change because such change involves altering her view of her significant internalized historical relationships. This type of change involves a decrease in idealization of the historic attachment relationship, and consequent re-experience of early emotions previously defended against by means of dissociation of feeling during infancy and childhood (Sullivan, 1953). Unwillingness to re-experience negative feelings becomes a powerful force maintaining stable representations of the infant that override and are often impervious to objective reality (Fraiberg et al, 1975, 1980; Main & Goldwyn, 1984; Main et al, 1985).

The mother has an investment in influencing the infant to assimilate to her representation so as not to disrupt maternal patterns of dissociation (Haft & Slade, 1989; Main et al, 1985; Stern, 1985). Early infant behavior patterns characterized by temperament theorists as

central dimensions of infant temperament may result from the mother's attempts to exert control over the infant in order to maintain the stability and continuity of her representations.

Additional evidence for the impact of parents' perceptions on caregiving style and on infant behavior has been provided by research showing that infant behavioral patterns gel and can be measured as early as one month of age (Tronick & Gianino, 1986). Bell and Ainsworth (1972) found that frequency of infant fussing and crying -- behaviors central to the definition of "difficult" temperament -- were derived not from inborn tendencies in the infant but from maternal qualities of responsiveness or lack of responsiveness to infant distress. By four months of age early crying and fussing had evolved into stable behavior patterns; these patterns remained consistent throughout the first year of life (Bell & Ainsworth, 1972). The quality of maternal responsivity Bell and Ainsworth identified as the critical factor in amount of infant crying is the same type of behavior identified by Fraiberg (1980), Main & Goldwyn (1984) and others as resulting from maternal representation of the infant.

Researchers in attachment conclude that measurable behavioral difficulties at one year result not from infant temperament characteristics but from maternal behaviors that impact on the infant (Crockenberg, 1986; Crockenberg &

Acredolo, 1983; Crockenberg & Smith, 1982; Sroufe, 1985). Sroufe noted that attachment classifications, unlike temperament categories, have been linked to a wide range of infant behavioral correlates, including peer competence, self-esteem, curiosity, coping and problem-solving abilities, and incidence of behavioral problems (Sroufe, 1985). This is so, according to Sroufe, because attachment classifications assess qualities of the whole mother-infant relationship, which organizes, rather than results from, individual differences in infant behavior. In fact, child factors such as "temperament" variation are encompassed within the relationship system, and "do not cause developmental outcome independent of caregiver influences" (Sroufe, 1985, p.12). Rather, "qualities that arise in relationships ultimately lead to qualities of individuals" (Sroufe, 1985, p.2).

Models of Temperament

Over the past three decades, theory and research in the field of temperament have followed the overall shift in the ontology of theories of human development from the study of behaviorism to the study of individual genetic, cognitive, and socioemotional differences developing in interaction with the environment. Specifically, temperament investigation has shifted away from defining temperament solely as a stable genetic entity. Pressure

for this change has come from the movement in developmental psychology towards a theory of individual differences arising from interactive experience in the context of the caretaking environment.

The antecedents to current developmentally oriented theories of temperament originated in the study of individual differences in adult personality. The classically accepted definition of temperament was presented five decades ago by Allport (1937). He defined temperament as the individual's characteristic emotional nature, susceptibility to stimulation, speed of response, and fluctuations in intensity and quality of prevailing mood, all of which were seen as constitutionally based inherited traits.

A decade later, Cattell (1946) defined temperament as those personality traits which change least in response to changes in the dynamic properties of events. Following Cattell, a number of researchers and theorists have attempted to clarify the notion of temperament and operationalize it through the development of a variety of psychometric measures. The primary difference between current competing schools of thought within the field of temperament is the degree to which they attribute individual differences in temperament to genetic/innate factors versus the extent to which the environment is seen as a dynamically interactive influence on the developing

personality. Common to all current theories is the use of parent report measures to describe and quantify characteristics of infant and child temperament.

From the nativist perspective on temperament, Buss and Plomin (1986) posit that temperament consists of inherited constitutionally and genetically based traits. According to their theory, the child's social environment only slightly modifies genetically determined temperament traits; it does not have impact either as a main effect or as part of an interaction. The key features of Buss and Plomin's theory are essential criteria that define biologically based dimensions of temperament: heritability, stability, predictiveness of adult personality, and evolutionary adaptiveness (Buss and Plomin, 1975). They define the four dimensions of temperament as emotionality, activity, sociability, and impulsiveness.

Rothbart and Derryberry (1982) have focused primarily on defining what traits constitute temperament as distinct from other personality systems. Their psychobiological approach posits temperament as consisting of constitutionally based individual differences in reactivity and self-regulation of reactivity at three levels: neural, physiological, and behavioral. Reactivity and self-regulation are expressed through the endocrine, somatic, and autonomic response systems, which vary in intensity, latency, rise and recovery time. Rothbart and

Derryberry stress the importance of temperament for understanding social development in that the self-regulatory system functions in an anticipatory manner, directing the attention of the organism's reactive system.

Current research in infant temperament is moving in several directions. One strand of research posits social relationships as regulated by the infant, with temperament as the significant factor that evokes a specific pattern of responses from the caregiver (Goldsmith & Campos, 1982). Another major research direction focuses on the "goodness of fit" between innate infant characteristics and maternal personality. In this view, infant temperament characteristics affect developmental outcome not by their intrinsic nature but by their positive or negative fit with maternal caretaking style (Thomas & Chess, 1980).

The most widely accepted approach to temperament is that of Thomas, Chess, and Birch (Thomas, Chess, and Birch, 1968; Thomas & Chess, 1977, 1980), whose New York Longitudinal Study was the first to examine temperament theoretically and empirically in infancy and early childhood. The Thomas et al (1968) concept of temperament is that it is inborn, constitutionally based, and evolves within the social environment, specifically within the infant-caregiver relationship. Their concept of temperament is that it relates to behavioral style, that is, the how rather than the why of behavior.

Consonant with Sameroff's (1975) transactional model of development, Thomas and Chess (1977) now view temperament as an independent contributor to the interactive process of development as it is shaped by the bi-directional influences of organism and environment. Specific to their view, the critical factor in determining developmental outcome is the effect of the infant's attributes on the match or "fit" between infant attributes and caregiver style. They distinguished between child/parent relationships characterized by "goodness-of-fit", which yield positive developmental outcomes, and those characterized by "poorness-of-fit" which result in low levels of social and cognitive development (Thomas & Chess, 1977). Specifically, the child's mode of interaction with the environment results from the responses elicited from the caregiver by the inborn characteristics of the infant. Neither the child's characteristics nor the adult's caretaking behavioral style is a problem or an asset in and of itself; rather each factor impacts the child's development as a result of the degree of success with which the two behavioral styles interact.

The Easy/Difficult Dimension of Temperament

The primary tool used for research in temperament was developed by Thomas, Chess, and Birch in the New York Longitudinal Study (1968). Their original assessment methodology was developed into the Revised Infant Temperament Questionnaire (RITQ) (Carey & McDevitt, 1978), and the Toddler Temperament Scale (TTS) (Fullard, McDevitt & Carey, 1984), standardized rating scales for infant and toddler temperament. The RITQ and TTS have been the basis for most theoretical investigations of temperament and for most rating scales designed to assess temperament dimensions. (Bates, Freeland & Lounsbury, 1979; Carey, 1970; Carey & McDevitt, 1978; Rothbart, Furby, Kelly & Hamilton, 1977).

Criticism of the RITQ and TTS has addressed the small sample from which the measurements were derived; possible lack of objectivity in ratings elicited by the scales; and value-laden aspects of the measurements (Goldsmith & Campos, 1982; Hubert et al, 1982; Samaroff et al, 1982). Despite these criticisms, the Revised Infant Temperament Scale and the Toddler Temperament Scale have been defended in terms of objective reliability and continue to be the most widely accepted and used scales in the field (Carey, 1982; Carey, Fullard, & McDevitt, 1984).

Administration of the Revised Infant Temperament Questionnaire and the Toddler Temperament Scale result in

the placement of each child into one of the three diagnostic categories originally defined by Thomas et al (1968): Easy, Slow-to-Warm-Up, and Difficult. Most temperament theory and research has revolved around the diagnostic category that Thomas and Chess labelled "difficult" temperament (1968). Difficult temperament is described as constitutionally based, appearing in infancy, and having continuity throughout childhood. "Difficult" infants are characterized by irregular biological functioning, initial aversion and slow adaptability to environmental change, intensity of affective expression, and negative mood. Negative mood, according to Thomas et al, is characterized by fussing and crying, and unpleasant, unsociable behavior (Thomas et al, 1968, Thomas & Chess, 1977).

Degree of difficultness is seen as the infant's most critical contribution to the transactional paradigm of goodness-of-fit (Thomas, Chess, 1980). It has also been viewed by temperament theorists as the major factor responsible for the quality of caregiving elicited from the mother by the infant (Milliones, 1978). Interest in infant temperament in general has centered around the diagnostic category of "difficult" temperament (as opposed to "easy" or "slow-to-warm-up") and has involved attempts to correlate difficult temperament with other developmental indices and outcomes (Bates, 1980; Vaughn, 1981).

Specifically, much attention has gone into establishing a link, first investigated by Thomas and Chess (1968), between early difficult temperament and increased risk of behavioral disorders in childhood. Central to this effort is the premise that if difficult temperament can be diagnosed in infancy - whether inborn or the product of poorness-of-fit - it should predict and/or account for subsequent developmental and behavioral difficulties in infancy and childhood.

Attempts to establish such longitudinal correlations have not been consistently successful. Several studies have shown that infants categorized as difficult have shown slower cognitive development (Field, Hallock, Ting, Dempsey, Dabiri, & Shuman, 1978; Sostek & Anders, 1977; Thomas & Chess, 1977). However, other studies (Goldsmith & Gottesman, 1981; Keogh, 1981) have found correlations only between individual temperament dimensions such as persistence and distractability and later IQ scores rather than between the category of difficult temperament and later cognitive ability.

Vaughn (1989) reviewed a large body of research which attempted to correlate temperament rating with quality of infant attachment, and concluded that no relationship has been shown between infant temperament and secureness of infant-mother attachment. This is a significant finding in that quality of attachment has been found to be an

extremely robust predictor of both cognitive and affective development in later infancy and childhood.

Lee & Bates (1985) found that difficultness in infancy did not predict behavior problems at age three as rated by babysitters, preschool teachers, or other secondary caregivers. Carey et al (Carey, Fox, and McDevitt, 1977) found that difficultness rated at 6 months was predictive of teacher-rated behavioral adjustment at 6 years. However, other researchers noted that these predictive correlations were modest and contradictory: infants "easy" in temperamental style were as likely as those rated "difficult" to manifest adaptive problems at age six (Olson, Bates, and Bayles, 1989).

The failure to correlate difficult temperament in early infancy with later developmental problems is related to the issue of stability and continuity of temperament over time. From both the nativist and the interactivist perspectives, the definition of temperament requires that traits associated with temperament remain underlyingly consistent over time and across situations.

Thomas and Chess (1968) conceptualized individual differences in temperament as stable over time, and therefore as predictors or precursors of later functioning. However, empirically, Thomas & Chess (1977) found only modest stability in temperament rating from infancy through age five. Likewise, McDevitt & Carey

(1981) showed continuity in ratings between early infancy (four to eight months) and later infancy/early childhood (one to three years). Dunn (1979) found relative lack of stability from birth to the second month; Ackerman (1987) showed lack of stability from 2 months to 12 months; and McDevitt (1986) notes that no studies have shown significant stability from birth to after 6 months.

Discontinuities in temperament measured over time have been interpreted in a variety of ways: Goldsmith and Campos (1982) see changes in temperament as originating in predetermined developmental transitions, not necessarily environmentally influenced; Thomas and Chess (1980) attribute temperament change to dramatic fluctuations in degree of goodness-of-fit.

Another direction of research attempting to validate the construct of temperament has studied correlations between temperament ratings and observations of infant behavior. Attempts to correlate clinical designations of difficult temperament with impressions of children's difficultness have found limited agreement between these measures (Bates et al, 1979; Zeanah et al, 1986). Vaughn (1981) concluded that different temperament diagnoses had neither concurrent behavioral validity nor predictive validity to other significant criteria in the first year; temperament ratings were, however, significantly related to maternal attitudes, characteristics, and behavior. In a

later study, Vaughn (Vaughn, Joffe, Bradley, Seifer, & Barglow, 1987) found that mothers of infants diagnosed as difficult differed significantly from mothers whose infants were identified as easy. Mothers of difficult babies were more aggressive, suspicious, impulsive, dependent, irritable, and anxious. Vaughn concluded that "temperament diagnoses ...of difficult or easy could be as well applied to the maternal respondent as to the infant (Vaughn et al, 1987, p. 155)".

Vaughn's conclusion that infant temperament diagnoses are equally applicable to the mother may be an oversimplification. However, his research parallels research in maternal representation which stresses the critical importance of maternal factors, i.e., the mother's representation as reflected in her behavior, on the infant's behavior and personality style.

This study extends the exploration of maternal representation to focus specifically on the relative predictive validity of maternal representation versus that of infant temperament rating.

Hypotheses:

There will be a relationship between the mother's representation of the infant and the infant's temperament rating at 6 weeks, 4 months, and 12 months of age.

Specifically:

- 1) The mother's representation of the infant will be relatively consistent over time periods.
- 2) The baby's temperament rating will change over time periods.
- 3) The mother's representation of the infant at 6 weeks and 4 months will predict infant temperament rating at the succeeding time periods at 4 months and 12 months. Specifically, the easier the mother's representation of the infant at these time periods, the easier the infant's temperament rating at the succeeding time periods.

CHAPTER III

METHOD

Sample

The subjects of this study are 38 mother-infant dyads. In order to minimize differences and variables associated with socioeconomic status, the mothers selected were white, ages ranging from 22 to 37, with an education level of high school or college. The infants, 19 female and 19 male, were first born, delivered at term of average size and birth weight, and had followed an average developmental course. The mothers were contacted during their hospital stay after giving birth at a hospital in the New York City area. Mothers recruited for the study agreed to be part of a longitudinal research project investigating normal social developmental processes in parent-infant relationships.

Data Collection

This study is part of a larger longitudinal study on parent-infant relationships, in which data about

mother-infant dyads were collected from six weeks to two years. The data for this particular study were collected when the infants were six weeks, four months, and twelve months old. At each age level, observations were made and scales administered at home and in the laboratory, using written materials and audio-visual equipment. This investigator was part of a team of researchers, each of whom participated in some or all aspects of data collection and evaluation. Data analysis of mother's representation of the infant from clinical interviews as well as analysis of temperament data was the sole responsibility of this investigator. All correlational analyses between mothers' representations and infant temperament scores were also done by this investigator.

Judges' Interrater Reliability

Interrater reliability among three judges' ratings of maternal representation was assessed using Pearson Product-Moment Correlation Coefficients. Each of the three correlations was statistically significant ($p < .001$). The mean interrater reliability was 0.91.

Procedure

Each mother-infant dyad began participation in the study with an individual session in the laboratory when the infant was six weeks old. Each pair was recorded on

videotape, with the mothers' knowledge, in a series of interactional situations by remote camera without the researcher present in the room. Following the video session, one researcher cared for the baby while the other researcher administered an interview to the mother. Following this, the mother was introduced to several questionnaires, including the temperament scale for six-week-old infants. The researcher went through these materials with the mother to assure an understanding of the tasks. Some mothers completed all materials within the time period of the session. Due to infant needs, other mothers left the session with a commitment to return by mail uncompleted forms within two weeks. This researcher rejected subjects for this study if the temperament questionnaire was returned more than two weeks later. This was done to insure that mothers' ratings were contemporaneous with the infants' behavior.

Procedures for data collection at four months and twelve months were the same as for six weeks, with the exception that at succeeding time periods, in addition to laboratory sessions, mothers were visited in their homes for audio-tape recorded interactions with their infants.

Infant Temperament Measures

Infant temperament was assessed independently of mother's representation at six weeks and four months by the

Revised Infant Temperament Questionnaire (Carey and McDevitt, 1978) (See Appendix B). For the purpose of assessing temperament in the neonatal period, only items on the questionnaire that apply to six week old infants were used (Sostek and Anders, 1977). At twelve months, the Toddler Temperament Questionnaire (Fullard, McDevitt, and Carey, 1984) was administered (See Appendix E). The Revised Infant Temperament Questionnaire (RITQ) and the Toddler Temperament Scale (TTS) have been shown to be stable measures when used jointly to assess temperament from early infancy to one year (Carey & McDevitt, 1978; Peters-Martin, & Wachs, 1984). In addition, the use of parent report to assess temperament has demonstrated reliability between parent's ratings and those of objective raters (Daniels, Plomin & Greenhalgh, 1984). Although under criticism, the RITQ and TTS remain the most widely accepted and employed scale for temperament measurement in the field, and have demonstrated the strongest reliability of temperament measures available to date (Hubert, Wachs, Peters-Martin, & Gandour, 1982).

Temperament and Gender

Although infant gender may function as a moderating variable, the absence of significant findings in the temperament literature regarding the effect of gender (Bates & Bayles, 1984; Carey & McDevitt, 1978) suggests

that it is unlikely that this variable will play a significant moderating role. Recent research on parental perception of infants (Hubert, 1989) has also shown no significant findings with respect to gender. However, this study does examine scores of maternal representation and infant temperament rating to determine the possible moderating role of gender.

Infant/Toddler Temperament Questionnaires

The Revised Infant Temperament Questionnaire (Carey and McDevitt, 1978) was designed to assess infant temperament by means of information elicited from the infants' mothers. Items on the questionnaire relate to observed infant behavior. For each question, the mother chooses one of six answers which grade the frequency of occurrence of that behavior from almost never to almost always. For example, in response to the statement "The infant continues to cry in spite of several minutes of soothing" the mother circles a number from 1 to 6, where 1 equals 'almost never', and 6 equals 'almost always'.

Each statement on the questionnaire corresponds to one of the nine dimensions of temperament originally defined by Thomas, Chess, and Birch (1968): activity, rhythmicity, approach, adaptability, intensity, mood, persistence, distractability, and threshold (see Appendix A for a description of these dimensions). Thomas, Chess, and

Birch clustered these nine variables into three classifications of infant temperament: easy, slow-to-warm-up, and difficult. The easy infant is highly adaptable to change, positive in mood, reacts with mild or moderate intensity, tends to approach new stimuli in a positive manner, and is rhythmic in basic biological functions. The difficult child is negative in mood, tends to withdraw, is arrhythmic in biological functions, and exhibits high intensity reactions. The third category defined by Thomas et al was the slow-to-warm up child, whose temperament is similar to the difficult child, but milder in intensity.

Carey converted Thomas' original lengthy clinical interview into the Infant Temperament Questionnaire (Carey, 1970), a questionnaire designed to be completed by the mother. This was revised to become the Revised Infant Temperament Questionnaire (Carey & McDevitt, 1978) intended for use with four to eight month old infants.

Subsequently, the Toddler Temperament Scale (Fullard, et al 1984) was devised to be used for toddlers ages 1 to 3.

Scores on five of the temperament categories are quantitatively analysed to rate subjects' temperament in terms of the dimension of difficulty/easiness. The degree of difficulty score is the ordinal measure obtained by averaging the scores of the five categories that define the easy/difficult diagnostic cluster of the infant. These

categories include adaptability, approach/withdrawal, intensity, mood and rhythmicity. A higher degree of difficulty score connotes a baby with a more difficult temperament style. A lower score connotes a baby with an easier temperament style. Temperament rating expressed as a degree of difficulty score allows for greater accuracy in statistical analysis of temperament scores than using assigned numbers for the diagnostic clusters (Ackerman, 1987; Greenbaum, 1981). (See Appendices C, D, F, and G for scoring method for the RITQ and the TSS). In the attempt to arrive at a finite definition of temperament, researchers have devised and used a large number of measures based on Thomas et al (1968) and Carey (1977). Hubert et al (1982) have analysed 26 of the 29 temperament assessment tools used in published research. They conclude that "at present we do not have a measure which provides a satisfactory operational definition of the construct of early temperament." (Hubert et al, 1982, p.578). However, since these are the available tools, researchers must use them in order to progress methodologically and theoretically (Hubert et al, 1982). Therefore, this researcher has chosen to use the RITQ and TTS. Unlike other temperament scales, these two scales in addition to being the ones most widely used, have been shown to have construct validity with respect to each other (Carey & McDevitt, 1978; McDevitt & Carey, 1981). They are the best choice of

assessment tools to use in a longitudinal study at the present time.

Although use of the RITQ & the TTS fits the needs of the present research question, there is the potential problem of perceptual bias: do scores on the questionnaire provide an accurate report of what is being assessed, or are they a reflection of the perceptions of the rater (in most temperament research, the mother)? Psychometric support of interrater reliability provides support for the tool. Although most temperament questionnaires based on the RITQ and TTS measures have not demonstrated such reliability or been tested for it, Carey et al (1978) have tested their scales and demonstrated high correlation between between mothers' ratings and observers' ratings performed concurrently through laboratory and home observation. These results have been replicated in subsequent tests of the objective reliability of the RITQ and the TTS (Daniels, Plomin, & Greenhalgh, 1984). Therefore, this researcher is using these scales despite the debate over the adequacy of such measures. Only by subjecting them to performance in further research will their strengths or weaknesses become fully apparent.

Mother's Representation of the infant: Data collection and Analysis

Clinical interviews were obtained from the mothers when the infants were 6 weeks, 4 months, and twelve months old. Interviews were done in the laboratory. The interview (See Appendix H) included 15 to 20 questions, depending on the age of the infant, pertaining to the mother's feelings, reactions, and representations in relation to her pregnancy, her experience of motherhood, her social relationships, her relationship with the infant, and her perceptions about the baby.

Assessment of maternal representation was based on the Adult Attachment Interview, developed by Main and her colleagues to assess mother's representations in their research on attachment (George & Solomon, 1989; Main & Goldwyn, 1984; Main, Kaplan, & Cassidy, 1985). The Adult Attachment Interview is a structured questionnaire consisting of 18 questions designed to elicit the mother's representation of her own attachment relationships. Subjects are asked to give adjectives describing their relationships with their parents, as well as a narrative example of each adjective.

Responses to the Adult Attachment Interview are rated by an overall qualitative evaluation. The "actual" experiences are evaluated with respect to the mother's conceptual organization of childhood experience. Mothers'

responses to the Adult Attachment Interview Questionnaire are scored by judges on five 9-point scales referring to the subject's experience with each parent and her state of mind regarding attachment. Two overall analyses are performed: specific content analysis of attachment themes, and global evaluation of attachment quality as conveyed by the interview responses as a whole.

The Adult Attachment Interview was developed on the assumption that interview responses provide a reflection of the representations that guide the individual's appraisal and perception of experience, and organize current and future behavior. Specifically relevant to this study, the use of clinically obtained adjectives and examples allow access to primary aspects of the mother's representation of her infant free of the constraints of category-generated questions (Main et al, 1985). Current research based on Main's method of operationalizing mother's representations shown consistent substantial correlations with infant behavior (Bretherton, et al, 1989; Cramer & Stern, 1988; Crowell & Feldman, 1989; George & Solomon, 1989; Haft & Slade, 1989; Hubert, 1989; Kobak & Sceery, 1988; Main et al, 1985; Main & Goldwyn, 1984; Ricks, 1985; Zeanah et al, 1985).

For the purpose of the current study, Main's interview format for operationalizing mother's representation of the infant was utilized. Items from the

interview with the mother designed to elicit her representation of her infant were: 1) Give three adjectives describing your baby; and 2) Give an example of each of the adjectives (see Appendix H for interview format).

Independent judges rated mothers' responses on a seven point Likert scale ranging from 1 (very easy) to 7 (very difficult) which yielded a score for maternal representation in terms of easiness/difficultness of the infant. Mother's adjectives as well as her examples were used in this phase of scoring to provide a meaningful interpretation of the mother's response, and to disambiguate any discrepancies between adjectives and examples. Based on Main's method of data analysis of the Adult Attachment Interview, mother's responses to the interview as a whole were considered by the judges in their evaluations of mother's specific representation of her infant.

The outcome of the scoring procedures was a single ordinal representation score comprised of the mean of the judges' scores.

Hypothesis Testing

It is hypothesized that there will be a relationship between the mother's representation of the infant and the infant's temperament rating at 6 weeks, 4 months, and 12 months of age. Specifically:

- 1) The mother's representation of the infant will be relatively consistent over time periods. This will be tested by an analysis of variance with repeated measures.
- 2) The baby's temperament rating will change over time periods. This will be tested by using an analysis of variance with repeated measures.
- 3) The mother's representation of the infant at 6 weeks and 4 months will predict infant temperament rating at the succeeding time periods at 4 months and 12 months. Specifically, the easier the mother's representation of the infant at these time periods, the easier the infant's temperament rating at the succeeding time periods. This will be tested by using a step-wise multiple regression analysis.

CHAPTER IV

RESULTSMother's Representation Scores

The means and standard deviations of mother's representation at each of the three time periods tested (6 weeks, 4 months, and 12 months) are presented in Table 1. Using scale values ranging from 1 (easy) to 7 (difficult), the lower the score on representation, the more easy is the mother's representation of her infant as rated by the judges; the higher the score on representation, the more difficult is the mother's representation of her infant as rated by the judges (See Table I).

An example of a mother whose representation of the infant was rated as easy described her infant at 6 weeks as "like me as a baby", "responsive", and "has definite likes and dislikes". A mother whose representation was rated as difficult described the infant at 6 weeks as "etched in my mind as horrid", "awful", and "hard to placate".

Table 1

Maternal Representation Ratings at 6 Weeks,4 Months and 12 Months

	Time period		
	6 weeks	4 months	12 months
<u>M</u>	4.61	3.68	4.21
<u>SD</u>	1.52	1.23	1.44

Hypothesis 1 states that the mother's representation of the infant will be relatively consistent from one time period to the next. This hypothesis was tested using an analysis of variance with repeated measures. There was a significant difference among the representation scores of the three time periods ($F=6.06$, $p<.01$). To further analyze the differences between the means, a post-hoc test using Scheffe's (1959) method was performed.

The difference between mothers' representation of the infant at 6 weeks ($M=4.61$) and 4 months ($M=3.68$) was statistically significant ($p<.01$). Mothers' representation at 4 months as rated by the judges was more easy than at 6 weeks. The difference between 4 months and 12 months was not statistically significant; the difference between representation at 6 weeks ($M=4.61$) and 12 months ($M=4.21$) also was not statistically significant.

The first hypothesis was not confirmed. The results suggest that mother's representation of the infant changes significantly between 6 weeks and 4 months, and is relatively stable between 4 months and 12 months.

To assess whether there were differences in judges' ratings of mother's representation of male versus female infants, an analysis of variance was performed. The means at each time period, by gender of the infant, are presented in Table 2. The main effect of gender was not statistically significant nor was the interaction between gender and time period (See Table 2).

Table 2

Mother's Representation Ratings by Gender of Infant

		Time period		
		6 weeks	4 months	12 months
Female	<u>M</u>	4.58	3.74	4.16
	<u>SD</u>	1.50	1.24	1.39
Male	<u>M</u>	4.63	3.63	4.26
	<u>SD</u>	1.57	1.26	1.52

Infant Temperament Scores

The means and standard deviations of the infants' degree of difficulty scores at each of the three time periods tested (6 weeks, 4 months, and 12 months) are presented in Table 3. Temperament score values ranged from 1 (easy) to 5 (difficult). The greater the degree of difficulty score, the more difficult is the temperament rating of the infant (See Table 3).

Hypothesis 2 states that infant temperament rating will change over time periods. This hypothesis was tested using an analysis of variance with repeated measures. There was a significant difference among the degree of difficulty scores at the three time periods ($F=96.56$, $p<.001$). For further analysis, Scheffe's (1959) method was used.

The difference between degree of difficulty scores at 6 weeks ($M=2.69$) and 4 months ($M=2.72$) was not statistically significant. The difference between infant temperament rating at 4 months ($M=2.72$) and 12 months ($M=3.39$) was statistically significant ($p<.001$), in the direction of infant temperament rating being more difficult at 12 months than at 4 months. The difference between infant temperament rating at 6 weeks and 12 months ($M=3.39$) was also statistically significant ($p <.001$), in the direction of infant temperament rating being more difficult at 12 months than at 6 weeks.

Table 3

Infants' Temperament Rating at Three Time
Periods

	Time period		
	6 weeks	4 months	12 months
<u>M</u>	2.69	2.72	3.39
<u>SD</u>	.46	.40	.32

With the exception of the ratings between 6 weeks and 4 months, the differences in temperament ratings between 6 weeks and 12 months and between 4 months and 12 months support Hypothesis 2, that infant temperament ratings will change across time periods.

To assess whether there were differences between male and female infant temperament ratings, an analysis of variance was performed. The means at each time period, by gender of the infant, are presented in Table 4. The main effect of gender was not statistically significant, nor was the interaction between gender and time period.

According to hypothesis 3 The mother's representation of the infant at 6 weeks and 4 months will predict infant temperament rating at the succeeding time periods (4 months and 12 months respectively). Specifically, the easier the mother's representation of the infant a given time period, the easier the infant's temperament rating at the succeeding time period. This hypothesis was tested using a multiple regression.

Table 5 presents the results of a multiple regression analysis using temperament rating at 4 months as the dependent variable and representation score at 6 weeks and 4 months as predictors. Although mother's representation at 6 weeks was a significant statistical predictor of infant temperament rating at 4 months (Beta=-.365; $t=2.40$; $p<.05$), the direction of this relationship was the

Table 4

Temperament Ratings by Gender of Infant

		Time period		
		6 weeks	4 months	12 months
Female	<u>M</u>	2.63	2.73	3.40
	<u>SD</u>	.53	.40	.28
Male	<u>M</u>	2.75	2.70	3.39
	<u>SD</u>	.39	.41	.36

Table 5

Multiple Regression Analysis Using Temperament Rating
at 4 Months as the Dependent Variable and
Representation Scores at 6 Weeks and 4 Months as
Predictors

	Representation time period	
	6 weeks	4 months
Beta	-.365	-.221
<u>t</u>	2.40*	1.45

*p < .05.

opposite of what was expected. That is, there was an inverse relationship between mother's representation scores at 6 weeks and 4 months and infant temperament rating at 4 months and 12 months.

Maternal representation at 4 months did not significantly increase the ability to predict infant temperament rating at 4 months in comparison to using representation at 6 weeks as a sole predictor. This can be seen in the lack of statistical significance shown by the Beta (Beta= $-.221$; $p=.16$) for this variable in Table 5.

Table 6 presents the results of a multiple regression analysis using temperament rating at 12 months as the dependent variable and representation scores at 6 weeks, 4 months, and 12 months respectively as predictors. Mother's representation at 4 months was a statistically significant predictor of infant temperament rating at 12 months (Beta= $-.477$; $t=3.02$; $p<.01$). Again, the direction of this relationship was opposite to what was expected. There was an inverse relationship between mother's representation scores at 4 months and infant temperament rating at 12 months.

Mother's representation at 6 weeks demonstrated a trend toward increasing the overall Beta in predicting temperament at 12 months (Beta= $-.273$; $t=1.59$; $.10 < p < .15$). Mother's representation at 12 months did not significantly increase the overall Beta in predicting

Table 6

Multiple Regression Analysis Using Temperament Rating
at 12 Months as the Dependent Variable and
Representation Scores at 6 Weeks,
4 Months, and 12 Months as Predictors

	Representation time period		
	6 weeks	4 months	12 months
Beta	-.273	-.477	.013
<u>t</u>	1.59	3.02*	.07

* p < .01.

temperament at 12 months (Beta= .013; $t=.07$).

Hypothesis 3 states that the mother's representation of the infant at 6 weeks and 4 months will predict infant temperament rating at the succeeding time periods (4 months and 12 months). It specifically states that the easier the mother's representation of the infant at these time periods, the easier the infant's temperament rating at the succeeding time periods. Although multiple regression analyses indicate that mother's representation of the infant at 6 weeks is a statistically significant predictor of infant temperament rating at 4 months, and mother's representation of the infant at 4 months is a statistically significant predictor of infant temperament rating at 12 months, in both cases, the direction was opposite to what was expected. There was an inverse relationship between mother's representation at 6 weeks and 4 months and infant temperament rating at 4 months and 12 months.

To assess whether infant's temperament rating at a particular time could be used to predict mother's representation of the infant at a succeeding time, two further multiple regression analyses were performed. Table 7 shows the results of an analysis using mother's representation of the infant at 4 months as a dependent variable and infant temperament rating at 6 weeks and 4 months as predictors. None of these results approach statistical significance. Table 8 shows the results of an

analysis using mother's representation of the infant at 12 months as a dependent variable, and infant temperament rating at 6 weeks, 4 months, and 12 months respectively as predictors. None of these results approach statistical significance.

There is no indication from these data that infant temperament rating at a given time predicts mother's representation of the infant at a subsequent time.

The results of the analysis using the infant's temperament ratings at 4 months and 12 months as dependent variables in the multiple regression analysis (Tables 5 and 6) in combination with the analyses using mother's representation of the infant at 4 months and 12 months (tables 7 and 8) provide support that the rating of mother's representation of the infant at a given time period predicts infant's temperament rating at the succeeding time period. However, in contradiction to hypothesis 3, the easier the mother's representation of the baby at a given time period, the more difficult the infant temperament rating at the succeeding time period.

In order to further evaluate the results of Hypothesis 3, scores of mother's representation at 6 weeks were plotted against scores of infant temperament at 4 months (see Figure 1). Similarly, scores of mother's representation at 4 months were plotted against scores of infant temperament at 12 months (see Figure 2).

Table 7

Multiple Regression Analysis Using Representation at
4 Months as the Dependent Variable and Temperament
Rating at 6 Weeks and 4 Months as Predictors

	Degree of difficulty time period	
	6 weeks	4 months
Beta	-.190	-.119
t	.93	.59

Table 8

Multiple Regression Analysis Using Representation at
12 Months as the Dependent Variable and Temperament
Rating at 6 Weeks, 4 Months, and 12 Months as
Predictors

	Degree of difficulty time period		
	6 weeks	4 months	12 months
Beta	.162	-.076	-.348
<u>t</u>	.77	.308	1.43

As both scattergrams indicate, the more difficult the maternal representation, the easier the infant temperament rating at subsequent time periods. Possible interpretations of this relationship will be discussed in Chapter V.

Figure 1

Scattergram of Maternal Representation
at 6 Weeks and Infant Temperament Rating
at 4 Months

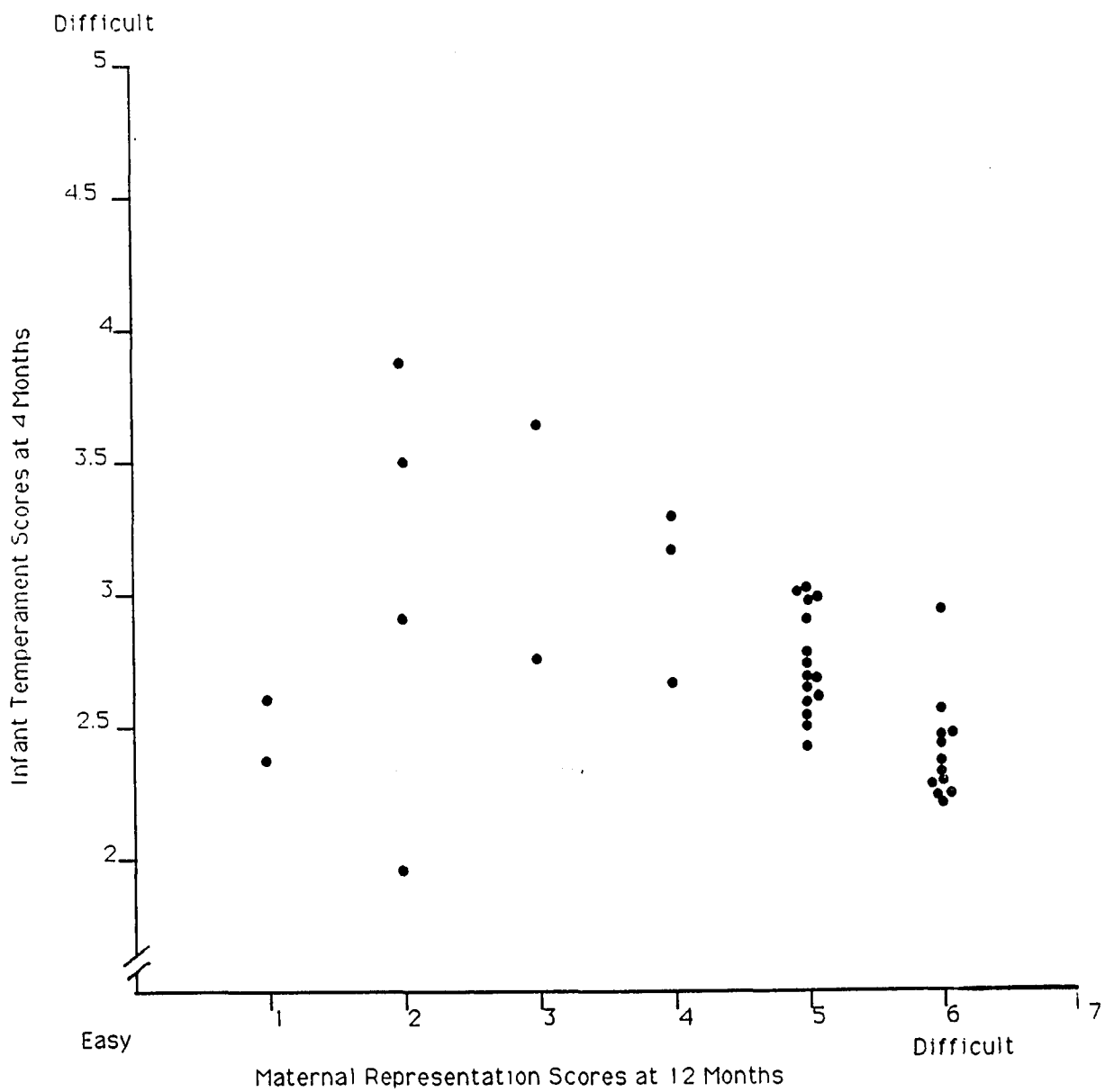
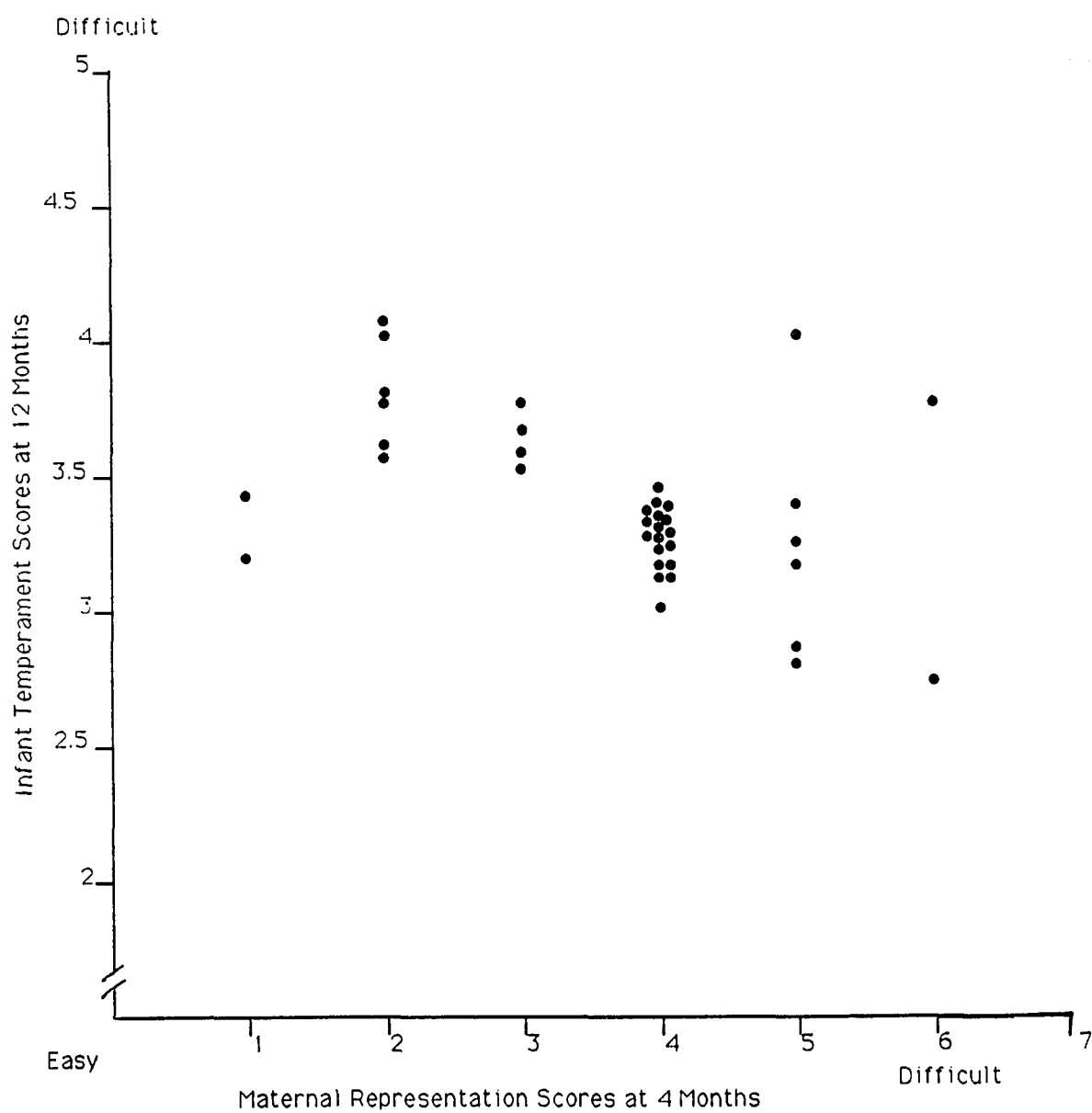


Figure 2

Scattergram of Maternal Representation
at 4 Months and Infant Temperament Rating
at 12 Months



CHAPTER V

DISCUSSION

Continuity of Mother's Representation

Hypothesis 1, that mother's representation of the infant would remain relatively consistent throughout the three assessment intervals, was not supported by the results, which showed significant changes in mother's representation between six weeks and four months.

There was no significant difference between mother's representation at six weeks and twelve months and between four months and twelve months, suggesting that representation may be more stable through these time periods. These results are consistent with the research findings of Zeanah & Anders (1987) that indicate that although the mother's prenatal internal working model of the infant may fluctuate, no significant transformation of the mother's internal working model of the infant occurs during the first year of life.

The finding of significant change in mother's representation between six weeks and four months is counter to research in maternal representation showing consistency of mother's representation over time (Cramer, 1986; Main et al, 1985; Vaughn, 1987; Zeanah & Anders, 1987; Zeanah et al, 1987, 1985, 1986, 1989). An explanation of the statistically significant shift in maternal representation between six weeks and four months (in the direction of increasing easiness) followed by relative stability from 4 months to 12 months, may be found in the theoretical framework of transactional adaptation (Stratton, 1988). Applied to these findings, it may be that as the reality of the baby impacts on the mother's early representation, her representation (which has been seen in other studies as existing prenatally) undergoes an adaptation or modification. While at six weeks the descriptions mothers give of their infants may reflect the mother's attempt to incorporate the reality of the newborn infant into the mother-infant transactional relationship, by four months the mother's representation has undergone an adaptation which may then achieve relative consistency through twelve months. These findings suggest that the period prior to the infant's four months of age may provide the context for the disorganization of the mother's early representation, which is reorganized by four months and remains relatively stable throughout the rest of the infant's first year.

Continuity of Infant Temperament

The second hypothesis, that infant temperament rating would change over the three time periods, was largely supported by the data. The results showed infant temperament changing significantly both from from six weeks to twelve months and from four months to twelve months.

These results support previous research findings that have shown discontinuity in temperament ratings over time (Ackerman, 1987; Dunn, 1979; Greenbaum, 1981; Mebert, 1989; Torgensen & Kringlin, 1978). According to Bornstein, Gaughran, & Homel (1985), changes in temperament ratings may reflect variance in constitutionally based personality functioning. Goldsmith & Campos (1982) suggest that differences in temperament ratings over time may be a result of the emergence of biologically-based developmental transitions, such as the onset of mobility in the infant. Thomas & Chess (1980) explain variations in temperament ratings as fluctuations in the goodness-of-fit interaction between mother and child. However, the finding of changes over time in temperament rating may support the suggestion by Vaughn et al (1987) that temperament in the first year is malleable as a result of mediating interactions with the parent.

Relationship Between Mother's Representation and Infant Temperament Rating

Hypothesis 3 states that mother's representation at each time period would predict infant temperament rating at the succeeding time period. Furthermore, Hypothesis 3 predicts that the easier the maternal representation of the infant at each time period, the easier the infant temperament rating at the succeeding time period. The results indicate an inverse relationship between these two variables. Mother's representation at 6 weeks significantly predicted infant temperament rating at 4 months. However, the easier the maternal representation of the infant 6 weeks, the more difficult the temperament rating of the infant at 4 months. Mother's representation at 4 months significantly predicted infant temperament rating at 12 months. Again, the easier the mother's representation at 4 months, the more difficult the infant temperament rating at 12 months. Representation at the same time period was not a significant predictor of temperament rating nor was temperament rating at the preceding time period a significant predictor of representation at the succeeding time period. One interpretation of the results of these findings is that the impact of the maternal representational system on infant behavior is reflected in infant temperament rating at the succeeding time period.

The results of this study conform to findings of investigations of attachment suggesting that infant behavior, as reflected in attachment rating, is powerfully affected or impacted on by mother's representation; and further, that this impact occurs with greater strength from mother's representation towards future infant behavior than from mother's representation towards contemporaneous infant behavior (Cramer & Stern, 1988; Crowell & Feldman, 1989; George & Solomon, 1989; Haft & Slade, 1989; Main et al, 1985; Main & Goldwyn, 1984; Sroufe & Fleeson, 1986).

A more easy infant temperament rating at four months following a more difficult maternal representation at six weeks (as seen in Figure 1), may reflect the infant's response to the mother's perception of the infant as discrepant from the internal working model that predated the birth of the child. The mother whose representation of the baby is difficult is likely to engage the infant in behaviors to bring the baby into compliance with her expectations. This conforms with research that has shown that mothers who perceive their infants as difficult tend to engage more with them than mothers who perceive their infants as easy (Bates et al, 1982; Crockenberg & Smith, 1982). It is also possible that a more easy temperament rating at four months following a more difficult maternal representation may reflect the infant's attempt to ameliorate the impact of maternal behavior motivated by a

representation of the baby as difficult.

A more easy score for maternal representation at four months followed by a more difficult infant temperament rating at twelve months (as seen in Figure 2) may reflect infant stress in response to maternal behavior motivated by the mother's attempt to maintain her idealized representation of the infant by exerting control over the infant's behavior. This is consistent with research by Lee and Bates (1985) which indicates that infant temperament may be related to the mother's desire to exert control over the child's behavior. It is also consistent with research indicating that mother's representations of the baby are often discrepant from the reality of infant behavior (Cramer & Stern, 1988). According to Main et al (1985), idealized representations derive from the mother's tendency to maintain her historic representations, which may result in maternal behavior unrelated to the baby with negative developmental consequences. Therefore it is possible that a more easy score on maternal representation followed by a more difficult infant temperament rating at the succeeding time period reflects the impact on infant behavior of the mother's attempt to control the infant's behavior in order to maintain the stability of her representational system.

The results of this study counter a prevailing theory of temperament in the infant: that it functions as a co-determinant in the goodness-of-fit paradigm. Maternal

representation was shown to be a statistically significant factor in predicting temperament rating, whereas temperament was not a statistically significant predictor of maternal representation at contemporaneous or succeeding time periods. The goodness-of-fit model would require equality in the predictive ability of one variable (maternal representation) in relation to another (infant temperament rating) at the succeeding time period.

The results of this study suggest areas of future investigation. First, there was an unexpected finding of an inverse relationship between mother's representation and infant temperament rating. A more detailed observation of changes in the discrepancies between scores of maternal representation and infant temperament rating over time within specific mother-infant dyads may help further clarify this data.

Secondly, the investigation here was primarily concerned with the relationship between maternal representation and infant temperament rating. In contrast to previous findings cited in the literature on the relative stability of maternal representation, mother's representation significantly changed between six weeks and four months. It may be useful to evaluate the possible impact this change may have had on infant temperament rating. For example, the development and changing needs of the infant during this time period may have an effect on

maternal representation or infant temperament or both.

Thirdly, although in this project constraints of resources and circumstances precluded measurement of mother's representation of her infant prior to the baby's birth, such data from future research may further clarify the findings of a study of this kind.

Additionally, although the independence of scores of maternal representation and infant temperament rating support the objectivity of the temperament scales, obtaining infant temperament ratings from direct observation independent of mother's ratings may help to further clarify the relationship between maternal representation and infant temperament rating. Lastly, it may be useful to replicate the study using subjects of a broader socio-economic diversity.

This study suggests that the most widely accepted temperament scales may have validity as measures of infant behavior, as evidenced by the independence between measures of mother's representations of her infant and her rating of the baby on the temperament scales. However, temperament rating does not provide an explanation for the source of infant behavior, whether inborn, developmentally emergent, the product of interaction between endogenous and environmental factors (equipotential influences), or the result of the transactional process of two independent autonomous systems interrelating.

One contribution of this study to the field of representation is to expand on previous research indicating the central impact of maternal representation on infant behavior. The findings of this study suggest that the infant's temperament rating may be interpreted as reflecting the impact of mother's representation on infant behavior. While there may be individual differences among infants, the results of this research suggest that maternal representations may mediate mother's interactions with the infant and produce the individual variations in infant behavior referred to as infant temperament.

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APPENDIX H

Interview Questionnaire at 6 weeks, 4 months, 12 months

6 WEEKS

Subject # _____

1. How did you respond to finding out you were pregnant?

2. How did your husband/father of the baby respond to finding out you were pregnant? _____

3. I would like you to try to describe, physically and emotionally, your experience of being pregnant. _____

4. How have you responded to this baby's being in your life.

5. How has your husband/father of the baby responded to this baby's being in his life. _____

6. Could you describe your relationship with support people in your life. How often do you see family, friends? _____

7. I would like you to try to describe your baby. Could you give me three adjectives ^{AND EXAMPLES} that characterize him/her. _____

8. I asked about a description of your baby. Now I would like you to try to give me three adjectives ^{AND EXAMPLES} that reflect your relationship with your baby. _____

9. Do you have a sense of who this baby is like - whether he/she takes after anyone in your family? _____

10. Can you describe how your baby responds to being separated from you? _____

11. How would you describe your own response to being separated from him/her? _____

12. Can you describe your baby's feeding behavior. _____

13. Can you describe your baby's sleeping behavior. (# of times up at night, is there a cycle yet) _____

14. I would like you to try to describe the ways in which your relationship with your husband has changed since the baby.

15. Did you work before/during your pregnancy? Are you back at work now/planning to go back to work? (If working) Can you describe, in terms of feelings, your experience of working and caring for your baby. (If not working but worked before) Can you describe, in terms of feelings, your experience of leaving work

to care for your baby. _____

4 MONTHS

Subject # _____

1. How have you responded to this baby's being a part of your life. _____

2. How has your husband/father of the baby responded to this baby's being a part of his life. _____

3. Could you describe your relationship with support people in your life. How often do you see family, friends? _____

4. I would like you to try to describe your baby. Could you give me three adjectives, ^{AND EXAMPLES} that characterize him/her. _____

5. I asked about a description of your baby. Now I would like you to try to give me three adjectives, ^{AND EXAMPLES} that reflect your relationship with your baby. _____

6. Do you have a sense of who this baby is like - whether he/she takes after anyone in your family? _____

7. Can you describe how your baby responds to being separated from you? _____

8. How would you describe your own response to being separated from him/her? _____

9. Can you describe your baby's feeding behavior. _____

10. Can you describe your baby's sleeping behavior. (# of times up at night, is there a cycle yet) _____

11. I would like you to try to describe the ways in which your

relationship with your husband has changed since the baby.

12. Did you work before/during your pregnancy? Are you back at work now/planning to go back to work? (If working) Can you describe, in terms of feelings, your experience of working and caring for your baby. (If not working but worked before) Can you describe, in terms of feelings, your experience of leaving work to care for your baby. _____

12 MONTHS

Subject # _____

1. How have you responded to this baby's being a part of your life. _____

2. How has your husband/father of the baby responded to this baby's being a part of his life. _____

3. Could you describe your relationship with support people in your life. How often do you see family, friends? _____

4. I would like you to try to describe your baby. Could you give me three adjectives^{AND EXAMPLES} that characterize him/her. _____

5. I asked about a description of your baby. Now I would like you to try to give me three adjectives^{AND EXAMPLES} that reflect your relationship with your baby. _____

6. Do you have a sense of who this baby is like - whether he/she takes after anyone in your family? _____

7. Can you describe how your baby responds to being separated from you? _____

8. How would you describe your own response to being separated from him/her? _____

9. Describe your baby's motor development. Is he/she standing, walking, etc.? When? _____

10. Can you describe your baby's feeding behavior. _____

11. Can you describe your baby's sleeping behavior. (# of times

up at night, is there a cycle yet) _____

12. I would like you to try to describe the ways in which your relationship with your husband has changed since the baby.

13. Did you work before/during your pregnancy? Are you back at work now/planning to go back to work? (If working) Can you describe, in terms of feelings, your experience of working and caring for your baby. (If not working but worked before) Can you describe, in terms of feelings, your experience of leaving work to care for your baby. _____

BIBLIOGRAPHY

- Allport, G.W. (1937). Personality: A psychosocial interpretation. New York: Holt.
- Ainsworth, M., Blehar, M., Waters, E., & Bell, S. (1978). Patterns of attachment: A psychological study of the strange situation. Hillsdale, NJ: Erlbaum.
- Bates, J. E., (1982). The concept of difficult temperament. Merrill-Palmer Quarterly, 26 (4), 299-319.
- Bates, J.E., Freeland, C.A., & Lounsbury, M.L. (1979). Measurement of infant difficultness. Child Development, 50, 794-803.
- Bates, J., Olson, S., Pettit, & Bayles, K. (1982). Dimensions of individuality in the mother-infant relationship at six months of age. Child Development, 53, 446-461.
- Beebe, B. & Lachmen, F. (1988). The contribution of mother-infant mutual influence to the origins of self- and object representations. Psychoanalytic Psychology, 5 (4), 305-337.
- Bell, S.M., & Ainsworth, M. (1972). Infant crying and maternal responsiveness. Child Development, 43, 1171-1190.
- Bornstein, M. H., Gaughran, J., & Homel, P. (1985). Infant temperament: Theory, tradition, critique, and new assessment. In C. E. Izard & P. B. Read (Eds.), Measurement of emotions in infants and children (Volume 2). New York: Cambridge University Press.
- Bowlby, J. (1969-1980) Attachment and Loss (Vol. 1-3). New York: Basic Books.
- Brazelton, T. B., and Als, H. (1979). Four early stages in the development of mother-infant interaction. In A. Scluit (Ed.), The psychoanalytical study of the child, Vol. 34.

- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. In I. Bretherton & E. Waters (Eds.), Growing points in attachment theory and research, Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209).
- Bretherton, I. (1987). New perspectives on attachment relations: Security, communication, and internal working models. In J. Osofsky (Ed.), Handbook of infant development (2nd ed.). New York: Wiley.
- Bruner, J.S., Olver, R.R., & Greenfield, P. M. (1966). Studies in cognitive growth. New York: Wiley.
- Buss, A. H., & Plomin, R.A. (1975). A temperament theory of personality development. New York: Wiley.
- Campbell, S.B. (1979). Mother-infant interaction as a function of maternal ratings of temperament. Child Psychiatry and Human Development, 10 (2), 67-76.
- Carey, W.B. (1970). A simplified method of measuring infant temperament. Journal of Pediatrics, 77, 188-194.
- Carey, W.B., & McDevitt, S.C. (1978). Revision of the infant temperament questionnaire. Pediatrics, 61 (5), 735-739.
- Carey, W.B., Fox, M., & McDevitt, S.C. (1977). Temperament as a factor in early school adjustment. Pediatrics, 60, 621-624.
- Case, R. (1978). Intellectual development from birth to adulthood: A neo-Piagetian interpretation. In R. Siegler (Ed.), Children's thinking: What develops?. Hillsdale, NJ: Erlbaum.
- Cramer, B. (1986). Assessment of parent-infant relationships. In Brazelton, T. B., & M.W. Yogman (Eds.), Affective development in infancy. Norwood, NJ: Ablex.
- Cramer, B. & Stern, D. (1988). Evaluation of changes in mother-infant brief psychotherapy: A single case study. Infant Mental Health Journal, 9 (1).
- Crockenberg, S. (1986). Are temperamental differences in babies associated with predictable differences in care giving. In J.V. Lerner & R.V. Lerner (Eds.), Temperament and social interaction in infancy and childhood. New Directions for Child Development, 31. San Francisco: Jossey-Bass.

- Crockenberg, S. & Acredolo, C. (1983). Infant temperament ratings: A function of infants, of mothers, or both?. Infant Behavior and Development, 6, 61-72.
- Crockenberg, S., & Smith, P. (1982). Antecedents of mother-infant interaction and infant irritability in the first three months of life. Infant Behavior and Development, 5, 105-119.
- Crowell, J., & Feldman, S. (1989). Assessment of mothers' working models of relationships: Some clinical implications. Infant Mental Health Journal, 10 (3), 157-172.
- Daniels, D., Plomin, R., & Greenhalgh, J. (1984). Correlates of difficult temperament in infancy. Child Development, 55, 184-1194.
- Diamond, S. (1957). Personality and temperament. New York: Harper.
- Field, T.M., Hallock, N., Ting, G., Dempsey, J., Dabiri, C., & Shuman, H.H. (1978). A first-year follow-up of high-risk infants: Formulating a cumulative risk index. Child Development, 49, 119-131.
- Fraiberg, S. (1980). Clinical studies in infant mental health: The first Year of life. New York: Basic Books.
- Fraiberg, S., Adelson, E., Shapiro, V. (1975). Ghosts in the nursery: A Psychoanalytical approach to the problems of impaired infant-mother relationships. Journal of the American Academy of Child Psychiatry, 14, 387-421.
- Fullard, W., McDevitt, S.C., and Carey, W.B. (1984) Assessing temperament in one- to- three- year-old children, Journal of Pediatric Psychology, 9 (2), 205-217.
- Goldsmith, H. H., & Campos, J.J. (1982). Toward a theory of infant temperament. In R.N. Emde & R. Harmon (Eds.), The development of attachment and affiliative Systems. New York: Plenum Press.
- Goldsmith, H.H., & Gottesman, I.I. (1981). Origins of variations in behavioral style: A longitudinal study of temperament in young twins. Child Development, 52, 91-103.

- Haft, W.L., & Slade, A. (1989). Affect attunement and maternal attachment. Infant Mental Health Journal, 10 (3), 157-172.
- Hubert, N.C., (1989). Parental subjective reactions to perceived temperamental behavior in their 6- and 24-month-old children. Infant Behavior and Development, 12, 185-198.
- Hubert, N.C., Wachs, T.D., Peters-Martin, P., & Gandour, M.J. (1982). The study of early temperament: Measurement and conceptual issues. Child Development, 53, 571-600.
- Kelly, P. (1976). The relation of infant's temperament and mother's psychopathology to interactions in early infancy. In K.Riegel and J. Meacham (Eds.), The developing individual in a changing world. Chicago: Aldine.
- Keogh, B. (1980). Children's temperament and teachers' decisions. In R.Porter & G. Collins (Eds.), Temperamental differences in infants and young children. London: Pittman.
- Klar, D., & Siegler, R.S. (1978). The representation of children's knowledge. In H.W. Reese & L.P. Lipsitt (Eds.), Advances in child development and behavior. New York: Academic Press.
- Klein, P. (1984). The relation of Israeli mothers towards infants in relation to infants' perceived temperament. Child Development, 55, 1212-1218.
- Kobak, R. & Sceery, A. (1988). Attachment in late adolescence: Working models, affect regulation, and representations of self and others. Child Development, 59, 135-146.
- Lamb, M.E. (1980). Unfulfilled promises: A review of The dynamics of psychological development by Alexander Thomas and Stella Chess. Contemporary Psychology, 25, 906-907.
- Langer, J. (1969). Theories of Development. New York: Holt, Rinehart, & Winston.
- Lee, C.L., & Bates, J.(1985). Mother-child interaction and perceived difficult temperament. Child Development, 56, 1314-1325.

- Main, M., Kaplan, N. & Cassidy, J. (1985). Security in infancy, childhood and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), Growing points in attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No. 209), 66-94.
- Main, M., & Goldwyn, R. (1984). Predicting rejection of her infant from mother's representation of her own experience: Implications for the abused-abusing intergenerational cycle. Child Abuse and Neglect, 8, 203-217.
- Mandler, J. (1983). Representation. In E. M. Hetherington (Ed.), P. Mussen (Series Ed.), Handbook of child psychology (4th ed.): vol. 3. (pp. 420-494). New York: Wiley .
- Matas, L. Arend, R.A., & Sroufe, L.A., (1978). Continuity of adaptation in the second year: The relationship between quality of attachment and later competence. Child Development, 49, 547-56.
- McDevitt, S.C. & Carey, W.B. (1981). Stability of ratings vs. perceptions of temperament from early infancy to 1-3 years. American Journal of Ortho Psychiatry, 51 (2), 342-345.
- Mebert, C.J. (1989). Stability and change in parents' perceptions of infant temperament: Early pregnancy to 13.5 months. Infant Behavior and Development. 12. 237-244.
- Milliones, J. (1978). Relationship between perceived child temperament and maternal behaviors. Child Development, 49, 1255-1257.
- Mischel, W. (1969). Continuity and change in personality. American Psychologist, 24, 1012-1018.
- Nelson, K. (1986). Event knowledge: Structure and function in development. Hillsdale, NJ: Erlbaum.
- Nelson, K., & Gruendel, J. (1981). Generalized event representations: Basic building blocks of cognitive development. In M.E. Lamb & A. L. Brown (Eds.), Advances in developmental psychology (Vol. 1, 131-158). Hillsdale, NJ: Erlbaum.

- Olson, S., Bates, J., & Bayles, K. (1989). Predicting long-term developmental outcomes from maternal perceptions of infant and toddler behavior. Infant Behavior and Development, 12, 77-92.
- Peters-Martin, P. & Wachs, T.D. (1984). A longitudinal study of temperament and its correlates in the first 12 months. Infant Behavior and Development, 7, 285-298.
- Piaget, J. (1951). Play, dreams and imitation in childhood. New York: Norton.
- Piaget, J. (1952). The origins of intelligence in children. New York: International Universities Press.
- Ricks, M. (1985). The social transmission of parental behavior: Attachment accross generations. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. Monographs of the Society for Research in Child Development, 50 (1-2, Serial No.209), 211-227.
- Rothbart, M. and Derryberry, D. (1982). Development of individual differences in temperament. In M. Lamb & A. Brown (Eds.), Advances in developmental psychology. Boston: Erlbaum.
- Rothbart, M.K., Furby, L., Kelly, S.R., & Hamilton, J.S. (1977). Development of a caretaker report temperament scale for use with 3-, 6-, and 12-month-old infants. Paper presentated at the meeting of the Society for Research in Child Development, New Orleans.
- Samaroff, A. (1975). Transactional models in early social relations. Human Development, 18, 65-79.
- Samaroff, A., Seifer, R., & Elias, P. (1982). Sociocultural variability in infant temperament ratings. Child Development, 53, 164-173.
- Sostek, A.M. and Anders, T.F.(1977). Relationships among the Brazelton neonatal scale, Bayley infant scales, and early temperament. Child Development, 48, 320-323.
- Sroufe, L.A. (1985). Attachment classification from the perspective of infant-caregiver relationships and infant temperament. Child Development, 56, 1-14.

- Sroufe, L. A., & Fleeson, J. (1986). Attachment and the construction of relationships. In W. Hartup & Z. Rubin (Eds.), Relationships and development (pp. 51-79). Hillsdale, N.J: Erlbaum.
- Stern, D.N. (1985). The interpersonal world of the infant: Views from psychoanalysis and developmental psychology. New York: Basic Books.
- Stern, D.N. (1989). The representation of relational patterns: Some developmental considerations. In A. Samaroff & R.N. Emde (Eds.), Relationship disorders in early childhood. New York: Basic Books.
- Stern-Bruschweiler, N., & Stern, D.A. (1989). A model for conceptualizing the role of the mother's representational world in various mother-infant therapies. Infant Mental Health Journal, 10 (3), 142-156.
- Stratton, P. (1988). Parents' conceptualization of children as the organizer of culturally structured environments. In J.R. Valsiner (Ed.), Child development within culturally structured environments. New Jersey: Ablex
- Sullivan, H.S. (1953). The interpersonal theory of psychiatry. New York: Norton.
- Thomas, A., & Chess, S. (1980). The dynamics of psychological development. New York: Bruner Mazel.
- Thomas, A., & Chess, S. (1977). Temperament and development. New York: Bruner Mazel.
- Thomas, A., Chess, S., & Birch, H. (1968). Temperament and behavior disorders in children. New York: New York University Press.
- Torgenson, A.M. & Kringlen, E. (1978). Genetic aspects of temperamental differences in infants. Journal of the American Academy of Child Psychiatry, 17, 433-444.
- Tronick, E., & Gianino, A. (1986). The transmission of maternal disturbances to the infant. In E. Tronick & T. Field (Eds.), Maternal depression and infant disturbance. New Directions for Child Development, 34, 5-11.

- Vaughn, B., Joffe, L., Bradley, C., Seifer, R., & Barglow, P. (1987). Maternal characteristics measured prenatally are predictive of ratings of temperamental "difficulty" on the Carey infant temperament questionnaire. Developmental Psychology, 23 (1), 152-161.
- Vaughn, B., Lefever, G., Seifer, R., & Barglow, P. (1989). Attachment behavior, attachment security, and temperament during infancy. Child Development, 60, 728-737.
- Vaughn, B., Taraldson, B., Crichton, L., & Egeland, B. (1981). The assessment of temperament: A critique of the Carey infant temperament questionnaire. Infant Behavior and Development, 4, 1-17.
- Werner, H. (1957). The concept of development from a comparative and organismic point of view. In D.B.Harris (Ed.), The concept of development. Minneapolis: University of Minnesota Press.
- Zeanah, C.H. & Anders, T.F. (1987). Subjectivity in parent-infant relationships: A discussion of internal working models. Infant Mental Health Journal, 8, 237-250.
- Zeanah, C.H., & Barton, M.L. (1989). Internal representations and parent-infant relationships. Infant Mental Health Journal, 10 (3), 135-141.
- Zeanah, C.H., Keener, M.A., & Anders, T.F. (1986). Adolescent mothers' prenatal fantasies and working models of their infants. Psychiatry, 49, 193-203.
- Zeanah, C.H., Keener, M.A., Anders, T.F., & Viera-Baker, C. (1987). Adolescent mothers' perceptions of their infants before and after birth. American Journal of Orthopsychiatry, 57 (3), 351-360.
- Zeanah, C.H., Keener, M.A., Stewart, L., & Anders, T.F. (1985). Prenatal perception of infant personality: A preliminary investigation. Journal of American Academy of Child Psychiatry, 24, 204-210.