SOCIAL INITIATION AND RESPONSIVENESS IN
PARENT-INFANT INTERACTION
DISSERTATION

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By

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CHAPTER I

REVIEW OF LITERATURE

The purpose of the present study was to investigate longitudinally the relationships between the initiation of social and distress/demand behaviors by infants at two ages and the responsiveness of parents to those initiatives.

A number of developmental theorists (Erikson, 1959; Spitz, 1959) have emphasized the significance of social interaction in the psychological development of the child. Sander (1964) suggested that reciprocal social interaction between mother and infant commences at about seven months of age and culminates in the focalization on the mother to the exclusion of others in the social network when the infant is between 10 and 13 months old. Sander (1964) based his concept of focalization on Bowlby's (1969) concept of attachment. Bowlby believed that the attachment of the infant for the mother resulted from the stimulation and contingent responsiveness provided by the mother. Several researchers (e.g., Lewis & Goldberg, 1969; Clarke-Stewart, 1973) have found maternal contingent responsiveness to be significantly related to various aspects of development

including social and intellectual competence. However, recent studies (Clarke-Stewart, 1973) have shown that the influence is reciprocal.

Recently attention has been focused on the father as an integral member of the social network of the infant. Fathers have been shown to be attachment objects (Lamb, 1977) who are responsive to their infants (Clarke-Stewart, 1973). However, fathers are generally less accessible to their infants than are mothers (Kotelchuck, 1976) and spend relatively more time playing with their infants and less time caregiving.

The present study investigated the relationships between the initiation of social and distress/demand behaviors by infants at two ages and the responsiveness of parents to those initiatives. In addition, the present study sought to determine if parental responsiveness or infant initiatives are influenced by the accessibility, or working status, of the parents.

Mother-Infant Interaction

A number of developmental and personality theorists have emphasized the importance of social interaction for the development of the child's ego. Indeed, Sullivan (1953) asserted that personality itself is only a hypothetical

construct wholly embedded in interpersonal situations. Erikson (1959) regarded the child's systematic attempts to interact with his social environment as the most essential aspects of development. He described ego strength (1962) as partially reflected in the ability of the child to elicit those responses required for survival from his environment. Spitz (1959) warned of aberrant development resulting from a given level of ego development not matched to the object relations appropriate to it.

Through clinical observations of mother-infant interaction, Sander (1964) focused on three aspects of interaction: initiation, reciprocation, and regulation. Throughout the first 20 months of the infant's life, these three aspects of mother-infant interaction were depicted in progressively more differentiated behaviors.

Sander (1962) felt that the mother's personality became known to the child as a series of expectancies the child developed from consistencies in the behavior of the mother. He described six issues resolved through the mother-infant interactions during the first 20 months of life. Each issue was resolved when the child's expectancy for a particular aspect of maternal behavior was formed.

During the first six months, initiation was predominately by the mother. From seven months through 13 months of

age, however, initiative in mother-infant interactions is made equally by the infant. During this period of time, two issues are negotiated. The first issue, that of initiative or early directed activity by the infant, is the time when the infant attempts to establish areas of reciprocity during his interactions with his mother. These activities are primarily social interchanges with the mother although exploration of the environment on his own initiative is also an important development during this period. Although Sander primarily described the mother-infant interaction, he noted (1962) that, during this period of development, the infant will accept care provided by the father or other caregiver.

From approximately 10 to 13 months of age, however, Sander (1962) felt that the infant discriminates his mother from other caregivers. The central issue resolved during this period is that of focalization on the mother, or the extent to which the infant succeeds in his demands that his mother alone fulfill all his needs. Sander based his concept of focalization during this period on the works of Bowlby (1969) and his concept of monotropy (Sander, 1962).

Sander's use of ages in describing these issues was somewhat arbitrary and, indeed, differed in each of his articles on the subject (1962, 1964, 1965). Each stage appears more marked by developmental milestones, such as the advent of the social smile and separation anxiety, more

than a birthday. The predominant test of Sander's issues to date has been his own clinical observations of 22 mother-infant dyads (1962, 1964, 1965).

Attachment and Responsiveness

Sander (1962) based his issue of focalization on the monotropy concept proposed by Bowlby (1969) in his work on attachment. Monotropy was a term coined by Bowlby (1969) to refer to the bias of a child to attach himself to one figure. Bowlby rejected food and caregiving activity as the chief reinforcers of attachment and instead suggested that

. . . evidence is now weighty that amongst the most effective reinforcers of attachment behavior is the way a baby's social companions respond to his social advances (1969, p. 314).

Bowlby (1969) based his conclusions on three primary sources: observations of Scottish children by Schaffer and Emerson (1964a), observations of Ganda children by Ainsworth (1963), and less systematic observations of Israeli children in kibbutzim. Ainsworth's observations of Ganda children led her to conclude that two variables were of primary importance in developing attachment behavior: the sensitivity of the mother in perceiving and responding to her infant's signals and the amount and kind of interaction between the mother and the infant (Ainsworth, 1963).

Bowlby (1969) described a number of observational studies of kibbutzim children, all with similar conclusions.

Despite the long hours the children spent under the care of the metapelets, the children did not form attachments to the metapelets. The primary objects of attachment among kibbutzim children were their parents and, in particular, their mothers who, unlike the metapelets, were free to respond to the infants and to initiate social play. The metapelets, who cared for a number of children at one time, had little time to respond to the infants' bids for attention.

The most systematic study of attachment discussed by Bowlby is that of Schaffer and Emerson (1964a). Schaffer and Emerson interviewed the mothers of 60 normal infants from Scottish working class homes. All the mothers were home during the day and fathers were home in the evenings. Each mother was interviewed during a home visit once each month from the time when the infants were approximately two months of age until the infants were 18 months of age. They attempted to insure the validity of the mothers' responses by inquiring about objective, easily observed behavior and by maintaining a non-evaluative attitude by the interviewers. They found an agreement percentage of 92% between interview data and observational data obtained during the home visit. Their primary measure of attachment was separation protest in a variety of situations.

The infants displayed initial attachment behavior when they were between 7 and 13 months old. In attempting to account for the development of attachment, Schaffer and Emerson (1964a) found no correlation between attachment intensity and amount of maternal availability of socialization practices (e.g., toilet training practices, feeding practices, or weaning age).

Schaffer and Emerson (1964a) did find that the degree of maternal responsiveness, rated on a six-point scale, was related to attachment intensity ($p < .02$); however, the direction of causality was not clear. They recommended viewing this relationship in terms of the mutual adaptation between mother and infant. They also found that the amount of maternal interaction (mother-initiated) correlated with maternal responsiveness ($p < .20$) and with the intensity of attachment at 18 months of age ($p < .02$). Based on these results, it may be reasonable to hypothesize that, should focalization occur, it may be related to the responsiveness, or reciprocation, of the parent.

Later studies by Ainsworth and her colleagues have underscored the role of maternal responsiveness in the development of the infant's attachment behavior (Ainsworth & Bell, 1969; Ainsworth, Bell, & Stayton, 1972). They cautioned, however, that the respective contributions of the mother and of the

infant are enmeshed in an interacting spiral making it impossible to distinguish the independent from the dependent variables (Ainsworth & Bell, 1969).

Influences of Maternal Responsiveness on Infant Behaviors

A number of theorists and researchers have related responsiveness or reciprocation to more global discussions of effectance motivation and the development of competence. Defining competence as the individual's ability to interact effectively with the environment, White (1959) regarded competence motivation, or effectance, as a primary drive of organisms which emerges when survival needs have been satisfied. Focalization, White theorized, is explained by the organism's efforts to produce difference-in-sameness in the stimulus field and noted that the child selects for interaction those aspects of his environment which he finds possible to affect in some way.

White (1960) subsequently suggested that the child's exploration of his social environment, where he learns what he can make people to and what he can expect from them, stems from the same effectance motivation as does his exploration of the physical environment. This relationship was supported by the research of Watson (Watson, 1972; Watson & Ramey, 1972) on reactions to response-contingent stimulation during early infancy. Watson focused on the

period from 8 to 10 weeks after birth when he felt, based on earlier research, that infants may normally be deprived of contingency experiences because of their short memories and the long recovery periods of most naturally effective motor responses. Using a sensitive pillow attached to a mobile suspended above the infant's head, Watson and his colleagues conducted a series of experiments aimed at stimulating the development of contingency awareness. To their surprise, they observed that infants with contingent mobiles almost unanimously displayed social responses of smiling and cooing along with the contingently rewarded behavior of pillow-pressing.

Based on his research using response-contingent mobiles, Watson (1972) advanced an ethological-social-cognitive hypothesis for the development of social responses such as smiling and cooing in young infants. Watson hypothesized that, when an infant observes a neutral or positive stimulus, he begins a contingency analysis. If, after several experiences with this stimulus, the infant finds a contingency between the stimulus and his response, then the contingent stimulus and, eventually, the initial stimulus become releasing stimuli for social responses such as smiling and cooing.

Watson suggested (1972) that, because of the young infant's short memory and long recovery time for motor

responses, most releasing stimuli for vigorous smiling and cooing behavior are human faces. The humans in the child's environment are the only stimuli that provide clear stimuli contingent upon the infant's responses small or mature enough to have a short recovery time. For example, the humans may imitate the child's sounds or say "kitchey-coo" every time their eyes meet. These games are variations of Watson's "The Game"--brief interactions which are contingent upon the infant's responses.

Watson (1972) denied, however, that any one type of stimulation, social or non-social, has any special significance for the infant. Rather,

. . . what is important is the perception of the relationship of contingency between a specific stimulus and a specific response. . . . "The Game" is not important because people play it, but rather people become important because they play "The Game" (1972, p. 338).

A number of studies have focused on the effects of responsiveness on infants' behavior. Studies by Rheingold (1959), Weisberg (1963), and Brackbill (1958) all found that contingent social responses (e.g., smiling, talking, physical contact) increased vocalizations and smiling behavior in infants under four months of age. Brackbill (1958) also found that, as the rate of smiling in four-month-old infants increased with contingent social reinforcement, the rate of protests declined simultaneously as a

result of counter-conditioning. During extinction, she noted, the rate of smiling decreased to zero, rather than to the baseline rate. Weisberg (1963) found that vocalizations increased when contingently reinforced by non-social stimuli such as a door chime.

Lewis and Goldberg (1969) observed the relationships between maternal responsiveness to infant social or distress signals and the infant response decrement to a blinking light display. Response decrement to a blinking light display was interpreted as an index of perceptual-cognitive development in the 12-week-old infants. Lewis and Goldberg (1969) found significant relationships using rank order correlations between the infants' response decrement and maternal responsiveness to distress signals ($\rho = .44$, $p < .05$) as well as maternal responsiveness to social signals ($\rho = .53$, $p < .05$). Response decrement was also positively correlated with the amount of affectionate tactual contact by the mother ($\rho = .45$, $p < .05$) and with the amount of looking ($\rho = .65$, $p < .01$) by the mother.

Lewis and Goldberg (1969) interpreted their findings as demonstrating the importance of short latencies and consistent reinforcement in the development of a generalized expectancy by the infant that his behavior affects the environment. They felt that this development of contingency

awareness by the infant had far reaching consequences for future development, concluding that

. . . the reinforcement of specific S-R bonds by the mother is effective in increasing the occurrence of that particular reinforced behavior; but more important, it develops within the infant the expectancy that his behavior can affect his environment. Given this expectancy, the infant is motivated to produce and utilize behaviors and skills not reinforced in his past experiences (1969, p. 100).

The conclusions reached by Lewis and Goldberg (1969) far outreached the scope of their data; however, results from other studies (Yarrow, 1963; Clarke-Stewart, 1973) have generally supported a strong relationship between contingent responsiveness and infant social and intellectual competence.

One study that did not support such a relationship was that of Beckwith (1971). She studies the relationships between infants' vocalizations and the attitudes and behaviors of their adopted mothers. Beckwith observed 24 mother-infant dyads when the infants were approximately 8 months of age and again when the infants were approximately 10 months of age. Using Spearman rank order correlations, she found a negative significant correlation between maternal ignorings of social or crying behavior and infant babbling during the first session ($\rho = -.41$, $p < .05$) but only a negative trend ($\rho = -.32$, $p > .05$) during the second session. Contrary to the findings of other studies, she also found a negative significant correlation between verbal

responses to the child and babbling during the first session ($\rho = -.52, p < .01$). However, it is noteworthy that her measure of verbal responses by the mother was not a contingent one.

Beckwith (1971) also found a negative significant correlation between physical responses to the cues of the infant and infant babbling during the first session ($\rho = -.40, p < .05$) but this relationship was not found during the second session. This finding suggests that contingent responsiveness may have specific influences on certain classes of behavior; contingent responsiveness may reinforce contact-maintaining or proximity-seeking behavior while contingent verbal responsiveness may reinforce vocalizations.

Results from a study by Clarke-Stewart (1973) may explain Beckwith's findings of highly specific effects of contingent responsiveness. Clarke-Stewart made a comprehensive study of mother-infant interactions in a sample of 36 dyads from the lowest socioeconomic class. She and her colleagues used a variety of structured, semi-structured, and unstructured procedures both in the home and the laboratory in a series of visits with infants from 9 to 18 months of age. She measured responsiveness in naturalistic home observations using a contingency measure of the proportion of the infant's initiatives to which the parent responded

appropriately within 20 seconds. Clarke-Stewart distinguished between maternal responsiveness to social signals and maternal responsiveness to distress signals.

In Clarke-Stewart's study (1973), the measures of responsiveness were far broader than were the measures used by Beckwith (1971). Whereas Beckwith used only one contingent measurement, that of physical responses to infant cues, Clarke-Stewart used a broad measure of contingent responsiveness which included any response deemed appropriate: physical contact (e.g., holding, touching, physical stimulation), social (e.g., speech, play), or caregiving (e.g., attending infant's need).

Clarke-Stewart (1973) found measures of responsiveness showed higher correlations with general measures of infant development, e.g., scores on the Bayley Scale of Infant Development, than to the frequency of specific infant behaviors, e.g., looking at mother. She found maternal responsiveness to social signals correlated highly with overall infant competence, a factor encompassing ratings of the infants' object involvement, level of play, level of attachment, and level of object permanence ($r = .69$, $p < .01$). Maternal responsiveness to distress/demand signals also correlated highly with infant competence ($r = .44$, $p < .01$).

Clarke-Stewart (1973) also found maternal responsiveness to social signals significantly related to the level of infant attachment to the mother as measured by the Strange Situation Behavior Instrument ($p < .01$). Securely attached infants, i.e., infants who were able to use the mother as a secure base from which to explore the environment, had mothers who were highest in stimulation, contingent responsiveness, and in the expression of affection.

Clarke-Stewart (1973) used the cross-lagged panel correlation to attempt to infer causal relationships between infant variables measured between 10 and 11 months and again between 14 and 16 months of age and maternal variables measured at the same two times. She found that maternal responsiveness to social signals influenced the performance of infants on the Bayley Scales of Mental Development at a later age ($p < .05$). Maternal responsiveness to distress and demand signals, however, was significantly influenced by the earlier vocalizations of the infant to the mother ($p < .01$) and by the earlier looking-at-the-mother behavior by the infant ($p < .05$).

Clarke-Stewart (1973) interpreted her findings as supporting the concept that contingent responsiveness not only reinforces specific infant behaviors but also establishes for the infant a generalized expectancy of control over his

environment. However, she noted that her findings suggested that, for the second year at least, maternal responsiveness to social signals was a far more significant influence on the development of many infant competencies than responsiveness to distress or demand signals. She found responsiveness to distress/demand signals related only to indices of the infant's attachment to mother ($r = .33$, $p < .05$ that $r > 0$), and, negatively, to indices of the infant's irritability ($r = -.34$, $p < .05$ that $r > 0$). Maternal responsiveness to distress, she concluded, was more likely to be influenced by the social behaviors of the infant than the reverse.

Like Clarke-Stewart, Yarrow and his associates found significant relationships between measures of infant social and intellectual competence and maternal responsiveness to social and intellectual competence and maternal responsiveness to social and distress/demand signals. Yarrow (1963) used ratings to measure the speed of response by the mother to the expressive needs of the infant in a cross-sectional study of 40 six-month-old infants and their adoptive and foster parents. He found a positive and significant relationship between the immediacy of maternal response and ratings of the social initiative of the infant ($r = .41$, $p < .01$). He also found a negative and significant relationship between the immediacy of maternal response and ratings of the autonomy of the infant ($r = -.39$, $p < .01$).

Yarrow (1963) interpreted the low correlation between maternal responsiveness and infant autonomy as evidence that autonomy may be a temperamental trait reflecting a constitutional predisposition and not affected by maternal behavior. In contrast, he interpreted the high correlation between maternal responsiveness and infant social initiative as evidence that responsiveness to need expression by the infant is one of three essential maternal functions influencing infant development. Other possible interpretations of the data, however, might be either that high maternal responsiveness negatively influences infant autonomy or that the levels of autonomy and social initiative of the infant both influenced the level of maternal responsiveness.

In a later study, Yarrow, Rubenstein, Pedersen, and Jankowski (1972) found no relationship between maternal responsiveness and ratings of the social responsiveness of the infant. They studied 41 infants who were five months old using time-sampling as well as structured measures of infant development. Unlike Clarke-Stewart (1973), they found maternal responsiveness to social signals significantly related only to positive vocalizations ($r = .30, p < .05$) while responsiveness to distress signals related to a variety of measures of mental and motor development including scores on the Mental Development Index of the Bayley Scale of Infant Development ($r = .30, p < .05$).

Two explanations may account for the apparent contradictions between the results of Clarke-Stewart (1973) and Yarrow et al. (1972). Yarrow et al. (1972) related maternal responsiveness to infant social responsiveness rather than to social initiatives as used by Clarke-Stewart (1973). Secondly, Yarrow et al. (1972) studied a younger population than did Clarke-Stewart (1973). Sander's theory of crucial issues in mother-infant interaction (1964) might predict that maternal responsiveness during the period from seven to nine months of age would affect infant social initiatives from 10 to 13 months of age.

In a longitudinal study, Yarrow, Goodwin, Manheimer, and Milowe (1973) used a variety of measures to assess the mental and social development of 10-year-old children. These measures were correlated with the behaviors of the mothers towards the children when they were six months old. In this study, Yarrow et al. (1973) did not distinguish between maternal responsiveness to social signals and to distress signals. They found that the general measure, responsiveness to communication, was positively related to male scores on the Wechsler Intelligence Scale for Children ($r = .47$, $p < .05$), male ratings on depth of relating ($r = .42$, $p < .05$) and to male ratings of social effectiveness ($r = .50$, $p < .05$). No significant relationships were found between maternal responsiveness to

communication and female scores on any measure. Yarrow et al. (1972) interpreted their findings as supporting the influence of maternal contingent responsiveness on the development of social and intellectual competence, at least in boys.

Bell and Ainsworth (1972) studied maternal responsiveness to distress/demand signals and infant crying in a longitudinal study of 26 mother-infant dyads during the first year of life. They found a significant relationship between the duration of the maternal unresponsiveness in one quarter and the duration of the infant crying during the subsequent quarter ($r = .45, p < .05$; $r = .42, p < .05$; $r = .51, p < .01$ respectively). Bell and Ainsworth (1972) noted that, by the end of the first year, individual differences in crying were more closely related to the history of maternal responsiveness than to neonatal irritability differences. They also found that maternal unresponsiveness was negatively related to ratings of infant communication during the fourth quarter ($r = -.63, p < .01$). These results seem to indicate that maternal responsiveness to distress/demand signals has a positive influence on the distress signals of the infant as well as on his social initiatives by decreasing the former and increasing the latter.

One demographic parameter that has been found to be related to maternal responsiveness is that of social class. Tulkin and Kagan (1971) studied mother-infant interaction in a sample of 30 middle-class and working-class mothers with 10-month-old infants. They found significant differences in responsiveness to social and to distress signals between middle-class and working-class mothers. Significant differences were found between middle-class and working-class mothers in the percentage of reciprocal vocalizations ($p < .001$) and of responses to spontaneous frets ($p < .001$).

Tulkin and Kagan (1971) interpreted their social class differences by pointing to a fatalistic attitude expressed by the working class mothers regarding their children. Believing developmental potential to be fixed at birth, these mothers felt environmental manipulations accomplished little. Therefore, they saw no reason to put the extra effort into either stimulating or responding to their infants which the middle-class mothers did.

In summary, it is evident that, at least in middle-class families, maternal responsiveness is related to several aspects of infant social and intellectual development. The nature of the antecedent-consequent influence is unclear. A conservative conclusion might be that maternal responsiveness to the social initiatives of younger infants

is positively related to the social initiatives of older infants while maternal responsiveness to the distress/demand initiatives of younger infants is negatively related to the irritability, or frequency of distress/demand initiatives, of older infants.

Influences of Infant Characteristics on Maternal Responsiveness

In recent years several authors (Bell, 1963; Harper, 1971; Walters & Stinnett, 1971) pointed out that results of many research studies previously interpreted as representing the influence of the parent on the child could easily be re-interpreted as representing the influence of the child on the parent. For example, although Yarrow (1963) focused on the influence of maternal characteristics on infant development, he noted that, on occasion, a foster mother's behavior differed greatly between two infants of the same age and sex because of the different temperamental characteristics of each infant.

Bell (1963) suggested that, in the areas of social responses, each parent's behavior is hierarchically organized. Each infant's behavior, he wrote, is in part determined by congenital factors which have three effects on the behavior of the parent. First, these congenital factors activate or fail to activate the repertoires of behavior available

to the parent. Secondly, they affect the level of response within each hierarchy of behaviors. Finally, these congenital factors differentially reinforce certain parental behaviors thus making them more likely to be elicited in future interactions.

Bell (1963) suggested two types of congenitally determined infant characteristics which influence parent behavior. First, he suggested, there are individual differences in human assertiveness which influence parental responses. He defined assertiveness as the maintenance of goal-directed behavior in the face of barriers. For example, in a study of monozygotic and dizygotic twins, Freedman (1965) found a high degree of heritability for "goal-directedness," an item from the Bayley Infant Behavior Profile.

The second area of congenitally determined infant characteristics Bell pointed to was that of person orientation. Schaffer and Emerson (1964b), in a longitudinal study of attachment in 37 infants from birth to 12 months of age, noted a considerable number of infants who actively rejected close physical contact. They found no correlation between the preference of the mother for physical contact and the preference of the infant. Infants described as cuddlers who had non-handling mothers sought contact comfort

from other family members while infants described as non-cuddlers rejected close physical contact from anyone. However, since their data was primarily based on interviews rather than on direct observation, one might question whether the stable individual differences were in the behavior of the infants or in the perceptions of the mothers.

Ainsworth et al. (1972) questioned the conclusions of Schaffer and Emerson (1964b) regarding cuddlers and non-cuddlers. They observed social interaction in 26 mother-infant dyads during the first year of life. They found a very strong correlation between the initiations of holding the parent by the infant during the fourth quarter of life and the duration of maternal non-routine holding of the infant during the first quarter of the year ($r = .50$, $p < .01$). They concluded that the individual differences in crying behavior at 1 year of age were more a result of the maternal history of responsiveness than a result of neonatal differences in irritability. However, since they did not examine the corresponding correlation between infant crying behavior during the first quarter and maternal responses during the fourth quarter, the direction of influence is still open to question.

Goldberg (1977) proposed a model of parent-infant interaction leading to social competence. She suggested that parental responsiveness is influenced by parental

feelings of efficacy or helplessness which, in turn, are influenced by the parental evaluation of interactions. She suggested that three infant characteristics affected the success of the interaction and the parent's perception, feelings of efficacy and, ultimately, responsiveness. These infant characteristics are readability, predictability, and responsiveness. Readability refers to the degree to which the behaviors of the infant are clearly defined and distinctive. Predictability refers to the degree to which the parent can anticipate the behavior of the infant based on preceding behaviors or on the environmental stimuli. Finally, responsiveness refers to the quality and extent of the reaction to stimulation by the infant.

Other congenital temperamental characteristics which may influence parental responsiveness were suggested by Thomas, Chess, Birch, Hertzog, and Korn (1963). Based on interviews with parents, they rated eight infants on nine temperamental characteristics from birth through two years of age. They found considerable stability in these characteristics which included activity level, approach or withdrawal, intensity of reaction, quality of mood, and persistence. They concluded that each individual has a primary reaction pattern which affects not only his behavior but that of others around him. However, since their data was based on interviews rather than direct observations, one

might again question whether the stability was in the reactions of the infants or in the perceptions of the parent.

Beckwith (1971) and Bell and Ainsworth (1972) noted considerable stability in infant irritability. In her observational study of mother-infant interaction at 8 and 10 months of age, Beckwith (1971) found considerable stability for infant crying ($r = .55$, $p < .01$) but low stability for infant babbling ($r = -.09$). She interpreted this stability as supporting the existence of irritability as a temperamental trait. However, Bell and Ainsworth (1972) also noted considerable stability in crying during the third and fourth quarter of the first year ($\rho = .43$, $p < .05$) but not during earlier quarters. They asserted that the stability was provided by the influence by maternal responsiveness rather than constitutional differences in the infants. However, they failed to support this conclusion with statistical evidence.

A number of researchers have noted that maternal responsiveness increased as the infant aged. Clarke-Stewart (1973) found a significant linear trend ($p < .01$) reflecting an increasing percentage of maternal responses to infant initiatives from the age of 10 months through 17 months. Similarly, Bronson (1974) found that the rate of maternal unresponsiveness to infants decreased from 40% at 14 months of age to 30% at 18 months of age to 20% at 24 months of age.

Bell and Ainsworth (1972) also found that the percentage of crying episodes ignored by the mother declined during the first year.

Bronson explained the increase in maternal responsiveness by pointing to two factors. First, the toddler increased the specificity of his bids as he grew older and made more bids calling for a specific response from the mother which she found difficult to ignore. In support of her conclusion, Bronson noted that mothers were more likely to respond to bids of giving or proximal showing by the infant and less likely to respond to bids of visual checking. Secondly, Bronson suggested that one result of a successfully functioning dyad is the training of the mother, with her cooperation, to respond to the bids of the toddler.

A number of studies (Lewis, 1972; Moss, 1967) found maternal responsiveness to be strongly influenced by the sex and state of the infant. Lewis (1972) found that mothers of girls were more likely to respond to a fret or cry than were mothers of boys. Mothers of girls were more likely to respond to an infant vocalization by vocalizing themselves than were mothers of boys. Mothers of boys, however, were generally more likely to respond to infant vocalizing than were mothers of girls. Mothers of boys were generally more likely to respond to infant movement of boys than of girls; however, mothers of girls were more

likely to respond to movement by smiling. These results are difficult to interpret, however, since Lewis did not indicate which, if any, were statistically significant.

Moss (1967) also found considerable sex differences in his observational study of mother-infant interaction from birth to three months of age. However, when the state or irritability of the infant was controlled for, these sex differences disappeared. During both observations, male infants slept less and cried more than did female infants. Mothers did not spend as much time with the more irritable male infants by three months of age as they did with other infants. Moss concluded that these more irritable infants were negatively reinforcing maternal responsiveness.

Parke and O'Leary (1976) also found both sex differences and ordinal position of infants to influence maternal responsiveness. In an observational study of parent-infant interaction in the hospital after birth, Parke and O'Leary noted that mothers rocked their first-born infants more than later-born infants ($p < .05$) and they rocked boys more than girls ($p < .05$).

Unfortunately, no clear picture of which infant behaviors affect parental behaviors and which are affected by parental behaviors has emerged. In his study of mother-infant interaction at three months of age, Lewis (1972) concluded that the infant smile was a response to parental

behavior while the infant fret was an elicitor of parental behavior. In contrast, with an older sample, Clarke-Stewart (1973) found that looking at and smiling at the mother resulted in the mother spending more time with the infant at a later age. Possible the direction of influence may change as the mother and infant progress through the issues described by Sander (1964); maternal responsiveness may influence social initiatives in the younger infant and, in turn, be influenced by the social initiatives of the older infant. It does seem clear, however, that the mother-infant relationship is a reciprocal one; each member influences and is influenced by the other.

Father-Infant Interaction

Until recent years most of the research and theory on parent-infant interaction has centered on the role of the mother. Both psychoanalytic theory and ethological theory described little or no direct role for the father during the child's earliest years. Recently, however, there has been a new focus on the role of the father in infancy. Psychoanalytic theorists, notably Burlingham (1973) and Mahler and Gosliner (1955) have focused on the unique contributions of the father to the psychological development of the infant. Ethological theorists, in contrast, have tended to focus on the similarities between the roles of the father and

the mother as attachment figures. Several researchers interested in social roles (e.g., Lewis & Weinraub, 1976; Hoffman, 1963) have examined the role of the father in the social network of the family.

Psychoanalytic Interpretations of the Paternal Role

Traditionally, psychoanalytic theory has emphasized that the role of the father in the development of the child first becomes apparent during the Oedipal conflict (Neubauer, 1960). The father is viewed by the child primarily as a rival for the possession and the attention of the mother (Freud & Burlingham, 1944). The function of the mother is primarily one of nurturance while the function of the father is as an instrument, or means to an end (Parsons & Bales, 1955).

In their observations of children evacuated and separated from their parents during World War II, Freud and Burlingham (1944) saw that the father played an important role in the life of the infant and toddler. The child's emotional relationship with the father began later than with the mother and initially centered on an admiration for his superior strength and power. From the second year, however, Freud and Burlingham felt that the child began to perceive the father as a giver of material advantages

and a possessor of magical omnipotence, one to be admired and imitated.

In her analysis of the pre-oedipal infant-father relationship, Burlingham (1973) noted that the

. . . comparative neglect of the pre-oedipal father not only does an injustice to his role but actually distorts in some manner the infant-mother relationship (1973, p. 24).

She pointed out that Freud, in his analysis of Little Hans, described the boys' love for his father who was his first model and playmate and who had cared for him from earliest infancy. Modern psychoanalytic theorists including Burlingham (1973) and Mahler and Gosliner (1955) have emphasized the roles of the father in infancy as, primarily, a playmate and a model.

Mahler and Gosliner (1955) regarded the father as playing a major role in the separation and individuation process culminating during the second year. The stable image of the father, they felt, was primarily that of a playmate rather than that of a caregiver. Therefore, his stable image, never as fused with that of the infant as is the mother's image, helps the toddler overcome a fear of symbiotic re-engulfment by the mother.

The role of the father in the separation-individuation process was further elaborated by Abelin (1975). Mahler described the separation-individuation process as consisting

of four sub-phases: differentiation, practicing, rapprochement, and processes leading to libidinal constancy (Mahler, 1972). Abelin focused on the role of the father during the practicing sub-phase from between seven and ten months of age until 15 to 16 months of age. During this time, he felt, paternal encouragement of the early exploratory behavior of the infant leads to a special attachment, and later identification, with the father. Abelin also emphasized the roles of the father and the mother as refueling sources during the explorations of the infant.

Greenacre (1960, 1966) focused on the horseplay engaged in by father and infant which commences when the infant is about six months old and beginning to separate from the mother. Greenacre (1966) asserted that both boys and girls seem to enjoy vigorous, active romping play more with the father than with the mother. He felt that, since the mother is generally less muscularly equipped for horseplay, her movements are less assured and this awkwardness and unease is sensed by the infant. Although initiated at first by the father, soon the horseplay becomes reciprocal, initiated equally often by the infant. In this sense, Burlingham noted (1973), infants become more active in their interactions with their fathers while remaining more passive recipients of care from their mothers.

Burlingham (1973) cautioned that these generalizations on the roles of the father and mother may be misleading because they are based on the more traditional stereotyped roles which may not be as widespread in modern society. The result of role-sharing by the parents, she suggested, may well be a combined parent image in the child's mind rather than two sharply distinct images.

Ethological Interpretations of the Paternal Role

Ethological investigations into the role of the father have focused on the father as an attachment figure or mother substitute. Bowlby (1969) wrote that, barring some developmental mishap, attachment is initially always directed towards the mother. However, when the father plays a major role in caregiving, he may become an attachment figure as well. Based on the observations of Ainsworth (1963) and Schaffer and Emerson (1964a), Bowlby regarded stimulation and responsiveness as the chief prerequisites for attachment. He did, however, also feel that hormonal levels following parturition as well as neonatal stimuli may predispose the mother more than the father to provide the conditions necessary for attachment.

Ainsworth (1963) noted in her observations in Ganda that the father was frequently a secondary attachment figure; however, in each case where the father was an attachment

figure, the infant initially had formed an attachment for the mother. Ainsworth described several fathers who played active roles in the care of their infants--bathing, playing, and holding them--who were attachment figures for these children.

Schaffer and Emerson (1964a) noted that 29% of the infants initially displayed attachments directed toward multiple objects. By the third month following the onset of attachment behavior, over 50% of the infants were jointly attached to the father and the mother; indeed, 27% of the infants were jointly attached to both father and mother initially. Infants with an intense attachment to a principal object were more likely to also have other objects of attachment than infants with only weak attachments to a principal object.

Schaffer and Emerson (1964a) found that responsivity was related to attachment intensity ($p < .02$); however, responsivity was also related to availability. In attempting to distinguish between responsivity and availability, Schaffer and Emerson found that in 72% of the infants the principal attachment object was also the most responsive person; however, in only 61% of the infants was the principal attachment object the most available person. For 75% of the infants, the principal attachment object was the most stimulating person. For 39% of the infants, the

person most responsible for feeding and caregiving routines was not the principal attachment object. Indeed, for 22% of the infants the principal attachment object did not participate even to a minor degree in any of the physical caregiving for the infant.

Thus, although the results of the study of Schaffer and Emerson (1964a) generally supported Bowlby's emphasis on the responsiveness of the infants' social companions as part of the basis for attachment, in no way can they be construed as supporting Bowlby's concept of monotropy nor Sander's concept of focalization. Indeed, Schaffer and Emerson concluded that

. . . to focus one's inquiry on the child's relationship with the mother alone would therefore give a misleading impression of the attachment function (1964a, p. 70).

Schaffer and Emerson (1964a) used maternal reports of separation anxiety as the index of attachment. Subsequent researchers, following the lead of Ainsworth, Bell, and Stayton (1971), have used a broader index of attachment which encompasses all proximity-seeking and contact-maintaining behavior. A number of researchers (Feldman & Ingham, 1975; Ross, Kagan, & Kotelchuck, 1975; Willemson, Flaherty, Heaton, & Ritchey, 1974) have used variants of the Strange Situation Behavior Instrument developed by Ainsworth et al. (1971) for assessing the level of attachment behaviors.

Unfortunately, small sample sizes, age variations, location variations (e.g., home versus laboratory), and methodological variance (e.g., parents observed separately or together) have made the findings of these studies equivocal. Two consistent findings have been noted, however. Fathers have tended to elicit attachment behaviors similar to those elicited by mothers but unlike those elicited by strangers; thus, fathers have been shown to be attachment figures. Secondly, laboratory situations have consistently proved more stressful for infants than have homes (Ross et al., 1975).

Lewis and Weinraub (1976) have pointed out that two conditions inherent in these studies may have suppressed differences in children's behavior towards each of their parents. First, since the parents have been forced to remain present, responding to and playing with the infants may have subtly been encouraged. Since the parents were asked not to initiate interaction with their infants, sex-of-parent differences may again have been suppressed. Secondly, the research procedures may have produced optimal performances by the parents rather than typical performances.

Further evidence of the optimal/typical performance distinction in studies involving fathers comes from two dealing with younger infants. Observing parents with their neonates, Parke and Sawin (1976) found that fathers were equally competent in caring for their infants, equally as

nurturant to their infants, and equally as involved (e.g., by holding, rocking, or talking to their infants) as were mothers. In contrast, Rebelsky and Hanks (1971), in taping the vocalizations of fathers to their young infants, found that fathers vocalized less than 40 seconds each day to their infants, considerably less than similar studies (e.g., Moss, 1967) have found for mothers. The research by Rebelsky and Hanks (1971), however, took place in the home without an observer present and repeatedly over a period of three months, thereby enhancing the likelihood that typical performances were obtained rather than optimal performances.

Social Role Interpretations of the Paternal Role

Lewis and Weinraub (1976) pointed out that one weakness of the ethological perspective on the paternal role in infancy is that, unlike the maternal role, the biological function of the father has no relationship to the paternal behavioral relationship with the infant. Attachment to the mother follows naturally from the stimulation and responsiveness provided in the feeding interactions with accompanying warmth, tactile, and kinesthetic stimulation. Lewis and Weinraub asserted that, while the mother-infant relationship follows from these biological predispositions, the father-infant relationship is less biologically determined and, therefore, influenced by other factors.

In examining the role of the father, Lewis and Weinraub (1976) pointed out that the father may directly affect the infant through specific play and caregiving interactions, or indirectly through affecting the other members of the child's social network, e.g., the mother. Supporting the existence of indirect effects, Pedersen (1975) studied the interrelationships in the social network of the neonate and found that, for boys, the feeding competence of the mother was significantly related to the degree of tension and conflict in the marriage ($r = -.60$, $p < .01$), the husband's esteem for the wife as mother ($r = .40$, $p < .05$), the negative affect expressed by the father towards the infant ($r = -.70$, $p < .01$) and the positive affect expressed by the father towards the infant ($r = .48$, $p < .05$). Pedersen (1975) interpreted these findings by stating that the effectiveness of the mother is augmented by the support and affection expressed by the father.

A number of studies have investigated relationships between the direct role of the father, i.e., in caregiving interactions, play interactions, and general accessibility to the infant, and the nature of the father-infant interactions. Two studies (Pedersen & Robson, 1969; Kotelchuck, 1976) examined the relationships between the infant's attachment to his father and the role of the father in the home. Pedersen and Robson (1969) interviewed the mothers of

45 first-born infants who were eight and nine months old. They defined attachment to the father in terms of greeting the father upon his return, usually in the evening. They found attachment to the father in boys to be significantly related to ratings of the variety and frequency of the caregiving provided by the father ($r = .67, p < .01$), the emotional investment of the fathers in their sons ($r = .79, p < .01$), the fathers' irritability level ($r = -.53, p < .05$), and the stimulation level of the fathers' play ($r = .61, p < .01$). Although no significant sex differences on fathers' ratings on any of these variables were found, none of these variables was significantly related to attachment in girls. The only significant sex difference in fathers' behavior towards their children related to their apprehension over their infants' well-being which was significantly more for females than for males ($p < .01$). Fathers' apprehension over well-being of the infant was significantly and negatively related to the attachment of females ($r = -.45, p < .05$); this was the only variable related to attachment in females. Overall availability of the father was not significantly related to attachment; fathers were accessible to their infants on the average of 26 hours each week during the infants' waking hours.

In a series of studies on 300 children ranging in age from six to 24 months, Kotelchuck (1976) studied the relationships between attachment behavior to father demonstrated in a modified Strange Situation Behavior Instrument and the role of the father in the home. Like other researchers, Kotelchuck found both mothers and fathers were attachment figures and found no discernable pattern of differences in the behaviors of children toward their parents. They did, however, note considerable differences in the roles of the parents in the homes. Mothers spent significantly more time with their infants--an average of nine hours each day as opposed to 3.2 hours for the fathers ($p < .001$). Mothers reported spending significantly more time feeding ($p < .001$), cleaning ($p < .001$), and playing with infants ($p < .01$) than did fathers. However, fathers reported spending a higher percentage of their contact time playing with their infants (37.5%) than did mothers (25.8%). Kotelchuck speculated that the relative amount of play contributed to the attractiveness of the fathers despite their relative unavailability.

Kotelchuck (1976) found few direct relationships between home caretaking variables and the behavior of children towards their parents in the laboratory. However, in one sample, children who did not spend at least 15 seconds in proximity to their fathers during reunions in the

laboratory came from families with the lowest caregiving fathers ($p < .01$). The highest relationship was found between paternal proximity in the presence of both parents and the number of diapers changed by the father each week ($r = .51$, $p < .01$). In two other samples, significant positive correlations were found between the overall amount of time the infants spent in proximity to their fathers and the extent of the fathers' caregiving ($r = .35$, $p < .01$; $r = .43$, $p < .01$).

Although Kotelchuck (1976) did not examine relationships between parental responsivity and attachment, his findings do not appear dissimilar from those reported by Schaffer and Emerson (1964a). Those fathers who did participate regularly in caregiving and, in particular, diaper-changing were a minority (e.g., 43% of the fathers reported that they had never changed a diaper); these fathers may well have been more responsive fathers as well.

In a sharp contrast to Kotelchuck's findings, Tasch (1952) found in a retrospective study of 85 fathers that 90% of them recalled participating regularly in the care of their infants with more than a third of the fathers active in feeding, bathing, and diaper-changing. These figures, considerably higher than those reported in other studies, may be somewhat distorted since only 36% of the fathers had any children under five years old at the time of the study.

Other studies reported results more similar to those of Kotelchuck (1976). Gardner (1943) reported that 35% of the 300 fathers surveyed reported they gave little or no assistance in the routine care of their infants while only 7% of the fathers reported that they gave "plenty of help" in caring for their infants. They also reported that, on the average, they spent three to four hours each weekday home and accessible to their infants in addition to Saturday afternoons and all day Sundays.

In a study of 709 British families, Newson and Newson (1963) reported that 21% of the fathers did not participate at all in the care of their infants while 52% were rated as high participators because of statements to the effect that, for example, the father changed wet diapers as a matter of course. They rated accessibility not on the basis of the amount of time the father spent at home but rather on the likelihood of helping with caregiving when he was at home. No studies have reported on the relationship between accessibility or caregiving and parental responsiveness.

In addition to Kotelchuck's finding that fathers engaged in relatively more play with their infants than did mothers, a number of studies have reported that the type of play engaged in by fathers is different than that engaged in by mothers. Lamb (1976b, 1977) found that, when both parents were present, fathers played significantly more

with their infants than did mothers ($p < .01$); however, mothers engaged in more toy-mediated, conventional play ($p < .01$) while fathers engaged in more roughhouse and horse-play ($p < .05$). In his sample of 20 families, he also found that fathers of higher socioeconomic status provided more caregiving than did fathers of lower socioeconomic status; however, the differences were not statistically significant. In contrast, in a longitudinal study of 14 infants from one to 2½ years of age, Clarke-Stewart (1977) found that, when both parents were present, mothers engaged in more play with their infants than did fathers. Like Lamb, however, she found that mothers engaged in more toy-mediated and less rough-and-tumble play than did fathers. Overall, Clarke-Stewart (1977) found parents generally alike in contingent responsiveness and in the quality of interaction; however, she did not report statistical results.

Clarke-Stewart (1977) found a possible explanation for the contradictory findings in their studies in the fact that, in her study, fathers were free to leave the room whereas in Lamb's studies (1976, 1977), they were not. In a semi-structured laboratory observation of the family triad, Clarke-Stewart found that fathers were preferred as playmates to mothers; however, in the home, fathers tended to leave mothers and infants alone. Mothers in the home, therefore,

were alone with the children significantly more often than were fathers ($p < .10$). This may indicate support of Lewis's and Weinraub's distinction (1976) between typical and optimal performance. Clarke-Stewart's home observations may have produced more typical paternal behavior while Lamb's observations produced optimal paternal behavior.

These results have generally supported the role distinctions described by Burlingham (1973), Abelin (1975) and Greenacre (1960, 1966). Fathers tend to spend relatively less time in caregiving than do mothers. Although the difference in the amount of time in play are equivocal, fathers consistently spend more time in rough-and-tumble horseplay than mothers who, in turn, spent more time in conventional toy-mediated play. However, Burlingham's (1973) suggestion that role distinctions may not be as distinct in contemporary society is supported by the findings of Clarke-Stewart (1977) that mothers and fathers were alike in the quality of their interactions, particularly in measures of contingent responsiveness and in observers' ratings of the effectiveness and affective quality of the interactions. In addition, she found pairs of parents correlated highly on all social interaction variables except those involving punishing, touching, and playing with objects. She did not report the statistical significance of these findings, however, and

pointed out that these correlations may be contaminated by the children's contributions to the interactions.

Two studies (Parke & O'Leary, 1976; Clarke-Stewart, 1977) noted that the presence of the other parent altered the parent-infant interaction. Parke and O'Leary (1976) observed parents' interactions with their neonates in the hospital. They found mother-infant interaction markedly diminished in the presence of the father. Mothers were significantly less likely to hold, touch, rock, vocalize to, imitate, and feed their neonates with father present ($p < .01$). Similarly, Clarke-Stewart (1977) noted that mothers engaged in less play with their infants in the presence of fathers ($p < .01$) than when they were alone with their infants. Parke and O'Leary found few differences in the interactions of fathers with their neonates as a result of maternal presence although they did note that fathers smiled more at their infants when their wives were present than when they were alone with their infants. When alone, Parke and O'Leary noted, mothers fed their infants more frequently than did fathers ($p < .01$).

Individual Differences

A number of studies have explored the effects of individual differences on the father-infant relationship. Gardner (1943), Hoffman (1963), Young (1975), and Ruderman

(1968) explored the caregiving roles of fathers with working wives. Gardner (1943) found that fathers with working wives participated no more in child care than did fathers with non-working wives. However, nearly 20 years later, Hoffman (1963), in a sample of 324 families with children in elementary school, found that husbands with full-time working wives were more involved in child-care than husbands with non-working wives ($p < .05$). However, no significant differences were found between child-care provided by husbands of part-time working mothers and husbands of non-working mothers. Ruderman (1968) found that white husbands of working wives were more involved in child care than husbands of non-working wives. In a study of 40 families with one-year-old infants, Young (1975) found a significant correlation between the accessibility of the father and the extent of caregiving he provided ($r = .39, p < .05$). She also found that husbands with working wives were significantly more accessible to their infants than husbands with non-working wives ($p < .05$) and engaged in more caregiving for their infants than husbands with non-working wives ($p < .05$). She found that the fathers were accessible to their infants on the average of 34 hours each week. Thus, current studies seem to indicate that husbands with working wives tend to be more accessible to their infants and more involved in caregiving. No studies have explored the relationships between

parental responsiveness and accessibility or working status.

Few studies have found significant sex differences in paternal behavior towards infants. Kotelchuck (1976) found that fathers of first-born sons reported playing with their sons on the average of 30 more minutes each day than did fathers of first-born daughters ($p < .01$). Parke and O'Leary (1976) found that fathers touched first-born boys more than either later-born boys or girls ($p < .05$). Fathers also vocalized more to first-born boys than to first-born girls ($p < .05$) but vocalized equally to later-born infants regardless of sex.

It is evident that the father plays both an indirect role and a direct role in the social network of the infant although his role is not identical to that of his wife. Similar to her in the quality of interaction (Clarke-Stewart, 1977) and in his position as an attachment object (Lamb, 1977), he engages in relatively more play and less caregiving with his infant (Kotelchuck, 1976). When his father is available, therefore, the infant seems to prefer him as a playmate to the mother (Clarke-Stewart, 1977).

Statement of Problem

In summarizing the specific literature reviewed, one can state that:

1. Maternal contingent responsiveness is significantly related to measures of infant social and distress/demand initiatives (Clarke-Stewart, 1973). However, no study has explored relationships between paternal contingent responsiveness and measures of infant distress/demand and social initiatives.
2. Maternal responsiveness may be influenced by a number of infant characteristics including irritability (Moss, 1967), age (Bronson, 1974) and social initiatives (Clarke-Stewart, 1973).
3. Infant attachment to parents may be influenced by the stimulation and responsiveness of the parents but not by their accessibility (Schaffer & Emerson, 1964a). However, no study has explored the relationship between maternal accessibility and responsiveness.
4. Although Sander (1964) described infants as showing no parental preferences between 7 and 9 months of age but focusing on the mother between 10 and 13 months of age, Lamb (1977) found no such parental preferences. Instead, infants have generally

preferred fathers, when available, for play (Lamb, 1977) and mothers for caregiving. However, no studies have explored the relationship between parental accessibility and infant social and distress/demand initiatives.

5. Parental roles have been described as generally dissimilar (Mahler & Gosliner, 1955); however, a recent study has shown pairs of parents to be alike in the quality of their interaction (Clarke-Stewart, 1977).

The purpose of the present study was to conduct a longitudinal investigation of the relationships between the initiation of social and distress/demand behavior by infants at two ages and the responsiveness of parents to those initiatives. In addition, the present study sought to determine if parental responsiveness or infant initiatives are influenced by the accessibility, or working status, of the parents. More specifically, the following hypotheses were developed:

1. Based on the research of Lamb (1976a, 1977), it is hypothesized that infants will make more social initiatives to fathers and more distress/demand initiatives to mothers, with no age or sex-of-infant effects expected.

2. Based on the research of Bronson (1974) it is hypothesized that parents will be more responsive to the social and distress/demand initiatives of older infants than of younger infants with no sex-of-infant or sex-of-parent effects expected.
3. Based on the research of Clarke-Stewart (1977), it is hypothesized that maternal and paternal responsiveness to infant social and distress/demand initiatives respectively will be positively and significantly correlated.
4. Based on the research of Kotelchuck (1976), Schaffer and Emerson (1964a) and Clarke-Stewart (1977), it is hypothesized that no relationship will be found between the accessibility of the parent and the parental responsiveness to infant social or distress/demand initiatives.
5. Based on the research of Clarke-Stewart (1973), it is hypothesized that the social initiatives of younger infants will positively influence parental responsiveness to social initiatives by older infants. Parental responsiveness to distress/demand initiatives of younger infants will negatively influence the distress/demand initiatives of older infants.

CHAPTER II

METHODOLOGY

The purpose of the present study was longitudinally to investigate the relationships between the initiation of social and distress/demand behaviors by infants at two ages and the responsiveness of parents to those initiatives. In addition, the present study sought to determine if parental responsiveness or infant initiatives were influenced by the accessibility of the parents.

Subjects

Subjects for the present study were 19 first-born male infants and 19 first-born female infants and their parents. Each parent-infant dyad was observed once when the infant was between seven and nine months old and again when the infant was between 10 and 12 months old. At the time of the initial visits, the mean age of the males was 8.07 months and that of the females was 8.66 months. Three months elapsed between the initial two visits (Time I) and the last two visits (Time II).

Subjects were recruited from the birth records of

Columbus, Ohio hospitals by means of an introductory letter followed by a telephone call. Appointments were confirmed by a subsequent letter. Copies of the initial and confirming letters sent to each family are located in Appendix A. Sixty-three percent of the parents of first-born infants contacted by telephone agreed to participate in the study. Of the 135 families contacted by mail, 45 of the families had older children, 20 had moved out of the vicinity since the birth of the infant, 7 families were not available until the infants were beyond the age requirements of the sample, and 23 families refused permission. Of the initial 40 families who agreed to participate in the study, two of the families withdrew after the initial visits because of schedule conflicts of the fathers.

All subjects were white and resided in middle-class suburban areas of the Columbus community at the time of initial contact. Six of the mothers were working half-time outside of the home at the time of the first visit; eight of the mothers were working full-time outside the home. The mean age of the mothers at the time of the birth of their infants was 27 years; that of the fathers was 28 years. Of the 76 parents, 8 had advanced professional degrees, 13 had at least an M.A. degree, 37 had at least a B.A. degree, and 14 had high school diplomas. The

education of four parents was unknown. Twenty-nine of the families owned their own homes or condominiums.

Procedures

After the initial letter was sent, describing the interest of the researcher in observing the social activities of infants and requesting the cooperation of the parents, the researcher telephoned each family. The parent was asked whether the infant was the first child and if both parents were willing to permit the researcher to observe their infant. Several parents voiced the concern that the real purpose of the study was to evaluate the "goodness" of the parent. In order to reassure the parents regarding the legitimate and non-evaluative purpose of the study, the researcher gave the following explanation:

After watching my own baby, I noticed that she reacted differently to her father than to me. Some authors have suggested that babies play the same way with both parents when they are younger but differently when they are older. I would like to find out if this is true.

If the parent agreed to participate in the study, the researcher explained that she would like to observe the baby twice within the subsequent week, once in the presence of each parent. The researcher also explained that both visits should be at approximately the same time of day, during a time when the infant was not eating, bathing, or,

obviously, sleeping. The researcher then explained that she would repeat the two visits three months after the first visits.

After an appointment was made for the first observation, a letter was sent confirming the date and time of the visits. An initial attempt was made to make the order of parental observation random; however, that was not always possible. In order to obtain the cooperation of many subjects, appointments had to be made at their convenience. During Time I, 27 initial visits were with the mother present and 11 visits were with the father. Whenever possible, both visits were made within one week; however, due to illness and vacation schedules, some visits to the same family were as much as three weeks apart.

The same female researcher made all visits. All visits to the same family were made at approximately the same time of day--morning, afternoon, or evening. After requesting the parent to read and sign the consent form, a copy of which is located in Appendix A, the researcher asked the parent to continue doing whatever activity would normally be done at that time of day, e.g., watching television, washing dishes, or playing with the baby. The parent was also requested to react normally to the infant. If the other parent was present, the researcher requested that parent

to become inaccessible to the infant for the duration of the visit.

The researcher sat where she could see both the parent and the infant. She carried a clipboard with the behavioral checklists attached to a tape recorder which emitted a tone every 10 seconds audible only to the researcher through an earphone. During the interval between each pair of tones, the researcher checked the infant social and distress/demand initiatives which were made and the corresponding parental responses. All infant social initiatives and distress/demand initiatives were recorded; however, only those parental behaviors which were in response to the infant behaviors and which occurred within 20 seconds of the infant behavior were recorded. All social and distress/demand behaviors of the infants and the corresponding parental responses were recorded for a 50-minute period except for behavior occurring during diaper-changes and bottle feedings.

Whenever the infants fell asleep with less than 10 minutes remaining during the observation period, the observation was terminated and the missing data was extrapolated. Whenever infants fell asleep with more than 10 minutes remaining during the observation period, another visit was scheduled to obtain the missing data. If the parent voiced a concern that the behavior of the infant was

not typical because of illness, severe diaper rash, etc., the observation was rescheduled. Whenever infants attempted to interact with the researcher or to play with the tape recorder, the researcher attempted not to respond and to conceal the tape recorder in order to direct social interactions back to the parent.

At the conclusion of the initial visits during Time I and Time II, the researcher attempted to schedule the next visit with the other parent. At the conclusion of the third visit, the researcher gave each parent a copy of the demographic information questionnaire and requested that the parents complete the questionnaire before the last visit. At the conclusion of the fourth and final visit, the researcher showed the behavioral categories to the parents and answered any questions which they had regarding the data collection or analyses. At this time the researcher also informed the parents that their responses to their infants had been noted but not their stimulation of the infant. Finally, the researcher thanked each parent for cooperating with the study and promised to send each family a copy of those results from the research which they would find interesting. The researcher also sent each infant a birthday card on his/her first birthday in order to express to the families her gratitude for their cooperation.

Instruments

Demographic Information Questionnaire

In order to determine the accessibility and caregiving for each parent, each parent was asked to complete a demographic information questionnaire before or after the last visit. In addition, parents were asked questions regarding their participation in prenatal classes and in the birth of the infant. A copy of the demographic information questionnaire is located in Appendix A.

Accessibility for each unemployed parent was determined by subtracting the inaccessible hours parents indicated from 84 hours per week, the estimated waking hours for a year-old infant each week. Accessibility for each working parent was estimated by multiplying the estimated available hours on an average weekday by five and adding it to the estimated available hours on the weekend.

Behavioral Checklist

A behavioral checklist consisting of 15 infant social and distress/demand behaviors and 14 parental response behaviors was used for time-sampling the social interactions between parent and infant. These behaviors were used in a larger study of mother-infant interaction by Clarke-Stewart (1973) to measure maternal responsiveness to social

initiatives and to distress/demand initiatives of infants. A complete list of the observation behavior units and their operational definitions is located in Appendix B. A sample of the behavioral checklist is also located in Appendix B.

Using videotapes of parent-infant interactions, interobserver reliability percentages were obtained between 90% and 100% for all behaviors in the present study. Split-half reliability correlations for the behaviors are presented in Appendix C. The estimated reliability for the entire Behavior Checklist, presented in Appendix C, was calculated using the Spearman-Brown prophecy formula.

Scoring. No behavior on the behavioral checklist was regarded as mutually exclusive of all other behaviors, therefore, it was possible for several behaviors to be scored simultaneously. However, some behaviors were operationally defined as being subsets of other behaviors. Therefore, the occurrence of several behaviors precluded the occurrence of several others within the same 10-second interval. When both Positive Vocalization and Smiles at Parent were emitted by the infant within one interval, for example, only Smiles at Parent was recorded. Within the parental categories, whenever Holding infant and Physical stimulation occurred during the same 10-second interval, only Physical stimulation was recorded. Finally, whenever

the infant emitted both a social behavior (e.g., Holding parent) and a distress/demand behavior (e.g., Cries) during the same interval, the overall purpose of the behavior sequence was judged to be distress/demand rather than social and, therefore, only the distress/demand behavior and its response were scored.

Data Reduction. Two types of data reduction were made. First, frequency counts were made of all infant and parent behaviors. Secondly, a contingency analysis was made of the proportion of the infant social and distress/demand initiatives to which the parent responded. The formulae used for these contingency analyses were adapted from those used by Clarke-Stewart (1973) and are presented in Appendix B. Each time an infant behavior occurred, the researcher checked for a parental response occurring during the same or succeeding 10-second interval. If infant behaviors occurred during two adjacent 10-second intervals but the parental response only occurred during the second interval, the infant initiative for that parental response was assumed to be the later-occurring behavior, or the behavior which occurred during the same interval as the parental response.

Separate contingency analyses were made for infant social initiatives with the corresponding parental responses and for infant distress/demand initiatives with the

corresponding parental responses. Thus, each parent-infant dyad produced four sets of scores for each visit: infant social initiatives (a frequency count), parental social responses (a contingency proportion), infant distress/demand initiatives (a frequency count), and parental distress/demand responses (a contingency proportion).

Statistical Analyses

Five hypotheses were proposed for the present study. In the following discussion, each hypothesis is followed by the statistical procedure used to test it.

It was hypothesized that infants would make more social initiatives to fathers and more distress initiatives to mothers. A mixed design analysis of variance with one between-subjects and two within-subjects variables was used to determine if social and distress/demand initiatives by the infant were influenced by the gender of the infant, the gender of the parent, or the time of testing.

It was hypothesized that parents would be more responsive to social and distress/demand initiatives of older infants than those of younger infants. Another mixed design analysis of variance, again with one between-subjects and two within-subjects variables, was used to determine if parental responsiveness to social and distress/demand

initiatives by the infant was influenced by the gender of the infant, the gender of the parent, or the time of testing.

It was hypothesized that positive correlations would exist between maternal and paternal social responsiveness and between maternal and paternal distress/demand responsiveness in pairs of parents. Pearson product-moment correlations were calculated for social responsiveness and again for distress/demand responsiveness scores between pairs of parents.

It was hypothesized that no relationship would exist between the accessibility of the parent and infant social initiatives, infant distress/demand initiatives, parental social responsiveness, or parental distress/demand responsiveness. Pearson product-moment correlations were calculated between parental accessibility and the following variables: social initiatives of the infant, distress/demand initiatives of the infant, parental social responsiveness, and parental distress/demand responsiveness.

It was hypothesized that social initiatives of younger infants would positively influence the parental responsiveness to the social initiatives of older infants. It was also hypothesized that parental responsiveness to distress/demand initiatives of younger infants would negatively influence the distress/demand initiatives of older infants. To investigate these relationships, parental variables

measured at Time I were correlated with infant variables and these correlations were compared with those between infant variables measured at Time I and parental variables measured at Time II. Correlations were corrected for attenuation. Differences between correlation coefficients were tested using a z-transformation (Peters & Van Voorhis, 1940) which corrects for the intercorrelation between contemporaneous and time-lagged variables. Kenny (1973, 1975) suggested two criteria of reliability and stationarity for the cross-lagged panel correlation; however, these criteria were not appropriate for the present study because of the limited number of variables and the lack of hypothesized relationships between the social variables and the distress/demand variables.

CHAPTER III

RESULTS

The present study was designed to determine the longitudinal relationships between the initiation of social and distress/demand behaviors by infants at two ages and the responsiveness of parents to those initiatives. In addition, the present study sought to determine if parental responsiveness to infant initiatives is influenced by the accessibility, or working status, of the parents.

Findings

The present study focused on five areas of hypothesized relationships: social and distress/demand initiatives, social and distress/demand responsiveness, maternal and paternal responsiveness, accessibility and responsiveness, and initiatives and responsiveness.

Social and Distress/Demand Initiatives

It was hypothesized that infants would make more social initiatives to fathers and more distress/demand initiatives to mothers with no age or sex-of-infant effects.

TABLE 1
DEMOGRAPHIC DATA

	Mothers	Fathers
Age (Mean)	27	28
Prenatal Class Participation (%)	87	87
Fathers Present at Birth (%)	-	76
Breast Fed Infants (%)	68	-
Own Home (%)	76	76
Education B.A. (or above)	74	76

Table 2 presents the frequency data for the 29 behaviors of the Behavior Checklist at Time I while Table 3 presents the frequency data for the behaviors at Time II. Table 4 summarizes the frequency data for social and distress/demand initiatives and for social and distress/demand responsiveness at Time I and at Time II. A mixed-design analysis of variance with one between-subjects variables and two within-subjects variables was used to determine if social and distress/demand initiatives by the infant were influenced by the gender of the infant, the gender of the parent, or the time of testing.

TABLE 2

BEHAVIOR CHECKLIST FREQUENCY DATA - TIME I

Behavior ^a	Mothers				Fathers			
	Females		Males		Females		Males	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<u>Infant Initiation (frequencies)</u>								
Holds P	30.47	22.0	33.58	32.14	48.58	42.91	18.89	17.76
A+c	.95	1.77	0.58	1.30	0.42	0.77	0.21	0.54
Goes	5.15	4.99	6.05	6.87	5.05	5.96	5.05	3.99
Looks	20.79	13.24	22.63	14.12	19.47	13.03	23.79	13.93
Smiles	19.68	20.71	22.10	19.69	21.84	20.07	15.47	12.42
Gives	.21	.71	0.10	0.32	1.16	1.92	0.37	0.83
Shows	5.00	12.96	0.84	1.68	2.95	7.99	0.74	2.30
Names	0.00	0.00	0.05	0.23	0.05	0.23	0.00	0.00
Pos Voc	52.79	26.96	46.05	26.06	47.42	21.92	46.21	24.54
Plays P	24.89	26.41	12.74	12.02	29.26	27.14	21.32	19.19
Calls P	0.00	0.00	0.10	0.32	0.05	0.23	0.00	0.00
Neg Voc	14.47	10.48	12.63	9.94	17.79	21.81	19.79	17.73
Cries	2.10	3.12	2.00	5.79	0.74	2.16	0.10	0.32
Voc D	3.26	4.56	6.26	11.34	1.63	2.71	1.89	2.96
Neg Phys	0.10	0.46	0.00	0.00	0.00	0.00	0.00	0.00
<u>Parent I Responses (proportions)</u>								
Holds	43.84%	26.45%	40.95%	28.65%	54.74%	48.14%	26.21%	23.38%
A+c	7.84	8.41	6.21	5.29	7.37	10.79	4.68	6.85
Phys Stim	5.00	7.02	7.79	10.86	11.84	14.90	12.05	12.61
Smiles	4.10	6.38	4.53	7.34	4.00	5.67	2.42	3.37
Soc Sp R	61.53	38.16	51.00	32.86	49.89	24.11	43.79	16.80

^aOperational definitions are located in Appendix B.

TABLE 2 (Continued)

Behavior ^a	Mothers				Fathers			
	Females		Males		Females		Males	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Parental Responses (proportions) (Continued)								
Ref Sp R	7.95	16.30	2.00	3.00	5.89	8.74	4.74	11.82
Plays	22.10	22.90	18.42	22.38	28.00	28.34	21.89	23.68
Gives R	2.84	2.73	2.84	1.98	4.00	4.07	2.21	2.30
Takes R	0.10	0.46	0.05	0.23	0.74	2.28	0.05	0.23
Comes	0.10	0.32	0.42	0.77	0.05	0.23	0.10	0.46
Appr	0.10	0.32	0.10	0.32	0.10	0.32	0.21	0.42
Puts R	0.32	0.67	0.37	0.60	0.10	0.32	0.32	0.48
Stops	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Att Needs	1.42	2.87	0.37	0.83	0.84	1.30	0.79	1.78

TABLE 3

BEHAVIOR CHECKLIST FREQUENCY DATA - TIME II

Behavior	Mothers				Fathers			
	Females		Males		Females		Males	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
<u>Infant^a</u>								
Holds P	23.68	20.84	22.79	16.24	32.37	42.99	16.26	11.88
Atc	0.32	0.82	0.37	0.60	0.10	0.32	0.32	0.82
Goes	4.16	3.64	3.21	3.10	6.00	6.85	4.37	3.77
Looks	12.21	8.20	11.89	9.14	16.95	11.92	15.42	14.24
Smiles	7.37	10.39	7.10	6.30	11.37	12.00	11.79	12.90
Gives	1.63	2.61	0.58	1.22	3.47	4.76	1.95	2.72
Shows	2.79	4.67	1.84	5.78	5.89	8.40	1.42	1.95
Names	0.05	0.23	0.00	0.00	0.21	0.54	0.00	0.00
Pos Voc	29.00	15.29	36.84	23.24	42.21	30.37	38.26	18.63
Plays P	20.42	21.91	6.68	7.81	16.63	17.40	16.42	29.72
Calls P	0.21	0.42	0.21	0.71	0.05	0.23	0.00	0.00
Neg Voc	6.37	8.96	11.84	15.05	11.74	23.13	9.79	9.32
Cries	0.53	1.31	0.89	2.35	0.74	2.98	0.95	3.47
Voc D	5.53	8.15	5.26	5.86	5.16	5.40	3.74	4.42
Neg Phys	0.00	0.00	0.10	0.46	0.05	0.23	0.21	0.71
<u>Parent</u>								
Holds	17.95%	15.82%	20.00%	15.20%	28.58%	35.84%	15.95%	12.10%
Atc	4.16	4.10	5.23	5.44	7.53	21.19	2.89	4.29
Phys Stim	2.10	3.65	1.63	2.38	8.21	11.06	6.74	10.20
Smiles	1.89	1.85	3.16	4.66	2.58	2.63	2.74	4.12
Soc Sp R	34.95	20.30	27.26	11.99	39.68	22.79	40.63	15.90

^aOperational definitions are located in Appendix B.

TABLE 3 (Continued)

Infant ^a	Mothers				Fathers			
	Females		Males		Females		Males	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Parent (Continued)								
Ref Sp R	14.16	21.38	4.42	8.40	10.05	12.90	5.42	17.46
Plays	21.63	21.48	8.79	11.55	20.53	21.33	20.53	30.13
Gives R	1.42	1.98	1.68	2.26	2.10	2.56	1.84	2.50
Takes R	1.05	2.12	0.47	1.17	1.95	2.95	1.16	2.09
Comes	0.10	0.32	0.00	0.00	0.05	0.23	0.16	0.50
Appr	0.21	0.54	0.21	0.54	0.37	1.01	0.21	0.63
Puts R	0.21	0.92	0.05	0.23	0.32	0.75	0.00	0.00
Stops S	0.05	2.12	0.00	0.00	0.00	0.00	0.05	0.23
Att Needs	1.26	3.66	0.37	0.96	0.47	0.96	0.63	1.12

TABLE 4

INITIATIVE AND RESPONSIVENESS FREQUENCY DATA

Variable	TIME I							
	Mothers				Fathers			
	Females		Males		Females		Males	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Social Initiative ^a	142.16	43.58	125.84	41.84	151.68	48.86	121.63	38.83
Social Responsiveness	68.84%	17.14	65.21%	16.58	67.21%	22.18	60.68%	22.71
Distress/Demand Initiative	20.05	14.53	21.47	17.64	20.16	23.22	22.05	17.53
Distress/Demand Responsiveness	80.37%	19.19	69.89%	19.08	78.79%	22.09%	71.16%	26.67
TIME II								
Social Initiative	91.37	41.43	88.05	40.90	120.21	51.89	92.37	35.25
Social Responsiveness	63.89%	24.21	56.26%	14.89	63.58%	24.36	66.42%	12.32
Distress/Demand Initiatives	12.68	14.80	19.05	18.21	18.32	23.82	12.79	12.58
Distress/Demand Responsiveness	75.00%	20.63	59.84%	29.22	66.84%	29.15	75.84%	22.43

^a Formula for each variable presented in Appendix B.

Table 5 presents the results of the analysis of variance for social initiatives by the infant. Infant social initiatives were significantly influenced by infant gender ($p < .10$), parent gender ($p < .10$), and time of testing ($p < .0001$). In addition, there was a significant interaction between infant gender and parent gender ($p < .10$). Table 4 reveals that older infants made fewer social initiatives than did younger infants. All infants made more social initiatives to fathers than to mothers. In addition, girls made more social initiatives to fathers than they did to mothers while boys made slightly more initiatives to fathers than they did to mothers. Thus, the first hypothesis was supported with respect to social initiatives.

Table 6 presents the results of the analysis of variance for distress/demand initiatives by the infant. No significant effects for infant gender, parent gender, or time of testing were found. Thus the first hypothesis was not supported with respect to distress/demand initiatives.

Social and Distress/Demand Responsiveness

It was hypothesized that parents would be more responsive to the social and distress/demand initiatives of older infants than to those of younger infants with no sex-of-parent or sex-of-infant effects expected. Table 4 summarizes the

TABLE 5
SUMMARY OF ANALYSIS OF VARIANCE RESULTS
FOR SOCIAL INITIATIVE

Source	df	MS	F	P
Sex Infant	1	14274.53	3.39	0.07
Error	36	4211.61		
Sex Parent	1	3515.53	3.46	0.07
Sex Infant				
x Sex Parent	1	3477.16	3.43	0.07
Error	36	1014.63		
Time	1	52951.11	42.66	0.0001
Sex Infant				
x Time	1	549.48	0.44	0.51
Error	36	1241.35		
Sex Parent	1	1841.06	1.90	0.18
x Time				
Sex Infant x				
Sex Parent x				
Time	1	276.48	0.29	0.60
Error	36	968.44		

TABLE 6
SUMMARY OF ANALYSIS OF VARIANCE RESULTS
FOR DISTRESS/DEMAND INITIATIVE

Source	df	MS	F	P
Sex Infant	1	41.06	0.09	.77
Error	36	464.36		
Sex Parent	1	0.01	0.00	0.99
Sex Infant x				
Sex Parent	1	309.80	1.30	0.26
Error	36	238.55		
Time	1	1036.90	2.78	0.11
Sex I x				
Time	1	14.53	0.04	0.85
Error		380.12		
Sex Parent x				
Time	1	4.11	0.02	0.89
Sex Infant x				
Sex Parent x				
Time	1	363.32	1.60	0.21
Error	36	227.79		

frequency data for social and distress/demand responsiveness at Time I and Time II. A mixed-design analysis of variance with one between-subjects variable and two within-subjects variables was used to determine if social and distress/demand responsiveness were influenced by the gender of the infant, the gender of the parent, or the time of testing.

Table 7 presents the results of the analysis of variance for parental social responsiveness. Parental social responsiveness was significantly affected by the interaction between parent gender and time of testing ($p < .10$). Table 4 reveals that mothers were less responsive to older infants than to younger infants while fathers were equally responsive to infants at both ages. Thus the second hypothesis was not supported with respect to parental social responsiveness.

Table 8 presents the results of the analysis of variance for parental distress/distress/responsiveness. Parental distress/demand responsiveness tended to be affected by the time of testing ($p = .10$). Inspection of Table 4 reveals that parents were less responsive to the distress/demand initiatives of older infants than to those of younger infants. Parental distress/demand responsiveness also tended to be affected by the interaction between parental and infant gender ($p < .10$). Inspection of Table 4 reveals that

TABLE 7
SUMMARY OF ANALYSIS OF VARIANCE RESULTS
FOR SOCIAL RESPONSIVENESS

Source	df	MS	F	P
Sex Infant	1	530.63	0.59	0.45
Error	36	897.48		
Sex Parent	1	32.24	0.13	0.72
Sex Infant				
x Sex Parent	1	136.42	0.55	0.46
Error	36	248.26		
Time	1	330.10	1.29	0.26
Sex Infant				
x Time	1	68.45	0.27	0.61
Error	36			
Sex Parent				
x Time	1	608.00	3.71	0.06
Sex Infant x				
Sex Parent x				
Time	1	424.45	2.59	0.12
Error	36	163.96		

TABLE 8
SUMMARY OF ANALYSIS OF VARIANCE RESULTS
FOR DISTRESS/DEMAND RESPONSIVENESS

Source	df	MS	F	P
Sex Infant	1	1765.29	2.53	0.12
Error	36	696.78		
Sex Parent	1	263.16	0.43	0.52
Sex Infant				
x Sex Parent	1	2137.50	3.48	0.07
Error	36	614.59		
Time	1	1566.74	2.93	0.10
Sex Infant				
x Time	1	190.13	0.36	0.55
Error	36	535.22		
Sex Parent				
x Time	1	295.68	0.68	0.42
Sex Infant x				
Sex Parent x				
Time	1	1404.68	3.23	0.08
Error	36	435.28		

mothers were less responsive to boys than to girls while fathers were more responsive to boys than to girls. Finally, parental distress/demand responsiveness was affected by the interaction between infant gender, parent gender, and time ($p < .10$). Inspection of Table 4 reveals that mothers were less responsive to older boys than to younger boys while fathers were more responsive to older boys than to younger boys. Thus the second hypothesis was not supported with respect to distress/demand responsiveness.

Maternal and Paternal Responsiveness

It was hypothesized that maternal and paternal responsiveness to infant social and distress/demand initiatives respectively would be positively and significantly correlated. Pearson product-moment correlations were calculated for social responsiveness and again for distress/demand responsiveness scores between pairs of parents.

Table 9 presents the intercorrelations among the initiative and responsiveness variables at Time I while Table 10 presents the intercorrelations among the same variables at Time II. Table 11 presents the intercorrelations among the initiative and responsiveness variables at both times corrected for attenuation. At Time I, correlations between pairs of parents were statistically significant for

TABLE 9
MOTHER-FATHER CORRELATIONS - TIME I

Maternal	Maternal			Paternal		
	Social Initiatives	Social Responsiveness	Distress/Demand Initiatives	Social Initiatives	Social Responsiveness	Distress/Demand Initiatives
Social Initiatives						
Social Responsiveness	.506 ^a .001 ^b					
Distress/Demand Initiatives	-.093 .58	.008 .96				
Distress/Demand Responsibilities	.421* .01	.478* .002	-.305 .06			
<u>Paternal</u>						
Social Initiatives	.444* .005					
Social Responsiveness	.148 .375	.410* .01		.469* .003		
Distress/Demand Initiatives	-.082 .626	.038 .823	.456* .004	-.305 .062	.072 .662	
Distress/Demand Responsiveness	.299 .068	.132 .429	.012 .944	.564* .0002	.485* .002	-.249 .131

^a Pearson product moment correlation.

^b Probability that $r > 0$.

* $p < .01$.

TABLE 10

Mother-Father Correlations - Time II

Maternal	Maternal			Paternal		
	Social Initiatives	Social-Respon-siveness	Distress/Demand Initiatives	Social Initiatives	Social-Respon-siveness	Distress/Demand Initiatives
Social Initiatives						
Social Responsiveness	.530 ^{a*}					
	.0006 ^b					
Distress/Demand Initiatives	-.147	.007				
	.379	.968				
Distress/Demand Responsiveness	.045	.372	-.036			
	.787	.021	.831			
Paternal						
Social Initiatives	.513*					
	.001					
Social Responsiveness	.326	.537*		.616*		
	.046	.0005		.0001		
Distress/Demand Initiatives	.129	.193	.089	.244	.137	
	.440	.247	.597	.139	.414	
Distress/Demand Responsiveness	.187	.224	-.093	.398*	.241	.150
	.261	.176	.580	.013	.146	.368

^a Pearson product moment correlations.^b Probability that $r > 0$.* $p < .01$.

TABLE 11
MOTHER-FATHER CORRELATIONS - CORRECTED FOR ATTENUATION

	Time I	Time II
Social Initiatives	.51328**	.57885**
Social Responsiveness	.52078**	.63603**
Distress/Demand Initiatives	.52977**	.10491
Distress/Demand Responsiveness	.01145	.33070*

*
p < .05.

**
p < .001.

social initiatives ($r = .51$, $p < .001$), social responsiveness ($r = .52$, $p < .001$) and distress/demand initiatives ($r = .53$, $p < .001$). At Time II correlations between pairs of parents were statistically significant for social initiatives ($r = .58$, $p < .001$), for social responsiveness ($r = .64$, $p < .0001$), and for distress/demand responsiveness ($r = .33$, $p < .05$). Thus the third hypothesis was supported with respect to social responsiveness at both times and for distress/demand responsiveness at Time II.

Accessibility

It was hypothesized that no relationship would be found between the accessibility of the parent and parental responsiveness to infant social or distress/demand

initiatives. Table 12 summarizes the caregiving data for parents from the Demographic Information Questionnaire. Mothers reported more hours each week during which they were accessible to their infants than did fathers ($p < .001$). Mothers were accessible to their infants on the average of 71 hours each week out of a total of 84 infant waking hours. Fathers were accessible to their infants an average of 31 hours each week. Mothers also reported caring for their infants while their spouses were inaccessible significantly more often than did fathers ($p < .001$). Mothers reported bathing their infants significantly more often than did fathers ($p < .001$), changing diapers more often ($p < .001$), feeding their infants more often ($p < .001$) and playing with their infants more often than did fathers ($p < .001$). Mothers also reported spending a greater proportion of their accessible time playing with their infants (41%) than did fathers (30%).

Table 13 presents the correlations between accessibility and the initiative and responsiveness variables. None of the correlations were significant at $p < .05$; however, at Time II, there was a negative correlation approaching significance between accessibility and infant social initiatives ($r = .21$, $p < .07$). Infants showed a tendency to make more initiatives towards the least accessible parent.

TABLE 12
CAREGIVING DATA (N=38)

	Mothers		Fathers			df
	Mean	SD	Mean	SD		
Accessibility ^a	70.95	13.77	35.10	15.18	10.78***	36
Exclusive Care ^a	40.00	21.90	5.17	4.94	9.56***	36
Bathing Baby ^a	5.05	2.07	1.17	1.54	9.26***	36
Diaper Changes ^b	6.90	2.28	1.45	1.09	13.32***	36
Feeding ^b	2.97	.91	.70	.61	12.75***	36
Play ^b	4.24	2.77	1.49	1.00	5.76***	36
Play/Access	.4143	.238	.301	.210	2.14*	36

^a Per week.

^b Per day.

* p < .05.

** p < .01.

*** p < .001.

TABLE 13
PARENTAL ACCESSIBILITY CORRELATIONS

	Accessibility	
	Time I	Time II
Sex Infant ^a	-.064 ^c .582 ^d	-.064 .582
Sex Parent ^b	-.738 .0001	-.738 .0001
Social Initiatives	-.108 .355	-.206 .074
Social Responsiveness	.085 .465	-.189 .102
Distress/Demand Initiatives	-.104 .370	-.105 .368
Distress/Demand Responsiveness	.007 .952	-.084 .469

^aSex Infant coded 1 = females, 2 = males.

^bSex Parent coded 1 = mothers, 2 = fathers.

^cPearson product-moment correlation.

^dProbability that $r > 0$.

Thus the fourth hypothesis was supported with respect to accessibility.

Initiatives and Responsiveness

It was hypothesized that social initiatives of younger infants would positively influence the parental responsiveness to the social initiatives of older infants. The cross-lagged panel correlation was used to determine if an antecedent-consequent relationship existed between the social initiatives of the infant at one time and the responsiveness of the parent to social and distress/demand initiatives at the other time of testing.

Figure 1 presents the cross-lagged panel results for the social behavior of infants and parents. Figure 2 presents the correlations corrected for attenuation using the reliability estimated by the Spearman-Brown prophecy formula presented in Table 15 located in Appendix C. The correlations are all positive and significant ($p < .01$). The correlations on the diagonals are the cross-lagged panel correlations. The cross-lagged panel correlation between infant social initiatives at Time I and parental responsiveness at Time II is significant ($r = .47, p < .001$ that $r < 0$). This suggests that infant social initiatives may influence subsequent parental responsiveness. The cross-lagged panel correlation between parental social responsiveness at Time I and infant

* $p < .01$ that $r > 0$.

** $p < .001$ that $r > 0$.

FIGURE 1
CROSS-LAGGED PANEL RESULTS - SOCIAL BEHAVIOR

* $p < .001$ that $r > 0$.

FIGURE 2
CROSS-LAGGED PANEL RESULTS CORRECTED
FOR RELIABILITY - SOCIAL BEHAVIOR

social initiatives at Time II is also significant ($r = .38$, $p < .01$). This suggests that parental social responsiveness may influence infant social initiatives. However, the probability that the difference between these two correlations occurred by chance is relatively low ($z = 1.80$, $p < .07$); therefore, it appears that infant social initiatives may influence parental social responsiveness more than the reverse. However, rival hypotheses which appear to be consistent with these results must also be explored.

One rival hypothesis is that infant social initiatives at Time I influence concurrent parental responsiveness and that this leads to parental responsiveness at Time II. This interpretation was rejected because it required that the correlation between the end points of the causal sequence (i.e., between infant social initiatives at Time I and parental responsiveness at Time II) would have been less than the product of the correlations between all adjacent intermediate points (i.e., between infant social initiatives at Time I, parental responsiveness at Time II, and parental responsiveness at Time II), (Eron, Heusmann, Lefkowitz, & Walder, 1972). The parallel hypothesis that parental social responsiveness influences infant social initiatives at Time I which, in turn, leads to infant social initiatives at Time II was rejected for similar reasons.

Another hypothesis was that initial infant social initiatives influence both concurrent parental responsiveness as well as later parental responsiveness. This hypothesis cannot be rejected in view of the significant correlation between infant social initiatives and parental responsiveness at Time I ($r = .57$, $p < .001$ that $r > 0$). It must also be mentioned that these were not independent variables; parental responsiveness was defined as the proportion of the infant initiatives to which the parent responded.

Hypotheses that infant social initiatives decrease parental responsiveness and, conversely, that parental responsiveness decreases infant social initiatives were rejected because all correlations were significantly positive. Thus the fifth hypothesis was supported for social behavior.

It was hypothesized that parental responsiveness to distress/demand initiatives of younger infants would negatively influence the distress/demand initiatives of older infants. Figure 3 presents the cross-lagged panel results for the distress/demand behaviors of infants and parents. Figure 4 presents the cross-lagged panel results corrected for attenuation. Distress/demand initiatives, although reliable at both Time I and at Time II ($r = .83$ and $r = .84$ respectively), showed no stability from Time I to Time II ($r = .07$). Similarly, distress/demand responsiveness was reliable only at Time I ($r = .62$) but not at Time II ($r = .25$) and showed no

* $p < .05$.

FIGURE 3
CROSS-LAGGED PANEL RESULTS -
DISTRESS/DEMAND BEHAVIOR

* $p < .05$ that $r > 0$.
 ** $p < .01$ that $r > 0$.
 *** $p < .001$ that $r > 0$.

FIGURE 4
 CROSS-LAGGED PANEL RESULTS - DISTRESS/DEMAND
 BEHAVIOR CORRECTED FOR RELIABILITY

stability from Time I to Time II ($r = .17$). Therefore, no analysis of the cross-lagged correlations was made. The only significant correlation in the panel was between infant distress/demand initiatives and parental distress/demand responsiveness at Time I ($r = -.38, p < .001$). Infants who displayed more distress/demand behavior had parents who were less responsive to distress/demand initiatives. Thus, although this correlation was in the hypothesized direction, the fifth hypothesis was not supported with respect to distress/demand behavior.

CHAPTER IV

DISCUSSION

The purpose of the present study was to investigate longitudinally the relationships between the initiation of social and distress/demand behaviors by infants at two ages and the responsiveness of parents to those initiatives. In addition, the present study sought to determine if parental responsiveness to infant initiatives is influenced by the accessibility, or working status, of the parents.

The present study focused on five areas of hypothesized relationships: social and distress/demand initiatives, social and distress/demand responsiveness, maternal and paternal responsiveness, accessibility and responsiveness, and initiatives and responsiveness.

Social and Distress/Demand Initiatives

It was hypothesized that infants would make more social initiatives to fathers and more distress/demand initiatives to mothers. This hypothesis was supported for social initiatives but not for distress/demand initiatives.

Infants tended to make more social initiatives to fathers than to mothers ($p < .07$). This finding parallels those of other studies (Lamb, 1976a, 1977; Clarke-Stewart, 1977) in which fathers have been a captive member of the observation. Focalization, as Sander (1964) described it, may only occur when fathers are free to leave the infant as Clarke-Stewart (1977) demonstrated. When fathers are present, they are usually preferred as playmates by infants perhaps because, as Kotelchuck (1976) pointed out, they engage more frequently in play than in other caregiving activities for the infant. The preference for fathers in social activities also supports Burlingham's (1973) description of the infant as a more active initiator of interaction with the father and a more passive recipient of caregiving from the mother. Since most infants were observed in the evening after they had been with their mothers for most of the day, it is possible that the increased number of initiatives towards fathers reflected the novelty of the fathers' presence.

The present study concentrated on hypotheses involving parent-infant dyads rather than on infant behavior alone. Therefore, no hypotheses were generated regarding the effect of time on the frequency of infant social initiatives. The results of the present study, however, showed a pronounced decrease in social initiatives by older infants ($p < .0001$).

This decrease may reflect the increasing detachment of the infant from the parent characteristic of the toddler in the separation-individuation stage described by Mahler (1972).

The observer noted that this apparent detachment of the older infant was primarily a result of increased exploration of the environment. The detachment was probably enhanced by the non-stressful nature of the present study which took place in the home of the infant with the parent present throughout the observation and with a passive observer. Indeed, the observer noted considerable interest on the part of older infants in her apparatus which consisted of a pencil, paper, clipboard, tape recorder, and earphone. The decreased frequency of social initiatives of older infants may also reflect the increasing use of the parent as a refueling source during the infant's explorations of the environment rather than as the primary source of all stimulation and environmental interaction (Abelin, 1975).

No parental preferences were shown by infants in their distress/demand initiatives. Lamb (1976a) found maternal preferences with both parents present under stressful laboratory conditions involving parental separations and reunions. In the present study, no stressful separations or strange environment was involved; furthermore, parents were observed separately rather than together. Therefore,

distress/demand initiatives more likely reflected the internal state of the infant rather than environmental conditions. Distress/demand initiatives during Time I seemed to indicate states of either hunger or exhaustion while distress/demand initiatives from the more mature infants during Time II seemed to indicate demands by the infant for some desired object.

The distribution of distress/demand initiatives was also highly skewed; during Time I, in 19 out of 76 observations the infant emitted five or fewer distress/demand behaviors and during Time II five or fewer distress/demand behaviors were emitted by infants in 23 out of 76 observations. Thus, in the present study, distress/demand initiatives appeared to reflect the state of the infant rather than any parental preference.

Social and Distress/Demand Responsiveness

It was hypothesized that parents would be more responsive to the social and distress/demand initiatives of older infants than to those of younger infants with no sex-of-infant or sex-of-parent effects expected. The results did not support this hypothesis for either social responsiveness or distress/demand responsiveness.

The results were exactly the opposite of those hypothesized: parents tended to be less responsive to older

children than to younger children ($p < .10$). Bronson (1974) found that the rate of unresponsiveness among mothers of toddlers declined from 40% at 12 months of age to 20% at 24 months of age. In the present study, mothers were responsive to 60% of the social initiatives of their older infants who were between ten and 13 months of age. However, mothers responded to 67% of the social initiatives of their younger infants who were between seven and nine months of age. Thus the results of the present study support those of Bronson (1974) for 12-month-old infants. The explanation for the decreased responsiveness of mothers to older infants may again rest with the beginning of the detachment process of separation-individuation (Mahler, 1972) which, in the present study, appears to be mutual. Additional study is needed to confirm this hypothesis.

Parents also tended to be less responsive to the distress/demand initiatives of older infants than to those of younger infants ($p < .10$). The explanation for this finding may rest in the change from negative vocalizations of the younger infants signalling hunger to the vocal demands of the older infants signalling desires for specific objects. Mothers tended to be less responsive to distress/demand initiatives from boys than from girls ($p = .07$). This finding is similar to that of Lewis (1972) and Moss (1967). In

the present study, fathers tended to be more responsive to distress/demand initiatives from older boys than to those from older girls ($p = .08$). This finding supports similar sex preferences found by Parke and O'Leary (1976).

Maternal and Paternal Responsiveness

It was hypothesized that maternal and paternal responsiveness to infant social and distress/demand initiatives respectively would be positively and significantly correlated. This hypothesis was supported with respect to social responsiveness both at Time I ($r = .52, p < .001$) and again at Time II ($r = .64, p < .001$). The hypothesis was not supported with respect to distress/demand responsiveness perhaps because of the low reliability and stability of that variable.

The high correlation between maternal and paternal responsiveness supports results found by Clarke-Stewart (1977). It is also noteworthy that, despite the significant preferences shown by the infants for fathers, infant social initiatives to mothers and to fathers were also significantly correlated both at Time I and again at Time II ($r = .51, p < .001$; $r = .58, p < .001$ respectively). This finding indicates that parents are similar in the quality of interaction with infants although the actual type and

quantity of interaction may differ as a number of earlier studies have shown (e.g., Lamb, 1976b; Kotelchuck, 1976). The similarity in the infant correlations as well as the increasing magnitude of both the infant and the parent correlations may indicate that each parent is modeling the other. Future studies should test this hypothesis.

These results certainly do not indicate that the roles of the fathers vis-a-vis their infants were essentially different than the roles of the mothers from the perspective of the infants. Infants demanded and received essentially similar treatment from each parent. Role separation in the child's eyes may not occur until a later age.

The generalizability of these findings may be questionable because of the special characteristics of the sample. Although parents were selected from hospital birth lists, parents who agreed to participate in the study were, for the most part, older, highly educated, highly involved, upper-middle class parents, as Table 1 illustrates. Over 75% of the couples had each completed college degrees, were over 25 years old, owned their own homes, and had participated in LaMaze Childbirth Education classes which encouraged paternal participation in childbirth. Of the 63 initial families contacted with first-born children, 25 of the families, or 40%, refused to participate in the study. The most common

reasons for refusal were that the father did not have the time to be observed, the father would be uncomfortable with an observer present, or simply that the father was unwilling to participate. It is highly possible that these fathers were qualitatively different in their interactions with their infants from the fathers who agreed to participate in the study. However, it will be extremely difficult to test this hypothesis.

Accessibility

It was hypothesized that no relationship would be found between the accessibility of the parent and the parental responsiveness to infant social or distress/demand initiatives. This hypothesis was supported by the results of the present study.

The lack of any significant relationship is particularly impressive in light of the highly significant parental differences in caregiving. Although 16 of the mothers were inaccessible to their infants at least 10 hours each week, usually in either part-time or full-time employment, the median accessibility score for mothers was 77 hours each week or 92% of the infant waking hours. Median accessibility for the fathers was 31 hours each week, or 37% of the infant waking hours. Although social desirability may have

exaggerated these reported figures, the results for the fathers are similar to those of earlier studies (Pedersen & Robson, 1969; Kotelchuck, 1976; Young, 1975).

In the present study, differences between mothers and fathers in accessibility were highly significant ($p < .0001$) as were differences for all other quantitative caregiving variables such as babysitting, bathing infants, and feedings. This finding is similar to that of Ruderman (1968) who found that increasing socio-economic status in which families was associated with lesser paternal involvement in caregiving. Although fathers generally appeared to be capable of engaging in sensitive, responsive, appropriate interactions with their infants, they rarely did so unless forced to by the absence of the mother.

The highly significant parental differences in the quantity of infant interaction and the highly significant correlations in the quality of interaction may be explained by the typical performance/optimal performance distinction suggested by Lewis and Weinraub (1976). Other investigations have found no relationship between the accessibility of the parent and the quality of the parent-infant interaction (e.g., Schaffer & Emerson, 1964a; Kotelchuck, 1976; Clarke-Stewart, 1977).

Initiatives and Responsiveness

It was hypothesized that the social initiatives of younger infants would positively influence parental responsiveness to the social initiatives to older infants while the parental responsiveness to distress/demand initiatives of younger infants would negatively influence the distress/demand initiatives of older infants. Results of the present study supported this hypothesis in respect to social initiatives and social responsiveness ($p < .10$). The stability and reliability of parental responsiveness to distress/demand initiatives were too low for any analysis of possible relationships with infant initiatives of distress/demand. However, the relationship between distress/demand initiatives and distress/demand responsiveness at Time I was in the expected direction ($r = -.38$, $p < .001$) as was the relationship between parental distress/demand responsiveness at Time I and infant distress/demand initiatives at Time II ($r = -.21$, $p < .10$).

Undoubtedly, a feedback loop is operating within the parent-infant interactions; each member constantly influences and is influenced by the other. The present study seems to suggest that, at least during the third and fourth quarter of the first year of life, an antecedent-consequent relationship may exist between the social initiatives of the

infant during the third quarter and the social responsiveness of the parent during the fourth quarter. These results are supported by the results of Clarke-Stewart (1973) but should be tested in an experimental manipulation using various levels of infant social initiatives as independent variables and adult responsiveness as the dependent variable.

Before additional investigation is made into the relationship between infant distress/demand initiatives and parental distress/demand responsiveness, the reliability and stability of the responsiveness variable should be improved. One possible improvement would be to increase the duration of each observation as did Clarke-Stewart (1973) and Bell and Ainsworth (1972).

Conclusion

The purpose of the present study was to investigate longitudinally the relationships between the initiation of social and distress/demand behaviors by infants at two ages and the responsiveness of parents to those initiatives. In addition, the present study sought to determine if parental responsiveness or infant initiatives were influenced by the accessibility, or working status, of the parents.

The present study demonstrated that, although parents differed greatly in the quantity and type of interaction, pairs of parents correlated highly both in the social

initiatives they elicited from their infants and in their responsiveness to those initiatives. The present study also found that infants made more social initiatives to fathers than to mothers; however, no relationship was found between parental accessibility and parental responsiveness to social or to distress/demand initiatives. Results of the present study seemed to indicate that the social initiatives of younger infants may influence the responsiveness of parents to the social initiatives of older infants. Additional experimental evidence is needed to support the existence of a causal relationship, however.

Results of the present study generally support the conclusions of Mahler and her colleagues regarding the role of the father (Mahler, 1972; Abelin, 1975; Greenacre, 1966). The fathers played a minor role in caregiving and appeared to be viewed by the infants more as playmates than as caregivers. However, in support of ethological research results (e.g., Ainsworth, 1964; Schaffer & Emerson, 1964a), fathers generally appeared capable of providing caregiving and were used by the infants as mother-substitutes.

When alone with the father, the infant did not appear to interact differently with the father than with the mother nor did the parents differ in the quality of interaction with their infants. It is difficult to determine if the increased social initiatives made by infants to their

fathers was due to the novelty of the fathers' presence or to the discrimination of parental roles by the infants. Although the parents in the present study generally followed rather traditional role divisions similar to those outlined by Parsons and Bales (1955), the infants did not appear to discriminate between the parents in seeking caregiving. However, additional research with both parents present in a paradigm which would require forced choices by the infants is necessary to confirm this hypothesis.

It is highly possible, that, although infants showed little discrimination between their parents, older toddlers and preschoolers may more clearly differentiate between their parents as Freud and Burlingham suggested (1944). Additional research is necessary to confirm this possibility.

APPENDICES

APPENDIX A

Initial Letter to Parents

Confirming Letter to Parents

Parental Consent Form

Demographic Information Questionnaire

430 Glenmont Avenue
Columbus, Ohio 43214

Dear Mr. and Mrs.

I am a graduate student in Developmental Psychology at The Ohio State University. After watching my own baby's development, I am interested in observing other first-born babies' social and play activities in the presence of their parents.

I would like to observe your baby during two separate one-hour visits, once with one parent present and once with the other parent present. I would like to return three months later to observe your baby again. I will not be "testing" your baby in any way and I do not wish to interrupt any of your family's routines.

I will be calling in a few days to arrange a convenient time to visit. I will be glad to answer any questions you might have regarding my study at that time.

Thank you for your assistance.

Sincerely,

(Mrs.) Susan M. Hegland

430 Glenmont Avenue
Columbus, Ohio 43214

Dear Mr. and Mrs.

Thank you for permitting me to observe your baby. As I said on the telephone, I would like to visit when your baby is awake and not eating a meal or taking a bath. I would also like a different parent to be present during each visit. However, I do not wish to disturb your family's routines in any way.

I am looking forward to visiting you on
at

Thank you for your assistance.

Sincerely,

(Mrs.) Susan M. Hegland

CONSENT FORM

I consent for my child to be observed in my home as part of a research study on the social behavior of infants.

The nature and general purpose of the research procedure have been explained to me. This research is to be performed under the direction of Dr. George Thompson who is authorized to use the services of others in the performance of this research.

I understand that any further inquiries I make concerning this procedure will be answered. I understand my identity will not be revealed in any publication, document, recording, video-tape, photograph, computer data storage, or in any other way which relates to this research. Finally, I understand that I am free to withdraw my consent and discontinue participation at any time following the notification of the observer.

Signed: _____
(father)

Signed: _____
(mother)

Susan M. Hegland
(Observer)

Baby # _____

Parent: Mother
Father

I appreciate the time which your family has shared with me. During my first visits, many parents suggested possible circumstances which may affect the amount of play that their babies engaged in with each parent. I compiled these questions and I would appreciate it if you and your spouse could find time to answer these questions before or during my next visit. I will be glad to answer any questions about them when I visit you again. Of course, if you do not feel comfortable answering these questions, I will understand.

1. Did you take any course during this or prior pregnancies on prenatal care or delivery? Yes _____ No _____
2. Did your spouse attend these classes with you? Yes _____ No _____
3. Were you and your spouse present (awake) in the delivery room when your baby was born? Yes _____ No _____

Mothers 4. Did you breast-feed your baby? Yes _____ No _____

Parents 5a. For about how many hours each week are you inaccessible to
not your baby during his/her waking hours (i.e., inaccessible by
employed working part-time, attending classes, shopping, playing tennis,
full-time etc.)? _____ hours each week

Parents 5b. On three out of five week days (work days), for about how
employed much time are you accessible to your baby during his/her waking
full-time hours (i.e., accessible between your arrival from work and your
baby's bedtime, not including time involved in tasks which
prohibit baby's presence such as lawn-mowing)? _____ hours each day

Parents 5c. On weekends, or your regular days off work, for about how much
employed time are you accessible to your baby during his/her waking hours?
full-time _____ hours each day

6. For about how long during an average week is your baby left in your care exclusively while your spouse works, shops, plays tennis, or is otherwise inaccessible to your baby?
_____ times each week for a total of _____ hours each week.

7. How often do you perform the following child care activities?
Bathing _____ each week Feeding _____ each day
Diaper changing _____ each day Play _____ hours or minutes
each day

8. When you and your baby play together, what are his/her favorite games and activities?

9. How old were you when your baby was born?

Thank you for your assistance.

APPENDIX B

Behavioral Checklist

Observation Behavior Units

Variables

Subject #	Date	Parent: M	P	TIME	Sheet #	
1		2	3			
BEHAVIORS	00	10	20	30	40	50
Infant	00	10	20	30	40	50
Holds P						
Atc						
Goes P						
Looks P						
Smiles P						
Gives P						
Shows P						
Names P						
Pos Voc						
Plays P						
Calls P						
Neg Voc						
Cries						
Voc D						
Neg Phys						
Parent						
Holds						
Atc						
Phys stim						
Smiles						
Soc Sp R						
Ref Sp R						
Plays						
Gives R						
Takes R						
Comes						
Appr						
Puts R						
Stops						
Att Needs						

OBSERVATION BEHAVIOR UNITS¹

Name	Infant Behavior Description
Holds P	B holds M or F, climbs onto lap, touches, clings to, holds hand.
Affectionate Tactual Contact (Atc)	B hugs or kisses M or F.
Goes P	B moves more than 4 ft by any means of self-propelled locomotion.
Looks P	B looks at M or F--no matter how short a glance--when not doing anything else.
Smiles P	B smiles or laughs at or with M or F.
Gives P	B gives, offers, or takes object to M or F.
Shows P	B shows or points to inaccessible object in M's or F's presence.
Names P	B calls out name of parent without demand.
Positive Vocalization (Pos Voc)	B makes a positive vocalization--speech or prespeech.
Plays P	B manipulates, sucks, bounces, bangs, examines, etc., M or F, or plays with parent using another object, e.g., ball or book.
Calls P	B calls M or F, demanding a response.
Negative Vocalization (Neg Voc)	B frets, fusses, whines, or makes other vocal sounds of negative cast.
Cries	Intense, continuous, negative vocalization--usually loud, prolonged, and tearful.

¹Adapted from Clarke-Stewart (1973).

Name	Infant Behavior Description
Vocal Demand (Voc D)	B makes a demand vocalization (speech or prespeech) for a specific thing to M or F.
Negative Physical Behavior (Neg Phys)	B expresses negative emotion by physical behavior such as hitting M or F, kicking object, etc.

Name	Parent Behavior Description
Holds	P holds B on knee, touches, picks up, carries, puts arm around, uses physical soothing with B.
Affectionate Tactual Contact (Atc)	P hugs, kisses, caresses, fondles, ruffles hair of, cuddles B.
Physical Stimulation (Phys stim)	Deliberate, active, physical stimulation; P rocks, bounces, tickles, plays physical game (e.g., pat-a-cake), roughhouses with B.
Smiles	P smiles or laughs at B, or shows other positive, nonverbal expression.
Social Speech Responsive (Soc Sp R)	P sings, whistles, whispers, verbally soothes, plays verbal game (e.g., peek-a-boo), or uses single responsive words (whoops!, Oh!, etc.) or short responsive questions (What? What do you want? What's the matter? Where are you going?). Speech must be responsive to B's state, situation, or signal.
Referential Speech Responsive (Ref Sp R)	All P's speech which refers to the environment directed toward B--labeling, giving information about objects, toys, people, the baby. All speech with referential content. Speech must be responsive to the B's activity or vocalization.
Plays	P entertains B with book, toy, or fingers, plays game, or soothes with materials.

Name	Parent Behavior Description
Gives R	P offers or gives object, toy, or food to B in response to B's demand.
Takes R	P takes object away from B in response to B's giving or offering object.
Comes	P comes within arm's reach (4 ft) of B.
Appropriate Response (Appr)	P makes appropriate nonverbal response to B, if not covered in another category.
Puts R	P puts B somewhere--in playpen, crib, high chair, on couch, on floor, etc. (not on lap). Act must be in response to B's demands.
Stops	P stops behavior in response to B's distress/demand initiatives.
Attends Needs (Att Needs)	P attends to B's physical need-diapers, wipes nose, dresses, bathes, Band-Aids, feeds, etc. in response to B's demands.

Abbreviations:

P Parent
 B Baby
 M Mother
 F Father
 R Responsive

VARIABLES¹

Social initiatives is the total sum of the frequencies of the following social behaviors directed by the infant to each parent:

Holds P, ²	Gives P,
Affectionate Tactual Contact,	Shows P,
Goes P,	Names P,
Looks P,	Vocalizes P, and
Smiles P,	Plays P.

Social Responsiveness is a contingency measure: the proportion of the social initiatives by the infant to which the parent responds positively within 20 seconds, i.e.,

when the infant displays any of these behaviors:

Holds P,	Smiles P,
Affectionate Tactual Contact,	Gives P,
Goes P,	Shows P,
Looks P,	Names P, or
Vocalizes P,	Plays P,

the parent responds within 20 seconds with any of these behaviors:

Holds,	Plays,
Affectionate Tactual Contact,	Gives R,
Physical Stimulation,	Takes R,
Smiles,	Comes, or
Social Speech R,	Appropriate R.
Referential Speech R,	

Distress/demand initiatives is the total sum of the frequencies of the following distress/demand signaling behaviors directed by the infant to each parent:

Calls P,
Negative Vocalization,
Cries,
Vocal demand, and
Negative physical behavior.

Responsiveness to distress/demand signals is a contingency measure: the proportion of the distress/demand initiatives by the infant to which each parent responds positively within 20 seconds, i.e.,

when the infant displays any of these behaviors:

Calls P,	Vocal Demand, or
Negative Vocalization,	Negative physical behavior,
Cries	

¹Adapted from Clarke-Stewart (1973).

²A complete operational definition for behavior in Appendix B.

the parent responds within 20 seconds with any of these behaviors:

Holds,	Puts R,
Affectionate Tactual Contact,	Gives,
Physical Stimulation,	Plays,
Attends Needs,	Social Speech R,
Comes,	Referential Speech R,
Appropriate Response,	or Stops.

APPENDIX C

Split-Half Reliability Correlations

Estimated Reliability of Behavior Checklist

TABLE 14
SPLIT-HALF RELIABILITY CORRELATIONS

Variable	Time I r	Time II r
Social Initiatives	.76***	.79***
Social Responsiveness	.69***	.72***
Distress/Demand Initiatives	.71***	.72***
Distress/Demand Responsiveness	.44***	.15

* p < .01 that r > 0.

** p < .001 that r > 0.

*** p < .0001 that r > 0.

TABLE 15
ESTIMATED RELIABILITY OF VARIABLES USING
SPEARMAN-BROWN PROPHECY FORMULA

Variable	Time I r	Time II r
Social Initiatives	.86	.88
Social Responsiveness	.82	.84
Distress/Demand Initiatives	.83	.84
Distress/Demand Responsiveness	.62	.25

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