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MATERNAL INTERACTION STYLE, THE FAMILY AND ATTACHMENT
OUTCOMES

BY
MARIA SCHILLER

A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
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IN
PSYCHOLOGY

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Abstract

Understanding of early relationship processes has been moving away from simplified linear relationships in favor of multifaceted approaches to child development (Moran & Pederson, 1992). Incorporation of these more dynamic models into the field of attachment research has been advocated (Mangelsdorf, et al., 1990), but not duly accomplished to date. Relations between maternal sensitivity and attachment outcomes are still expected to be linear, although empirical support for this notion is limited. Studies vary in methodology, findings and interpretation. Building on previous research (Schiller & Seifer, 1992), this study addressed methodological issues as related to assessment of maternal sensitivity and attachment constructs as well as placed their relationship within the context of family interaction.

Using videotaped data of 51 mother-infant dyads, we identified the relevant components of maternal sensitivity as related to attachment outcomes. Data consisted of (1) six weekly naturalistic observations of free-play interaction in the home at 6 months (2) Ainsworth Strange Situation at 12 months during a laboratory visit; (3) home-based Q-sort measures of attachment security derived from both maternal and observer reports; and (4) self-report and interview measures of family functioning. Scoring systems appropriate to each of these assessments were used. Multiple home assessments were used so that a series of observations could be aggregated to form reliable measures of the maternal sensitivity scales.

Results indicated that (1) aggregation of multiple home observations produces highly reliable and consistent measures of sensitivity (2) maternal sensitivity was related to both home (Q-sort) and laboratory (Ainsworth classifications) measures of attachment, although the Q-sort method produced more robust findings, (3) measures of family functioning were positively related to Q-sort attachment, but not to Ainsworth classifications of security, (4) Interview-based measures of family functioning were related to both sensitivity and observer-reported Q-sort security, while (5) Self-report measures of family functioning were related to mother-reported Q-sort security.

Current findings are discussed in the context of previous attachment research. Methodological as well as theoretical explanations are considered.

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Maternal Interaction Style, The Family and Attachment Outcomes

Introduction

Statement of the problem

Understanding of early relationship processes is moving away from simplified linear relationships in favor of multifaceted approaches to child development (Moran and Pederson, 1992). Human behavior and development are increasingly conceptualized as a dynamic process affected by, and interacting with, many variables. Integrative approaches have been progressively replacing theoretically polarized positions; transactional models (Sameroff and Chandler, 1975) are taking the place of more linear conceptualizations as more accurate explanations of complex phenomena. This evolution is also becoming evident in research on early attachment.

The long-standing dichotomy, for example, between temperament and attachment is slowly giving way to an appreciation of the mutual dependency of such constructs (Seifer & Schiller, in press; Susman, Waldman, Kalkose and Egeland, 1992; Calkins and Fox, 1992; Vaughn, Stevenson-Hinde, Lefever, Shouldice, Trudel, Belsky, Waters and Kotsaftis, 1992). This in turn opens up more complex models of development and at the same time challenges researchers to develop methods of measuring and describing interactive behaviors and qualities of relationships.

Incorporation of these compelling approaches specifically into the field of attachment research has been advocated by researchers from several perspectives. Drawing on systemic concepts, Mangelsdorf et al., (1990), and Pederson and Moran, (in press) have argued that relationships are necessarily seen as an "organized whole" (Sroufe and Fleeson, 1988) in which the individual characteristics of each participant play an active role. Additional support for this notion of adaptive pathways, rather than predetermined positive and negative traits or relationships, comes from the field of

developmental psychopathology (Sroufe and Egeland, 1991). Similarly, the role of context in shaping behavior has been strongly implicated in behavioral research (Seifer and Sameroff, 1986; Sameroff and Emde, 1989) but not as yet systematically applied to the study of the marital and family context in shaping the developing relationship between a caregiver and child.

In spite of these theoretical advances and initial efforts at implementation, the process of change has been slow and inconsistent (Pederson and Moran, in press). Specifically, the subject of this study, relations between maternal sensitivity and attachment outcomes, are still often expected to be linear, although both theoretical and methodological support for this notion is limited. Studies to date have varied in methodology, findings, and interpretations. There have been inconsistencies ranging from operationalizing constructs (especially sensitivity) to the type, number and context of assessment. Mixed findings or findings with small effect size have been open to diverse interpretations. While some researchers maintain the position that maternal sensitivity is the single most effective predictor of attachment (Isabella, 1993), others emphasize the weak or inconsistent relations (Rosen and Rothbaum, 1993).

The purposes of this study were: (1) to address some of the methodological inconsistencies revealed in the literature through careful selection and implementation of assessment measures. Aggregated measures of sensitivity and multiple methods of assessing attachment were used; and (2) to place the attachment relationship within a broader context of development and family life by conducting multiple assessments in the home environment and by gathering information to help explore the role of family and marital relationships through both self-report and clinical interview methods.

Justification for and Significance of the Study

Importance of Attachment

The attachment system, as first conceptualized by Bowlby (1969, 1982), is a species-typical set of adaptive responses whose evolutionary value apparently is to protect its vulnerable members. Bowlby proposed that the "attachment system" was comprised of several patterned behavioral responses including attachment behaviors (such as crying, calling, reaching, and following) that can be "activated" when the young find themselves in risky or threatening situations. The adaptive function of these behavioral patterns consists of returning the infant to closer, proximity to its attachment figure, who provides caretaking and protection. Secure attachment, in Bowlby's terms, is a well-defined, efficiently activated system, that will function as needed to provide proper protection for the vulnerable child, as well as a secure base for exploration of the environment. Operationally defined, securely attached children are able to use their mothers effectively and without anxiety as a "secure base" from which to gain comfort when needed, and then return to exploratory tasks.

The quality of attachment, often conceived as the degree to which an infant's balance of exploratory vs. safety needs are met by the caregiver, has been seen as an important contributor to lifelong development. Theoretically, the child's capacity to seek comfort, have his needs met by caregivers and return to the business of growth and learning is crucial for the development of "secure" expectations about himself and the world. As attachment theorists point out, a caretaker's pattern of contingent, sensitive behavior over time provides a foundation for the development of trust and positive self-worth (Sroufe and Waters, 1977; Bretherton, 1985). Such positive primary relationships provide the basis for approaching relationships with others in an open, productive attitude which is more likely to result in fulfilling close relationships.

Attachment theorists invoke a theoretical mechanism, the "internal working model" to describe the control system that regulates attachment behavior (Bowlby, 1980; Stern, 1989). An internal working model is a motivational system that regulates behavior on a symbolic, largely non-conscious level and guides one's interpretations and interactions with the environment. According to Stern, (1989) these models, which begin as flexible representations, based on early caregiving experiences, develop into less malleable schemas that determine how a person approaches interactions with others, and in turn how others react thereby confirming the original model. In this way, early attachment relationships, through ongoing interplay with the environment help dictate a pattern of interpersonal relatedness.

Recent empirical work has substantiated the claim that secure attachment patterns are an important marker of positive and adaptive socio-emotional development. Security of attachment has been associated with positive outcomes in cognitive development in both normative and delayed populations (Donovan & Leavitt, 1978; Mahoney et. al., 1985; Bakeman & Brown, 1980; Bornstein & Tarnis-LeMonda, 1988). Other beneficial effects of secure attachment include social behavior and communication skills in the developing child (Clarke & Seifer, 1985; Lutkenhaus, Grossmann & Grossmann, 1985)) as reflected in more stable and rewarding relationships (Clarke-Stewart & Hevey, 1981; Hubbs-Tait, 1987; Park & Waters, 1989; Main, 1983; Patterson, Cohn & Kao, 1989). As noted above, security of attachment has been seen as a foundation for later emotional regulation and personality development (Main, Kaplan and Cassidy, 1985; Sroufe and Fleeson, 1986). Further, Sroufe and Fleeson argue that the way in which early behavior is organized vis-a-vis another important person, will shape the course of other significant relationships in later life. It is hypothesized that infants who receive sensitive, timely responsive care acquire a set of positive expectations about close

relationships with others, which form a foundation for satisfying and productive adult relationships.

Sroufe , on the other hand (1988) provides a theoretical framework for how less adequate attachment behaviors may lead to maladaptive peer relationships. In the case of an insecure child, who presumably has internalized a working model based on unfulfilling response to his needs, one possible scenario might be to avoid others, rather than to approach them openly. When faced with rejection, he is likely to find confirmation for his internal working model and to retreat further into an avoidant strategy. Another child faced with variable, or inconsistently available parental response, may develop an ambivalent working model and in anticipation of unpredictable behavior on the part of others, rely on angry behavior as a coping strategy further contributing to his own rejection. Such cycles, if perpetuated, may result in social isolation, withdrawal and depression.

Crittenden (1992) outlines a related model. She sees insecure children as those who fail to learn adaptive coping mechanisms for managing affect. These children, who theoretically fail early on to receive appropriate responsiveness from their caregivers, do not learn to regulate their affective states, but rather to intensify their signals. These children are at risk for exhibiting aggressive, maladaptive behaviors associated with conduct disorders. Matas et al., (1978), Sroufe, (1988) conducted an extensive longitudinal project that lends support for these hypotheses. These researchers found that insecure preschoolers had a higher incidence of self-esteem problems, depression and generally less adaptive peer relationships. Lyons-Ruth and colleagues (1993) also reported that children judged as disorganized with regard to attachment strategy at eighteen months were more likely to engage in maladaptive, aggressive peer relationships in preschool.

Beyond early childhood, researchers are beginning to examine the effects of early attachment on adolescent development. Insecure attachment is described as a

risk factor for adolescent depression (Kobak et al., 1991; Greenberg et al., 1991), with continued significant effects on peer relationships (Urban, et al., 1991). In line with this interest, Main and Goldwyn (1984) developed the Adult Attachment Interview. Administered to adults, this semi-structured interview is hypothesized to reflect adult internal working models of relationships, which presumably continue to influence and guide their relationships with others, including their offspring, thus contributing to intergenerational transmission of relational processes. Significant relations between adult and infant security have been reported (van IJzendoorn, 1993; Fonagy, Steele, & Steele, 1991).

To summarize, attachment is viewed by theorists as an important regulatory and developmental construct. Originally conceptualized as an evolutionary, species-typical mechanism, the attachment system, as it develops into internal working models is seen as having lasting effects on personality and interpersonal development throughout the lifetime.

Importance and Definitions of Sensitivity

Attachment theory implies that maternal sensitivity is one of the primary factors determining a secure mother-infant attachment. In their classic study, Ainsworth and colleagues examined the relationship between patterns of maternal sensitivity to infant's cues, over the first year of life, and the quality of attachment observed at twelve months (Ainsworth, Blehar, Waters, & Wall, 1978). Findings showed that mothers judged as more sensitive over the course of the year, were more likely to have securely attached infants at 12 months than less sensitive mothers. Sensitive mothers, as defined by Ainsworth et al. (Ainsworth, Bell, & Stayton, 1971; 1974) were able to accurately interpret their babies' cues and respond to them appropriately, promptly and consistently. Ainsworth et al. asserted that babies of such mothers, on the basis of accumulated experience, develop the expectation that

their needs will be most adequately addressed, the beginnings of positive working models. They learn that their signals are heard and understood; they develop trust. Secure attachment, then, is viewed as an outgrowth of this basic trust.

At the other extreme, maltreated infants, described as suffering from "caretaking casualty" (Sameroff & Chandler, 1975), have been found to be more likely than their normative counterparts to demonstrate disturbances in the quality of attachment (Lyons-Ruth et al., 1987; Cicchetti & Barnett, 1991) and with it, some far-reaching unfavorable consequences (Schneider-Rosen, et al., 1985).

In light of this emphasis and above noted evidence regarding associations between parenting, attachment and developmental outcomes, a closer look at the construct of sensitivity is in order. Noted researchers in the field have emphasized various aspects of the maternal repertoire in their definitions of maternal sensitivity. Accordingly, several terms have been used interchangeably in the literature to refer to the underlying construct of optimal parenting. Ainsworth's concept of sensitivity is the appropriate and contingent responsiveness exhibited by the mother to her infant's cues. Ainsworth has relied primarily on naturalistic observations particularly in caretaking situations to arrive at global ratings of relative maternal sensitivity (Ainsworth and Bell, 1969). Stern (1977) has focused on the timing and structure of the mother-infant interaction particularly during moments of social play.

"Attunement" is the desired state of mutual responsiveness which is attained by an infant and his mother, provided that the mother is able to perceive the infant's cues and adjust her behaviors to the appropriate level of stimulation. Such interactions, studied in detail during face-to-face interactions, are characterized by periods of mutual greeting, engagement and breaks. The sensitivity of the mother in this case would be most closely associated with her ability to tune up or down according to her infant's needs. Insensitive interaction is often characterized by intrusive, or

overstimulating behaviors at times when the infant is sending signals for a break, or lack of interesting action when the infant is engaged and clearly available.

Detailed investigation of the face-to-face interaction has been the focus of study of Tronick, Als, and Brazelton (1980), Cohn et al. (1986), and Kaye and Fogel (1980). Second-by-second analyses have been used to describe the steps comprising a continuum of mutual involvement of young infants and their mothers in a laboratory setting. "Synchrony" is the term most often used by these researchers to describe the ideal state where each partner is picking up the cues of the other and interacting accordingly. Imitation of baby's behaviors, appropriate pauses, and mutual gaze are some of the more favorable behaviors observed in synchronous dyads. Fogel and Thelan (1987) point out that the challenge facing the mother lies in the need for continuous adjustment to the growing capabilities of her developing infant. As the infant becomes capable of longer attention span and ongoing stimulation, the mother needs to expand and change her repertoire accordingly or risk boring and "tuning out" the infant.

In a similar vein, Belsky (Belsky, Taylor, Rovine 1984--StudyII; Isabella, Belsky & von Eye, 1989; Isabella & Belsky, 1991) operationally define sensitivity as "interactional synchrony", which essentially consists of reciprocity of the dyad and the responsivity of the mother. In accordance with attachment theory, Belsky hypothesizes that maternal responsivity to infant's cues lead to a mutually rewarding interaction which in turn leads to the infant's conceptualization of the mother as "available, responsive and trustworthy." According to this model, responsivity and synchrony are the precursors of secure attachment. In fact, maternal responsiveness to infant's cries were the early focus of study in documenting individual differences. Bell and Ainsworth (1972) reported that in their longitudinal sample, infants whose mothers responded quickly and consistently to crying in early infancy, had children

who cried less, and used alternative communication more than children of mothers who systematically did not respond in this fashion.

Narrowing the construct even further some researchers have used responsivity alone as an implicit or explicit measure of sensitivity (e.g., Crockenberg & McCluskey, 1985; Lewis & Feiring, 1989). These researchers either distributed self-report questionnaires aimed at assessing responsivity patterns or counted frequency of responses on a time sampled basis. In interpreting their results these authors often equate these variables with measures of sensitivity.

To reiterate, due to the emphasis placed on maternal sensitivity as a contributing factor to attachment and developmental outcomes, it has been the focus of extensive study. Operational and methodological variability in the literature, however has contributed to ambiguity in interpretation of findings.

Assessment of Attachment

Ainsworth and her colleagues developed a laboratory procedure designed to classify observed behaviors exhibited by the child in response to a series of separations and reunions with his mother in an unfamiliar setting (Ainsworth & Wittig, 1969). Specified behaviors rated over the course of this "Strange Situation" procedure generate three general categories: Secure (B), Avoidant (A), and Resistant (C) (Ainsworth, Blehar, Waters, & Wall, 1978). As stated above, Securely attached infants are identified as using their mother as a "secure base"; they are able to seek out contact with her when needed, and then return to exploratory tasks. Insecure children have traditionally been described as exhibiting one of two patterns, or strategies. Avoidant children are seen as de-emphasizing their affective needs for fear of being rejected by their caregiver. Their affective tone is neutral, and they often actively avoid proximity to mother at the moment of reunion. Resistant children show an ambivalent attachment pattern; they alternate between soliciting and rejecting contact

with their parent. Their affective tone is often negative, with petulance persisting through reunion episodes. The Avoidant and Resistant attachment classifications are often referred to collectively as "Insecure attachment."

Recently, Main and Solomon (1990) introduced an additional secondary category for classification of attachment behavior in the strange situation. The need for an additional category grew out of reported findings that up to 14% of samples were "unclassifiable" according to the three original categories (Main & Weston, 1981). Behavior was considered "unclassifiable" for example, when a baby displayed clear exemplars of both Avoidant and Resistant patterns. Alternatively, infants might have demonstrated typically Secure actions such as greeting and seeking contact from the caregiver, but carried these behaviors out with a noted absence of appropriate affect. Further, Main and Weston argued that forced classification of these infants into A/B/C categories would result in the majority of "Unclassifiable" tapes being scored as "Secure", thus resulting in misleading classification and description of the overall sample. Finally, researchers working with maltreated samples discovered theoretically problematic findings of high ratio of securely attached infants (Egeland and Sroufe, 1981).

Based on these observations as well as a comprehensive review of additional videotapes, Main and Solomon published criteria for the scoring of a Disorganized (D) attachment category. This category of infants is conceptually distinct from the original insecure groupings in that D infants are thought to be (a) lacking a coherent attachment strategy, or (b) showing other evidence of behavioral disorganization when attachment systems are activated. Whereas Avoidant and Resistant children rely on a *pattern* of behavior in their interactions with their caregiver, some Disorganized infants have failed to integrate their experience into any given strategy. Therefore, these children may exhibit an array of behaviors characteristic of the other three categories, but without the predicted order, consistency, or affective tone.

Alternatively, they may display odd or bizarre behaviors, particularly in reunion situations. When faced with a stress on the relationship system, these infants exhibit unorganized or bizarre behavior. Since the availability of these criteria, attachment researchers have included the D category in attachment classification of both at risk and normative samples. It has been suggested that as much as 15% of normative samples will be classified as Disorganized (Cicchetti, 1987).

These classifications were originally conceptualized by Ainsworth as outcome variables, designed to examine the consequences of previously observed patterns of maternal behaviors in the home. It was hypothesized that a novel, stressful situation would trigger the infant's pattern of established responses. These behavioral patterns are presumably reflective of accumulated experiences in the ongoing relationship between the child and mother. Attribution of a classification then *implies*, but does not directly assess, the components of the current relationship or its precursors. Recent emphasis on systems-based interpretation has led researchers to suggest that the study of a relationship dictates that both the qualities of the mother (sensitivity) and the infant (security) are manifestations of the same dynamic process (Pederson and Moran, in press).

The classification of attachment on the basis of the Strange Situation paradigm has become an accepted convention. The construct of attachment along with the operationally defined attachment behaviors, as observed in the Strange Situation, have been used almost exclusively to index the quality of attachment of a young child to his mother (Pederson et al., 1990), although this approach is associated with a series of limitations. For example, the constraints of a laboratory procedure with variable arousal effects on different children may result in unrepresentative, atypical activation of the attachment system, and consequently atypical response patterns (Vaughn et al., 1994). Recently, however, an alternative approach has been suggested and adapted by some researchers (Waters & Deane, 1985; Pederson et al., 1990; Vaughn &

Waters, 1990; Vaughn et al., 1992; Pederson & Moran, in press). The Attachment Behavior Q-sort was introduced by Waters and Deanne (1985) as a way of addressing some of the limitations of assessment in a structured laboratory-based paradigm.

This Q-sort instrument consists of 90 items. Each item is a description of attachment-relevant behavior derived from theoretical and empirical work on attachment. Many items are qualified by specifying a context. These items are printed on cards to be sorted into nine piles according to similarity with the infant's behavior. The completed sort is then compared with the "criterion sort" (a composite sort of the prototypically secure child, as judged by a series of experts). The resulting correlation is interpreted as a continuous measure of the child's relative security of attachment. Some researchers believe that this instrument not only provides a useful complement to the Strange Situation, but also provides some methodological and theoretical advantages in the assessment of attachment (Seifer & Schiller, in press; Waters & Deane, 1985; Pederson et. al., 1990; Vaughn and Waters, 1990, Krupka, et al., 1992, Pederson & Moran, in press).

Waters and Deane (1985) point out that a method of assessment closely related to the child's naturalistic environment is more in keeping with Bowlby's original conceptualization of the attachment system. Not only does it promote a more realistic assessment, but it also provides the opportunity to assess a fuller repertoire of attachment behaviors, observed in their natural context. For example, in the home, the child may normally feel safe to explore, to move away from his mother, only checking with her periodically. If a stressful, situation were to develop, however, such as an accidental fall, a loud noise, or the arrival of a stranger, the "safe" distance might be greatly reduced, and the need for more physical contact, rather than distance interaction more immediate.

In addition, a lab setting affects children differently. Based on previous experiences, or temperamental differences, children react quite differently on first

entrance to a strange room. The Strange Situation paradigm may therefore prove intensely stressful to one child and not noticeably disturb another. To the extent that such differences affect the "triggering" of the attachment system, they may confound the behaviors observed and classified in the Strange Situation (Crockenberg, 1981; Kagan, 1982; Campos, Barrett, Lamb, Goldsmith & Stenberg, 1983; Vaughn et al., 1992; Vaughn et al., 1994; Goldsmith & Harman, 1994). It must be noted, however, that the arguments presented by some researchers that all relevant behavior observed and scored during the Strange Situation is can be entirely explained by infant attributes, i.e. temperamental style is probably overstated (Vaughn, Lefever, Seifer & Barglow, 1989; Seifer & Schiller, in press). These researchers found that while temperamental differences in children affected certain behaviors during the Strange Situation, such as amount of crying, such differences alone were not enough to account for security of attachment classifications.

Finally, Lamb et al. (1985), have suggested that too much valuable information collected through observation in the Strange Situation is ultimately lost by reducing outcomes to a three-category code. Some researchers have resorted to "converting" the categorical distinction into a continuous variable for use in correlational analyses (Cox et al., 1992). The Q-sort method, on the other hand, yields a continuous measure of Security. Others have reported findings based on attachment *behaviors* observed during the Strange Situation, rather than classifications (Lyons-Ruth et al., 1987). These issues point to the usefulness of an alternative approaches to assessment of attachment.

Sensitivity and Attachment

Similarly, the relation between sensitivity and attachment is undergoing closer evaluation in the current literature. While some studies provide support for Ainsworth's original work (Grossmann and Grossmann, 1985; Crockenberg &

McCluskey, 1985; Belsky, Rovine, & Taylor, 1984; Egeland & Farber, 1984; Smith & Pederson, 1988; Pederson et al, 1990; Benn, 1985; Isabella, Belsky & VonEye, 1989; Isabella & Belsky, 1991; Isabella, 1993; Pederson & Moran, in press), other studies reveal contradictory or mixed findings (Miyake and Chen, 1985, Goldberg et al., 1986; Lyons-Ruth, Connell, Zoll and Stahl, 1987; Lewis and Feiring, 1989; Mangelsdorf, et al., 1990; Cox, Owen, Henderson & Margand, 1992; Nakagawa, Lamb, Miyaki, 1992; Valley, Vondra, and Shaw, 1992, Schiller and Seifer, 1992; Rosen & Rothbaum, 1993). A review of recent studies is summarized in Tables 1-A and 1-B, those generally supporting the positive relationship between attachment and maternal sensitivity (1-A) and those reporting mixed, or negative findings (1-B) respectively.

Several points are important to consider when evaluating this body of literature. First, studies vary greatly in terms of design and assessment methods. Procedures vary from lengthy home observations coupled with informal diary-like recordings, to relatively brief observation periods analyzed through time-sampling methods. In addition, behaviors of interest vary from free-play, feeding, caretaking, or "regular activities" chosen by the mother. Second, the operational definitions of sensitivity range from molecular behavioral counts to global four-point scales. Third, most studies (with two exceptions) are based on relatively small sample sizes. Studies employing large samples (Egeland & Ferber, 1984; Isabella & Belsky;1991) were inconsistent in the pattern of reported results in terms of the types of maternal behavior and length of observation periods that proved predictive of attachment classifications. Fourth, some researchers, (Goldsmith & Alansky, 1987) have pointed out that the often cited relationship between maternal sensitivity and attachment classification is not as large as assumed by some theorists (Ainsworth, 1978; Grossmann et al., 1985; Crockenberg & McCluskey, 1985; Benn, 1985). Their metanalysis of studies revealed a weak effect for the studies reviewed. Finally, a

recent study (Schiller and Seifer, 1992) failed to replicate Ainsworth's original findings when repeated, extensive observations, and objective measures of sensitivity with demonstrated high reliability were used.

In the Schiller and Seifer study, repeated measures were used to address two major questions. 1. Can a reliable measure of maternal style be obtained using repeated observations over time? 2. Is there a relatively more stable or representative time period (6 vs. 9 months) in assessing the mother-infant relationship, and is one relatively superior in predicting 12 month attachment classification? It was found that through aggregation of 6 observations, a highly reliable measure of maternal sensitivity with strong stability over time could be obtained. The age of assessment did not affect the relation of sensitivity with attachment outcomes. Interestingly, while maternal sensitivity at 6 and 9 month did not relate to Strange Situation (Ainsworth & Witting, 1969) attachment classification, a positive relationship was observed with the Attachment Q-sort (Waters & Deanne, 1985).

These results raise questions not only about the assumptions regarding linear relations between sensitivity and attachment, but also about the methodological implications of assessing each of these constructs.

Maternal Attributes Related to Sensitivity and Attachment

Among the numerous factors studied as predisposing of mothers to a relative quality of parenting have been age (Ragozin et al., 1982) and depression (Radke-Yarrow et al, 1985; Field, 1988; Cohn et. al., 1986; Lyons-Ruth, Connell & Grunebaum, 1990; Lyons-Ruth, Repacholi, McLeod & Silva, 1991). Teenage mothers, more often display insensitive parenting styles, perhaps leading to increased risk of infant developmental delay (Field, 1980; Levine, et al., 1985). Maternal depression has been associated with disturbed face-to face interactions as well as

Insecure infant attachment (Cohn, 1986; Lyons-Ruth, et al., 1990; van IJzendoorn, Goldberg & Frenkel, 1992).

The mechanisms by which such factors affect relationship development have not yet been specified, but attention has turned toward examining contextual effects on mothers' ability to effectively parent. The role of social support, for example has been seen as a significant contributor to attachment outcomes (Crockenberg, 1981; Sroufe, 1985). Crockenberg (1981) considered maternal responsiveness, infant irritability and social support as important contributors to the developing mother-infant relationship. She found that social support was the single most significant predictor of attachment status. Of additional interest, was the interaction between infant irritability and social support. It appears that for mothers of highly irritable babies social support was especially important in determining the quality of attachment. These findings point to transactional influences among the child, the mother and the environment, rather than purely linear determinants of attachment based on maternal traits or behavior.

Other researchers have focused more on distinguishing the relative differences in style and behaviors of mothers of Secure versus Avoidant versus Resistant babies in helping to understand the process of attachment formation. It has been suggested that maternal style of interaction, falling on a continuum according to level of stimulation, can serve as a differentiating measure (Belsky, Rovine, & Taylor, 1984). These authors found mothers of Securely attached infants to demonstrate an "intermediate" level of interaction, as compared to the "overstimulation" and "neglect" that characterized the interaction style of mothers of Avoidant and Resistant infants, respectively. Egeland and Farber (1984) describe stable differences among these three sets of mothers in slightly different terms. Caretaking abilities, including general knowledge, timing, and responsivity, as well as maternal feelings and attributions about motherhood were considered. As expected, mothers of Securely

attached babies, were most appropriately responsive, while mothers of Avoidant babies were characterized as "indifferent" and "unavailable." Mothers of Resistant babies suffered more from lack of awareness, than lack of interest, but also failed to provide sensitive care.

Other researchers (Mangelsdorf et al., 1990; Tronick, 1989) demonstrated that maternal characteristics, such as affective state influence the interactive style of the mother, the degree to which she can be available, sensitive and responsive.

To briefly summarize, in exploring the pathways to sensitive and insensitive parenting, many aspects of caregiver characteristics have been studied. More recent efforts have focused on identifying the mechanisms by which such individual characteristics are translated into behavioral or interactional patterns. The role of social support, infant attributes and the interplay of these factors has resulted in more comprehensive and useful models.

Family Variables

Considering the role of social support and context further, researchers have begun exploring the effects of marriage on parent-infant relations, and attachment specifically. Positive relations have been found between marital functioning (i.e. marital satisfaction, conflict resolution, and level of emotional closeness) with quality of parenting and attachment (Jacobson & Frye, 1991; Howes and Markman, 1989; Goldberg and Easterbrooks, 1984). Jacobson and Frye (1991) and Valley et al., (1992) found significant positive relationships between maternal social support, especially the presence of an intimate relationship, to sensitivity and attachment outcomes. The link between marital quality and attachment has been studied directly (Cox, Owen, Lewis, and Henderson, 1989; Goldberg and Easterbrooks, 1984; Howes and Markman, 1989) establishing the importance of marital adjustment and satisfaction as a significant variable in terms of infant attachment outcomes.

More globally, researchers concerned with understanding developmental outcomes in children often call attention to the role of the family (Stevenson-Hinde, 1990; Marvin, 1992; Schachere, 1989; Minuchin, 1985). Moran and Pederson (1992) for example describe a model where the global context of the family, including social, financial and marital circumstances are translated and communicated by the primary caregiver to the developing infant. Theoretical application and integration of the family systems and attachment approaches has been the focus of recent writings as researchers recognize the compatibility of these frameworks and the utility of adaptation of the family system approach to the study of attachment (Stevenson-Hinde, 1990; Marvin, 1992; Schachere, 1989; P. Minuchin, 1985). Family systems theory is based on the assumption that all dyadic relationships occur and exist in context; they are both created and maintained by the larger family system. Therefore, the study of any given dyadic relationship must take into account the forces responsible for its upkeep. As an example applied to the mother-infant relationship, one possible scenario could be considered: A mother receiving insufficient support from her spouse may feel both anxious, lacking in confidence, and frustrated by unmet emotional needs. This emotional state may become expressed through a variety of undesirable interactive patterns with her infant such as over-, or under-involvement, anxious, or inconsistent style. This in turn may result in heightened or anxious attachment behaviors on the part of the infant, who may be unsure of what to expect when intensifying his signals for attention. An already frustrated parent may then feel progressively overburdened by these demands, becoming more needy in relation to her spouse who in response to increasing demands may also feel overburdened and withdraw further. Into this already complex cycle, one must add the inherent attributes of all relationship patterns, such as personality and relationship histories of the adults and temperamental attributes of the child. No doubt a "difficult" child would intensify his signals with greater intensity in the above

scenario, contributing to a more profound relationship and familial disturbance than an "easy" child.

In a comprehensive review of the literature examining the relation of attachment and maternal employment, Schachere (1989) outlines potential mechanisms for differential outcomes within the framework of family systems. She argues that the vulnerability of a child to insecure attachment is affected not simply by maternal employment status, but by the meaning and structure surrounding this choice which is dictated by overall family dynamics. How does the family respond and cope with mother's schedule and availability? Is there a pattern of resentment in the marriage translated into dyadic interactions with the child, or does mother's career bring pride and structure to the family environment? Is increased paternal involvement seen by the family as an asset or a burden? In asking these bi-directional, rather than linear questions the strengths of family systems can be effectively applied in increasing our understanding of long-standing developmental and relational issues.

In spite of this growing interest in family influences and systemic approaches to the study of development, direct assessment of overall family functioning has been missing from attachment research. Systemic models of family functioning have been developed and successfully applied to research settings, (Miller, Bishop, Epstein and Keitner, 1985; Keitner, Miller, Epstein, Bishop, Fruzzetti, 1987; Epstein, Baldwin, and Bishop, 1983, Sameroff, 1988). Much of this research is based on the McMaster model of family functioning, where the family is conceptualized as an open system. There is an interchange of its internal subsystems, (the dyad, the individual) and external systems, (the school, community, and work) (Epstein, Bishop, and Levin, 1978; Epstein and Bishop, 1981). As in other models based on systems theory, (Minuchin, 1974), the emphasis is on the family unit and the transactional patterns

that are believed to shape the behavior of all members, rather than on any given individual's characteristics.

The McMaster model subdivides family functioning into three main "task areas." The Basic Task Area consists of instrumental issues such as provision of basic resources for family members. The Developmental Task Area refers to the change and growth of individual members, as well as familial life stages, such as moving, births, deaths, etc. Finally, The Hazardous Task Area is the family's management of unfortunate life events such as illness, accident, loss of income, etc. There are 6 dimensions of family functioning, which cut across the Three Basic Task areas: Problem Solving, Communication, Roles, Affective Involvement, Affective Responsiveness and Behavior Control. Each of these dimensions conceptually contributes an equally important component to the overall functioning of the family, and can be assessed both by interviewing the family (McMaster Clinical Rating Scale) and having family members complete the Family Assessment Device (FAD) (Epstein, Baldwin, and Bishop, 1983). This study used both methods of family assessment to gain an index of family functioning for the participating families. Placing the mother-child attachment in the context of the family led to better understanding of this important and complex phenomenon.

Summary and Research Questions

Achievement of secure attachment in infancy is considered an important and favorable developmental process. It represents an adaptive response from the ethnological and developmental perspectives. It is associated with numerous positive developmental outcomes in cognitive and socio-emotional development. Maternal sensitivity has been postulated as the most significant contributor to positive attachment outcomes, but the definition and assessment of this construct contributed to methodological limitations in many studies examining this relationship. Recent

work (Schiller and Seifer, 1992) showed that maternal sensitivity can be reliably and consistently measured through aggregation methods.

Assessment of attachment has been accomplished to date almost exclusively through a structured lab paradigm. Recent evidence indicates that a more naturalistic approach yielding a continuous (rather than a categorical), measure of attachment may be preferable in accurately capturing the attachment system.

In addition, the family context is often speculated as an important contributor to the developing relationship between infant and mother. The family system has not been adequately studied in this context. This study addressed these issues by examining the following research questions:

1. How are attachment assessment methods related?

By utilizing the two most widely used approaches to assessment of attachment, we were able to compare the Strange Situation and the Q-sort methods. Further, both trained observers and mothers completed the Q-sort measure allowing for comparisons and exploration of reporter-bias and associated methodological implications.

2. How is maternal sensitivity related to attachment outcomes?

Earlier work (Schiller and Seifer, 1992) demonstrated that (a) reliable and stable measure of sensitivity may be obtained through aggregate methods, and (b) maternal sensitivity as assessed in the home at 6 months is not related to Strange Situation outcomes but is positively related to Q-sort measures of security. This study aimed to replicate these findings on a larger more diverse sample.

3a. How is family functioning related to attachment?

3b. How do family and marital functioning variables mediate the sensitivity-attachment relationship?

To help place the mother-infant relationship in broader context, measures of family and marital functioning were administered in this study. Their relation to both sensitivity and attachment outcomes was explored.

Method

Subjects

Fifty-one mother-child dyads participated in this study. These subjects were recruited from those who have already completed their participation in a larger study (N=120) of infant temperament at the Bradley Research Center (Seifer, Sameroff, Barrett, & Krafchuk, in press). The Infant Temperament Study was a short-term longitudinal project, studying infants between 4 and 6 months of age. The project involved a variety of procedures and instruments. Only those components which are directly applicable to this study will be described. This sample was chosen because six home observations were made when the infants were 4 to 6 months of age. These subjects were also recruited for participation into one of two studies of family relationships at The Bradley Research Center (The Providence Family Study; or the current study).

Initial Recruiting Procedures:

Recruiting was done for the Temperament Study at Women and Infant's Hospital, Providence, RI. A trained research assistant (often the author) screened medical records to identify families who met the following criteria: subjects were

healthy newborns, not requiring stay in the intensive care nursery; and were born to families living within driving distance from Providence. Special efforts were made to recruit a diverse group of subjects, representing a variety of racial, SES, marital status, and birth-order factors. Descriptive characteristics of the sample are summarized in Table 2. As can be seen in the Table, and illustrated in Figure 1, although all socio-economic classes were represented, the sample can be best described as largely middle to upper-middle class.

Insert Table 2 and Figure 1 here

After initial screening, the research assistant approached mothers during the lying-in period at the hospital. The Infant Temperament Study was explained to them in some detail. Those that expressed interest received a one-page description of the study to review with their families. They also signed a consent form granting the research staff permission to contact them by phone when the infant was two to three months old. Every effort was made at the initial recruiting phase, as well as during follow-up phone contact, to include families who were able and willing to participate in weekly home observations and related procedures as part of an extensive longitudinal study. As a final recruiting step, after the 2-3 month follow-up call, the research assistant made an initial home visit to the participating family. Procedures and questionnaires were further explained and informed consent was signed by those families who eventually agreed to participate.

Post Temperament Study Recruiting Procedures:

Phone contact was made by the project coordinator of the family studies with only those families who had indicated a willingness to be re-contacted at completion of the Temperament study. Details of study procedures, compensation, and length of

participation were explained. Mothers expressing interest in participation, were then contacted to arrange scheduling of initial visits. Informed consent was reviewed and signed by the parent.

6 month Assessment:

Home Assessment of Sensitivity: Procedures

Six home visits on consecutive weeks were made by a research assistant to the participating families to videotape naturalistic observations in three situations: child playing alone; child playing with his/her mother; and caretaking activities. The same research assistant visited a family throughout the 6-week study. She brought with her a small videotape camera, and a standard set of five, age-appropriate toys. Mothers were not specifically instructed how to play with their infants or whether to use the toys provided. They were informed, however, that a minimum of ten (10) minutes was to be observed for each of the three types of behaviors during the visit. Total length of the home visit was usually between 45 and 90 minutes.

Home Assessment of Sensitivity: Data Reduction

For each of the 51 participating subjects, 6 video tapes of home observations were reviewed. Six observations were chosen as an appropriate number in terms of the development of a reliable aggregated measure of maternal style. In previous research, (Schiller and Seifer, 1992) high reliability (intraclass correlations ranging from $r = .78$ to $r = .88$) was achieved by aggregating across six observations. In addition, in the earlier study, 6 and 9 month data were examined. Results showed that both age levels were *equally unrelated* to attachment outcomes in the Strange Situation, but *were similarly* related to attachment security as evaluated by the Q-sort, with the 6-month data slightly more strongly related. For the purposes of this study,

therefore, the availability and analysis of only the 6 month age level was deemed optimal.

Scoring of maternal sensitivity was also completed as in our previous research. The first 10 minutes of the mother and child playing together were reviewed and scored by one of the trained and reliable raters. The remaining two situations of behaviors (child playing alone and caretaking) were not scored. There were two main reasons for this decision. First, mothers are often not visible on tape during caretaking and play-alone episodes. Second, the chosen coding system for maternal sensitivity, The Parent /Caregiver Involvement Scale (PCIS), was developed by Farran et al. (1986) specifically for periods of interactive play between a mother and her young child (See Appendix I for sample score sheet). Other reasons for employing this scale were that reliability and validity information was available and satisfactory; the scale has been used in three previous research projects, including a longitudinal study of young children; (Farran et al., 1985; 1987) ratings were made on a Likert scale based on specified behaviors observed during the course of the interaction. Such well-defined, yet global ratings (as compared to time-sampled coding of specific behaviors) have been recommended as the superior method for assessing individual differences in patterns of behavior such as maternal sensitivity (Jay & Farran, 1981; Cairns & Green, 1979; Waters, 1978).

Home Assessment of Sensitivity: Reliability and Variables Used:

Rater reliability was established before final scoring began. Raters (the author and two additional raters) were reliable and experienced in the use of the Parent/Caregiver Involvement Scale (PCIS, Farran et al., 1986) from our previous research projects. However, due to slight variability of method and sample, as well as passage of time, a new training and reliability verification was undertaken. Minor adjustments in the coding procedure were instituted as a result. For example, as this sample included first-born as well as later-born infants, where as our previous sample

consisted exclusively of first-borns, the effects of older siblings on the dyadic mother-infant interaction needed to be considered. Appropriate decision rules were applied and added to the coding scheme. Subsequently, raters completed a set of 10 tapes. Acceptable reliability was demonstrated on subscales as well as summary variables. Reliability was calculated using intraclass correlations and values exceeded $r=.80$. As this level of reliability is sufficiently high, the home observation tapes were scored by a single rater, with any unusual or difficult tapes reviewed by another rater (usually the author) for reliability checks.

There are 10 ratings on the PCIS: (Physical Involvement, Verbal Involvement, Responsiveness of Caregiver to Child, Play Interaction, Control of Activities, Directives/Demands, Relationship among Activities, Positive Statements, Negative Statements, Goal Setting). For each rating, a score for Amount, Quality, and Appropriateness was made on a five point scale. The ratings were then summed so that data reduction yielded 3 summary variables for each mother-child dyad observed at 6 months. These variables were: Amount of maternal involvement (AMNT), Quality of maternal involvement (QUAL) and Appropriateness of maternal involvement (APPR). Descriptive information for these variables (means and standard deviations) is provided in Table 3. Correlations among these three scales are presented in Table 4.

Insert Tables 3 and 4 here

As in our previous research, the three dimensions of the scale were found to be highly interrelated, with correlations ranging from $r=.38$; $p<.05$ to $r=.97$; $p<.001$. As expected from previous findings, correlations of measures of Quality and Appropriateness of maternal involvement were very closely related to each other, and

relatively less related to Amount of involvement. This pattern of results is to be expected, because Amount refers to the frequency of maternal response, where as Appropriateness and Quality are meant to assess the relative sensitivity with which these responses are delivered.

As discussed above, there were 6 observation points for each dyad around the 6 month age level. Average week-to-week intraclass correlations were examined for each summary variable. While measures of Quality and Appropriateness of maternal involvement were relatively stable ($r=.38$) as expected from previous research, measure of Amount of involvement was quite variable from week to week ($r=.00$). Therefore, in all further analyses only variables QUAL and APPR were considered. As can be seen in Table 5, six-week aggregation of these two variables improved their reliability to $r=.79$ and $r=.80$, respectively resulting in a highly reliable measures of maternal sensitivity.

Insert Table 5 here

12 month Assessment:

Home Assessment of Attachment: Procedures and Reliability

Each family was visited by one or two observers for a three hour naturalistic observation period. The observation period was scheduled at the family's convenience when mother and child were together and the child was awake. The Attachment Q-sort was used to assess home-based attachment behavior (Waters & Deanne, 1985). For establishment of reliability, the author visited each family with one of three additional raters. Observers remained silent or minimally interactive with mother and child during the first two hours of the observation period. (During the third hour explanations for completing the maternal Q-sort were provided). Each

observer made independent notations of attachment-relevant behavior every 5 minutes of observation. After the completion of the visit, each observer's notes were compared and reviewed and the Attachment Q-sort was independently completed. Correlation of the two sorts provided reliability information. This training process was continued until each pair of observers reached reliability $r > .75$. (This level of inter-rater reliability is consistent with, and in fact exceeds the standards of previous use of the Q-sort instrument [B. Vaughn, personal communication]). Subsequently, visits were made by a single observer.

The above outlined procedure is consistent with previous use of this instrument. Specifics of the procedure vary in terms of length of observation and number of observers used. Procedures have ranged from 90 minutes with 1 or 2 observers (Krupka, et al., 1992) to 6 hours with 2 observers (Vaughn and Waters, 1990). Jacobson and Frye (1991); Moran et al., (1992) report 2-3 hour observation periods with 1 observer yielding adequate samples of behavior necessary for the reliable completion of the Q-sort ratings.

Each observer sorted the 90 behavioral statements (see Appendix II) into nine piles (10 statements each) according to how closely each statement represented the usual observed behavior of the child. The completed sorts were then correlated with the sort of the prototypically secure child to generate a relative security of attachment rating for each child. The criterion sort (see Appendix II) was developed by aggregating completed prototype sorts generated by eight expert judges (Waters & Deane, 1985).

Participating mothers were also asked to complete the Attachment Q-sort at the time of the home visit. After 2 complete hours of observation, the observer explained the instrument to the mother and remained available for questions as the mother completed her sort. She was also instructed to respond to the child in her usual way while completing her sort. The inclusion of this procedure had several

benefits. First, maternal report, used in conjunction with objective observer ratings was designed to provide a more complete view of the child. Second, it enabled the comparison between observer and maternal ratings on the same instrument. Finally, the insertion of a time period where maternal attention was split between her child and a specific task (Pederson et al., 1990) provided the observer with ample opportunity to witness behaviors relevant for the Q-sort such as maternal prohibitions, child's bids for contact and attention, and child's independent play.

Home Assessment of Attachment: Data Reduction

The Attachment Q-sort yields 2 continuous summary variables of relative security and dependency (QSEC and QDEP) of the child in relation to his mother. In original development of the Q-sort, a measure of dependency was included so as to distinguish secure-base attachment behaviors from a more global neediness exhibited by a child (Waters & Deanne, 1985). In this project both maternal and observer sorts were examined thus, a total of 4 summary variables of Q-sort attachment were considered. Descriptive information for these variables is presented in Table 6 and intercorrelations in Table 7. As can be seen in Table 7, measures of security and dependency were not related in maternal report, ($r = -.19$), but were moderately related in observer report ($r = .33$; $p < .05$). When considering mother-observer agreement, as expected, moderate relations emerged for security and dependency ($r = .28$; $p < .05$ and $r = .32$; $p < .05$ respectively).

Insert Tables 6 and 7 here

Laboratory Assessment of Attachment: Procedures and Data Reduction

The 12 month laboratory visit consisted of several protocols, but only the Strange Situation is relevant for this study. The Strange Situation (Ainsworth & Wittig, 1969) is a structured 23-minute paradigm involving a series of separations and reunions of the mother and child, in addition to episodic interactions with an unfamiliar adult ("stranger"). The procedure consists of eight brief episodes: 1) Experimenter brings mother and infant to playroom - 30 sec.; 2) mother and infant alone - 10 minute free play; 3) stranger enters and sits quietly, talks to mother, engages child in play - 3 min.; 4) mother leaves, stranger is left in the room with infant 5) mother returns, stranger leaves, free-play - 3 min., 6) mother leaves infant alone in play room - 3 min.; 7) stranger returns, attempts to comfort baby if necessary - 3 min.; 8) mother returns, stranger leaves, free play - 3 min. Each of the last 6 episodes is 3 minutes. If the infant is distressed during the separation episodes (4, 6, 7) the episode is shortened to allow mother's return.

The Strange Situation (Ainsworth et al., 1978) was used to assess laboratory-based attachment security. A trained and certified rater of strange situation attachment was responsible for scoring all 51 tapes. This rater was independent and "blind" to both sensitivity and Q-sort attachment observations.

Specified behaviors are coded from videotapes that subsequently yield a security of attachment classification for each child (Ainsworth, et al., 1978). (Please see Appendix III for reference for full scoring criteria). The behavior scales scored are: (1) Proximity/Contact seeking of the child which captures the intensity and persistence of the child attempts to be in physical contact with mother, (2) Contact Maintaining, which refers to the child's degree of activity and persistence in remaining in physical contact with mother, (3) Resistance, as expressed through angry behaviors such as pushing away, throwing, kicking, batting, squirming out of contact, etc., and (4) Avoidance which is exemplified through moving away, leaning away, turning away, hiding from the mother, or ignoring of bids for attention. Behavior

ratings are then considered as patterns and matched with descriptions of major groupings: Secure (B), Avoidant (A), Resistant (C) and the newly developed Disorganized (D). Group (A) infants are characterized mainly by pronounced avoidance of proximity, low maintenance of contact, and/or little interaction with the caregiver in reunion episodes. Group (B) infants show clear behavioral indications that the child wishes to be in physical and interactive contact with his mother, especially in reunion episodes. The child may or may not be distressed at separation, but if distressed, he is able to go to his mother and quickly become consoled on reunion without substantial anxiety or avoidance. Group (C) infants are exemplified by resistance, or ambivalence to contact and interaction with the mother. The child may, for example, signal for contact, but once achieved, immediately squirm to get away. Group (D) is distinct from the other three groupings in that it does not describe a given pattern, or strategy. Rather, children classified as D are best described as exhibiting atypical, hard-to-interpret behaviors, such as combinations of Avoidant and Resistant patterns, interrupted, or incomplete movements stereotyped movements, such as rocking, freezing, stilling and other out-of-context behaviors. (please see Appendix IV for reference for full list of D-relevant behaviors). Whether or not a D classification is assigned, the best A, B, S, or Unclassifiable category is also assigned. For data analysis purposes, if a D classification was assigned, it was considered as the primary attachment classification. These four categories were considered in subsequent analyses as well as the more global comparison of Secure (B) vs. Insecure (non-B) groups.

Assessment of Family and Marital Functioning:

Family Assessment: Interview:

A subset of 24 families took part in The McMaster Structured Interview of Family Functioning (MCSIFF), which was conducted by the author. (For logistical

reasons it was only possible to conduct this interview with those families who were also participating in the Providence Family Study). A sample of 24 families is sufficiently large, however for preliminary exploration.

The MCSIFF is a two to three hour semi-structured interview conducted in a comfortable setting in the laboratory. (Please see Appendix V for outline of interview). The session involved all family members, including infants, who were asked questions, as appropriate, to allow the interviewer to rate each family on the following dimensions based on the McMaster model of family functioning: Problem Solving, Communication, Roles, Affective Involvement, Affective Responsiveness and Behavior Control. In addition, an overall, Global Functioning score was rated. Ratings for all scales were made on a seven point scale.

Prior training of the author in administration of this clinical interview and reliable scoring based on the Clinical Rating Scale (CRS; Epstein, Baldwin & Bishop, 1982, see Appendix VI for reference) consisted of tape review, live observation, supervision with one of the original authors of the instrument, as well as ongoing peer, clinical and research supervision. Scoring reliability was achieved among four independent raters and interview administrators (intraclass $r > .80$).

Family Assessment: Self-Report:

Of the 51 participating mothers, 48 completed the Family Assessment Device (FAD, see Appendix VII, Epstein, Baldwin, and Bishop, 1983), . This 60 item self-report instrument closely parallels the MCSIFF Interview yielding scores on each of the six dimensions of family functioning as well as a Global Functioning score. The scores on the FAD items range from 1 (very healthy) to 4 (very dysfunctional).

While both approaches assess the same dimensions of family functioning, they represent different perspectives. The FAD measures the family's perception while the Clinical Rating Scale (CRS) completed by a trained clinician following the

completion of the MCSIFF represents a clinician's view. These instruments have been successfully used in previous research with families. Miller et al., (1985) and Epstein et al., (1983) report high reliability and validity estimates for the FAD. Internal consistency of the scale ranges from .72 to .92, with moderate correlations among scales (.4 to .6). On a non-clinical sample of 45 families, test-retest reliability ranged .61 to .76 on the scales. Moderate correlations between the FAD and the MCSIFF were demonstrated in previous research (Archambault, 1992; Keitner, et al., 1992). The FAD has also been shown to have moderate correlations with other family assessment self-reports, demonstrating adequate concurrent validity.

Marital Satisfaction: Self-Report:

Forty-eight mothers completed the Dyadic Adjustment Scale (DAS, Spanier, 1976, see Appendix VIII), to assess marital satisfaction. The DAS is a 32 item questionnaire assessing Dyadic Satisfaction, Cohesion, Consensus, and Affectional Expression. The overall Satisfaction score was used in this study. Moderate to high correlations between the DAS and FAD have been previously reported (Dickstein, et al., 1992).

Measures of Marital and Family Functioning: Data Reduction, Reliability

As described above, the two measures of family functioning (MCSIFF and FAD) each yield scores on 6 dimensions of family functioning and a summary variable of General Functioning. Thus, the same dimensions are described through self-report and clinical interview methods. It should be noted, however, that the scales of the two instruments are directionally reversed, that is, higher scores on the MCSIFF represent healthier functioning while higher scores on the FAD indicate relatively more disrupted functioning. For the FAD, "healthy functioning" is described as falling below the cut-off scores which range from 1.9 for Behavior

Control to 2.3 for Roles dimensions. For the MCSIFF, "healthy functioning" on all dimensions is characterized by scores equal to or exceeding 5. Marital satisfaction was derived from a single DAS variable which represents Overall Marital Satisfaction as reported by mother. For this variable the cut-off score is equal to 100, with higher scores signifying relatively greater marital satisfaction. See Table 8 for descriptive information (means and standard deviations) of these variables and Table 9 for intercorrelational information.

Insert Tables 8 and 9 here

Table 9 shows characteristics of these family measures in this study. As in previous research (Miller, et al., 1985), moderate to high correlations were observed between the MCSIFF and FAD scales, with 5 out of 7 corresponding scales being significantly related

$r = -.44$; $p < .05$ to $r = -.75$; $p < .001$. (With the exception of two scales Affective Responsiveness and Behavior Control which were only moderately related $r = -.36$ and $r = -.23$, respectively). Given relatively small sample size of these comparisons, these relations did not reach significance. However, the pattern of findings replicates previous research and shows concordance between the two instruments. In addition, maternal marital satisfaction was found to be significantly related to all subscales of the self-report measure of family functioning (FAD) with values ranging $r = -.28$; $p < .05$ to $r = -.56$; $p < .001$) and 5 of 7 subscales of the interview measure (MCSIFF) $r = .39$; ns to $r = .68$; $p < .001$. Small sample size comparisons resulted in relations on two subscales (Communication and Behavior Control) as not reaching significance, but the pattern of results clearly demonstrates concordance in the more global aspects of family functioning and a degree of independence in the more specific areas. In

subsequent analyses global or summary variables of family functioning were examined in relation to other constructs, i.e. sensitivity, attachment as these were demonstrated to be more robust.

Results

This study addressed four major issues. (1) In exploring the relations between attachment and related or contributing constructs, consideration of assessment methodology of attachment itself seems worthwhile. Administration of the two main methods of attachment assessment, conducted both in the home and in the laboratory, and drawing on both the expertise of maternal report as well as the objectivity of trained observers, enabled such comparisons. (2) Extension and replication of earlier findings (Schiller & Seifer, 1992) where maternal style as assessed through reliable, aggregated observations in the home was found to be related to Q-sort Security, but not to strange situation Security classification was undertaken. Replication efforts were necessary as earlier work was conducted with a relatively small and homogeneous sample. (3) Lacking in earlier work, as well as in the field of attachment research in general, is the empirical evaluation of the contribution of the family system to the developing relationship between mother and child. This study aimed to explore relations between family functioning, marital satisfaction, and attachment. Both self-report and interview measures were used. (4) The relation between sensitivity and family and marital functioning as related to attachment outcomes was explored.

Relations Among Attachment Measures:

The four indices of Q-sort attachment were as follows: (1) Q-sort Dependency as rated by mother (QDEPM), (2) Q-sort Dependency as rated by

observer (QDEPO), (3) Q-sort Security as rated by mother (QSECM), and (4) Q-sort Security as rated by observer (QSECO). These measures of Q-sort attachment were correlated with Security as assessed in the Strange Situation. This was done by grouping Secure (B) vs. Insecure (non-B) cases and then correlating this variable (SECURE12) with the four continuous variables derived from the Q-sort. In our previous research, we found measures of Q-sort Security, but not Dependency to be significantly correlated with Strange Situation Security ($r=.38$; $p<.001$). In the current sample, however these relations failed to reach significance. Correlational values were $r=.06$ (ns) for mother reported Security and $r=.13$ (ns) for observer reported Security. Ratings of Dependency were also not significantly related to Security in the Strange Situation $r=-.00$ (ns) for maternal report and $r=.23$ (ns) for observer report.

Insert Table 10 here

The means for each strange situation attachment group were examined using a one-way ANOVA procedure; results are summarized in Table 11. Generally, mean ratings of Q-sort Security ranged from $M=.31$ ($SD=.12$) to $M=.45$ ($SD=.14$) for maternal report and $M=.34$ ($SD=.30$) to $M=.44$ ($SD=.23$) for observer report with no significant differences among any of the groups. For measures of Dependency values ranged from $M=-.01$ ($SD=.28$) to $M=-.16$ ($SD=.10$), with no significant group differences for maternal report. Observer reported Dependency however proved to be significant in discriminating Secure (B) vs. Insecure (non-B) infants. Interestingly, the mean ratings of Dependency for Secure infants were higher than for any of the Insecure groups ($M=.00$; $SD=.24$ for the Secure group with values ranging from $M=-.09$; $SD=.29$ to $M=-.37$; $SD=.22$ for the Insecure groups).

Insert Table 11 here

Maternal Sensitivity and Attachment:

Strange Situation:

To determine the relation between maternal sensitivity measures collected at 6 months and subsequent attachment classification in the Strange Situation at 12 months, a one-way ANOVA procedure with Planned Comparison tests was used. The planned comparison contrasted maternal style of group B mothers vs. groups A and C combined (i.e. Secure versus Insecure). Group D mothers were excluded from this comparison since there is less knowledge or theory about the relation of parenting sensitivity to Disorganized attachment. As mentioned above, only the qualitative measures of maternal style, i.e. Quality and Appropriateness of involvement were examined, as Amount of involvement proved to be unstable in week-to-week analyses. Results are presented in Table 12-A. These analyses indicated that Securely attached infants (group B) had mothers who were judged at the 6 month age level to show better Quality and Appropriateness of involvement than mothers of group A and group C infants combined. Values ranged from $M = 3.54$ ($SD = .66$) to $M = 3.89$ ($SD = .22$) for the two measures of sensitivity for groups A and C while group B mean ratings were $M = 4.16$ ($SD = .40$) for Quality and $M = 3.99$ ($SD = .40$) for Appropriateness of involvement. Note that this effect was found only when group D infants were not considered in the Planned Comparison. When group D infants were added to the equation, the effect was no longer significant, in fact they had higher mean ratings of maternal sensitivity than even the B group infants ($M = 4.24$; $SD = .28$ for Quality and $M = 4.09$; $SD = .35$ for Appropriateness; see Table 12-A). Table 12-B

further illustrates that when B versus the combined non-B groups (including A, C, and D) were compared, no significant differences in either Quality or Appropriateness were found. For the Secure group the values were $M = 4.16$ ($SD = .40$) and $M = 3.99$ ($SD = .40$) for Quality and Appropriateness respectively. For the Insecure group these values were $M = 3.98$ ($SD = .52$) and $M = 3.84$ ($SD = .52$).

Insert Tables 12-A and 12-B here

Q-sort:

To examine the relation between maternal sensitivity at 6 months and Q-sort attachment at 12 months, correlational analyses were performed. Maternal report of Security or Dependency was not related to maternal sensitivity. Values ranged from $r = -.08$ (ns) to $r = .15$ (ns). Observer reported Dependency was also unrelated to sensitivity $r = .14$ (ns) and $r = .24$ (ns) for Quality and Appropriateness, respectively. However, both Quality and Appropriateness were positively and significantly related to observer reported Security on the Q-sort ($r = .47$; $p < .001$ and $r = .44$; $p < .001$ for Quality and Appropriateness, in that order). These findings are consistent with findings from our previous research where correlational values for observer reported Security and measures of sensitivity ranged from $r = .24$; $p < .17$ to $r = .38$; $p < .02$ in the prior work.

Insert Table 13 here

Multiple regression analyses were then conducted to further explore the relation between maternal sensitivity and observer reported security. Quality and Appropriateness variables were entered together in a multiple regression equation, as these predictors of attachment were highly correlated measures of sensitivity.

Together, these variables accounted for 46%; ($p < .05$) of the variance in the Q-sort security rating as judged by an observer. This finding indicates that there is no additive gain in predicting power when sensitivity variables are considered together, as would be expected when the predictors are highly correlated ($r = .97$, see Table 4).

Family Functioning and Attachment:

In analyses of family functioning as related to attachment, global summary variables were of most interest. These were mother's rating of Marital Satisfaction (DASM12), and global functioning scores from the self report and interview measures of Family Functioning, respectively (FADGFM12, MSTOT12). (Note: scale scores for both interview and self-report measures are also presented in the Tables below). All measures reflect data collected around the child's 12 month age level, concurrent with measures of attachment.

Strange Situation:

Table 14-A and 14-B summarize the results of one-way ANOVA's which were used to examine the relation between the three measures of family functioning and Strange Situation attachment classifications. It should be noted once again that only a subsample of families was able to take part in the interview assessment of Family Functioning, resulting in 24 cases for the MSTOT12 variable. Thus, findings are seen as exploratory in nature for this measure. No significant group differences were found on any of the Family Functioning variables when the means of groups A, B, C, and D were compared, (See table 14-A) or when only the Secure versus Insecure groups were compared (See Table 14-B). For the four classification groups means ranged from $M = 102.98$ ($SD = 10.94$) to $M = 109.45$ ($SD = 1.26$) for Marital Satisfaction, $M = 1.47$ ($SD = .40$) to $M = 1.75$ ($SD = .40$) for self report Family

Functioning and $M = 4.67$ ($SD = .82$) to $M = 5.75$ ($SD = 1.26$) for interview based Family Functioning scores.

Insert Table 14-A and 14-B here

Q-sort:

Correlational analyses were done to examine the relation between family measures and Q-sort attachment. These findings are summarized in Table 15. Maternal report of Security was significantly related to self report measures of Marital Satisfaction and Family Functioning, with $r = -.34$; $p < .05$ and $r = .36$; $p < .05$ for summary variables. Maternal report was not related to interview measures of Family Functioning $r = .21$ (ns). A different pattern emerged when observer report of Security was considered. Observer reported Security was significantly and positively related to interview but not to self report measures of Family Functioning ($r = .41$; $p < .05$, $r = -.11$; ns, and $r = .10$; ns for summary variables of interview Family Functioning, self-report Family Functioning and self report of Marital Satisfaction, in that order). Measures of Dependency were unrelated to any of the Family Functioning or Marital Satisfaction variables for either mother or observer generated ratings.

Insert Table 15 here

Family Functioning and Sensitivity:

Additional correlational analyses were carried out to consider the relation among family variables and measures of maternal sensitivity. For both Quality and Appropriateness of involvement, significant positive relations were found with most

of the interview measures of Family Functioning including the summary, or Global measure ($r = .51$; $p < .05$ and $r = .49$; $p < .05$ for Quality and Appropriateness respectively). No such relations were found for self-report measures of either Family Functioning ($r = -.25$; ns and $r = -.24$; ns) or Marital Satisfaction ($r = .22$; ns and $r = .21$; ns) for either of the sensitivity measures.

Insert Table 16 here

Family Functioning, Sensitivity and Attachment:

For both measures of sensitivity and security, observer generated ratings of home-based behavior, i.e. maternal sensitivity observed in the home at 6 months and Q-sort attachment assessed in the home and 12 months were found to be related to interviewer, or directly assessed measures of Family Functioning, rather than to self report measures of Family Functioning and Marital Satisfaction. Conversely, self-report measures of Family Functioning and Marital Satisfaction were concordant with maternal reports of Security.

Taken together with above reported results of maternal sensitivity as relating to observer reported Security of attachment, only the variables of interest were combined in a hierarchical multiple regression. These were: Quality and Appropriateness of maternal involvement and the Global variable of interview-based Family Functioning. As above, Quality and Appropriateness were entered in a single step to the equation. They were entered in alternating order with the Global measure of Family Functioning to determine amount of independent variance explained in the outcome measure of Q-sort security based on observer report. It must be noted that these analyses were performed on a smaller sample ($n = 24$), as MCSIFF data were available for these families. In equation 1, Quality and Appropriateness were entered

at Step 1 and the Family Functioning score entered in Step 2. In equation 2, the Family Functioning score was entered at Step 1, with sensitivity variables added at Step 2. These findings are presented in Table 17. Results show that when Family Functioning was partialled in the second equation, (entered on step 1 of the regression) maternal sensitivity variables were still significantly related to Q-sort Security (change in R squared = .29; $p < .05$). However, when maternal sensitivity was partialled, in the first equation, Family Functioning no longer related to Security (change in R squared = .00; ns).

Insert Table 17 here

As family variables were not significantly related to Strange Situation Security, similar analyses were not undertaken with this outcome variable.

Discussion

This study aimed to address the following major questions:

1. How are attachment assessment methods related?

Two main methods of assessment of mother-infant attachment, the Strange Situation (Ainsworth et al., 1978) classification system and the Attachment Q-Sort (Waters & Deanne, 1985) were used and compared. Additionally, the Q-sort measure was completed independently by both mothers and trained observers to allow for methodological comparisons.

As expected, mother and observer reports of Q-sort attachment were moderately related. Parental report reflects extensive experience with a child, while observer reports are based on relatively short observation periods, but are aided by

training and experience with the instrument as well knowledge of normative behavior of children in a given age group. Previous research has shown that higher correspondence between mothers and observers may be achieved, but only through an extensive period of parent "training" (Teti & Mourgouy, 1994). In the current project standard procedures of explanation, brief practice and availability for mother's questions by a trained observer were used, which approximated the extended "training" protocol. Given these methods, it appears that parental and observer ratings coincide in terms of the more robust behaviors of the child, but diverge in describing the more subtle behaviors.

Comparison of the Strange Situation, a structured laboratory measure, and the home-based naturalistic observation of the Q-sort yielded less expected findings. In our previous research, (Schiller & Seifer, 1992) as well as in the validation and development of the Q-sort, moderate correlations between the two methods were found. In our previous work, the two methods of assessing attachment Security were significantly and positively related. In the current sample, however, no such relations were discovered. Several explanations for these findings may be considered. First, in this study, infants were classified into the traditional A/B/C groups as well as the newly developed D classification. This grouping was not used in the original validation, or in subsequent comparisons of the two methods (Waters & Deane, 1985; Vaughn & Waters, 1990). In fact, in Vaughn & Waters' validation study the Q-sort measure was documented as successfully distinguishing Secure vs. Insecure infants but failed to discriminate among the three attachment classifications. Second, this sample, as mentioned above, contained a significant proportion of D-classified infants (see Figure 2) which may have contributed to less typical sample distribution of attachment-relevant behavior, as described by the Q-sort. Third, the emphasis of the two methods is distinct. The Strange Situation aims to tap the aroused attachment system, focusing on the mechanics of separations and the reparative work the dyad

engages in during reunions. The Q-sort, on the other hand, describes the relatively non-stressed, naturalistic, "secure-base" behavior of a child in relation to his mother. This difference in emphasis may in part account for the lack of correspondence between the two methods. It may also help to address the unexpected finding that Q-sort measured dependency, not security, discriminated among the Strange Situation groups, with higher dependency evident in the secure group of infants. Infants who are potentially more reactive and expressive in their attachment-reunion behavior may also be the ones to demonstrate a higher level of general dependency in a less stressful environment. Finally, the possibility of sample-specific aberration must be considered. As described above, efforts were made to recruit a representative sample, but a sample of fifty-one dyads may present somewhat atypical characteristics. Such characteristics may not have been directly controlled in the study, but may have expressed themselves in attachment-related behaviors.

Rather than attributing one method with a preferential status in terms of assessment accuracy, these results suggest that the two ways of approaching the complex construct of infant attachment may provide complementary, if not overlapping points of view.

2. How is maternal sensitivity related to attachment outcomes?

In addressing this question this study aimed to replicate earlier work (Schiller & Seifer, 1992). In several ways these findings were comparable to the earlier project. First, the method of assessing maternal style was once again shown to be valid and reliable. The Parental/Caregiver Involvement Scale (PCIS) was again used to assess maternal behavior in repeated weekly observations as in our earlier work. Inter-rater reliability was established to anticipated levels. Aggregated measures (over 6 weekly sessions) also proved highly reliable for the two qualitative measures of maternal style. Unlike the earlier study the quantitative measure, Amount of

maternal involvement , proved to be more variable from week to week, resulting in unacceptable aggregated reliability levels. This variable, which was thus excluded from subsequent analyses, had not been an important predictor in earlier work. The implications of this finding are significant from a methodological perspective, as many studies examining maternal sensitivity and attachment often employ undifferentiated qualitative and quantitative ratings, often in a single observational period (See Tables 1-A and 1-B). The current findings imply that such methodology may lead to unstable observations and conclusions that vary from study to study.

Second, methodological variability in the literature, as reviewed in Tables 1-A and 1-B, prompted both the earlier and current study of these issues. In the present study, as in the earlier project, careful attention was given to observer bias, reliability of measures, and assessment procedures. Attachment classifications were done by a trained and reliable independent rater. Both measures of attachment and sensitivity were carefully selected and appropriate levels of reliability were reached before any independent rating of either construct was undertaken. Maternal sensitivity ratings were based on a theoretically and methodologically sound assessment method combined with repeated assessments in the home to produce a highly stable and reliable instrument. Q-sort ratings were done by independent observers, unfamiliar with both sensitivity and Strange Situation ratings. Sensitivity ratings were made based on videotape review by a separate set of independent raters. (Note: the author, although involved in both Q-sort and sensitivity scoring, was never responsible for both assessments of a given family). This level of methodological consistency and scrutiny allowed for careful replication of earlier findings and more definitive answers to the questions posed.

Third, in this study, as in earlier work, a strong relation was found between maternal sensitivity and Q-sort attachment Security, as rated by an observer. These findings are particularly interesting given that maternal sensitivity is assessed at the 6

month age level and attachment Security around the 12 month age. Many studies reviewed (see Tables 1-A and 1-B) that failed to demonstrate the theoretical relation of sensitivity as a precursor to attachment were done by conducting concurrent assessments. In addition, both the Q-sort and the home-based ratings of sensitivity employed here are measures collected in a naturalistic setting, over a relatively extended period. The parallel conceptualization and approach of these two methods may help in highlighting the relation of the constructs they measure.

Unlike our previous findings, where no significant relation between maternal style and Strange Situation attachment was found, current findings show marginally positive relations. Infants of mothers who were judged as relatively more sensitive at the 6 month observation period were more likely to be classified as Secure (B) rather than Resistant (C) or Avoidant (A). These findings are interpreted as marginal because they were evident only when the Disorganized (D) group of infants was removed from analyses. It should be noted that according to scoring procedures for the newly developed Disorganized category, an additional A/B/C classification must be made whenever an infant is judged to be primarily D, or lacking in a coherent attachment strategy. Thus, when only A/B/C distinctions were considered in terms of maternal sensitivity, D infants were included within those groupings. As mentioned above, 20% of the sample was classified as D; thus this group, when subsumed in the traditional A/B/C classifications contributed substantially to the overall variance. No significant differences among groups in terms of maternal sensitivity were then discerned. But, when the D category was removed, the effect emerged.

Further, the comparison of the mean values of maternal sensitivity revealed that, surprisingly, mothers of Disorganized infants were judged as more sensitive than even the mothers of Secure infants. This finding is at odds with recent modifications of attachment theory, as well as the rationale for the recent development of the D category. D infants are traditionally conceptualized as suffering from extensive

inadequacy in care that subsequently results in their inability to forge a coherent attachment strategy as demonstrated by a series of bizarre or, affectively incongruent behaviors in the Strange Situation. Perhaps it is not the usual caregiving environment that is important here, but the experience of episodic disruptions as in the case of abuse or trauma.

Several possible explanations, although speculative in nature, may be considered as explanations for these findings. First, the relatively higher incidence of D infants in this sample (20 % as compared to the 10-15% which has been suggested for normative samples, Cichetti, 1987) may contribute theoretically and empirically new and unexplained variance to an otherwise normative sample. As previous research documenting association between D classification and abusive parenting was based on high-risk samples (Lyons-Ruth et al., 1987, 1990, 1993; Cicchetti, et al., 1987), expectations for normative samples remain unclear. It may be worth considering, for example, alternative pathways for arrival at a Disorganized pattern of attachment-relevant behaviors within a structured setting for children from abusive versus unremarkable parenting backgrounds. Individual infant characteristics, as well as the constraints of the laboratory procedure itself need to be considered. It has been suggested, for example, that infants vary in the level of arousal experienced within the Strange Situation paradigm. Some have speculated that it may not be applicable to infants with atypical fear, or anger thresholds (Goldsmith & Alansky, 1987; Campos, Barrett, Lamb Goldsmith & Stenberg, 1983). It may also be possible then, that infants from normative backgrounds demonstrating unusual behaviors in the Strange Situation are especially affected by its demands. These children may in fact be more reactive, more needy, and more accustomed to highly responsive care from their mothers. These children may then appear in some ways similar to those suffering from long-standing histories of abuse only within the specific constraints and

expectations of a structured paradigm designed to elicit stress and arousal , but these similarities may be superficial, reflective of distinct precursors.

Second, marginal findings with regard to maternal sensitivity and attachment classification are consistent with our previous work as well as suggestions by several researchers that the often cited relationship is not as robust as may be expected (Goldsmith & Alansky, 1987; Rothbaum & Rosen, 1993). Many studies (see Table 1-B) report mixed or partially supportive findings of the theoretically important, but empirically controversial relationship.

Given the methodological rigor of this study and the overall consistent pattern of findings with previous work, we conclude that maternal sensitivity, as measured through repeated reliable observations is related to attachment outcomes. The method of attachment assessment chosen may influence the strength of the observed relationship. In other words, attachment, as assessed in a naturalistic setting over a relatively longer observation period was clearly related to similarly assessed maternal style. The emphasis and demands of a structured laboratory paradigm, however produced less robust associations with home-based assessments of sensitivity.

3. How is family functioning related to attachment?

In analysis of the relation of family functioning to attachment, a similar pattern emerged. The Q-sort measure of Security was, as predicted, related to directly observed, but not to self-reported measures of Family Functioning. In other words, observer-reported home-based ratings of attachment Security were related to Family Functioning as assessed in a clinical interview. Such relations are consistent with theoretical predictions regarding family environments as contexts and perpetuating mechanisms for developing relationships (Schachere, 1990; Stevenson-Hinde, 1990; Goodman, Brogan, Lynch & Fielding, 1993). No comparable relationships were detected with Strange Situation classification, or when only the dichotomous variable

(Secure vs. Insecure) was considered. The families of Securely and Insecurely attached infants did not notably differ from each other.

These latter findings are not only counter-intuitive, but also difficult to reconcile with current theoretical thinking about the nature of relationships in context. Several explanations need to be considered. First, a limitation is noteworthy, in the interpretation of these results. Only a smaller subsample of families participated in the family interview, and thus comparison for this variable among attachment groups must be interpreted with caution, and considered exploratory in nature. Second, methodological differences between the attachment methods compared need to be considered. As mentioned above, the Q-sort and the Strange Situation varied in period, type and emphasis of observation. Their ratings may then yield related, but not synonymous representations of the attachment construct.

The specificity of the Strange Situation assessment, tapping the stressed attachment system under structured observation, may be less related to the overall context or ongoing patterns of the developing relationship than the home-based naturalistic focus of the Q-sort. Specifically, the advantage of observing a child in a home setting over several hours is the opportunity to witness the ways in which "secure base behavior" is balanced with exploration, how comfort is sought and addressed in relatively unstressed surroundings, and how normative patterns of interaction unfold. This observation of daily life may be closer in spirit to those constructs such as Affective Involvement, Roles, Communication which are assessed in the Family Functioning interview. As described above, the Q-sort measure was also found to be positively and significantly related to maternal style, as observed in the home. These theoretically consistent links were found only with observer-generated reports, however. Again, direct observation of a child's attachment behavior was found to be related to similarly observed maternal sensitivity six months

earlier. This type of observation yielded distinct information from that provided by mother, even when the same instrument (the Q-sort) was used.

Based on these findings, the Q-sort, when conducted by trained observers, as compared with the Strange Situation, appears as a relatively more impressive method in terms of providing theoretically consistent links to related constructs of both sensitivity and family relations.

4. How do family functioning variables mediate the sensitivity-attachment relationship?

Similar to the pattern of findings outlined above, maternal sensitivity as observed at 6 months in the home, was related exclusively to interview-based measures of Family Functioning, not self-report. Further, self-report measures of Family Functioning were related to self-report measures of attachment while interview-based, or observed measures of Family Functioning were related only to observer-reported attachment Security. The impact of methodological choice seems to have played a significant role in determining the results. It appears that mothers and observers provided distinct, but internally consistent representations of these interrelated constructs-sensitivity family and attachment.

To summarize,

- (1) As expected, Family Functioning was found to be related to both sensitivity and attachment outcomes, although Family Functioning was not independently predictive of attachment if the effects of sensitivity were statistically controlled.
- (2) Method of assessment played an important role both in determining outcomes and dictating interpretations.
- (3) Although Family Functioning did not explain unique variance in attachment outcome, its relation to maternal sensitivity suggests a mediating role in the

sensitivity-attachment relationship. Researchers have suggested several pathways for this effect. Crockenberg (1981) for example has proposed the impact of social support on a mother's ability to provide sensitive responsiveness to her child. The impact of positive marital relationships, both as a means of addressing mother's own needs and as a source of social support has also been cited (Goldberg & Easterbrooks, 1984; Sroufe, 1985; Jacobson & Frye, 1991). More globally, a family atmosphere where the emotional needs of members are given adequate attention and priority is in all likelihood a conducive environment for promotion of sensitive dyadic interaction.

Conclusions and Future Directions for Research

Five major conclusions from this study can be made:

(1) Two currently available and widely used methods for assessing infant attachment (The Q-sort and the Strange Situation) may be tapping related, but not largely overlapping aspects of the attachment construct.

(2) Home-based, repeated, and aggregated observations of maternal sensitivity produce a reliable and theoretically meaningful measure.

(3) Maternal sensitivity and attachment were related. Stronger relations were demonstrated with the home-based Q-sort attachment Security measure than with Strange Situation classifications.

(4) Family variables were found to play an important role in the relation of attachment and sensitivity, particularly when home-based attachment measures were combined with interview-based assessments of Family Functioning.

(5) Methodological effects were revealing: In relation of attachment and sensitivity, method of attachment assessment resulted in varying strength of effect. In relation of family measures, security of attachment, and sensitivity, informant variables played a crucial role, with observer-generated measures and mother-reported measures providing internally consistent but independent descriptions.

Rather than provide concrete answers, these findings, considered as a whole, point to the complexity of the concepts under study and suggest several issues worthy of further consideration. The multi-faceted nature of dyadic interaction, as well as individual behavior style is worthy of prolonged, rigorous observation. Attention to methodology, rather than simply a matter of preference or availability may in fact dictate the nature of constructs tapped and the range of interpretations made. Clearer alignment of methodology with questions posed than is currently prevalent in the field may be necessary. For example, self-report measures are likely to provide useful, but distinct information from that gathered by trained objective observers over time. Similarly, in selecting a method for attachment assessment, rather than seeking the "better", or more accurate one, it may be more useful to first decide which component of this complex and dynamic process is under investigation and then select the method accordingly.

Future research will need to also focus on several issues raised, by the findings of the study, but to date inadequately addressed in the literature. Specifically, expectations for classification and interpretation of disorganized (D) attachment behavior in normative samples will need to be both theoretically and empirically explored.

In addition, many important variables worthy of investigation were not examined in this study. Individual variables pertaining to the mother as well as the child need to be included. For example, the contribution of the child to the ongoing

relationship, i.e. temperamental style; the contribution of the mother i.e. her emotional and physical health, attachment history, life stress. Finally, present findings lend support to recent interest in incorporating family systems perspectives to the study of attachment. However, given the limitations of small samples, current work will need to be replicated to verify and extend findings.

These efforts may be fruitful not only in helping to more fully explore and contextually place the issue of infant attachment, but also in continuing to provide avenues for integration of clinical and research efforts in this area. While some researchers and clinicians have already started this process with promising results (Lieberman 1992; Ericson et al., 1992; Marvin, 1992) more careful investigation into relevant components and points of intersection is well worth continued pursuit of research questions posed. Further elaboration and clarification, for example, of the mechanisms through which relationships within a family help to shape the mother-child relationship, and how it in turn affects the remaining system, would lend compelling support to family-based treatment components of early intervention programs, largely lacking such focus. The ability to consistently and reliably assess maternal style is an exciting research as well as clinical tool applicable and much needed in the expanding short-term work with mother-infant and mother-toddler dyads. More generally, added appreciation and evidence for the influence of context on children's behavior, and its interpretation can help put in perspective brief office-based assessments often conducted for evaluation purposes. The need to observe children in their milieu, to consult the input of parents as well as outside reporters is applicable as much to research as to every-day clinical practices. These are just some of the examples in which questions posed in this project may lend themselves to elaboration in the field of clinical and developmental psychology.

Table 1a

Review of Studies of Maternal Sensitivity and Attachment: Positive Outcomes

authors	sample	measures	procedures	observation	findings	summary
Ainsworth et al. (1978)	N = 23 (A = 6 B = 13 C = 4)	global 9 point ratings from subjective narratives (4 main scales)	extensive home visits over the course of 1st year; 1 observer	64 hours of observation total	high intercorrelations of 4 sensitivity scales	Subjective coders, described by Ainsworth as "semi-participants" in the lives of the subjects responsible for narrative accounts which then generated sensitivity scores; small sample size; small groups
Belsky, Rovine & Taylor (1984)	N = 60	15 sec. time sampling, specific behaviors such as responsive, soothe, vocalize, positive affect scored	home observations 1, 3, 9 months	45 minutes at each visit	maternal behaviors ratings observed at 9 months only related to attachment classification	Sensitivity operationally defined as presence or absence of specific behaviors, no qualitative measures used; limited observation periods.
Beinn (1985)	N = 41	Ainsworth scales	interview with mother; 1 observer	4 hours of interview	maternal sensitivity ratings related to attachment classification	Same observer was responsible for interviews and sensitivity ratings - possibility of observer bias.
Cox, Owen, Henderson & Margand (1992)	N = 38	Ainsworth scales; time sampling count of affection and vocalization	semi-structured home visit 3 months	15 minutes	maternal sensitivity ratings related to attachment classification	Attachment re-coded as a continuous rather than classification variable; relation of sensitivity and attachment interpreted as significant with only modest reported correlations.
Crockenberg & McCluskey (1985)	N=46	10 sec. time sampling: seconds lapsed after baby's cry to mother's response; global 4 point sensitivity ratings	4 brief home visits 3 months; 12 month lab independent raters	3 1/2 hours total observation	3 month ratings related to proximity seeking behavior. 12 month ratings related to concurrent proximity and resistance behaviors	12 month sensitivity ratings based on behavior observed in the strange situation - possible situation confound. Sensitivity operationally defined as time to respond to a cry at 3 months vs. unspecified global ratings at 12 months.

Table 1a (Continued)

authors	sample	measures	procedures	observation	findings	summary
Egeland & Farber (1984)	N = 189	Ainsworth and other global rating scales	home visits 3, 6 months	feeding situation	caretaking skills, not affective measures related to attachment	Sensitivity operationally defined as according to Ainsworth scales, occurrences of specific behaviors in a feeding situation. Findings are inconsistent with Ainsworth's predictions as qualitative measures not related to attachment.
Grossmann et al (1985)	N = 49	audiorecorded narrative; Ainsworth scales	home visits 2, 6, 10 months 2 observers	1 hour each visit	Ainsworth's pattern of results replicated, but small group differences	Subjective observation method as in Ainsworth's study; 2 independent observers; less observation time; small group differences reported, some not reaching significance.
Isabella, Belsky & Von Eye	N = 51	15 sec. time sampling, specific behaviors such as responsive, soothe, vocalize, positive affect scored specific sequences defined as "interactional synchrony	home observations 1, 3, 9 months	45 minutes at each visit	interactional synchrony at 3, not 9 months predictive of attachment classification	Sensitivity operationally defined as presence or absence of specific behaviors, no qualitative measures used; limited observation periods.
Isabella & Belsky (1991)	N = 153	same as above	home observations 3, 9 months	45 minutes at each visit	above findings replicated with both 3 and 9 month samples.	same as above
Isabella (1993)	N = 32	videotaped or written narrative; Ainsworth scales reduced to 3 main scales: sensitive responding, rejection, activity	home observation 1, 4, 9 months (8 total)	30 minutes at each visit	maternal sensitivity ratings related to attachment classification	Sensitivity operationally defined as contingent responding; small sample size.

Table 1a (Continued)

authors	sample	measures	procedures	observation	findings	summary
Pederson et al. (1990)	N=40	Q-sorts: attachment and maternal sensitivity	2 home visits	2 hours at each visit	maternal sensitivity and attachment Q-sorts related	Acceptable reliability between raters reported, but each rater responsible for both measures for each subject - possibility of observer bias
		2 raters, not independent				
Pederson & Moran (in press)	N = 76	Q-sorts: attachment and maternal sensitivity	home visits 8, 12 months	2 hours at each visit	maternal sensitivity and attachment Q-sorts related	same as above
		2 raters, not independent				
Smith & Pederson (1988)	N = 48	3 sec. time sampling classification of maternal response	lab observation 12 months	60 3-minute episodes	attachment related to type of maternal response	Sensitivity operationally defined as 1 of 3 mutually exclusive responses: appropriate, insufficient, intrusive; concurrent observation of sensitivity only; short observation period in structured setting.

Table 1b

Review of Studies of Maternal Sensitivity and Attachment: Mixed and Negative Outcomes

authors	sample	measures	procedures	observation	findings	summary
Goldberg et al. (1986)	N = 59 (mixed sample: pre-term and full term twins and single births)	Ainsworth scales; additional global ratings	unstructured home visit including feeding situation; 3, 6, 9 months	1 1/2 - 2 hours at each visit	maternal sensitivity not related to attachment classification	Mothers of subcategories of securely attached children were judged as less sensitive than subcategories of insecure children. Findings attributed in part to unusual sample characteristics.
Lewis & Feiring (1989)	N = 174	10 sec. time sampling classification of maternal response, reduction to 2 main variables: distal and proximal contact	unstructured home visit; 3 months	2 hours	mothers of avoidant-type infants were judged more responsive than mothers of secure and resistant infants	Other factors including infant sociability predictive of attachment classification, not maternal sensitivity.
Lyons-Ruth et al. (1987)	N = 56 (high risk sample)	global ratings and time sampling	unstructured home visit 12 months	40 minutes	attachment behaviors, not attachment classification related to maternal sensitivity	Findings explained in the context of unusual reunion behaviors of this high-risk sample.

Table 1b (Continued)

authors	sample	measures	procedures	observation	findings	summary
Nakagawa, Lamb, Miyaki (1992)	N = 60 (Japanese, 1st born)	Ainsworth scales (adapted)	unstructured home visit 4, 8 months lab visit 8 months	10-90 minutes at each visit	no relation between maternal sensitivity and attachment	Weaker relation between precursor maternal sensitivity and attachment outcome suggested.
Rosen & Rothbaum (1993)	N = 62	5 point rating scales rated each minute 3 main scales: approval, availability, structure	laboratory visit; 12 months 4 structured and semi-structured situations	21 minutes of total observation	no significant distinctions among attachment groups based on parenting measures; 1 measure of sensitivity related to attachment	Modest association between parenting and concurrent attachment status reported.
Valley, Vondra & Shaw (1992)	N = 101	unspecified sensitivity scale	lab teaching task	-----	Maternal sensitivity not related to attachment	Social support more predictive of attachment than maternal sensitivity.

Table 2
Descriptive Characteristics of the Sample

Descriptive Information	Percent of Subjects	Number of Subjects (N=51)
<u>Gender</u>		
female	53%	27
male	47%	24
<u>Race</u>		
white	98%	50
non-white	2%	1
<u>Ethnicity</u>		
Northern European	47%	24
American/Canadian	24%	12
Southern European	10%	5
Eastern European	8%	4
Portuguese	4%	2
Latin American	2%	1
Northern African	2%	1
Southern African	2%	1
unavailable information	2%	1
<u>Marital Status</u>		
married	94%	48
mother living with partner	6%	3
<u>Socio-Economic Status</u> (Hollingshead Four-Factor Scores)		
Score 1 (Highest)	22%	11
Score 2	45%	23
Score 3	26%	13
Score 4	6%	3
Score 5 (Lowest)	2%	1

Table 3

Descriptive Information for Home Observations of Maternal Sensitivity (n = 51)

Variables	Mean	Standard Deviation
AMNT Amount of maternal involvement	3.01	0.27
QUAL Quality of maternal involvement	4.06	0.48
APPR Appropriateness of maternal involvement	3.91	0.47

Table 4

Correlations Among Home Observation Variables of Maternal Sensitivity

	AMNT	QUAL	APPR
AMNT	1.00		
QUAL	0.38*	1.00	
APPR	0.43*	0.97**	1.00

Note: Significance tests are two-tailed.

* $p < .05$ ** $p < .001$

Table 5

Average Week-to-Week Correlations of Maternal Sensitivity

and

Aggregated Correlations Over the Six-Week Observation

Variable	Week-to-Week	6-Week Aggregate
AMNT	0.00	0.00
QUAL	0.38	0.79
APPR	0.38	0.78

Table 6

Descriptive Information for Home Observations of Attachment (n=51)

Variables	Mean	Standard Deviation
QDEPM Q-sort measure of dependency, maternal report	-0.08	0.17
QSECM Q-sort measure of security, maternal report	0.42	0.16
QDEPO Q-sort measure of dependency, observer report	-0.07	0.28
QSECO Q-sort measure of security, observer report	0.41	0.26

Table 7

Correlations Among Home Observation Variables of Attachment

	QDEPM	QSECM	QDEPO	QSECO
QDEPM	1.00			
QSECM	-.19	1.00		
QDEPO	.32*	.32*	1.00	
QSECO	.11	.28*	.33*	1.00

Note: Significance tests are two-tailed.

* $p < .05$

Table 8

Descriptive Information for Measures of Marital and Family Functioning

<u>Variables</u>	<u>Mean</u>	<u>Standard Deviation</u>
Self-Report Measures (n = 48):		
Family Assessment Device (FAD) maternal report		
FADPSM12	2.11	0.33
Problem Solving		
FADCOM12	1.88	0.42
Communication		
FADROM12	2.20	0.46
Roles		
FADARM12	1.89	0.30
Affective Responsiveness		
FADAIM12	1.81	0.41
Affective Involvement		
FADBCM12	1.61	0.37
Behavior Control		
FADGFM12	1.59	0.38
General Functioning		
Dyadic Adjustment Scale (DAS), maternal report		
DASM12	106.33	12.48
Interview Measures (n = 24):		
McMaster Structured Interview of Family Functioning (McSiff)		
MSPS12	4.67	1.37
Problem Solving		
MSCO12	4.71	1.37
Communication		
MSRO12	5.00	1.38
Roles		
MSAR12	4.96	1.33
Affective Responsiveness		
MSAI12	5.38	1.38
Affective Involvement		
MSBC12	5.33	1.71
Behavior Control		
MSTOT12	5.04	1.27
Total/General Functioning		

Table 9

Correlations Among Measures of Family and Marital Functioning

	MSPS12	MSCO12	MSRO12	MSAR12	MSAI12	MSBC12	MSTOT12	DASM12
FADPSM12	-.75** (n=24)	-.69** (n=24)	-.73** (n=24)	-.67** (n=24)	-.67** (n=24)	-.31 (n=24)	-.72** (n=24)	-.53** (n=47)
FADCOM12	-.52* (n=24)	-.44* (n=24)	-.55* (n=24)	-.54* (n=24)	-.54 (n=24)	-.07 (n=24)	-.44* (n=24)	-.53** (n=47)
FADROM12	-.63** (n=24)	-.57* (n=24)	-.69** (n=24)	-.60* (n=24)	-.52* (n=24)	-.29 (n=24)	-.60* (n=24)	-.47** (n=47)
FADARM12	-.33 (n=24)	-.33 (n=24)	-.38 (n=24)	-.36 (n=24)	-.22 (n=24)	-.07 (n=24)	-.34 (n=24)	-.43* (n=47)
FADAIM12	-.53* (n=24)	-.50* (n=24)	-.65** (n=24)	-.63** (n=24)	-.48* (n=24)	-.53* (n=24)	-.63** (n=24)	-.45* (n=47)
FADBCM12	-.23 (n=24)	-.26 (n=24)	-.34 (n=24)	-.35 (n=24)	-.12 (n=24)	-.23 (n=24)	-.31 (n=24)	-.28* (n=47)
FADGFM12	-.54* (n=24)	-.50* (n=24)	-.54* (n=24)	-.57* (n=24)	-.44* (n=24)	-.09 (n=24)	-.52* (n=24)	-.56* (n=47)
DASM12	.53* (n=23)	.39 (n=23)	.67** (n=23)	.65** (n=23)	.50* (n=23)	.22 (n=23)	.68** (n=23)	---

Note 1: Significance tests are two-tailed. * $p < .05$ ** $p < .001$

Note 2: Lower scores on the FAD indicate relatively healthier functioning, while higher scores on the McSiff and DAS represent healthier family functioning and marital satisfaction respectively.

Table 10

Correlations Between Home Observation Variables of Attachment
and
Laboratory Measure of Security of Attachment (n=51)

	SECURE12
QDEPM	-.00
QSECM	.06
QDEPO	.24
QSECO	.13

Note: Significance tests are two-tailed.
None of the p values reach significance.

Table 11

Mean Ratings on Home Observation of Attachment (Q-sort)
for each
Attachment Group (Strange Situation) at 12 Months

Variables	A	B	C	D	F-Ratio	P
QDEPM	-.01 (.28)	-.08 (.15)	-.05 (.19)	-.16 (.10)	1.58	.21
QSECM	.31 (.12)	.43 (.15)	.39 (.21)	.45 (.14)	1.10	.36
QDEPO	-.37 (.22)	.00 (.24)	-.04 (.29)	-.09 (.29)	2.74 ¹	.05
QSECO	.36 (.21)	.44 (.23)	.40 (.29)	.34 (.30)	.46	.71
(n)	(5)	(23)	(11)	(11)		

Note: Table entries are means with standard deviations in parentheses.

¹ Planned comparison tests revealed group B mean as significantly different from means of groups A and C on Q-sort measure of dependency, observer report. See Table 12.

Table 12-A

Mean Ratings on the Home Observation Variables of Maternal Sensitivity for Each Attachment Group at 12 Months

Variables	A	B	C	D	F-Ratio	P
QUAL	3.89 (.22)	4.16 (.40)	3.75 (.71)	4.24 (.28)	2.84	.05* ¹
APPR	3.87 (.22)	3.99 (.40)	3.54 (.66)	4.09 (.35)	3.38	.03* ²
(n)	(5)	(23)	(11)	(11)		

Note: Table entries are means with standard deviations in parentheses.

¹ Planned comparison test revealed group B mean as significantly different from groups A and C on quality of maternal involvement.

² Planned comparison test revealed group B mean as significantly different from groups A and C on appropriateness of maternal involvement.

Table 12-B

Mean Ratings of Home Observation of Maternal Sensitivity for Secure and Insecure Attachment Groups at 12 Months

Variables	Secure	Insecure	F-Ratio	P
QUAL	4.16 (.40)	3.98 (.52)	1.71	.20
APPR	3.99 (.40)	3.84 (.52)	1.37	.25
(n)	(23)	(28)		

Note: Table entries are means with standard deviations in parentheses. None of the F values approach significance.

Table 13

Correlations Between Home Variables of Sensitivity and Attachment

	QUAL	APPR
QDEPM	-.08	-.11
QDEPO	.24	.14
QSECM	.15	.13
QSECO	.47**	.44**

Note: Significance tests are two tailed.

**p<.001

Table 14-A

Mean Ratings on Variables of Family and Marital Functioning
for each Attachment Group at 12 Months

Variables	A	B	C	D	F-Ratio	P
MSPS12	4.00 (..)	4.58 (1.62)	4.67 (1.37)	5.25 (.96)	.29	.83
MSCO12	5.00 (..)	4.42 (1.62)	5.00 (1.26)	5.25 (.96)	.44	.73
MSRO12	5.00 (..)	4.92 (1.56)	4.50 (1.05)	6.00 (1.41)	.92	.45
MSAR12	4.00 (..)	5.17 (1.53)	5.00 (1.27)	4.75 (1.26)	.26	.85
MSAI12	6.00 (..)	5.25 (1.36)	5.00 (1.79)	6.25 (.96)	.73	.55
MSBC12	4.00 (..)	5.08 (1.88)	5.50 (2.07)	6.25 (.50)	.63	.61
MCSTOT12	5.00 (..)	5.10 (1.50)	4.67 (.82)	5.75 (1.26)	.54	.66
	n=1	n=12	n=6	n=4		

Note: Table entries are means with standard deviations in parentheses. None of the F-values approach significance.

Table 14-A (Continued)

Variables	A	B	C	D	F-Ratio	P
FADPSM12	2.12 (.28)	2.16 (.34)	2.03 (.30)	2.03 (.35)	.61	.61
FADCOM12	1.94 (.53)	1.89 (.37)	1.85 (.55)	1.84 (.43)	.09	.96
FADROM12	2.23 (.30)	2.33 (.46)	2.09 (.44)	2.04 (.51)	1.17	.33
FADARM12	1.94 (.31)	1.92 (.32)	1.74 (.17)	1.91 (.34)	1.03	.39
FADAIM12	1.75 (.47)	1.90 (.41)	1.77 (.33)	1.68 (.47)	.77	.52
FADBCM12	1.57 (.47)	1.63 (.34)	1.52 (.30)	1.64 (.46)	.26	.85
FADGFM12	1.75 (.40)	1.65 (.35)	1.49 (.45)	1.47 (.40)	.94	.43
DASM12	103.98 (11.77)	107.02 (10.94)	102.91 (17.33)	109.45 (1.26)	.53	.67
	n=4	n=22	n=11	n=10		

Note: Table entries are means with standard deviations in parentheses. None of the F-values approach significance.

Table 14-B

Mean Ratings of Family and Marital Functioning Variables
for Secure and Insecure Attachment Groups at 12 Months

Variables	Secure	Insecure	F-Ratio	P
MSPS12	4.58 (1.62)	4.75 (1.14)	.08	.77
MSCO12	4.42 (1.62)	5.00 (1.04)	1.09	.31
MSRO12	4.92 (1.56)	5.08 (1.24)	.08	.78
MSAR12	5.17 (1.53)	4.75 (1.14)	.57	.46
MSAI12	5.25 (1.36)	5.50 (1.44)	.19	.67
MSBC12	5.08 (1.89)	5.58 (1.56)	.50	.49
MCSTOT12	5.08 (.40)	5.00 (.52)	.02	.88
(n)	(12)	(12)		

Note: Table entries are means with standard deviations in parentheses. None of the F values approach significance.

Table 14-B (Continued)

Variables	Secure	Insecure	F-Ratio	P
FADPSM12	2.17 (.34)	2.06 (.31)	1.38	.25
FADCOM12	1.90 (.37)	1.86 (.47)	.09	.75
FADROM12	2.33 (.46)	2.09 (.43)	3.39	.07
FADARM12	1.92 (.32)	1.85 (.28)	.69	.41
FADAIM12	1.90 (.41)	1.74 (.39)	1.94	.17
FADBCM12	1.63 (.34)	1.60 (.39)	.12	.73
FADGFM12	1.64 (.41)	1.53 (.35)	.99	.32
DASM12	107.02 (10.94)	105.75 (13.83)	.12	.73
(n)	(22)	(26)		

Note: Table entries are means with standard deviations in parentheses. None of the F values approach significance.

Table 15

**Correlations Between Measures of Family and Marital Functioning
and Home Observations of Attachment**

	QDEPM	QSECM	QDEPO	QSECO
<u>McSiff Measures (n=24):</u>				
MSPS12	-.08	.37	.33	.46*
MSCO12	.04	.28	.33	.42*
MSRO12	.03	.21	.09	.39
MSAR12	-.13	.23	.09	.34
MSAI12	-.04	.13	.07	.40*
MSBC12	.04	.04	.22	.08
MSTOT12	.00	.21	.29	.41*
<u>FAD Measures (n= 48):</u>				
FADPSM12	.00	-.26	-.07	-.18
FADCOM12	.00	-.38*	.04	-.17
FADROM12	-.09	-.33*	-.16	-.44*
FADARM12	-.12	-.32*	-.08	.03
FADAIM12	.05	-.33*	-.05	-.10
FADBCM12	-.13	-.15	-.14	-.13
FADGFM12	-.07	-.34*	-.15	-.11
<u>DAS Measures (n= 48):</u>				
DASM12	.11	.36*	-.02	.10

Note 1: Significance tests are two-tailed. * $p < .05$

Note 2: Lower scores on the FAD indicate relatively healthier family functioning, while higher scores on the McSiff and DAS represent relatively healthier family and marital functioning respectively.

Table 16

**Correlations Between Measures of Family and Marital Functioning
and Home Observations of Sensitivity**

	QUAL	APPPR
<u>McSiff Measures (n=24):</u>		
MSPS12	.48*	.45*
MSCO12	.36	.34
MSRO12	.47*	.44*
MSAR12	.44*	.42*
MSAI12	.46*	.43*
MSBC12	.15	.16
MSTOT12	.51*	.49*
<u>FAD Measures (n= 48):</u>		
FADPSM12	-.22	-.21
FADCOM12	-.28	-.27
FADROM12	-.35*	-.35*
FADARM12	.05	.08
FADAIM12	-.09	-.12
FADBCM12	-.06	-.07
FADGFM12	-.25	-.24
<u>DAS Measures (n= 48):</u>		
DASM12	.22	.21

Note 1: Significance tests are two-tailed. *p<.05

Note 2: Lower scores on the FAD indicate relatively healthier family functioning, while higher scores on the McSiff and DAS represent relatively healthier family and marital functioning respectively.

Table 17

Multiple Regression: Home Observations of Maternal Sensitivity,**Interview Assessment of Family Functioning****and****Home Observation of Attachment⁺**

STEP	VARIABLES ENTERED	TOTAL R-SQUARED	CHANGE IN R-SQUARED
1	QUAL APPR	.46*	
2	MSTOT12	.46*	.01
1	MSTOT12	.17*	
2	QUAL APPR	.46*	.29*

⁺n=24

*p<.05

Figure 1

Socioeconomic Characteristics of the Sample: Hollingshead Four-Factor Scores

The four factors used in index are: Education, Occupation, Sex, and Marital Status; 1=highest -- 5=lowest

Figure 2

Attachment Classification in the Sample

Appendix I

Parent/Caregiver Involvement Scale (1986)

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PARENT/CAREGIVER INVOLVEMENT SCALE (Farran, Kasari, Comfort, and Jay, 1986)

Caregiver's Name/ID _____ Today's Date ____/____/____
MO Day Year

Child's Name/ID _____

This scale is designed to assess the behavior of a caregiver during play interactions with his/her child in home or laboratory settings. Play interactions should be observed for 20-30 minutes before scoring. Each item has behavioral descriptors at odd intervals along the 5-point scale. Please read the descriptors and the conventions in the manual for each item then write the number that best describes the observed caregiver behavior. If a behavioral item is not observed, please score 1 for Amount and NA for Quality and Appropriateness.

	Amount	Quality	Appropriateness	
A. Physical Involvement	_____	_____	_____	
B. Verbal Involvement	_____	_____	_____	
C. Responsiveness of Caregiver to Child	_____	_____	_____	
D. Play Interaction	_____	_____	_____	
E. Teaching Behavior	_____	_____	_____	
F. Control of Activities	_____	_____	_____	
G. Directives, Demands	_____	_____	_____	
H. Relationship among Activities	_____	_____	_____	
I. Positive Statements, Regard	_____	_____	_____	
J. Negative Statements, Regard	_____	_____	_____	
K. Goal Setting	_____	_____	_____	
A Q A Subscale Totals:	_____	_____	_____	
A Q A MEANS	<div></div>	<div></div>	<div></div>	
L. Impression of Parent-Child Interaction:				
Availability	Acceptance	Atmosphere	Enjoyment	Learning Environment
_____	_____	_____	_____	_____
Impression Total _____	IMPRESSION MEAN' <div></div>			

Appendix II

Attachment Behavior Q-Sort - Revision 2.0 (1986) E. Waters, SUNY Stony Brook

	Item	Security	Dependency
1.	Child readily shares with mother or lets her hold things if she asks to.	8.0	5.2
	Low: Refuses.		
2.	When child returns to mother after playing, child is sometimes fussy for no clear reason.	1.8	5.8
	Low: Child is happy or affectionate when he returns to mother between or after play times.		
3.	When he is upset or injured, child will accept comforting from adults other than his mother.	4.8	2.0
	Low: Mother is the only one he allows to comfort him.		
4.	Child is careful and gentle with toys and pets.	6.2	4.8
5.	Child is more interested in people than in things.	6.3	5.8
	Low: More interested in things than people.		
6.	When child is near mother and sees something he wants to play with, he fusses or tries to drag mother over to it.	2.2	7.2
	Low: goes to whatever he wants without fussing or dragging mother along.		
7.	Child laughs and smiles easily with a lot of different people.	4.3	2.4
	Low: Mother can get him to smile or laugh more easily than anyone else.		
8.	When child cries, he cries hard.	3.3	4.6
	Low: Weeps, sobs, doesn't cry hard, or hard crying never lasts very long.		
9.	Child is lighthearted and playful most of the time.	6.5	3.0
	Low: Child tends to be serious, sad, or annoyed a good deal of the time.		
10.	Child often cries or resists when mother takes him to bed for naps or at night.	2.3	6.0

Item	Security	Dependency
11. Child often hugs or cuddles against mother, without being asked or invited to do so. Low: Child doesn't hug or cuddle much, unless mother hugs him first or asks him for a hug.	7.5	7.4
12. Child quickly gets used to people or things that initially made him shy or frightened him. **Middle if never shy or afraid.	6.0	2.8
13. When the child is upset by mother's heaving, he continues to cry or even gets angry after mother is gone. Low: Cry stops right after mom leaves. **Middle if not upset by mom leaving.	2.7	7.4
14. When child finds something new to play with, he carries it to mother or shows it to her form across the room. Low: Plays with the new object quietly or goes where he won't be interrupted.	7.8	6.2
15. Child is willing to talk to new people, show them toys, or show them what he can do, if mother asks him to.	7.7	4.0
16. Child prefers toys that are modeled after living things (e.g., dolls, stuffed animals). Low: Prefers balls, blocks, pots and pans, etc.	5.2	5.0
17. Child quickly loses interest in new adults if they do anything that annoys him.	3.5	4.4
18. Child follows mother's suggestions readily, even when they are clearly suggestions rather than orders. Low: Ignores or refuses unless ordered.	8.5	5.6
19. When mother tells child to bring or give her something, he obeys (Do not count refusals that are playful or part of a game unless they clearly become disobedient). Low: Mother has to take the object or raise her voice to get it away from child.	7.7	5.4

Item	Security	Dependency
20. Child ignores most bumps, falls, or startles.	4.2	3.0
Low: Cries after minor bumps, falls, or startles.		
21. Child keeps track of mother's location when he plays around the house. Calls to her now and then. Notices her go from room to room. Notices if she changes activities.	8.8	8.0
** Middle if child isn't allowed or doesn't have room to play away from mom.		
22. Child acts like an affectionate parent toward dolls, pets, or infants.	6.5	4.8
Low: Plays with them in other ways.		
Middle if child doesn't play with or have dolls, pets, or infants around.		
23. When mother sits with other family members, or is affectionate with them, child tries to get mom's affection for himself.	2.7	7.0
Low: Lets mother be affectionate with others. May join in, but not in a jealous way.		
24. When mother speaks firmly or raises her voice at him, child becomes upset, sorry, or ashamed about displeasing mom	4.5	5.4
(Don't score high if child is simply upset by the raised voice or afraid of getting punished.)		
25. Child is easy for mother to lose track of when he is playing out of her sight.	2.0	2.8
Low: Talks and calls when out of sight. Easy to find; easy to keep track of what he is playing with.		
**Middle if never plays out of sight.		
26. Child cries when mother leaves him at home with baby-sitter, father, or grandparent.	3.3	7.6
Low: Doesn't cry with any of these.		

Item	Security	Dependency
27. Child laughs when mother teases him.	6.3	4.0
Low: Annoyed when mother teases him.		
**Middle if mother never teases child during play or conversation.		
28. Child enjoys relaxing in mother's lap.	7.5	6.4
Low: Prefers to relax on the floor or on furniture.		
Middle if child never sits still.		
29. At times, child attends so deeply to something that he doesn't seem to hear when people speak to him.	4.3	4.0
Low: Even when deeply involved in play, child notices when people speak to him.		
30. Child easily becomes angry with toys.	2.3	5.0
31. Child want to be the center of mother's attention. If mom is busy or talking to someone, he interrupts.	2.5	8.4
Low: Doesn't notice or doesn't mind not being the center of mother's attention.		
32. When mother say "No" or punishes him, child stops misbehaving (at least at that time)> Doesn't have to told twice.	7.2	4.6
33. Child sometimes signals mother (or gives the impression) that he wants to be put down, and then fusses or wants to be picked right back up.	1.3	5.2
Low: Always ready to go play by the time he signals mother to put him down.		
34. When child is upset about mother leaving him, he sits right where is and cries. Doesn't go after mom.	1.2	5.0
Low: Actively goes after her if he is upset or crying.		
**Middle if never upset by mom leaving.		

Item	Security	Dependency
35. Child is independent with mother. Prefers to play on his own; leaves mother easily when he wants to play.	4.3	1.0
Low: Prefers playing with or near mom.		
**Middle if not allowed or not enough room to play away from mother.		
36. Child clearly shows a pattern of using mother as a base from which to explore. Moves out to play. Returns or plays near her. Moves out to play again, etc.	8.8	3.6
Low: Always away unless retrieved, or always stays near.		
37. Child is very active. Always moving around. Prefers active games to quiet ones.	4.8	4.4
38. Child is demanding and impatient with mother. Fussing and persists unless mom does what he wants right away.	1.2	7.2
39. Child is often serious and businesslike when playing away from mother or alone with his toys.	4.7	5.0
Low: Often silly or laughing when playing away from mother or alone with his toys.		
40. Child examines new objects or toys in great detail. Tries to use them in different ways or to take them apart.	6.5	4.0
Low: First look at new objects or toys is usually brief (May return to them later however).		
41. When mother says to follow her, child does so.	8.5	6.8
(Do not count refusal or delays that are playful or part of a game unless they clearly become disobedient.)		
42. Child recognizes when mother is upset.	8.2	5.0
Becomes quiet or upset himself. Tries to comfort her. Asks what is wrong, etc.		
Low: Doesn't recognize; continues to play; behaves toward mom as if she were OK.		

Item	Security	Dependency
43. Child stays closer to mother or returns to her more often than the simple task of keeping track of her requires. Low: Doesn't keep close track of mother's location or activities.	4.7	8.6
44. Child asks for and enjoys having mother hold, hug, and cuddle him. Low: Not especially eager for this. Tolerates it but doesn't seek it; or wiggles to be put down.	7.7	7.4
45. Child enjoys dancing or singing along with music. Low: Neither likes nor dislikes music.	5.2	5.0
46. Child walks and runs around without bumping, dropping or stumbling. Low: Bumps, drops, or stumbles happen throughout the day (even if no injuries result).	5.7	4.6
47. Child will accept and enjoy loud sounds or being bounced around in play, if mother smiles and shows that it is supposed to be fun. Low: Child gets upset, even if mother indicates the sound or activity is safe or fun.	7.2	5.0
48. Child readily lets new adults hold or share things he has, if they ask to.	6.0	4.0
49. Runs to mother with a shy smile when new people visit the home. Low: Even if he eventually warms up to visitor, child initially runs to mother with a fret or a cry. **Middle if child doesn't run to mother at all when visitors arrive.	6.3	5.2
50. Child's initial reaction when people visit the home is to ignore or avoid them, even if he eventually warms up to them.	3.5	5.4

Item	Security	Dependency
51. Child enjoys climbing all over visitors when he plays with them.	4.7	2.6
Low: Doesn't seek close contact with visitors when he plays with them.		
**Middle if he won't play with visitors.		
52. Child has trouble handling small objects or putting small things together.	3.8	5.0
Low: Very skillful with small objects, pencils, etc.		
53. Child puts his arms around mother or puts a hand on mom's shoulder when she picks him up.	8.5	6.0
Low: Accepts being picked up but doesn't especially help or hold on.		
54. Child acts like he expects mother to interfere with his activities when mom is simply trying to help him with something.	1.5	4.0
Low: Accepts mother's help readily, unless she is in fact interfering.		
55. Child copies a number of behaviors or ways of doing things from watching mother's behavior.	7.0	5.4
Low: Doesn't noticeably copy mother's behavior.		
56. Child becomes shy or loses interest when an activity looks like it might be difficult.	2.7	5.6
Low: Thinks he can do difficult tasks.		
57. Child is fearless.	4.0	2.4
Low: Child is cautious or fearful.		
58. Child largely ignores adults who visit the home. Finds his own activities more interesting.	3.2	3.8
Low: Finds visitors quite interesting, even if he is a bit shy at first.		

Item	Security	Dependency
59. When child finishes with an activity or toy, he generally finds something else to do without returning to mother between activities. Low: When finished with an activity or toy, he returns to mother for play, affection or help finding more to do.	3.8	1.2
60. If mother reassures him by saying "It's OK" or "it won't hurt you", child will approach or play with things that initially made him cautious or afraid. **Middle if never cautious or afraid.	8.5	3.0
61. Plays roughly with mother. Bumps, scratches, or bites during active play. (Does not necessarily mean to hurt mom.) Low: Plays active games without injuring mother. **Middle if play is never very active.	1.8	4.6
62. When child is in a happy mood, he is likely to stay that way all day. Low: Happy moods are very changeable.	5.5	4.0
63. Even before trying things himself, child tries to get someone to help him.	2.0	7.8
64. Child enjoys climbing all over mother when they play. Low: Doesn't especially want a lot of close contact when they play.	7.0	6.0
65. Child is easily upset when mother makes him change from one activity to another. (Even if the new activity is something child often enjoys.)	1.8	5.0
66. Child easily grows fond of adults who visit his home and are friendly to him. Low: Doesn't grow fond of new people very easily.	7.0	3.6
67. When the family has visitors, child wants them to pay a lot of attention to him.	4.0	4.4

	Item	Security	Dependency
68.	On the average, child is a more active type person than mother. Low: On the average, child is less active type person mother.	5.0	5.0
69.	Rarely asks mother for help. Low: Often asks mother for help. **Middle if child is too young to ask.	2.3	1.2
70.	Child quickly greets mother with a big smile when he enters the room (Shows her a toy, gestures, or says "Hi, Mommy"). Low: Doesn't greet unless mother greets him first.	8.0	5.6
71.	If held in mother's arms, child stops crying and quickly recovers after being frightened or upset. Low: Not easily comforted.	8.8	3.4
72.	If visitors laugh at or approve of something the child does, he repeats its again and again. Low: Visitors reactions don't influence child this way.	4.5	5.4
73.	Child has a cuddly toy or security blanket that he carries around, takes to bed, or holds when upset. (Do not include bottle or pacifier if child is under two years old.)	5.2	5.6
74.	When mother doesn't do what child wants right away, child behaves as if mom were not going to do it at all (Fusses, gets angry, walks off to other activities, etc.) Low: Waits a reasonable time, as if he expects mother will shortly do what he asks.	1.5	6.2
75.	At home, child gets upset or cries when mother walks out of the room (May or may not follow her). Low: Notices her leaving; may follow but doesn't get upset.	1.2	8.0

Item	Security	Dependency
76. When given a choice, child would rather play with toys than with adults.	3.2	2.8
Low: Would rather play with adults than toys.		
77. When mother asks child to do something, child readily understands what she wants (May or may not obey).	7.7	5.2
Low: Sometimes puzzled or slow to understand what mother wants.		
**Middle if child is too young to understand.		
78. Child enjoys being hugged or held by people other than his parents and/or grandparents.	4.5	2.4
79. Child easily becomes angry at mother.	1.0	5.2
Low: Doesn't become angry at mother unless mom is very intrusive or child is very tired.		
80. Child uses mother's facial expressions as a good source of information when something looks risky or threatening.	8.5	4.6
Low: Makes up his own mind without checking mother's expressions first.		
81. Child cries as a way of getting mother to do what he wants.	1.8	7.4
Low: Mainly cries because of genuine discomfort (tired, sad, afraid, etc.).		
82. Child spends most of his play time with just a few favorite toys or activities.	4.0	4.8
83. When child is bored, he goes to mother looking for something to do.	6.5	7.0
Low: Wanders around or just does nothing for a while, until something comes up.		
84. Child makes at least some effort to be clean and tidy around the house.	5.0	4.6
Low: Spills and smears things on himself and on floors all the time.		

Item	Security	Dependency
85. Child is strongly attracted to new activities and new toys.	7.5	3.4
Low: New things do not attract him away from familiar toys or activities.		
86. Child tries to get mother to imitate him, or quickly notices and enjoys it when mom imitates him on her own.	6.5	6.2
87. If mother laughs at or approves of something the child has done, he repeats it again and again.	5.8	6.6
Low: Child is not particularly influenced this way		
88. When something upsets the child, he stays where he is and cries.	1.2	4.4
Low: Goes too mother when he cries. Doesn't wait for mom to come to him.		
89. Child's facial expressions are strong and clear when he is playing with something.	6.5	4.8
90. IF mother moves very far, child follows along and continues his play in the area she has moved to (Doesn't have to be called or carried along; doesn't stop play or get upset).	8.3	7.2
**Middle if child isn't allowed or doesn't have room to be very far away.		

Appendix III

Please refer to: Ainsworth, M.,D.,S., Blehar, M., C., Waters, E. & Wall, S. (1978)
Patterns of Attachment: A psychological Study of the Strange Situation
Hillsdale, NJ: Lawrence Erlbaum Associates.
Pages 343-362 for full behavioral scoring criteria and pages 59-64 for
criteria for group classification.

Appendix IV

Please refer to: Ggrenberg, M. T., Cicchetti, D., & Cummings, E. M. (Eds.)
Attachment in the Preschool Years. University of Chicago Press.
Pages 136-148 for full behavioral scoring criteria and group
classification.

Appendix V

Outline of McMaster Structured Interview of Family Functioning (McSIFF) (1987). Bishop, D., Epstein, N., Keitner, G., Miller, I., & Zlotnick, C.

DATES:

CLINICIANS:

FAMILY MEMBER:

1. Presenting Problem:
 - A. Issues that family members feel are problems or difficulties for the family.
 - B. Family discussion of the problems.
 - C. Action taken to deal with the problems.
 - D. Understanding and resolution of the problems.
2. Roles: Recurrent patterns of behavior by which family members fulfill instrumental and affective family functions.
 - A. Instrumental Roles: Provisions of food, clothing, shelter, safety, and money.
 - B. Role Allocation and Accountability: How allocated responsibilities are distributed, shared and evaluated among family members.
 - C. Life Skills Development - Children: Tasks necessary to help children start and get through school, develop peer relationships, develop age-appropriate responsibilities, get along in society and develop interests.
 - D. Life Skill Development - Adults: Tasks necessary to help adults pursue career or vocational interests and to maintain or increase adult's level of personal development.
 - E. Maintenance and Management of Family Systems: Tasks that involve leadership, decision making, handling of family finances and relationships with extended family, friends and neighbors.
 - F. Affective Roles: Provision of nurturance and support (tasks of providing family members with support, care, reassurance and comfort).
 - G. Adult Sexual Gratification: Ability to initiate sex and respond to each other in a sexually and affectively gratifying manner.
3. Behavior Control: Patterns for handling behavior of children and adults in physically dangerous situations, in meeting and expressing psychobiological needs or drives and in interpersonal relationships.

CHILDREN:

- A. Physically Dangerous Situations: Rules for such situations as playing or running out in the street, playing with matches, alcohol and drugs, using dangerous objects (e.g., knives, sharp objects, guns), moving into dangerous surroundings.
- B. Psychobiological Needs or Drives: rules for eating, sleeping, eliminating, sex and aggression.

- C. Interpersonal Relationships: Rules for getting along with family members and for people outside the family.
- D. Enforcement of Rules: How adults enforce rules.

ADULTS:

Appropriate rules for such situations as driving recklessly, alcohol and drugs, smoking, suicide attempts, taking inappropriate risks. Rules for interpersonal relationships.

4. Problem Solving: Family's ability to resolve problems to a level that maintains effective family functioning. Problems involve:
 - Instrumental Problem Solving: Mechanical problems of everyday family life (e.g., household repairs, planning a trip, buying an appliance).
 - Affective Problem Solving: Problems involving feelings (e.g., family member angry/excited about something).
 - A. Identification: How instrumental and affective problems are identified.
 - B. Communication: How instrumental and affective problems are communicated to the appropriate person(s).
 - C. Development of Action Alternatives: How family members discuss and agree upon suitable/appropriate plans of action to solve instrumental and affective problems.
 - D. Action: How problems to solve problems are put into action.
 - E. Monitoring and Evaluating Action: How the family checks to see whether or not action plans were acted upon and carried out.
5. Communication: Recurrent patterns of how instrumental and affective information and messages are exchanged within the family.
 - A. Extent of Communication: Amount of time adults talk to one another and which parents and children talk to one another.
 - B. Clarity of Communications: The extent to which: discussions of everyday issues and understood; feelings and moods are discussed straightforwardly and are understood by family members; family members listen to each other; family members let one another know that they understand what they've said and, when they don't, ask to clarify it; sensitive topics can be discussed.
 - C. Directness of Communication: The extent to which family members answer for themselves, talk directly to the person for whom the message is intended and do not talk about a person in their presence.
6. Affective Responsiveness: The degree to which the family and family members respond with the full range of feelings and whether or not these feelings and whether or not these feelings are appropriate for the particular situation and/or behavior.
 - A. Welfare Emotions:
 - Joy/Pleasure
 - Tenderness/Concern/Affection

B. Emergency Emotions:

Anger
Sadness
Fear

7. Affective Involvement: Degree to which the family as a whole shows interest in and values the activities and interests of individual family members.
- A. Adult Relationships: Degree to which adults feel that their spouse or some other adult shows a genuine interest in them and in the things that interest them (e.g., activities, hobbies, etc.). The degree to which this involvement is authentic and caring but allows the individual enough space to feel that they “can do their own thing” and to “think for themselves.”
- B. Parent-Child Relationships: The degree to which children feel that parents show a genuine interest in their activities and interests but also demonstrate authentic concern about their well being (e.g., don’t just show interest in the child because it’s important to the parent). The extent to which parents feel that they can get close enough to their children and children feel they can get close enough to their parents. The degree to which children feel that they have enough space to “think for themselves” and to “do their own thing.”
8. Family Functioning: Summation of the dimensions, identified transactional patterns.

Signature

Appendix VI

McMaster Clinical Rating Scale

Nathan B. Epstein, M.D.
Lawrence M. Baldwin, Ph.D.
Duane S. Bishop, M.D.

Please address inquiries to:

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Butler Hospital
345 Blackstone Boulevard
Providence, Rhode Island 02906

Appendix VII

ID: ____

Date: ____/____/____

Rater: M F

FAMILY ASSESSMENT DEVICE

Many statements about families are listed below. Please read each statement carefully, and decide how well it describes your own family. You should answer according to how you see your family. Each statement has 4 possible responses:

- SA** (STRONGLY AGREE) if that statement describes your family very accurately
A (AGREE) if that statement describes your family for the most part
D (DISAGREE) if that statement does not describe your family for the most part
SD (STRONGLY DISAGREE) if that statement does not describe your family at all

Try not to spend too much time thinking about each statement, but respond as quickly and honestly as you can. If you have trouble with a statement, answer with your first reaction. Please be sure to answer **every** statement.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. Planning family activities is difficult because we misunderstand each other.....	SA	A	D	SD
2. We resolve most everyday problems around the house.....	SA	A	D	SD
3. When someone is upset the others know why.....	SA	A	D	SD
4. When you ask someone to do something, you have to check that they did it.....	SA	A	D	SD
5. If someone is in trouble, the others become too involved.....	SA	A	D	SD
6. In times of crisis we can turn to each other for support.....	SA	A	D	SD
7. We don't know what to do when an emergency comes up.....	SA	A	D	SD
8. We sometimes run out of things that we need.....	SA	A	D	SD
9. We are reluctant to show our affection for each other.....	SA	A	D	SD
10. We make sure members meet their family responsibilities.....	SA	A	D	SD
11. We cannot talk to each other about the sadness we feel.....	SA	A	D	SD
12. We usually act on our decisions regarding problems.....	SA	A	D	SD
13. You only get the interest of others when something is important to them.....	SA	A	D	SD
14. You can't tell how a person is feeling from what they are saying.....	SA	A	D	SD
15. Family tasks don't get spread around enough.....	SA	A	D	SD

		Strongly Agree	Agree	Disagree	Strongly Disagree
16.	Individuals are accepted for what they are.....	SA	A	D	SD
17.	You can easily get away with breaking the rules.....	SA	A	D	SD
18.	People come right out and say things instead of hinting at them.....	SA	A	D	SD
19.	Some of us just don't respond emotionally.....	SA	A	D	SD
20.	We know what to do in an emergency.....	SA	A	D	SD
21.	We avoid discussing our fears and concerns.....	SA	A	D	SD
22.	It is difficult to talk to each other about tender feelings.....	SA	A	D	SD
23.	We have trouble meeting our bills.....	SA	A	D	SD
24.	After our family tries to solve a problem, we usually discuss whether it worked or not.....	SA	A	D	SD
25.	We are too self-centered.....	SA	A	D	SD
26.	We can express feelings to each other.....	SA	A	D	SD
27.	We have no clear expectations about toilet habits.....	SA	A	D	SD
28.	We do not show our love for each other.....	SA	A	D	SD
29.	We talk to people directly rather than through go-betweens.....	SA	A	D	SD
30.	Each of us has particular duties and responsibilities.....	SA	A	D	SD
31.	There are lots of bad feelings in the family.....	SA	A	D	SD
32.	We have rules about hitting people.....	SA	A	D	SD
33.	We get involved with each other only when something interests us.....	SA	A	D	SD
34.	There's little time to explore personal interests.....	SA	A	D	SD
35.	We often don't say what we mean.....	SA	A	D	SD
36.	We feel accepted for what we are.....	SA	A	D	SD
37.	We show interest in each other when we can get something out of it personally.....	SA	A	D	SD
38.	We resolve most emotional upsets that come up.....	SA	A	D	SD
39.	Tenderness takes second place to other things in our family.....	SA	A	D	SD

		Strongly Agree	Agree	Disagree	Strongly Disagree
40.	We discuss who is to do household jobs.....	SA	A	D	SD
41.	Making decisions is a problem for our family.....	SA	A	D	SD
42.	Our family shows interest in each other only when they can get something out of it.....	SA	A	D	SD
43.	We are frank with each other.....	SA	A	D	SD
44.	We don't hold to any rules or standards.....	SA	A	D	SD
45.	If people are asked to do something, they need reminding.....	SA	A	D	SD
46.	We are able to make decisions about how to solve problems.....	SA	A	D	SD
47.	If the rules are broken, we don't know what to expect.....	SA	A	D	SD
48.	Anything goes in our family.....	SA	A	D	SD
49.	We express tenderness.....	SA	A	D	SD
50.	We confront problems involving feelings.....	SA	A	D	SD
51.	We don't get along well together.....	SA	A	D	SD
52.	We don't talk to each other when we are angry.....	SA	A	D	SD
53.	We are generally dissatisfied with the family duties assigned to us.....	SA	A	D	SD
54.	Even though we mean well, we intrude too much into each others lives.....	SA	A	D	SD
55.	There are rules about dangerous situations.....	SA	A	D	SD
56.	We confide in each other.....	SA	A	D	SD
57.	We cry openly.....	SA	A	D	SD
58.	We don't have reasonable transport.....	SA	A	D	SD
59.	When we don't like what someone has done, we tell them.....	SA	A	D	SD
60.	We try to think of different ways to solve problems.....	SA	A	D	SD

Appendix VIII

ID: _____

Date: _____

Rater: M F

SPANIER DA SCALE

There are several sets of questions below, with slightly different instructions for each. Please answer each question according to the directions given.

Most people have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your spouse (or partner) for each item on the following list.

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
1. Handling family finances	5	4	3	2	1	0
2. Matters of recreation	5	4	3	2	1	0
3. Religious matters	5	4	3	2	1	0
4. Demonstrations of affection	5	4	3	2	1	0
5. Friends	5	4	3	2	1	0
6. Sexual relations	5	4	3	2	1	0
7. Conventionality (correct or proper behavior)	5	4	3	2	1	0
8. Philosophy of life	5	4	3	2	1	0
9. Ways of dealing with parents or in-laws	5	4	3	2	1	0
10. Aims, goals, and things believed important	5	4	3	2	1	0
11. Amount of time spent together	5	4	3	2	1	0
12. Making major decisions	5	4	3	2	1	0
13. Household tasks	5	4	3	2	1	0
14. Leisure time interests and activities	5	4	3	2	1	0
15. Career decisions	5	4	3	2	1	0

Please indicate how often the following things have happened.

	All the Time	Most of the Time	More Often Than Not	Occasionally	Rarely	Never
16. How often do you discuss or have you considered divorce, separation, or terminating your relationship?	0	1	2	3	4	5
17. How often do you or your mate leave the house after a fight?	0	1	2	3	4	5
18. In general, how often do you think that things between you and your partner are going well?	0	1	2	3	4	5

	All the Time	Most of the Time	More Often Than Not	Occasionally	Rarely	Never
19. Do you confide in your mate?	0	1	2	3	4	5
20. Do you ever regret that you married/lived together?	0	1	2	3	4	5
21. How often do you and your partner quarrel?	0	1	2	3	4	5
22. How often do you and your mate "get on each other's nerves?"	0	1	2	3	4	5

	Every Day	Almost Every Day	Occasionally	Rarely	Never
23. Do you kiss your mate:	4	3	2	1	0
	All of Them	Most of Them	Some of Them	Very Few of Them	None of Them
24. Do you and your mate engage in outside interests together	4	3	2	1	0

How often would you say the following events occur between you and your mate:

	Never	Less Than Once a Month	Once or Twice a Month	Once or Twice a Week	Once a Day	More Often
25. Have a stimulating exchange of ideas	0	1	2	3	4	5
26. Laugh together	0	1	2	3	4	5
27. Calmly discuss something	0	1	2	3	4	5
28. Work together on a project	0	1	2	3	4	5

These are some things about which couples sometimes agree and sometimes disagree. Indicate if either item below causes differences of opinions or were problems in your relationship during the past few weeks (circle YES or NO).

29. Being too tired for sex	0 YES	1 NO
30. Not showing love	0 YES	1 NO

31. The points on the following line represent different degrees of happiness in your relationship. The middle point, "happy," represents the degree of happiness of most relationships. Please circle the **one** point that best describes the degree of happiness, all things considered, of your relationship (Circle **only one**)

0 1 2 3 4 5 6

Extremely
Unhappy

Fairly
Unhappy

A Little
Unhappy

Happy

Very Happy

Extremely
Happy

Perfect

32. Which **one** of the following statements best describes how you feel about the future of your relationship?
(Circle **only one**)

- 5. I want desperately for my relationship to succeed, and would go to almost any length to see that it does.
- 4. I want very much for my relationship to succeed, and will do all I can to see that it does.
- 3. I want very much for my relationship to succeed, and will do my fair share to see that it does.
- 2. It would be nice if my relationship succeeded, but I can't do much more than I am doing now to help it succeed.
- 1. It would be nice if it succeeded, but I refuse to do any more than I am doing now to keep the relationship going.
- 0. My relationship can never succeed, and there is no more that I can do to keep the relationship going.

BIBLIOGRAPHY

- Ainsworth, M. D. S., & Bell, S. M. (1969). Some contemporary patterns of mother-infant interaction in the feeding situation. In A. Ambrose (Ed.). Stimulation in early infancy. New York: Academic Press.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1971). Individual differences in the development of some attachment behaviors. Merrill - Palmer Quarterly, 123-143.
- Ainsworth, M. D. S., Bell, S. M., & Stayton, D. J. (1974). Infant-mother attachment and social development: "socialization" as a product of reciprocal responsiveness to signals. In M. Richards (Ed.). The integration of a child into a social world. New York: Cambridge University Press.
- Ainsworth, M. D. S., Blehar, M. C., Waters, E., & Wall, S. (1978). Patterns of attachment : A psychological study of the strange situation. New Jersey: Hillsdale.
- Ainsworth, M. D. S., & Wittig, B. (1969). Attachment and exploratory behavior of one-year-olds in a strange situation. In B. M. Foss (Ed.). Determinants of infant behavior (Vol. 4) London: Methuen.
- Archambault, R., Doherty, M., & Harris, M. (1992). Utilizing the McMaster family assessment with families with a psychiatrically disturbed child/adolescent. Paper presented at the International McMaster Conference, Providence, RI.
- Bakeman, R., & Brown, J. V. (1980). Early interaction: Consequences for social and mental development at three years. Child Development, 51, 437-447.
- Beckwith, L., Cohen, S. E., Kopp, C. B., Parmelee, A. H., & Marcey, T. G. (1976). Caregiver-infant interaction and early cognitive development in preterm infants. Child Development, 47, 579-587.
- Belsky, J., Rovine, M., & Taylor, D. G. (1984). The Pennsylvania infant and family development project, III: The origins of individual differences in infant-mother attachment: Maternal and infant contributions. Child Development, 55, 718-728.
- Belsky, J., Taylor, D. G., & Rovine, M. (1984). The Pennsylvania infant and family development project, II: The development of reciprocal interaction in the mother-infant dyad. Child Development, 55, 706-717.
- Bell, S. M., & Ainsworth, M. D. S. (1972). Infant crying and maternal responsiveness. Child Development, 43, 1171-1190.
- Benn, R. (1985). Factors associated with security of attachment in dual career families. Paper presented at the Biennial Meeting of the Society for Research in Child Development, April, Toronto.
- Bowlby, J. (1969,1982). Attachment and loss (Vol. 1). Attachment. New York: Basic Books.

- Bornstein, M. H., & Tamis - LeMonda, C. S. (1988). Maternal responsiveness and cognitive development in children. In M. H. Bornstein (Ed.). Maternal responsiveness: Characteristics and consequences. New directions for child development, 43, San Francisco: Jossey-Bass.
- Bretherton, I. (1985). Attachment theory: Retrospect and prospect. In I. Bretherton & E. Waters (Eds.). Growing points in attachment theory and research. Monographs for the Society for Research in Child Development, 50, (Serial No. 209).
- Cairns, R. B., & Green, J. A. (1979). How to assess personality and social patterns: Observations or ratings. In R. B. Cairns (Ed.). The analysis of social interactions: Methods, issues and illustrations. New Jersey:Hillsdale.
- Calkins, S.D., & Fox, N. A. (1992). The relations among infant temperament, security of attachment, and behavioral inhibition at twenty-four months. Child Development, 631456-1472.
- Campos, J. J., Barrett, K. C., Lamb, M. E., Goldsmith, H. H., & Stenberg, C. (1983). Socioemotional development. In P. H. Mussen (Ed.). Handbook of Child Psychology (Volume 2 Infancy and Developmental Psychobiology) pp. 784-886.
- Cicchetti, D. (1987). Developmental psychopathology in infancy: Illustration from the study of maltreated youngsters. Journal of Consulting & Clinical Psychology, 55, 837-845.
- Cicchetti, D., & Barnett, D. (1991). Attachment organization in maltreated preschoolers. Development and Psychopathology, 3, 397-411.
- Clarke, G. N., & Seifer, R. (1985). Assessment of parents' interactions with their developmentally delayed infants. Infant Mental Health Journal, 6 (4), 214-225.
- Clarke-Stewart, K., & Hevey, C. M. (1981). Longitudinal relations in repeated observations of mother-child interaction from 1 to 2 1/2 years. Developmental Psychology, 17 (2), 127-145.
- Cohn, J. F., Matias, R., Tronick, E. Z., Connell, D., & Lyons-Ruth, K. (1986). Face-to face interactions of depressed mothers and their infants. In E.Z. Tronick, T. Field (Eds.). Maternal depression and infant disturbance. New directions for child development, 34, San Francisco: Jossey-Bass.
- Cox, M.J., Owen, M.T., Lewis, J.M., & Henderson, V. K. (1989). Marriage, adult adjustment, and early parenting. Child Development, 60, 1015-1024.
- Cox, M.J., Owen, M. T., Henderson, V. K., & Margand, N. A. (1992). Prediction of infant-father and infant-mother attachment. Developmental Psychology, 28 (3), 474-483.
- Crittenden, P. M. (1992). Treatment of anxious attachment in infancy and early childhood. Development and Psychopathology, 4, 575-602.

- Crockenberg, S. B. (1981). Infant irritability, mother responsiveness, and social support influences on the security of infant-mother attachment. Child Development, 52, 857-865.
- Crockenberg, S., & McCluskey, K. (1985, May). Predicting infant attachment from early and current behavior of mothers and infants. Paper presented at the meeting of the Society for Research in Child Development, Toronto, Canada.
- Dickstein, S., Seifer, R., Sameroff, A. J., Miller, I., Keitner, G., Schiller, M., & Hayden, L. (1992). Maternal depression, family functioning, and parental attributions about the child. Paper presented at the International McMaster Conference, Providence, RI.
- Donovan, W. L., & Leavitt, L. A. (1978). Early cognitive development and its relation to maternal physiologic and behavioral responsiveness. Child Development, 49, 1251-1254.
- Egeland, B., & Farber, E. A. (1984). Infant-mother attachment: Factors related to its development and changes over time. Child Development, 55, 753-771.
- Egeland, B., & Sroufe, L. A. (1981). Attachment and early maltreatment. Child Development, 52, 44-52.
- Epstein, N. B., Baldwin, L. M., & Bishop, D. S. (1983). The McMaster family assessment device. Journal of Marital and Family Therapy, 9, 171-180.
- Epstein, N. B. & Bishop, D. S. (1981). Problem-centered therapy of the family. In A.S. Gurman & D. P. Kniskern (Eds.). Handbook of Family Therapy. New York: Brunner/Mazel.
- Epstein, N. B., Bishop, D. S., & Levin, S. (1978). The McMaster model of family functioning. Journal of Marriage and family counseling, 4, 19-31.
- Ericson, M. F., Korfmacher, J., & Egeland, B. (1992). Attachments past and present: Implications for therapeutic intervention with mother-infant dyads. Development and Psychopathology, 4, 495-507.
- Farran, D., Kasari, C., Comfort-Smith, M., & Jay, S. (1986). Parent / Caregiver Involvement Scale. For further information contact Dale Farran, Child Development - Family Relations, University of North Carolina at Greensboro.
- Farran, D. C., Comfort - Smith, M., & Kasari, C. (1985, April). Factors affecting parent child interactions with young handicapped children. Poster presented at the biennial meeting for Research in Child Development, Toronto, Canada.
- Farran, D., Kasari, C., Yoder, P., Harber, L., Huntington, G., & Comfort-Smith, M. (1987). Rating mother-infant interactions in handicapped and at-risk infants. In D. Tamir (Ed.). Stimulation and intervention in infant development. London: Freund Publishing.
- Field, T. (1980). Interactions of preterm infants born to lower SES, teenage mothers. In T. Field, S. Goldberg, D. Stern & A. Sostek (Eds.). Interactions of high-risk infants and children. New York: Academic Press.

- Field, T., Healy, B., Goldstein, S., Perry, S., Bendell, D., Schanberg, S., Zimmerman, E. A., & Kuhn, C. (1988). Infants of depressed mothers show "depressed" behavior even with nondepressed adults. Child Development, 59, 1569-1579.
- Fogel, A., & Thelan, E. (1987). Developmet of early expressive and communicative action:Reinterpreting the evidence from a dynamic systems perspective. Developmental Psychology, 23 (6), 747-761.
- Fonagy, P., Steele, H., & Steele, M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. Child Development, 62, 891-905.
- Goldberg, S., Perrotta, M., Minde, K., & Corter, C. (1986). Maternal behavior and attachment in low-birth-weight twins and singletons. Child Development, 57, 34-46.
- Goldberg, W. A., & Easterbrooks, M.A. (1984). Role of marital quality in toddler development. Developmental Psychology, 20, No.3, 504-514.
- Goldsmith, H. H., & Alansky, J. A. (1987). Maternal and infant temperamental predictors of attachment: A meta-analytic review. Journal of Consulting and Clinical Psychology, 55, (6), 805-816.
- Goldsmith, H. H., & Harman, C. (1994). Temperament and attachment: Individual and relationships. Current Directions in Psychological Science, 3, 53-57.
- Goodman, S. H., Brogan, D., Lynch, M. E., & Fielding, B. (1993). Social and emotional competence in children of depressed mothers. Child Development, 64, 516-531.
- Greenberg, M. T., Speltz, M. L., Deklyen, M., & Endriga, M. C. (1991). Attachment security in preschoolers with and without externalizing behavior problems: A replication. Development and Psychopathology, 3, 413-430.
- Grossmann, K., Grossmann, K. E., Spangler, G., Suess, G., & Unzner, L. (1985). Maternal sensitivity and newborns' orientation responses as related to quality of attachment in Northern Germany. Monographs of the Society for Research in Child Development, 44 (1-2, Serial No. 209).
- Howes, P., & Markman, H.J. (1989). Marital quality and child functioning: A longitudinal investigation. Child Development, 60, 1044-1051.
- Isabella (1993). Origins of attachment: Maternal interactive behavior across the first year. Child Development, 64, 605-621.
- Isabella, R. A., Belsky, J., & von Eye, A. (1989). Origins of infant-mother attachment: An examination of interactional synchrony during the infant's first year. Developmental Psychology, 25 (1), 12-21.
- Isabella, R. A., & Belsky, J. (1991). Interactional synchrony and the origins of infant-mother attachment: A replication study. Child Development, 62, 373-384.

- Jay, S., & Farran, D. (1981). The relative efficacy of predicting IQ from mother-child interactions using rating versus behavioral count measures. Journal of Applied Developmental Psychology, 2, 165-177.
- Jacobson, S.W., & Frye, K.F. (1991). Effect of maternal support on attachment: Experimental evidence. Child Development, 62, 572-582.
- Kagan, J. (1982). Psychological research on the human infant: An evaluative summary. New York: W. T. Grant Foundation.
- Kaye, K., & Fogel, A. (1980). The temporal structure of the face-to-face communication between mothers and infants. Developmental Psychology, 16 (5), 454-464.
- Keitner, G. I., Ryan, C. E., Miller, I. W., Kohn, R., & Epstein, N. (1992). Family functioning and the course of major depression. Paper presented at the International McMaster Conference, Providence, RI.
- Keitner, G. I., Miller, I. W., Epstein, N. B., Bishop, D. S., & Fruzzetti, A. E. (1987). Family functioning and the course of major depression. Comprehensive Psychiatry, 28, 54-64.
- Kobak, R. R., Sudler, N., & Gamble, W. (1991). Attachment and depressive symptoms during adolescence: A developmental pathways analysis. Development and Psychopathology, 3, 461-474.
- Krupka, A., Moran, G., Pederson, D. (1992). Multidimensional measurement of sensitive caretaking: A validation of the maternal behavior Q-sort. Poster presented at the International Conference on Infant Studies, Miami, FL.
- Lamb, M., Thompson, R., Gardner, W., & Charnov, E. (1985). Infant-mother attachment: The origins and developmental significance of individual differences in the strange situation behavior. Hillsdale, NJ: Erlbaum.
- Levine, L., Garcia Coll, C.T., & Oh, W. (1985). Determinants of mother-infant interaction in adolescent mothers. Pediatrics, 75 (1), 23-29.
- Lewis, M., & Feiring, C. (1989). Infant, mother, and mother-infant interaction behavior and subsequent attachment. Child Development, 60, 831-837.
- Lieberman, A. F. (1992). Infant-parent psychotherapy with toddlers. Development and Psychopathology, 4, 559-574.
- Lutkenhaus, P., Grossmann, K. E., & Grossmann, K. (1985). Infant - mother attachment at twelve months and style of interaction with a stranger at the age of three years. Child Development, 56, 1538-1542.
- Lyons-Ruth, K., Connell, D. B., Zoll, D., & Stahl, J. (1987). Infants at social risk: Relations among infant maltreatment, maternal behavior, and infant attachment behavior. Developmental Psychology, 23 (2), 223-232.
- Lyons-Ruth, K., Conell, D. B., Gruenbaum, H. U., & Botein, S. (1990). Infants at social risk: Maternal depression and family support services as mediators of infant development and security of attachment. Child Development, 61, 85-98.

- Lyons-Ruth, K., Alpern, L., & Repacholi, B. (1993). Disorganized infant attachment classification and maternal psychosocial problems as predictors of hostile-aggressive behavior in the preschool classroom. Child Development, 64, 572-685.
- Lyons-Ruth, K., Repacholi, B., McLeod, S., & Silva, E. (1991). Disorganized attachment behavior in infancy: Short-term stability, maternal and infant correlates, and risk-related subtypes. Development and Psychopathology, 3, 377-396.
- Main, M. (1983). Exploration, play and cognitive functioning related to infant-mother attachment. Infant Behavior and Development, 6, 167-174.
- Main, M., & Goldwyn, R. (1984). Predicting rejection of her infant from mother's representation of her own experience: Implication for the abused-abusing intergenerational cycle. Child Abuse and Neglect, 8, 203-217.
- 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 of attachment theory and research. Monographs of the Society for Research in Child Development, 50 (Serial No. 209).
- Main, M., & Solomon, J. (1990). Procedures for identifying disorganized/disoriented infants in the strange situation. In M. Greenberg, D. Cicchetti, & M. Cummings, (Eds.). Attachment in the preschool years: Theory, research and intervention. Chicago: University of Chicago Press.
- Main, M., & Weston, D. R. (1981). The quality of the toddler's relationship to mother and to father: Related to conflict behavior and the readiness to establish new relationships. Child Development, 52, 932-940.
- Mangelsdorf, S., Gunnar, M., Kestenbaum, R., Lang, S., & Andreas D. (1990). Infant proness - to - distress temperament, maternal personality, and mother - infant attachment: Associations and goodness of fit. Child Development, 61, 820-831.
- Marvin, R. (1992). Attachment and family systems-based intervention in developmental psychopathology. Development and Psychopathology, 4, 697-711.
- Matas, L., Arend, R., & Sroufe, L.A. (1978). Continuity of adaptation in the second year: The relationship between quality of attachment and later competence. Child Development, 49, 547-556.
- Miyake, K., Chen, S., & Campos, J. (1985). Infant temperament, mother's mode of interaction, and attachment in Japan: An interim report. Monographs of the Society for Research in Child Development, 44 (1-2, Serial No. 209).
- Miller, I. W., Epstein, N. B., Bishop, D. S., & Keitner, G. I. (1985). The McMaster family assessment device: Reliability and validity. Journal of Marital and Family Therapy, 11 (4), 345-356.

- Minuchin, P. (1985). Families and individual treatment: Provocations from the field of family therapy. Child Development, 56, 289-302.
- Minuchin, S. (1974). Families and Family Therapy. Cambridge: Harvard University Press.
- Moran, G., Pederson, D. (1992). The role of attachment theory in the analysis of early mother-infant interaction: Targeted description and meaningful interpretations. Paper presented at the Quebec Symposium on Childhood and The Family, March, 1992.
- Nakagawa, M., Lamb, M. E., Miyaki, K. (1992). Antecedents and correlates of the strange situation behavior of Japanese infants. Journal of Cross-Cultural Psychology, 23 (3), 300-310.
- Park, K. A., & Waters, E. (1989). Security of attachment and preschool friendships. Child Development, 60, 1076-1081.
- Patterson, J. C., Cohn, D. A., & Kao, B. T. (1989). Maternal warmth as a protective factor against risks associated with peer rejection among children. Development and Psychopathology, 1, 21-38.
- Pederson, D.R., & Moran, G. (in press). A categorical description of infant-mother relationships in the home and its relation to Q-sort measures of infant attachment security and maternal sensitivity. Manuscript to appear in: B. Vaughn & E. Waters (Eds.). Constructs, cultures and caregiving: New growing points in attachment research and theory. Monographs of the Society for Research in Child Development.
- Pederson, D. R., Moran, G., Sitko, C., Campbell, K., Ghesquire, K., & Acton, H. (1990). Maternal sensitivity and the security of infant-mother attachment: A Q-sort study. Child Development, 61, 1974-1983.
- Radke-Yarrow, M., Cummings, E. M., Kuczynski, L., & Chapman, M. (1985). Patterns of attachment in two- and three-year-olds in normal families and families with parental depression. Child Development, 56, 884-893.
- Ragozin, A. S., Basham, R. B., Crnic, K. A., Greenberg, M. T., & Robinson, N. (1982). Effects of maternal age on parenting role. Developmental Psychology, 18 (4), 627-634.
- Roggman, L. A., Langlois, J. H., & Hubbs-Tait, L. (1987). Mothers, infants, and toys: Social play correlates of attachment. Infant Behavior and Development, 10, 233-237.
- Rosen, K. S., & Rothbaum, F. (1993). Quality of parental caregiving and security of attachment. Developmental Psychology, 29 (2), 358-367.
- Sameroff, A. J. (1988). Family-Child study of affective and anxiety disorders. NIMH funded research project in progress, Bradley Family Research Center, Providence, RI.

- Sameroff, A. J., & Chandler, M. J. (1975). Reproductive risk and the continuum of caretaking casualty. In F. D. Horowitz, M. Hetherington, S. Scarr-Salapatek & G. Siegel (Eds.). Review of child development research (Vol.4, pp. 187-244). Chicago: The University of Chicago Press.
- Sameroff, A. J., & Emde, R., N. (Eds.). (1989). Relationship disturbances in early childhood: A developmental approach. New York: Basic Books.
- Schachere, K. (1990). Attachment between working mothers and their infants: The influence of family processes. American Journal of Orthopsychiatry, 60 (1), 19-34.
- Schiller, M. & Seifer, R. (1992) Assessment of maternal style as a precursor to attachment. Poster presented at the biennial International Conference on Infant Studies, Miami, FL.
- Schneider-Rosen, K., Braunwald, K. G., Carlson, V., & Cicchetti, D. (1985). Current perspectives in attachment theory: Illustration from the study of maltreated infants. Monographs of the Society for Research in Child Development, 44 (1-2, Serial No. 209).
- Seifer, R., & Sameroff, A., J. (1986). The concept, measurement and interpretation of temperament in young children: A survey of research issues. In M. L. Wolraich & D. Routh (Eds.). Advances in developmental and behavioral pediatrics (Vol. 7; pp. 1-43). Greenwich, CN: JAI press.
- Seifer, R., Sameroff, A.J., Barrett, L., Krafchuk, E. (in press) Infant temperament measured by multiple observation and mother report. Child Development.
- Seifer, R., & Schiller, M. (in press). The role of parenting sensitivity, infant temperament, and dyadic interaction in attachment theory and assessment. In E. Waters, B.E. Vaughn, G. Posada, & K. Kondo-Ikemura (Eds.), Constructs, cultures, and caregiving: New growing points of attachment theory and research. Monographs of the Society for Research in Child Development.
- Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing quality of marriage and similar dyads. Journal of Marriage and Family, 38, 15-28.
- Sroufe, L. A. (1985). Attachment classification from the perspective of infant-caregiver relationships and infant temperament. Child Development, 56, 1-14.
- Sroufe, L. A. (1988). The role of infant - caregiver attachment in development. In J. Belsky & T. Nezworski (Eds.). Clinical Implications of Attachment. New Jersey: Hillsdale.
- Sroufe, L., A. & Egeland, B. (1991). Illustrations of person - environment interaction from a longitudinal study. In T. D. Wachs & R. Plomin (Eds.). Conceptualization and measurement of organism - environment interaction. Washington, D.C.: American Psychological Association.
- Sroufe, L. A., & Fleeson, J. (1986). Attachment and the construction of relationships. In W. Hartup & Z. Rubin (Eds.). The nature and development of relationships. Hillsdale, NJ: Erlbaum.

- Sroufe, L. A., & Fleeson, J. (1988). The coherence of family relationships. In R. A. Hinde & J. Stevenson-Hinde, (Eds.). Relationships within families: Mutual influences. Clarendon Press.
- Sroufe, L. A., & Waters, E. (1977). Attachment as an organizational construct. Child Development, 51, 1222-1229.
- Stern, D. (1977). The first relationship: Mother and infant. Cambridge: Harvard University Press.
- Stern, D. N. (1989). The representation of relational patterns: Developmental considerations. In A. J. Sameroff & R. N. Emde (Eds.). Relationship disturbances in early childhood: A developmental approach. New York: Basic Books.
- Stevenson-Hinde, J. (1990). Attachment within family systems: An overview. Infant Mental Health Journal, 11 (3), 218-227.
- Susman, A., Waldman, I., Kalkoske, M., & Egeland, B. (1992). Infant temperament and maternal sensitivity as predictors of attachment security. Poster presented at the biennial International Conference on Infant Studies, Miami, FL.
- Teti, D. M., & Mourgty, S. (1994). Using mothers vs. observers in Attachment Q-Sort assessments: Theoretical and practical issues. Paper presented at the 9th International Conference on Infant Studies, Paris, France.
- Tronick, E., Als, H., & Brazelton, T. B. (1980). Monadic phases: A structural descriptive analysis of infant-mother face to face interaction. Merrill-Palmer Quarterly, 26, 5-24.
- Tronick, E. (1989). Emotions and emotional communication in infants. American Psychologist, 44, (No.2), 112-119.
- Urban, J., Carlson, E., Egeland, B., & Sroufe, A. L. (1991). Patterns of individual adaptation across childhood. Development and Psychopathology, 3, 445-460.
- Valley, C., Vondra, J., & Shaw, D. (1992). An hypothesis testing approach to prediction of attachment classification. Paper presented at the International Conference on Infant Studies, Miami, FL.
- van IJzendoorn, M. H. (1993). Associations between adult attachment representations and parent-child attachment, parental responsiveness, and clinical status: A meta-analysis on the predictive validity of the adult attachment interview. Manuscript submitted for publication.
- van IJzendoorn, M. H., Goldberg, S., Kroonenberg, P. M., & Frenkel, O. J. (1992). The relative effects of maternal and child problems on the quality of attachment: A meta-analysis of attachment in clinical samples. Child Development, 63, 840-858.

- Vaughn, B. E., Goldberg, S., Atkinson, L., Marcovitch, S., MacGregor, D., & Seifer, R. (1994). Quality of toddler-mother attachment in children with down syndrome: Limits to interpretation of strange situation behavior. Child Development, 65, 95-108.
- Vaughn, B. E., Lefever, G. B., Seifer, R., & Barglow, P. (1989). Attachment behavior, attachment security and temperament during infancy. Child Development, 60, 728-737.
- Vaughn, B. E., Stevenson-Hinde, J., Lefever, G. B., Shouldice, A., Trudel, M., Belsky, J., Waters, E. & Kotsaftis, A. (1992). Attachment security and temperament in infancy and early childhood: Some conceptual clarifications. Developmental Psychology, 28 (3) 463 - 473.
- Vaughn, B., & Waters, E. (1990). Attachment behavior at home and in the laboratory: Q-sort observations and strange situation classifications of one-year-olds. Child Development, 61, 1965-1973
- Waters, E. (1978). The reliability and stability of individual differences in infant-mother attachment. Child Development, 49, 483-494.
- Waters, E. & Deane, K. E. (1985). Defining and assessing individual differences in attachment relationships: Q-methodology and the organization of behavior in infancy and early childhood. Monographs of the Society for Research in Child Development, 44 (1-2, Serial No. 209).