PARENTAL ATTACHMENT TO PREMATURE AND SERIOUSLY ILL INFANTS

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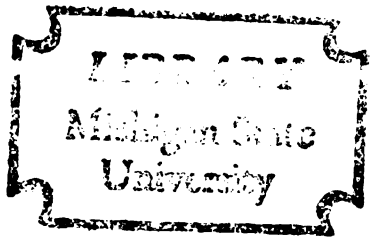

ABSTRACT

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AND SERIOUSLY ILL INFANTS

By

Barry Morgan Wright

The present study is a correlational analysis of the relationship between characteristics of premature and seriously ill infants and parental attachment behaviors and attitudes. The fundamental assumption of this study is that there is an interaction between infant characteristics and parental attachment in the neonatal period. The major infant variables were sex, medical history, auditory and visual orientation, and visual fixation behavior. The major parent variables were visiting patterns, maternal feeding behaviors, parental distress, attitudes toward childrearing, and demographic characteristics.

The 31 infants in the study were hospitalized from birth in a Regional Neonatal Intensive Care Unit, primarily due to complications of prematurity. The mean gestational age was 34 weeks and mean age at discharge

was 28 days. Infants judged to have congenital defects or neurological damage were excluded from the sample.

Just prior to discharge, the infants were assessed on the Animate Auditory Orientation and Animate Visual Orientation scales from the Brazelton Neonatal Assessment Scale (Brazelton, 1973). Visual fixation behavior was assessed using an apparatus similar to that developed by Fantz (1967) and used by Moss and Robson in their studies of attachment (1969, 1970). The three stimulus targets were a face, a scrambled face, and vertical stripes which were each presented three times in counterbalanced order. It was hypothesized that parental attachment would be related to infant competence in visual orientation and fixation.

The parents of these infants completed a questionnaire just prior to discharge, including the following measures: the Multiple Affect Adjective Checklist (Zuckerman & Lubin, 1965), the Post-Partum Research Inventory (Schaefer & Manheimer, 1960), the Social Readjustment Rating Scale (Holmes & Rahe, 1967), the Locke-Wallace Marital Inventory (1959), and items generated from Green and Solonit's Vulnerable Child Syndrome (1964).

Behavioral assessment of the parents included a record of visiting and feeding frequencies; the mother was also observed during a feeding. The feeding

behaviors which were assumed to indicate attachment were the amount of time looking at the infant and the number of nonfunctional affectionate touches.

Although the frequency of visiting and feeding behaviors were expected to cluster as attachment behaviors, they proved to be independent of each other. This may have been the result of a third unmeasured variable, the efforts of the medical staff to encourage visiting among uninvolved parents.

As hypothesized, parental personality measures and attachment behaviors were related. Mothers with Ignoring attitudes touched their infants less often; also, Fearful, Hostile, and Stressed mothers made less contact with their infants. In contrast, fathers who reported distress made more contact with their infants. This suggests a sex role difference in parental response to the crisis of a sick infant. Fathers appear to take a more instrumental role in maintaining contact with the hospital.

The expected association between high parental attachment and high infant visual fixation was confirmed. Specifically, high fixation on pictures of faces was related to high maternal looking and touching. Infants who fixated poorly on faces had mothers who were more Ignoring and blaming. Infants with high visual fixation had fathers who were more Responsive and less Irritable.

It was hypothesized that parents who had developed an attachment to their infant would show less distress. The opposite was found to be the case. Parents who were more involved with their infants showed more distress, presumably because of the potential loss of an infant to whom they had become attached.

It has often been assumed that prematurity is an impediment to parental involvement. However, in this study mothers showed more consistent visual attention to more premature infants, when controlling for the degree of perinatal medical trauma. This suggests that prematurity, independent of perinatal trauma, need not have deleterious consequences for parental attachment.

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CHAPTER I

INTRODUCTION

It has become increasingly clear that the premature or seriously ill infant continues to be psychologically disadvantaged long after hospital discharge. Much of the research on these infants has focused on correlating prematurity, in varying degrees, with intellectual deficits, mental retardation, hyperkinesis, autism, accident proneness, and later becoming a high school dropout or institutionalized (Caputo & Mandell, 1970). Most of these same researchers have focused on the aspects of reproductive casuality, emphasizing the probable role of poor prenatal care, nutrition, and attendant minimal brain damage in understanding the sequelae of prematurity.

Another set of investigators have focused on the role of caretaking in these difficulties and, in particular, on the vicissitudes of parental attachment to these infants. The most blatant indices of parenting difficulties are the disproportionately high incidences of child abuse and failure to thrive syndrome among

medically high risk infants. Among the infants who fail to thrive in the absence of any medical reasons, 25-41% are premature (Shaheen, Truskowsky, & Barbero, 1968; Ambuel & Harris, 1963). Similarly, the premature or seriously ill infant may be three times as likely as a normal full-term infant to be the object of child abuse (Klein & Stern, 1971). Also, a serious illness in early infancy may have a more lasting impact on the parents than on the child (Green & Solnit, 1964). Clearly the problems of attachment between parents and seriously ill infants deserve further exploration.

In their review of this research area, Sameroff and Chandler (1975) observed that "studies on high-risk infants have selectively focused attention on either reproductive or caretaking aspects of these casualities." The results of long-range predictions made from these studies have been disappointingly poor. This may be due to the inherent limitations of unilateral retrospective studies of what appears to be an evolving transactional process.

In contrast to the retrospective study in which the outcome is clearly known, a prospective study requires the selection of theoretically important variables which may lead to the same or similar outcomes. A major variable of theoretical interest in this research is parental attachment, the vagarities of which have been

blamed for a wide range of developmental disorders. Yet at this point in the study of the parent-infant interaction in the early neonatal period, the presence or absence of parental attachment is presumed to be a factor in exacerbating the developmental disadvantages of these infants. However, this relationship has not been clearly established and, given the predictive failures of many studies of "high-risk" infants and parents, the long-range consequences of parental attachment must be considered conjectural. Nevertheless, a first step in unraveling potential consequences of parental attachment to premature or seriously ill infants can be made by examining the very early relationships between these infants and their parents.

CHAPTER II

REVIEW OF THE LITERATURE

The research on the development of parental attachment to premature or seriously ill infants is not extensive, though it has focused rather clearly on two issues. The first, explored by Leifer, Seashore, and associates (Leifer et al., 1972; Seashore et al., 1973) and Klaus and Kennel (1970a,b,c,d) has tried to determine whether there exists in humans, as in many animal species, a critical period of attachment which is disrupted by the separation of the new mother from her premature or sick infant. The second perspective, developed by Gerald Caplan and associates, has examined parental reactions to prematures as an example of crisis behavior in an effort to correlate crisis management to mental health outcomes (Caplan, Mason, & Kaplan, 1965).

The Critical Period Approach

The search for a critical period of human attachment is based on extensive evidence of such periods in other species, which is extensively reviewed elsewhere (Rheingold, 1963). When it is so clear in infrahuman

species that the lack of mother-infant contact can produce grossly incompetent mothering, it is plausible to wonder whether there are deleterious consequences from the separation of human mothers from their neonates. To test this hypothesis Leifer and associates (1972) contrasted the behavior and attitudes of three groups of mothers. The separated group of 22 mothers had no physical contact with their premature infants from birth until the time they were transferred from the intensive care unit to the discharge nursery. The group of contact mothers entered the intensive care unit within two to three days after birth and were allowed to handle and care for their premature infants as much as possible. The third group of mothers delivered full-term normal babies and had contact with their infants only at feeding times, in accord with traditional hospital policy. These groups were observed in caregiving activities prior to discharge and at one and four weeks thereafter. There were no significant differences between contact and separated groups on any of the behavioral measures such as holding, affectionate touching, ventral contact, looking, and talking. Thus, the observational data did not reflect any consequences of maternal separation.

In this study it was also hypothesized that the separated group of mothers would have lower maternal self-confidence than the contact mothers (Seashore et al.,

1973). However, separation had no measurable impact on multiparous mothers and ambiguous impact on primiparous mothers. The authors found a significant difference between primiparous separated mothers and other mothers, but this may have been an effect of practice rather than separation. The difference between these groups reached significance at two observations, the day the baby left the intensive care nursery and entered the discharge nursery, and the day before discharge. Thus, the first observation was a comparison of mothers who had had contact and helped care for their infants for an average length of 36 days with mothers who were handling their babies for the very first time. Similarly at the second observation the contact group had been caretaking for 46 days and the separated group for 10 days. As one might expect from a practice effect, as distinct from an impaired ability to form an attachment, there were no differences between the separated and contact mothers at one month after discharge.

Perhaps the greatest weakness in the study was that the contact mothers did not, in fact, have that much more contact than the separated mothers. Unfortunately, accurate visiting records were not kept but it was estimated that the contact mothers visited the intensive care unit only once every six days to handle their infants. Incidental data, however, suggest that separation between

mother and infant may have had an impact which was not captured in the mother-infant interaction behaviors: there were six divorces in the 49 couples, five in the separated group, three of the four mothers who tried to breast feed failed, and two mothers, both in the separated group, gave up custody of their infants. Whether these were the result of separation, as the authors suggest, or a more complicated interaction of the separation, variations in individual visiting patterns, and prior low maternal self-confidence cannot be answered from this study. It does suggest, however, that there may be greater and more complex consequences of prematurity for the family than the samples of mother-infant interaction within these groups might indicate.

In a similar study, Klaus and Kennel compared early and late contact mothers of premature infants (1970b,c). The early contact mothers cuddled their infants more and spent more time in en face looking, defined as "the mother's face in such a position that her eyes and those of the infant meet fully in the same vertical plane of rotation" (1970b). At one month after discharge there were no significant differences between groups. It is unclear why Klaus and Kennel obtained some significant results since their sample size was even smaller than Leifer's. It may be that their visiting

frequencies were higher since they described fairly assertive and ingenious approaches to encouraging the mothers to visit their infants (Kennell & Klaus, 1970b).

Testing the same hypothesis on a group of full-term mothers rather than mothers of prematures, Kennel and Klaus were able to establish clear and lasting differences between an extended contact and control group (Klaus, Jerauld et al., 1972). The 28 primiparous mothers of normal infants were assigned to two groups according to the day of delivery. The extended contact group of mothers were given their infants for an hour within the first 3-4 hours after birth and five additional hours for the first three days for a total of 16 more hours than the control group mothers who only glanced at their babies after birth, made a brief visit at 6-12 hours, and then 2-30 minute visits at feeding intervals. At one month the extended contact mothers showed significantly more en face and fondling, were more reluctant to leave their infants with others, and showed more soothing behaviors. Even at one year the extended contact mothers showed more soothing behaviors during the physical examination of their children and expressed missing them more when they had returned to work or school (Kennell, Jerauld et al., 1974).
There are a number of possible hypotheses to explain the more significant results obtained with full-term

infants rather than prematures. One of the stronger possibilities, however, is that in this latter study contact was controlled precisely, in contrast to simply allowing the mothers to visit at the intensive care nursery. This clearly suggests that the amount of contact between mother and infant as well as the personality correlates of different visiting patterns are variables which can no longer be ignored.

The Crisis Theory Approach

Caplan, Mason, and Kaplan (1965) conducted four studies of the parents of prematures, working from the perspective of crisis theory. Within this framework they hoped to tap four groups of factors: the influences of the situation itself (e.g., the degree of contact), the pre-existing personalities, cultural influences, and interactions with significant others. In their studies, however, the pre-crisis personality and cultural factors were not explored systematically.

In the first study, Caplan (1960) compared the case records of "Healthy Outcomes" and "Unhealthy Outcomes." The three discriminating variables in the patterns of parental reactions were their cognitive grasp of the situation, the way they handled their feelings, and their ability to obtain help and support. In the "Healthy Outcome" cases the parents aggressively sought information about their baby without avoiding or denying

the extra dangers and burdens of having a premature infant. They could make a reality based appraisal of the situation without relying on global beliefs that everything would be either good or bad. In the "Healthy Outcome" cases there was a "continuous awareness of negative feelings throughout the crisis" (1966, p. 153). The Healthy Outcome parents were able to seek out and receive support from family and community while the Unhealthy Outcome parents only helped one another in their mutual denial of difficulties.

The predictive validity of these hypotheses was tested on 28 mothers (Mason, 1963). Predictions could be made in only 19 cases, of which 17 correctly matched clinical judgments of mother-infant interactions at six weeks. Unfortunately, the outcome criteria were largely unspecified so it is difficult to know what was predicted by what.

To refine the bases for predicted outcomes, Kaplan and Mason (1960) further defined the tasks confronting the mother of a premature infant: to express anticipatory grief over the possible loss of the infant, to acknowledge her feelings of failure for not having a full-term baby, to resume emotional investment in the infant, and to accomplish the instrumental functions of caring for her premature infant.

Given these tasks, Kaplan (1961) developed II predictive items such as visiting patterns, preoccupation with the infant, expression of feelings at separation, and her discussion of actual or potential defects in her infant. These items were scored present or absent from interviews. The outcome assessment was based on similar attitudes and behaviors including neglect, overfeeding, or pushing the infant to develop. Twenty-four of the 30 predictions matched mental health outcomes correctly. Interestingly enough, the mother's visiting pattern predicted better than all other items combined. The predictive value of visiting frequencies has been substantiated by Fanaroff, Kennell, and Klaus (1970) in their findings that disorders of mothering which resulted in the child being abandoned, battered, fostered, or failing to thrive, occurred exclusively among infrequently visiting mothers.

One of the major limitations of these studies was stressed by the authors themselves: they did not attempt to establish any causal relationships but rather an association between grappling patterns, task accomplishment, and "mental health outcome." As such, it established a continuity between a "poor" response to crisis and a "poor" outcome. While it was consistent with their purpose to focus on maternal attitudes and behaviors, there was no systematic observation of

mother-infant interaction or a consideration of infant behaviors. Thus, one is left with an uncomfortable lack of specificity about what constituted a good or bad outcome.

The Interactional Approach

More recently, longitudinal studies by Moss, Robson, and Pedersen (1968, 1969) have sought such an integration of prenatal maternal attitudes, maternal feelings of attachment toward her infant, and the reciprocal interaction of mother and infant. In studies at 1 and 3 months of age, vis-a-vis was studied as a theoretically significant index of communication and attachment between mother and child. For both males and females, there was a significant correlation between positive prenatal attitudes and vis-a-vis at one month. For females, this correlation extended to both vis-a-vis and fixation time for geometric and social stimuli at 3 1/2 months. In addition vis-a-vis at one month predicted to interpersonal gazing and spontaneous social behaviors with a stranger at 8-9 1/2 months.

Thus interpersonal gazing seems to be a suggestive index of early reciprocal social interaction between mother and child with significant developmental continuities. Studies with adult subjects seem to confirm Tomkins' (1965) emphasis on the role of eye contact in establishing interpersonal intimacy. Studies have

indicated that interpersonal gazing is both a function of the subject's prior emotional state and his perception of the person with whom he is interacting. In interview situations, eye contact seems to be an index and enhancer of affective expression (Effran, 1968; Exline, 1965).

To further explore emotional attachment as an experiential process, Moss and Robson (1970) conducted interviews with the same group of mothers discussed above. To tap the mothers' feelings three specific questions were asked: "When did you first experience positive feelings and love toward him?"; "When did he first become a person to you?"; and, "When did he first seem to recognize you?" (1970, p. 977). Even within this upper-middle-class sample, conscious of socially desirable and "proper" attitudes toward children, there was a considerable variance in the attitudes reported by mothers. Thirty-four percent reported no feelings at all in their first contact with their infant and 7% expressed initial negative feelings. Fifty percent of the positive feelings reported were related to the infant's "responses" such as smiling, eye contact, visual fixation, and following. Similarly, 72% of the mothers first perceived the infant as a person in response to visual behaviors, usually during the 4-6 week period.

This normative study of attachment between mothers and full-term healthy infants has clear

implications for the study of attachment to high-risk infants. First, there are clearly discernable individual differences in early maternal responses to infants. Some felt love for their babies within the first two days after birth ("early attachers") and others did not express this feeling within nine weeks ("late attachers"). Second, most mothers seem to rely on "response" behaviors from the baby to trigger and reinforce positive maternal feelings and the perception of her baby as a real person. Further, one case in this sample suggests the possibility of a strongly deleterious interaction between these variables. One of the mothers who initially felt very positively toward her baby, describing her first post-partum days as the best in her life, soon felt estranged from her infant, wanting nothing to do with him. This mother, like others in the early attaching group, needed to know that her baby would respond to her intense positive feelings. Unfortunately, when this mother had been home for a few days she discovered that her baby did not respond to being held, was difficult to calm, late in showing smiling and eye contact, and was later diagnosed as brain damaged. Clearly the mother's difficulties in establishing an attachment toward her baby would not have been predicted from the warmth she initially felt for him. In fact, it almost seemed that the strength of the early feelings, given a nonresponsive child,

gravely exacerbated the difficulties in forming an enduring bond between them. Thus, when looking at attachment between parents and their high-risk infant, it becomes essential to examine the interaction between the strength of the parental attachment behaviors and attitudes and the responsiveness of the infant. As Moss and Robson suggest, "the infant who cannot respond by looking or smiling is profoundly helpless and endangered since he cannot check the inevitable disenchantment and anger in his parents by eliciting countervailing responses of love and pity" (1970, p. 982).

Hypotheses

The early studies by Caplan, Mason, and Kaplan suggest that there is a relationship between parental responses to the crisis of prematurity and later outcome, even if only in such global terms as good and bad mental health outcomes. The more recent studies described above suggest that a considerably more refined prediction of outcomes for these infants could be made by focusing specifically on the vicissitudes of parental attachment processes. However, an approach based solely on the parental side of the interaction would suffer from the same limitations as the traditional one-sided focus on the child's attachment to his mother. Particularly in this population, the variations in the physiological responsiveness of the infants and the clear differences

in parental reactions to the crisis of a premature and/or sick neonate demand that the interaction of mother and infant be assessed as well as what each party brings to the interaction.

Given this perspective, the following hypotheses can be advanced:

Hypothesis 1:

Visiting, touching, and looking at the infant are behaviors which are presumed to indicate early parental attachment. Therefore, these measures should all be positively intercorrelated.

Hypothesis 2:

Positive attitudes toward children, lower emotional distress, a better relationship with a spouse, and low life stress should facilitate parental attachment. Therefore, there should be a positive relationship between these variables and parental attachment measures.

Hypothesis 3:

It is assumed that parental attachment is at least partially elicited by the infant's visual behavior. Therefore, there should be a positive relationship between infant visual competency and parental attachment.

Hypothesis 4:

Parents who have been able to successfully attach to their infant will show less distress. Consequently, there should be a negative relationship between measures of distress and parental attachment.

CHAPTER III

METHOD

Subjects

Infants

The infants were hospitalized in the Regional Neonatal Intensive Care Unit (hereafter, NICU) at E. W. Sparrow Hospital, Lansing, Michigan. The decision to put an infant in the NICU was made by the physician at birth or immediately thereafter, most frequently because of prematurity, neonatal depression, or respiratory distress. Of the 31 infants in the study, 27 were premature, 2 were small for gestational age, and 2 were full-term infants. All infants who were judged by the staff neonatologists to have congenital defects or neurological damage were excluded from the sample. Gestational age ranged from 28 to 40 weeks, with a mean of 34 weeks (6 weeks premature). Mean birth weight was 2080 grams (4 lbs., 7 ozs.) and ranged from 985 grams (2 lbs., 2 ozs.) to 3912 grams (8 lbs., 5 ozs.). The infants in the sample received a mean of 5.3 days of ventilatory assistance with a range from 0 to 69 days. Mean age at discharge was 28 days, ranging from 4 to 88.

Parents

Eighty-seven percent of the parents were Caucasian, 77% were married or living together, and 40% were on welfare. The mean age for mothers was 23.6 years with a mean of 12 years of school. The mean age for fathers was 25.4 years with a mean of 13 years of school and a mean income of $10,000.

Procedure

All parents of medically qualified infants were approached by the experimenter after their infant was medically stabilized and nearing a discharge weight of 4 lbs. 8 ozs. The full introductory explanation given to subjects is contained in Appendix A. Some families were not approached because their infants were hospitalized only briefly or were discharged unexpectedly. Eighty percent of the families approached agreed to participate. Refusals fell into two groups: (a) parents whose infants were hospitalized so briefly that they did not come to know and trust the staff, and (b) parents whose lives were in such chaos that participation seemed impossible. Therefore, this sample under-represents both healthier babies and the highest risk families.

Feeding Observation

An observation was made through a glass window in the nursing station as the mother bottle fed her

infant in the NICU, surrounded by babies, isolettes, and staff. Breast feeding mothers were observed by a female research assistant behind a screen or in a separate room. Because the feeding environment was variable, a count was taken of the number of people present and interacted with during a feeding. These variables, as well as breast feeding, were often partialled out in the analysis of feeding behavior. Looking was defined as the percentage of time during which the mother looked at her infant and/or bottle during the first 10 minutes of a feeding. Touching was defined as the number of non-functional affectionate touches in the same period. Based on the joint observation of nine feeding, inter-rater reliabilities between the principal investigator and two research assistants were .91 and .94 for Looking and .89 and .90 for Touching.

Infant Observation

Infants were tested in the few minutes between waking and being fed, except in those few cases when an infant was characteristically in a quiet-alert state after feeding. The first two measures, Auditory Orientation and Visual Orientation, are the Animate Auditory Orientation and Animate Visual Orientation scales from the Brazelton Neonatal Assessment scale (Brazelton, 1973). The first measures the degree of head rotation in orienting to a voice and the second measures the arc in which

an infant's eyes track a face moving across his visual field (complete scales are listed in Appendix A). Osofsky and Danzer (1974) report a positive correlation between an infant's score on Animate Visual Orientation and eye contact with mother during feeding, suggesting a stability in this behavior across situations.

The second set of measures are of visual fixation, using an apparatus similar to that developed by Fantz (1967) and used by Moss and Robson in their studies of attachment (1969, 1970). This is a chamber which covers the visual field of the infant and provides a homogeneous background for the presentation of visual stimuli. The stimulus targets were presented through a slot in the rear of the chamber, 12 inches from the infant's eyes. Unlike Fantz's procedure for exploring visual preferences, stimulus targets were presented singly for a 30-second period followed by a five-second interval between presentations. The three 5"x3" stimulus targets, a face, a scrambled face, and vertical stripes, were presented three times in counterbalanced order (stimulus patterns are contained in Appendix A). Fixation was defined as the time there was superimposition of the target reflection within the area of the pupil and iris as observed through a peephole behind the target. Because of the scarcity of testable infants in the NICU, inter-rater reliability was necessarily derived from

observations of full-term infants. Based on 12 observations, interrater reliabilities were .95 and .91 between the research assistants and the principal investigator. Presentation of the stimulus targets was terminated when the infant fell asleep or began crying and did not return to a quiet-alert state with the introduction of a pacifier. An unsuccessful trial was defined as one which was terminated before the presentation of the fourth target.

Questionnaire

The questionnaire scales, briefly summarized in Tables 1 and 2, are presented in full in Appendix A.

Table 1

Parent Questionnaire Scales

Variable	Brief Description	Source
Depression	40 adjectives descriptive of depression	Multiple Affect Adjective Checklist (MAACL) by Zuckerman and Lubin (1965)
Anxiety	21 adjectives descriptive of anxiety	MAACL
Hostility	28 adjectives descriptive of hostility	MAACL
Irritability	5 items assessing anger and edginess in relationship to the infant	Irritability Scale; Schaefer and Manheimer's Post-Partum Research Inventory (1960)
Worry	5 items about sources of worry in caretaking of infant	Fear or Concern for Baby Scale; Schaefer and Manheimer (1960)
Negative Attitudes	5 items stress the negative aspects of child rearing	Negative Aspects of Childrearing Scale; Schaefer and Manheimer (1960)
Ignoring	5 items concerning the desired amount of social interaction with an infant	Ignoring Scale; Schaefer and Manheimer (1960)
Intrapunitive	5 items concerning self-blame for the infant's problems	Intrapunitive Scale; Schaefer and Manheimer (1960)
Extrapunitive	5 items of blaming others for the infant's problems	Extrapunitive Scale; Schaefer and Manheimer (1960)

Table 1--Continued

Variable	Brief Description	Source
Responsiveness	5 items assessing how quickly a parent responds to infant needs	Responsiveness to Infant's Needs Scale; Schaefer and Manheimer (1960)
Need for Reassurance	4 items concerning a parent's desire for reassurance	Need for Reassurance Scale; Schaefer and Manheimer (1960)
Fearful	5 items concerning morbid parental concerns about infant health	Items generated from Green and Solonit's Vulnerable Child Syndrome (1964)
Stress	checklist of life events from the previous three months	Social Readjustment Rating Scale; Holmes and Rahe (1967)
Marital Adjustment	14 items concerning marital agreement and satisfaction	Lock-Wallace Marital Inventory (1959); first item was unscored because of frequent non-completion
Planned Baby	a yes-no item	Designed for this study
Response to Conception	a 5-point Lickert scale assessing happiness about conceiving	Designed for this study

Table 2

Infant Medical Variables

Variable	Description
Weight	Measured at birth
Gestational Age	Estimated at birth by attending neonatologist
Apgar at 1 minute	A 5-item scale measuring heart rate, respiratory effort, muscle tone, reflex irritability, and color. High scores indicate minimal birth trauma while very low scores indicate definite trauma, including asphyxia. Attending nurses routinely record the Apgar score at birth.
Apgar at 5 minutes	The same scoring system but a stronger predictor of neurological damage.
Combined Apgar	The sum of 1 and 5 minute scores
Maximum 0_2	Maximum concentration of oxygen which was required to maintain the infant.
Respirator	The number of days the infant was maintained on a respirator or other apparatus providing ventilatory assistance.
Days in Primary Intensive Care	A measure of the duration of the most critical period of the infant's illness before being transferred to the less closely monitored room in the NICU. Transfer from primary intensive care usually coincided with the infant being able to maintain himself outside the isolette and communication to the parents that the worst of the crisis was over.
Severity of Illness	The sum of Maximum 0_2, Respirator, and Days in Primary Intensive Care
Transport	Infants whose medical condition necessitated their transfer from smaller outlying hospitals
Calling, Visiting, Feeding	Frequencies of these parental behaviors were recorded by the nursing staff. As a consequence the completeness of these records fluctuated with medical emergencies.
Total Contact	For mothers, the sum of calling, visiting, and feeding. For fathers, the sum of calling and visiting. Records of fathers feeding were not available.

CHAPTER IV

RESULTS

The hypotheses predict a relationship between variables within infants, mothers, and fathers. Of the 2740 correlations presented below, 394 (14%) are significant at $p < .05$, indicating that the results are not merely random. Given the large number of relationships, only those tables relevant to hypothesis testing will be presented with the text. All other tables can be found in Appendix B. The analysis begins with a consideration of the first set of relationships, the degree of commonality in infant, mother, and father variables.

Infant Variables

Medical History (see Table B-1)

These variables fall into three clusters: prematurity (weight and gestational age), conditions at birth (Apgar scores), and post-natal medical insults. All three clusters are significantly related to the length of hospitalization and show a generally high level of association (50% are significant at $p < .05$).

However, it is important to note the relative independence of prematurity and Apgar scores: none of these correlations reach significance in this sample of sick infants. Similarly, while prematurity is associated with postnatal insults, it is more strongly related to age at discharge, reflecting a long, noncritical growing period for some preemies. Therefore, even given a high level of association between these three clusters, there is also a degree of independence between gestational age and condition at birth which should not be overlooked.

Infant Competence (see Table B-2)

The measures of auditory and visual orientation show a nonsignificant correlation (r=.30) and are unrelated to the visual fixation measures. This may be due to method variance and/or the independence of orienting and attending processes. There is a high intercorrelation of fixations of all targets even when age differences are partialled out, indicating that the individual differences are not simply a function of different ages. The absence of significant sex differences is congruent with Fantz's (1967) report of weak and inconsistent sex differences in visual fixation at this age.

Medical History and Infant Competence (see Table B-3)

A high Apgar at 1 minute and Combined Apgar are significantly related to a longer fixation on the first

three targets. This is consistent with Lewis' (1967) report of a positive correlation between Apgar Scores and high visual fixation. A longer hospital stay was correlated with more unsuccessful trials, indicating that prematurity and multiple medical insults are associated with a more transitory quiet-alert state in these infants.

Mother Variables

There are three sets of maternal variables: feeding behaviors, contact behaviors, and personality scales.

Feeding Behaviors (see Table B-4)

Breast feeding mothers touched their infants more often than bottle feeding mothers. Looking and touching have a nonsignificant positive correlation ($r=.27$) when controlling for breast feeding and the number of people present during feeding. The low association of these behaviors suggests that while they both indicate involvement with the infant, the behaviors fulfill different functions in the interaction such as affection, curiosity, or elicitation of infant response. While these behaviors show maternal involvement, this is the first indication that the specific attachment behaviors may operate more independently than was hypothesized.

Contact Behaviors (see Table B-5)

As one might expect, the frequencies of calling, visiting, and feeding are intercorrelated. Two variables associated with a lower frequency of visiting are distance from the hospital and length of hospitalization.

Personality Variables (see Table B-6)

There was a fairly high degree of intercorrelation of the MAACL and Post-Partum Research Inventory Scales, while the Lock-Wallace Marital Inventory and Stress were unrelated to others scales. Primiparous mothers were significantly more likely to have planned their baby and been happier to learn that they had conceived. Primiparous mothers also scored lower on Hostility, Anxiety, and Fearfulness. This finding of lower distress in primiparous mothers could be explained by their infants being planned or by a higher level of denial in new parents.

Intercorrelations of Maternal Personality and Behaviors

Feeding and Contact Behaviors

The absence of any significant correlations between these variables indicates again a level of independence in attachment behaviors which was unexpected. Clearly, the results indicate that the degree of effort to make contact by calling or visiting the unit is

independent of the degree of comfort and visible involvement during a feeding.

Contact Behaviors and Personality Variables (see Table 3)

Significant associations in this matrix emerge only when controlling for age, transport, distance from the hospital, and severity of illness. Mothers who reported a high level of Stress were less likely to call the NICU. Low frequency of calling was also associated with high Hostility and Fearfulness. Presumably this is an interaction effect: hostile and fearful parents establish less contact with the unit which in turn intensifies their distress. Mothers who scored high on Responsiveness feed significantly more often. Similarly, mothers who planned their babies and were happy to learn they were pregnant visited their babies more often. Thus the decision to have a baby and happiness at conception carry over into a greater involvement with the infant following birth.

Feeding and Maternal Personality (see Table 4)

Ignoring mothers, those who desired less social interaction with their infant, did in fact Touch less often ($r=-.73$, $p \leq .01$). There were no significant correlations between Looking and personality measures.

Table 3

Correlations of Maternal Personality Variables and Contact Behaviors

Personality Variables[a]	Frequencies of Contact Behaviors			
	Calls	Visits	Feedings	Calls + Visits + Feedings
Depression	-.40	.07	-.20	-.18
Anxiety	-.37	.17	-.12	-.06
Hostility	-.42*	-.16	-.36	-.39
Fearful	-.44*	.16	-.04	-.01
Neg. Attitudes	-.30	.38	.07	.16
Ignoring	-.25	-.18	-.39	-.40
Irritable	-.38	.29	-.09	.01
Worry	-.05	.13	.00	.06
Intrapunitive	-.26	-.09	-.05	-.05
Extrapunitive	-.12	-.14	-.14	-.13
Stress	-.44*	-.16	-.09	-.15
Responsiveness	.11	.03	.42**	.29
Marital Adjustment	.20	.17	.42*	.38
Planned	.05	.45**	.04	.20
Response to Conception	.09	.55**	.33	.41

Note. Controlling for age at discharge, severity of illness, the number of people interacted with during feeding, transport, and distance between hospital and home.

[a] N = 25 for Depression, Anxiety, Hostility; N = 24 for Marital Adjustment; N = 27 for all other variables.

* $p \leq .05$

** $p \leq .01$

Table 4

Maternal Personality and Feeding Behaviors

Personality Variables	Feeding Behaviors[a]	
	Looking	Touching
Depression	.16	.08
Anxiety	-.24	-.13
Hostility	-.01	.00
Fearfulness	.25	-.01
Neg. Attitudes	-.35	.05
Ignoring	-.26	-.73**
Irritable	-.33	-.20
Worry	.15	.01
Intrapunitive	.04	.04
Extrapunitive	.16	-.42
Stress	-.41	.00
Responsiveness	.02	-.45
Marital Satisfaction	.10	.31

Note. Controlling for age at discharge, breast feeding, sex, and number of people mother interacted with during feeding.

[a] N = 20 for Touching; N = 25 for Looking, Depression, Anxiety, Hostility; N = 27 for all other variables.

** $p \leq .01$

These findings fail to confirm the hypothesized association between attachment behaviors but confirm the second hypothesis that attachment behaviors are related to personality variables.

Father Variables

Paternal variables form two groups: contact behaviors and personality scales. The intercorrelations of personality scales are very similar to those for mothers. On 7 of 14 personality scales, mothers and fathers show significant positive correlations: Depression, Anxiety, Hostility, Irritable, Extrapunitive, Stress, and Marital Adjustment. This suggests that while role differences may be operating for mothers and fathers their experiences of distress are similar.

Men whose mates were primiparous were also significantly lower in Hostility, Anxiety, Depression, and were more Irritable. Like wives, they were happier to learn of the pregnancy ($r=.76$, $p \leq .01$). Thus, while both mothers and fathers report lower distress with the first infant, it remains unclear whether this is a function of planning the baby or a higher level of denial.

As expected paternal contact behaviors were related: fathers who called often also visited frequently. Frequency of visits was also less related to distance from the hospital than for mothers.

Contact Behavior and Personality Variables (see Table 5)

As one might expect, fathers who express Ignoring and Intrapunitive attitudes visit less often and have less total contact. Yet the indices of general distress, as measured by the MAACL and Fearful, have opposite correlations for mothers and fathers. While mothers who are feeling Hostile and Anxious call less often, fathers who score high on Depression and Anxiety call more often. It may be that in families with high anxiety and distress, mothers and fathers act according to fairly traditional sex role divisions. The male is more likely to assume an instrumental role in maintaining a high degree of contact with the hospital in spite of his distress. In fact, maternal anxiety is highly correlated with the father calling the hospital ($r=.58$, $p \leq .01$), possibly because the father manages his own anxiety by acting as a buffer between the hospital and his anxious mate.

Medical History and Parental Variables

Medical History and Maternal Feeding (see Table 6)

Mothers Look significantly more at low birth weight, low gestational age infants. Thus prematurity, independent of medical problems (which showed non-significant negative correlations with Looking), is associated with more consistent maternal attention rather than disinterest and nonattachment.

Table 5

Correlations of Paternal Personality Variables and Contact Behaviors

Personality Variables[a]	Frequencies of Contact Behaviors[b]		
	Calls	Visits	Total Contact
Depression	.53*	.33	.41
Anxiety	.57*	.36	.45
Hostility	.44	.17	.26
Fearful	.45	.17	.26
Neg. Attitudes	-.12	-.29**	-.26
Ignoring	-.36	-.69**	-.66**
Irritable	.02	.08	.07
Worry	.41	-.03	.11
Intrapunitive	-.31	-.51*	-.50*
Extrapunitive	.23	-.36	-.21
Stress	.39	.31	.36
Responsiveness	-.06	-.35	-.29
Marital Adjustment	-.37	.04	-.09
Planned	-.55*	-.12	-.27
Response to Conception	-.42	-.02	-.14

Note. Controlling for age at discharge, transport, and severity of illness.

[a] N = 19 for Marital Adjustment; N = 21 for all other personality variables.

[b] N = 23 for contact variables.

* $p \leq .05$

** $p \leq .01$

Table 6

Correlations of Infant Medical Variables and Maternal Feeding Behaviors[a]

Feeding Behaviors	Infant Medical Variables								
	Apgar 1 min	Apgar 5 min	Gestational Age	Birth Weight	Respiration Days	Max O_2 Concentration	Primary Intensive Care	Severity of Illness	Sex
Time Looking	.22	.17	-.45*	-.49*	-.02	-.26	-.22	-.24	-.26
Affectionate Touching	.04	.24	-.29	-.27	.02	.32	-.20	.13	.26

Note. Controlling for age at discharge and breast feeding

[a]N = 20 for Touching; N = 25 for Looking; N = 28 for Apgar at 5 minutes; N = 29 for Apgar at 1 minute, Max O_2, Severity of Illness; N = 31 for all other variables.

*$p \leq .05$

Medical History and Maternal Contact

These variables are unrelated, except that low birth weight infants were fed less often, a consequence of the longer period before these infants were large enough to be bottle fed by mothers.

Medical History and Maternal Personality (see Table 7)

Mothers were more Ignoring and Extrapunitive of males. When controlling for age, sex, and parity, a high Apgar at 1 minute is significantly associated with high Intrapunitive, Negative Attitudes, and Worry. These correlations remain significant even when Severity of Illness has been partialled out, suggesting that maternal feelings are far more tied to the condition of the infant in the early neonatal period than the subsequent course of the illness.

Maternal variables are more strongly associated with the birth condition (sex, prematurity, and birth trauma) than to the source or duration of the illness. Other relationships are in the opposite direction than hypothesized. The fact that mothers of low birth weight infants show more visual involvement demonstrates heightened attachment. It should be noted that the staff in this NICU very actively encouraged parents to visit their infants from birth onwards, in sharp contrast to the traditional period of separation between a preemie

Table 7

Correlations of Infant Medical Variables and Maternal Personality Variables[a]

Medical Variables	Maternal Personality Variable														
	Depression	Anxiety	Hostility	Fearful	Negative Attitudes	Ignoring	Irritable	Worry	Intrapunitive	Extrapunitive	Stress	Responsive	Marital Adjustment	Planned	Response to Conception
Days on Respirator	.15	.05	.02	.34	.15	-.01	-.12	.07	-.18	.00	-.02	.06	.19	.04	.29
Maximum 0_2	.21	.19	-.22	.29	.29	-.12	.16	.08	.11	.17	.35	.23	.38	-.05	.19
Days in Primary Intensive Care	.17	.22	.17	.35	.37	.05	.39*	.37	-.10	-.10	-.31	.15	-.06	.25	.26
Severity of Illness	.25	-.32	-.15	.33	.27	-.04	.20	.10	.03	.11	.21	.23	.40	.02	.25
Apgar 1 min.	.21	.06	.05	.20	.49**	-.08	.10	.44**	.48**	.01	.08	-.01	.06	-.08	-.24
Apgar 5 min.	.05	-.13	-.05	-.14	.17	.02	.01	.11	.40**	-.03	.19	-.10	.33	.01	-.22
Gestational Age	.00	.20	.24	.22	.09	.18	.22	.07	-.21	-.18	-.14	.11	.08	.03	.18
Birth Weight	.01	.24	.26	.25	.09	.20	.23	.10	-.28	-.05	-.28	.02	-.09	.13	.25
Sex	-.01	-.03	.07	.12	.12	.50**	.34	.26	.33	.49**	.06	.05	.14	.31	-.23

Note. Controlling for infant's age at questionnaire completion

[a]N = 24 for Marital Satisfaction; N = 25 for Anxiety, Depression, and Hostility; N = 27 for all other personality variables; N = 28 for Apgar at 5 minutes; N = 29 for Apgar at 1 minute, Max 0_2, Severity of Illness; N = 31 for all other medical variables.

*$p \leq .05$

**$p \leq .01$

and his parents. The absence of clear personality correlates of Looking suggests that the increased looking may be due to the stimulus value of an extremely tiny, helpless infant whose entire appearance is sharply different from the popular image of babies.

The unexpected association between low Apgars and low maternal distress begins to suggest that mothers of sicker infants must deny their distress to such an extent that they even express less worry than is medically appropriate.

Medical History and Paternal Contact (see Table 8)

As predicted, fathers of sicker babies make more contact. Fathers call significantly more often and have more total contact with infants who scored poorly on the Apgar at 5 minutes. Fathers also called more frequently if their infants spent more time in Primary Intensive Care.

Medical History and Paternal Personality (see Table 9)

Low gestational age is significantly associated with low Depression and Anxiety. When Severity of Illness is partialled out, the essential association between prematurity and low distress remains.

In contrast to prematurity, medical trauma is associated with increased paternal distress. While only

Table 8

Correlations of Infant Medical Variables and Paternal Contact Behaviors[a]

Paternal Contact Behaviors	Infant Medical Variables									
	Apgar 1 min	Apgar 5 min	Apgar 1 + 5	Gestational Age	Birth Weight	Respiration Days	Max O_2	Days in Primary Intensive Care	Severity of Illness	Sex
Frequency of Calls	-.42	-.82***	-.66**	.11	.50*	.12	.37	.49*	.35	-.18
Frequency of Visits	-.04	-.32	-.13	.03	.16	.01	.33	.28	.29	-.21
Frequency of Calls and Visits	-.16	-.51*	-.31	.06	.28	.05	.38	.33	.33	-.22

Note. Controlling for age at discharge and transport.

[a]N = 23 for father contact variables; N = 28 for Apgar at 5 min; N = 29 for Apgar at 1 min; Max O_2, Severity of Illness; N = 31 for all other variables.

*$p \leq .05$

**$p \leq .01$

***$p \leq .001$

Table 9

Correlations of Infant Medical Variables and Paternal Personality Variables

Paternal Personality Variables[a]	Infant Medical Variables[b]								
	Apgar 1 minute	Apgar 5 minutes	Apgar 1 + 5	Gestational Age	Birth Weight	Days on Respirator	Maximum O_2	Days in Primary Intensive Care	Severity of Illness
Depression	.05	-.48*	-.22	.61**	.55*	.35	.14	.56*	.31
Anxiety	.13	-.43	-.11	.46*	.51*	.25	.09	.36	.17
Hostility	.00	-.56**	-.14	.24	.39	-.07	-.06	.25	-.17
Fearful	.22	-.18	.09	.46*	.61**	.08	-.06	.45*	-.02
Neg. Attitudes	.07	-.19	.13	.25	.27	-.12	-.10	-.16	-.30
Ignoring	.32	.19	.26	-.21	-.24	.03	-.22	-.19	-.18
Irritable	.27	-.10	.15	.30	.26	-.07	.21	-.37	-.02
Worry	-.21	-.56*	-.31	.30	.44	-.10	.09	-.09	-.14
Intrapunitive	.14	.34	.30	-.01	-.06	-.18	-.25	-.65**	-.37
Extrapunitive	.08	-.16	.16	.20	.39	-.04	-.09	-.13	-.26
Stress	.21	-.06	.30	.23	.36	-.15	-.08	.21	-.16
Responsiveness	.15	-.13	.05	.16	.11	.20	.14	.60**	.34
Marital Adjustment	.14	.60**	.23	.14	-.16	.17	.21	-.12	.29
Planned Response to Conception	.07	.31	.19	-.03	-.30	.12	-.18	.34	-.02

Note. Controlling for age at discharge and sex of infant.

[a] N = 21 for paternal personality variables.

[b] N = 19 for marital adjustment; N = 28 for Apgar at 5; N = 29 for Apgar at 1; maximum O_2; Severity of illness; N = 31 for all other medical variables.

*

**

8% of these correlations are significant, several are significant at the $p \leq .01$ level and the direction of the relationships is relatively clear. Low Apgar at 5 minutes is associated with high Worry and low Marital Satisfaction. When controlling for age, sex, and parity, Days on Respirator is correlated with Depression; Days in Primary Intensive Care is Associated with high Depression, Anxiety, Fearfulness, and Responsiveness.

For both fathers and mothers, prematurity showed positive correlates while the correlates of medical trauma were divergent: mothers of low Apgar infants were less negative and worried, while fathers were more worried, made more contact with infants, and reported more anxiety, fearfulness, and worry in response to subsequent medical difficulties. Assuming that mothers are more intensely invested in the infant perinatally than fathers, the experience of having "failed" by producing a dangerously ill infant is such an overwhelming experience that they are forced to use more denial in coping with the crisis. In contrast, fathers, acting in the instrumental role suggested earlier, may deal with their distress by making more contact with the hospital and are in a position to operate with less denial.

Infant Competence and Parental Variables

Infant Competence and Maternal Feeding (see Table 10)

When controlling bottle feeding, number of people present during the feeding, sex, and age, several important relationships emerge. Maternal Looking is associated with high infant fixation on the first three targets ($r=.74$, $p \leq .001$) and maternal Touching with high fixation on the first face ($r=.53$, $p \leq .05$) and face mean ($r=.66$, $p \leq .01$). Whatever the causal origins of these associations, they suggest that a mutually reinforcing system of interaction has already developed before the infant is discharged from the hospital. The mother who Looks and Touches more has a baby who attends longer to faces.

Infant Competence and Maternal Personality (see Table 11)

In general, low orientation and fixation are positively correlated with low maternal distress. This finding closely parallels the association between low Apgars and low maternal distress. In fact, mothers of infants who fixate poorly on faces are more Ignoring, Extrapunitive, and report less Stress. It seems likely that these mother/infant pairs are less attached: Ignoring mothers express less interest in social interaction with infants and also Touch their infants less often. Conversely,

Table 10

Infant Competence and Maternal Feeding Behaviors

Feeding Behaviors[a]	Infant Competence[b]													
	Visual Orientation	Auditory Orientation	Pictures Attended	Mean Fixation Time	Total Fixation Time	Fixation 1st 3	First Stripe	Stripe Mean	First Face	Face Mean	First Scrambled Face	Scrambled Face Mean	Unsuccessful Trials	Sex
Time Looking	-.04	-.23	-.22	-.17	-.25	.74***	-.31	-.26	.17	.09	-.15	-.08	-.32	-.31
Affectionate Touches	.19	.16	-.35	-.45	-.27	.21	.29	-.04	.53*	.66*	.07	.20	-.04	.23

Note. Controlling for age, bottle feeding, severity of illness, people present, and number of people with whom the mother interacted.

[a] N = 20 for Touching; N = 25 for Looking.

[b] N = 25 for Visual Orientation; N = 26 for Auditory Orientation; N = 30 for pictures attended and unsuccessful trials; N = 29 for all other fixation variables.

*$p \leq .05$

**$p \leq .01$

***$p \leq .001$

Table 11

Correlations of Infant Competence Measures and Maternal Personality Variables

Personality Variables[a]	Infant Competence Measures[b]												
	Visual Orientation	Auditory Orientation	Pictures Attended	Mean Fixation Time	Total Fixation Time	Fixation 1st 3	First Stripe	Stripe Mean	First Face	Face Mean	First Scrambled Face	Scrambled Face Mean	Unsuccessful Trials
Depression	.53**	.12	.05	-.11	.02	.17	.42*	.16	.03	.04	-.13	-.18	.19
Anxiety	.58**	-.02	.02	-.21	-.01	-.12	.28	.15	-.27	-.27	-.24	-.36	.17
Hostility	.21	.08	-.06	-.09	.03	-.27	.07	-.03	.13	-.00	.09	-.12	.50
Fearful	.26	.30*	-.08	.26	-.01	.31	.36**	.24	.23	.34	.16	.41*	-.03
Neg. Attitudes	.32	.45*	.22	.11	.16	.29**	.45**	.20	.30**	.22	.27**	.28	-.14
Ignoring	-.21	.17	-.14	-.01	-.06	-.45**	-.26	-.05	-.42**	-.33	-.45**	-.25	.16
Irritable	.06	.24	.12	-.01	.11	.01	.29	.02	.23	-.15	.05	.02	.21
Worry	-.21	.03	.10	.13	.15	.20	.28	.20	.08	-.07	-.18	.00	.19
Intrapunitive	-.29	.09	-.14	.16	-.04	.16	.17	.31	-.05	.19	-.21	-.03	.19
Extrapunitive	-.04	.29*	-.02	.19	.02	.05	.00	.16	-.58**	-.16	-.24	.06	-.02
Stress	.57**	.46**	.24	-.16	-.04	.19	.25	.15	-.47*	-.14	.04	-.13	-.33
Responsiveness	-.29	-.24	-.19	.18	-.01	-.09	-.22	-.01	-.14	-.05	.07	.01	.10
Marital Adjustment	.15	-.31	-.37*	-.23	-.41**	-.14	-.18	-.09	.15	.15	-.11	-.30	.03
Planned	-.64**	-.22	-.30	.24	-.18	-.02	-.28	-.09	.35	.11	.16	.13	.31
Response to Conception	.06	-.28	-.27	.45**	-.09	.02	-.06	.11	.12	.04	.35	.24	.23

Note. Controlling for age, severity of illness, and sex

[a] N = 24 for marital adjustment; N = 25 for Anxiety, Hostility, Depression.

[b] N = 25 for Visual Orientation; N = 26 for Auditory Orientation; N = 30 for Pictures Attended and Unsuccessful Trials; N = 29 for all other fixation variables.

* $p \leq .05$

** $p \leq .01$

infants who fixate poorly on the first face have mothers who Touch less often; infants who fixate less on the first three targets (two of which are faces) have mothers who look less often. The interactional process between these mothers and infants seems impaired.

In contrast to the original hypothesis, it seems incorrect to attribute low distress (e.g., Depression and Anxiety as distinct from Ignoring) to nonattachment. Rather, these data suggest that the high competent infants have more depressed, anxious, and stressed mothers precisely because the attachment has taken place. If the mother were not attached, she would express less distress because she would have less investment in her sick infant.

Infant Competence and Paternal Personality (see Table 12)

As with mothers, fathers' personality measures were tied to infant competencies, yet they show a different pattern. High fixation is associated with low Irritable and high Responsiveness scores. This suggests that high infant fixation may be an elicitor of responsiveness in fathers and an inhibitor of irritability.

In contrast, the infant who orients well to both people and sounds around him may appear to be a more active, "normal" infant. As a consequence, attachment may increase (with its concomitant anxieties) while the role demands for a highly involved, protective father may

Table 12

Correlation of Infant Competence Measures and Paternal Personality Variables

Paternal Personality Variables[a]	Infant Competence Measures[b]												
	Visual Orientation	Auditory Orientation	Pictures Attended	Mean Fixation Time	Total Fixation Time	Fixation 1st 3	First Stripe	Stripe Mean	First Face	Face Mean	1st Scrambled Face	Scrambled Face Mean	Unsuccessful Trials
Depression	.43*	-.01	.19	-.32	.03	.03	-.04	-.22	.02	-.29	.05	-.41	-.29
Anxiety	.56*	.03	.17	-.31	-.03	.03	-.05	-.23	.04	-.15	-.11	-.12	-.22
Hostility	.18	.14	.08	-.08	.02	.02	.07	-.06	.07	-.09	.11	-.12	-.31*
Fearful	.33	.39	.49*	-.30	.25	-.08	-.18	-.31	-.05	-.44	-.04	-.18	-.51*
Neg. Attitudes	.01	.23	.13	-.09	.00	.14	-.28	-.28	.00	-.06	.45	.26	-.16
Ignoring	.18	.24	-.02	-.26**	-.09	.05	-.06	-.09**	.06	.36	-.03	.12	-.09
Irritable	.51*	.44	.28	-.66**	-.21	-.09	-.41	-.70**	-.23	-.45	.09	-.34	-.01
Worry	.23	.16	.05	-.16	-.09	-.25	-.27	.26	-.39	-.39	-.13	-.07	-.24
Intrapunitive	.13	.49*	.20	.14	.09	-.14	-.18	-.02	-.57*	-.28	-.03	.09	.06
Extrapunitive	.24	.49*	.35	.22	.25	-.06	-.07	.08	-.44	-.00	-.08	.31	-.28
Stress	.11	.08	.30	-.04	.21	.01	.08	.15	-.13	-.15	.06	-.17	-.36
Responsiveness	-.68**	-.46	-.02	.63*	.50*	.22	.12	.41	.19	.27	.43	.31	.40
Marital Adjustment	.16	.24	-.35	-.17	-.45	.16	-.02	-.12	.32	.24	-.02	-.07	-.23
Planned	-.55*	.09	-.05	.41	.10	.14	-.12	.05	.50*	.04	.12	.17	.33
Response to Conception	-.38	-.02	-.37	.20	-.24	.25	-.09	.02	.43	.14	.21	.30	.37

Note. Controlling age, sex, and severity of illness

[a] N = 19 for Marital Adjustment; N = 21 all other personality variables.

[b] N = 25 for visual orientation; N = 26 for auditory orientation; N = 30 for Pictures Attended and Unsuccessful Trials; N = 29 for all other fixation variables.

* $p \leq .05$

** $p \leq .01$

decrease (with an attendent decrease in responsiveness and increase in irritability). This would explain the finding that high orienting infants have fathers who are more Anxious but also less Responsive and more Irritable.

Summary of Findings

1. Infant auditory and visual orientation were unrelated to measures of visual fixation.

2. Infants with high Apgar scores at 1 minute fixated longer on the first presentation of each target.

3. Infants who had required longer hospitalization showed a more transient quiet-alert state.

4. Maternal looking and touching during feeding were not significantly related.

5. Breast feeding mothers touched their infants more often.

6. Mothers who scored high on Ignoring touched their infants less often during feeding.

7. Mothers looked more at low birth weight infants rather than less.

8. Maternal contact behaviors were unrelated to feeding behaviors.

9. Frequency of maternal contact was negatively related to the length of hospitalization, commuting distance to the hospital, and levels of stress, hostility, and fearfulness. Mothers who planned their babies visited more often and Responsive mothers fed more often.

10. Fathers of sicker infants made more contact and showed more distress. They were more depressed, anxious, fearful, and responsive. However, fathers of infants who were more premature showed less Depression and Anxiety.

11. Mother and father pairs showed similar levels of depression, anxiety, hostility, irritability, extrapunitiveness, and marital adjustment.

12. New parents reported less distress. Primiparous mothers scored lower on hostility, anxiety, and fearfulness. Their mates also showed less depression, anxiety, and hostility.

13. Mothers of infants with high Apgar scores were more intrapunitive, worried, and had more negative attitudes toward childrearing.

14. Infant competence, specifically high fixation on pictures of faces, was related to high maternal looking and touching. Infants who fixated poorly on faces had mothers who were more Ignoring and Extrapunitive.

15. High infant fixation was associated with high paternal responsiveness and low irritability, while high orientation competence was associated with less responsiveness and more anxiety and irritability.

These findings do not confirm the hypothesized association between frequency of contact with the infant and feeding behaviors. While visiting, looking, and

touching are all attachment behaviors, they operate more independently than expected.

The second hypothesis concerning the intercorrelation of parental behaviors and personality was confirmed. Ignoring mothers fondled their infants less; fearful, hostile, stressed mothers made less contact with their infants. In contrast, fathers who reported distress made more contact with their infants.

The third hypothesis concerning the correlation between parental attachment behaviors and infant competence was confirmed: parental involvement and attachment is related to infant competence.

The fourth hypothesis was not confirmed: attached parents showed greater anxiety, worry, and general distress. Becoming attached to a sick infant clearly involved significant distress for these parents.

CHAPTER V

DISCUSSION

An underlying assumption in this and other studies has been that premature infants are at a greater risk psychologically, presumably because of perinatal trauma, social labeling, or impaired parental attachment. This study has focused on this last element: the vicissitudes of parental attachment to premature and seriously ill infants. Since this sample does not include a comparison group of normal, full-term infants, the question which can be explored is whether greater prematurity is related to more impaired attachment. This restricted focus does have the advantage of controlling the effects of social labeling, since all infants in the study had been defined to the parents as high-risk infants.

The prolonged separation between parents and infants in the neonatal period has been suggested as the factor which characteristically impedes parental attachment to premature infants. It is therefore important to note that this hospital actively encouraged parental contact in the intensive care nursery. The staff's

commitment to facilitating parental involvement was so effective that mothers visited three times as frequently as the free contact group of mothers in the Stanford study (Leifer et al., 1972). Within this supportive environment, the degree of prematurity, as distinct from the level of medical insults, seemed to be positively related to more consistent maternal visual attention. While this attention may have been motivated by a mixture of anxiety, curiosity, and fear, it does demonstrate involvement rather than the predicted disinterest and nonattachment. This unexpected finding suggests that a lower gestational age need not be a greater impediment to parental attachment. This is congruent with Parmelee and Haber's argument (1973) that prematurity, independent of perinatal trauma, need not have deleterious consequences.

The question which then arises is whether medical insults are associated with impaired attachment. In Klein and Stern's study (1971) of the high incidence of child abuse among premature infants, 75% of the preemies in their small sample had had "major neonatal problems." It seems important, therefore, to try to unravel the independent effects of medical insults. In this sample, sickness was clearly associated with greater involvement, distress, and worry for fathers. For mothers, early medical difficulties (low Apgars) were associated with

less distress, presumably because they felt the crisis even more acutely than fathers and therefore denied more. The fact that these mothers continued to express less distress even when their infants were ready to be discharged, though, raises the issue of whether this continued denial indicated less attachment. This interpretation is congruent with the clinical observation of parents of premature infants: a low level of parental anxiety before discharge is predictive of poor outcomes after discharge (Mason, 1963). Attenuated maternal attachment, therefore, seems to be a correlate of medical difficulties (presumably due to a protective withdrawal from a dangerously ill infant) rather than prematurity per se.

While there are ambiguities in interpreting the association between medical variables and parental behaviors and attitudes, the situation is even more complex when considering the molar concepts of infant competence and parental attachment. It seems relevant to reconsider both the difficulties of operationalizing these concepts and assessing them at one point in a highly turbulent period for parents and infants.

It is clear from the data that attachment behaviors were unexpectedly independent: there was only a low level of association between looking and touching and no association with the frequency of contact with the infant.

The degree of independence of these behaviors and the subtle complexity of the feeding situation was evident in the observation of a very distressed mother with her four-day-old infant. During the feeding she stared at her infant without interruption (thereby attaining the highest possible score on Looking) while her free hand slowly moved completely away from her infant's body and formed a tight fist which remained rigidly in front of her until the end of the feeding. The mother was Oriental, seriously ill herself, and seemed anxious about the feeding even before reluctantly consenting to the observation. It appeared to the observer that this mother visually fixated on her infant to avoid making eye contact with the observer rather than out of affection for her infant. In fact, her more basic feelings about her situation seemed to be acted out, perhaps unconsciously, by the clenched fist. This dyad dramatically illustrated principles which appeared to be operating in some of the other cases as well: (a) Touching and Looking can be <u>negatively</u> associated, (b) Touching seems a far less self-conscious expression of affect, (c) high Looking might simply be a method to avoid looking at the observer, expressing anxiety about the observation rather than involvement with the infant.

While much of the independence of Looking and Touching could be attributed to these factors and

instability of the feeding observation, the fact that the behaviors are more related to personality variables than each other suggests both that: (a) these individual behaviors have a somewhat different meaning for a mother and (b) these meanings are different for different mothers. This is clearly the weakest link in attempting to operationalize a concept such as attachment when it is ultimately defined as what an infant means to his parent. Yet, whatever the idiosyncratic meanings of these behaviors, it is still possible to link the presence of these individual behaviors with concepts of involvement and ultimately attachment.

There is an analagous difficulty in the operationalization of infant competence. In addition to the problem of generalizing from one assessment to broad behavior traits, this study did not directly tap the link between infant behavior and parental perception of that behavior. Specifically, some parents seem oblivious to their infant's lack of responses while others failed to notice highly accurate, stable social responses. This variability in parental perceptions raises two unanswered questions:

1. What factors influence parental perception of observable competencies; and,

2. What meanings do parents give to specific behavioral competencies?

It was clear that fathers reacted differently to infants who oriented competently than to those who attended competently, suggesting the tentative inference that the more mobile orienting responses signalled that the infant was "normal" and out of danger.

Yet beyond the difficulties inherent in researching such concepts as infant competency and parental attachment, this study clearly indicates the need for a more complex model of the attachment process with premature and seriously ill infants. While the simple hypothesis was advanced that parents who felt less distress would attach more readily, it has become evident that there are at least three distinct processes operating simultaneously during this period:

1. the temporal development of attachment in the context of medical danger and infant competence,

2. the expression or denial of distress during different phases of the perinatal period,

3. the assumption of parental roles with respect to a sick infant.

While the correlation design of this study does not allow conclusions about temporal or causal relationships, it seems appropriate to advance a process model which could have produced the data in this study. These processes, therefore, are not proven by, but are congruent with, the findings of this study.

The temporal relationship between the first two processes, the development of attachment and the expression of distress, seem particularly important in interpreting the unexpected association between high distress and high attachment. While high prenatal distress may have impeded the subsequent development of attachment (resulting in the hypothesized association between high distress and low attachment) this temporal relationship could not be examined since distress was measured only at discharge. The fact that low distress and low attachment were associated at discharge suggests an alternative temporal relationship: parents whose denial is high even at discharge have been less able to attach to their infant and consequently express less concern and distress about their infant's condition. These parents are often described by the staff as "foggy," difficult to make contact with, and oblivious to the medical difficulties of their infant. While they express positive attitudes toward their infant, the staff experiences more difficulty connecting with these parents. It seems likely that these parents have a similar difficulty connecting with their new infant. Their denial operates both on a cognitive level, so that they remain uncomprehending of medical difficulties, and on an emotional level, so that they express little anxiety or concern even when their baby is about to be discharged into their complete responsibility.

While Caplan et al. (1965) established that the parents of premature infants who expressed less distress had more difficulty with their infants after discharge, the present study demonstrates the additional link between expressed distress and infant competence: highly competent infants have parents who show more concern and distress, presumably because they are more invested in their infant. Unattached, ignoring mothers touched their infants less often and in turn had infants who fixated more poorly on faces. Similarly, infants who oriented less had parents who were less Depressed and Anxious. It seems likely that these parents are similar to the low anxious parents in the Caplan study who ultimately had more difficulty after discharge.

Perhaps the most striking difference between Caplan's findings and the present study is in the interpretation of visiting data. While Caplan found visiting frequencies to be a better outcome predictor than all other variables combined, visiting frequencies did not emerge as strong, central variables in this study. It is likely that this difference can be attributed to different hospital policies regarding parental visiting. An examination of the very low visiting frequencies reported by Caplan suggests that parents were neither allowed inside the intensive care nursery nor actively encouraged to visit. While one-third of the mothers in

Caplan's study visited the hospital fewer than two times in the last two weeks preceding discharge, no mothers in the current study visited so infrequently. The explicit hospital policy at the E. W. Sparrow NICU was to encourage parents to visit frequently, even if that required personal phone calls from the nurses or doctors. Any parents who had visited as infrequently as the bottom third of the parents in Caplan's sample would have been counseled by the medical and social service staffs to facilitate visiting. Given this general encouragement of visiting and intervention in the case of infrequent visiting, visiting frequencies are not "pure" measures in the present study. Rather, they reflect an interaction between parents and hospital staff in addition to the parent-infant relationship. Caplan's caveat, that the predictive powers of visiting frequencies " . . . might be invalidated by . . . policy changes in regard to mothers' visiting" was borne out (1965, p. 158).

Another complication in understanding the attachment process is coming to terms with the differing experiences and role expectations of mothers and fathers. The data give some indications of role complementarity during this difficult period: fathers play a more involved, active, protective role when their child is particularly sick, even to the point of calling the NICU more often in response to their wives' anxiety. This

makes the interpretation of parental attachment more difficult since, as in this example, one spouse may act for the other, leaving the incorrect and otherwise puzzling conclusion that there was no relationship between the sickness of the infant and maternal contact behaviors. If the father's role is to be particularly active when his infant is sick, the converse may be to withdraw as his infant becomes more socially responsive. This would explain the finding that high orienting infants have fathers who are anxious (because they have become attached) yet assume less responsibility for infant caretaking, in accord with the more typical paternal role relationship with a small infant.

In many ways the process of parental attachment to premature and seriously ill infants is fundamentally unique: the infant is immediately labeled as sick with the possibility of dying, parents have less contact with their infant in the neonatal period, and there is a lengthy moratorium on the parental assumption of full caregiving responsibilities. Yet within this unique context there are variables which appear to operate much the same as with healthy full-term infants. Specifically, there is a similar relationship between infant responsiveness and maternal behaviors. In a sample of healthy infants, Moss and Robson (1968) found an association between high maternal vis-a-vis and, among girls,

fixation time for social stimuli at 3 1/2 months. The present study demonstrates additional correlations between maternal looking, touching, and high infant fixation on social stimuli at an even earlier age. These relationships are evident even though these mothers had less contact with their infants. It seems, therefore, that infant competence is a component of the reciprocal social interaction which enhances parental attachment to both healthy and sick infants.

Although the data in this study were gathered at one point in time, just before the infant was discharged from the hospital, they still allow us to make some speculations about processes which change over time. The development of attachment, the phasic handling of distress and denial, and the assumption of parental roles appear as highly interwoven processes even before these infants leave the hospital. A longitudinal study, with a series of observations before and after discharge, would be necessary to unravel the development and interaction of these processes. However, even within the limits of the present data, a number of conclusions can be advanced: that prematurity is not necessarily a threat to attachment, that infant competence is related to parental attachment even in the very early neonatal period, and, finally, that less distressed parents appear to be those at greatest risk as nonattached parents.

APPENDICES

APPENDIX A

RESEARCH INSTRUMENTS

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BRAZELTON NEONATAL ASSESSMENT SCALES

A. Orientation-Animate Visual
   1. Does not focus on or follow stimulus.
   2. Stills with stimulus and brightens.
   3. Stills, focuses on stimulus when presented, brief following.
   4. Stills, focuses on stimulus, follows for 30°arc, jerky movements.
   5. Focuses and follows with eyes horizontally for at least a 30°arc. Smooth movement. Loses stimulus but finds it again.
   6. Follows for two 30°arcs, with eyes and head.
   7. Follows with eyes and head at least 60° horizontally, maybe briefly vertically, partly continuous movement, loses stimulus occasionally, head turns to follow.
   8. Follows with eyes and head 60° horizontally and 30° vertically.
   9. Repeatedly focuses on stimulus and follows with smooth, continuous head movement horizontally, vertically, and in a circle. Follows for 120° arc.

B. Orientation-Animate Auditory
   1. No reaction.
   2. Respiratory change or blink only.
   3. General quieting as well as blink and respiratory changes.
   4. Stills, brightens, no attempt to locate source.
   5. Shifting of eyes to sound, as well as stills and brightens.
   6. Alerting and shifting of eyes and head turns to source.
   7. Alerting, head turns to stimulus, and search with eyes.
   8. Alerting prolonged, head and eyes turn to stimulus repeatedly.
   9. Turning and alerting to stimulus presented on both sides on every presentation of stimulus.

All potential subjects were given the following initial explanation:

We're conducting a study of families who have babies here in the NICU. We know this is a difficult time for most parents but would like to understand better what things make this period more difficult or less difficult for you and your baby. We hope that this information will help us to be more helpful to families in the future. Participation would involve filling out a questionnaire about how you are feeling, an observation of how feedings are going for you and your baby, and my showing your baby some pictures.

If parents agreed to participate, they signed a research consent form and were given the questionnaires found on the following pages. The order of the instruments are as follows:

1. Multiple Affect Adjective Checklist
2. Post-Partum Research Inventory
3. Social Readjustment Rating Scale
4. Lock-Wallace Marital Inventory
5. Demographic Data

Participant Number_____

Date_____

PARENT QUESTIONNAIRE

In our research we are interested in finding out more about the feelings and attitudes of parents of premature infants. All answers will be confidential. Your name should not appear anywhere on the questionnaire.

On the following sheet you will find words which describe different kinds of moods and feelings. Mark an X in the boxes beside the words which describe how you generally feel. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly.

1 ☐ active
2 ☐ adventurous
3 ☐ affectionate
4 ☐ afraid
5 ☐ agitated
6 ☐ agreeable
7 ☐ aggressive
8 ☐ alive
9 ☐ alone
10 ☐ amiable
11 ☐ amused
12 ☐ angry
13 ☐ annoyed
14 ☐ awful
15 ☐ bashful
16 ☐ bitter
17 ☐ blue
18 ☐ bored
19 ☐ calm
20 ☐ cautious
21 ☐ cheerful
22 ☐ clean
23 ☐ complaining
24 ☐ contented
25 ☐ contrary
26 ☐ cool
27 ☐ cooperative
28 ☐ critical
29 ☐ cross
30 ☐ cruel
31 ☐ daring
32 ☐ desperate
33 ☐ destroyed
34 ☐ devoted
35 ☐ disagreeable
36 ☐ discontented
37 ☐ discouraged
38 ☐ disgusted
39 ☐ displeased
40 ☐ energetic
41 ☐ enraged
42 ☐ enthusiastic
43 ☐ fearful
44 ☐ fine
45 ☐ fit
46 ☐ forlorn
47 ☐ frank
48 ☐ free
49 ☐ friendly
50 ☐ frightened
51 ☐ furious
52 ☐ gay
53 ☐ gentle
54 ☐ glad
55 ☐ gloomy
56 ☐ good
57 ☐ good-natured
58 ☐ grim
59 ☐ happy
60 ☐ healthy
61 ☐ hopeless
62 ☐ hostile
63 ☐ impatient
64 ☐ incensed
65 ☐ indignant
66 ☐ inspired
67 ☐ interested
68 ☐ irritated
69 ☐ jealous
70 ☐ joyful
71 ☐ kindly
72 ☐ lonely
73 ☐ lost
74 ☐ loving
75 ☐ low
76 ☐ lucky
77 ☐ mad
78 ☐ mean
79 ☐ meek
80 ☐ merry
81 ☐ mild
82 ☐ miserable
83 ☐ nervous
84 ☐ obliging
85 ☐ offended
86 ☐ outraged
87 ☐ panicky
88 ☐ patient
89 ☐ peaceful
90 ☐ pleased
91 ☐ pleasant
92 ☐ polite
93 ☐ powerful
94 ☐ quiet
95 ☐ reckless
96 ☐ rejected
97 ☐ rough
98 ☐ sad
99 ☐ safe
100 ☐ satisfied
101 ☐ secure
102 ☐ shaky
103 ☐ shy
104 ☐ soothed
105 ☐ steady
106 ☐ stubborn
107 ☐ stormy
108 ☐ strong
109 ☐ suffering
110 ☐ sullen
111 ☐ sunk
112 ☐ sympathetic
113 ☐ tame
114 ☐ tender
115 ☐ tense
116 ☐ terrible
117 ☐ terrified
118 ☐ thoughtful
119 ☐ timid
120 ☐ tormented
121 ☐ understanding
122 ☐ unhappy
123 ☐ unsociable
124 ☐ upset
125 ☐ vexed
126 ☐ warm
127 ☐ whole
128 ☐ wild
129 ☐ willful
130 ☐ wilted
131 ☐ worrying
132 ☐ young

The next set of questions are about bringing up children. Some of the situations mentioned below may not have happened to you yet with your new baby. In that case, mark how you think you will feel when the situation comes up. Please answer all questions. There are no right or wrong answers.

1. I'm afraid I'll lose my temper with the baby.
   Often_____; Sometimes_____; Rarely_____; Never_____.

2. I worry about whether my baby is getting the right amount or right kind of food.
   Often_____; Sometimes_____; Rarely_____; Never_____.

3. I anticipated having difficulty with this baby.
   Often_____; Sometimes_____; Rarely_____; Never_____.

4. I miss my freedom since having a baby.
   Often_____; Sometimes_____; Rarely_____; Never_____.

5. When the baby cries a lot, I worry about what I'm doing wrong.
   Often_____; Sometimes_____; Rarely_____; Never_____.

6. I think that a young baby should be handled only as much as is necessary to care for him.
   Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

7. It would have been easier for me to take care of the baby if I didn't have to leave the hospital so soon.
   Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

8. Even now I'm afraid that my baby won't be normal.
   Often_____; Sometimes_____; Rarely_____; Never_____.

9. I was happy when I found out that this baby was on the way.
   Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

10. Whenever the baby has a bowel movement I change the diaper:
    Immediately_____; Within a few minutes_____; Within fifteen minutes_____; Within the hour_____; In an hour or so_____.

11. I've wished that I could have someone to tell me if I am doing a good job in caring for my baby.
    Often_____; Sometimes_____; Rarely_____; Never_____.

12. Taking care of the baby leaves me on edge and tense.
    Often_____; Sometimes_____; Rarely_____; Never_____.

13. I worry about how much clothing or how many blankets the baby should have.
    Often_____; Sometimes_____; Rarely_____; Never_____.

14. I haven't had time to rest or relax since I came home.
Strongly agree_____; Mildly agree_____; Mildly disagree_____;
Strongly disagree_____.

15. I'm sometimes still afraid that my baby won't live very long.
Often_____; Sometimes_____; Rarely_____; Never_____.

16. If I could only be more sure of myself in caring for the baby, I think the baby would be more relaxed.
Strongly agree_____; Mildly agree_____; Mildly disagree_____;
Strongly disagree_____.

17. There's no use in talking to a baby until he gets a little older.
Strongly agree_____; Mildly agree_____; Mildly disagree_____;
Strongly disagree_____.

18. I think that my family and friends could have been more helpful to me when I came home from the hospital.
Strongly agree_____; Mildly agree_____; Mildly disagree_____;
Strongly disagree_____.

19. When my baby wets his diaper I change him:
Immediately_____; Within a few minutes_____; Within a half hour_____; Within an hour_____; Whenever I get around to it_____.

20. I'd feel encouraged if people would tell me my baby looks strong and healthy.
Strongly agree_____; Mildly agree_____; Mildly disagree_____;
Strongly disagree_____.

21. I think my baby will catch up with full term babies before too long.
Strongly agree_____; Mildly agree_____; Mildly disagree_____;
Strongly disagree_____.

22. A baby's crying gets on your nerves after a while.
Strongly agree_____; Mildly agree_____; Mildly disagree_____;
Strongly disagree_____.

23. I worry that my baby is sicker than the doctors and nurses told me.
Often_____; Sometimes_____; Rarely_____; Never_____.

24. I worry that something might happen to the baby when I bathe him.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

25. We can't manage to go out since having the baby.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

26. If I had paid more attention to what I was told by doctors and nurses, I wouldn't have as many problems in caring for my baby as I do.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

27. The best way to bring up a baby is to put him on a regular feeding schedule from the beginning.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

28. I wish my husband would give me more help with the baby than he does.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

29. I'm afraid my baby will be terribly hard to care for at home.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

30. If my baby cries for something to eat, I feed him:
Immediately_____; Within five munutes_____; Within fifteen minutes_____; Only if it's time for a feeding_____.

31. I've wished a doctor would see my baby more often so he could tell me if he or she was all right.
Often_____; Sometimes_____; Rarely_____; Never_____.

32. Cleaning, diapering and caring for a baby can get a woman down.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

33. I am concerned whether the baby is growing as he should.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

34. The nurses were helpful to me in learning to take care of my baby.
Often_____; Sometimes_____; Rarely_____; Never_____.

35. I blame myself for problems the baby has.
Often_____; Sometimes_____; Rarely_____; Never_____.

36. A very young baby is not social enough to be fun.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

37. The staff at the hospital didn't take enough time to explain things to me or help me.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

38. When the baby cries at night, I get up to see what might be causing it:
Immediately_____; Within a few minutes_____; Within ten minutes_____; After more than ten minutes_____; Not at all_____.

39. I've felt that it would help if an experienced woman would tell me if my baby was all right.
Often_____; Sometimes_____; Rarely_____; Never_____.

40. I've been nervous and jumpy since having the baby.
Often_____; Sometimes_____; Rarely_____; Never_____.

41. I've worried that something was wrong with my baby.
Often_____; Sometimes_____; Rarely_____; Never_____.

42. Taking care of a young baby keeps me from doing many things I would like to do.
Often_____; Sometimes_____;Rarely_____;Never_____.

43. If I tried to learn more about caring for my baby, I wouldn't have as many problems with him.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

44. A baby gets spoiled if you pick him up when he cries.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

45. I've needed more help than I've gotten in caring for the baby and doing my housework.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

46. I feel the mother should always be close enough to her baby to hear him if he cries.
Strongly agree_____; Mildly agree_____; Mildly disagree_____; Strongly disagree_____.

SURVEY on BRINGING UP CHILDREN

Answer each of the following statements using the following scale:

1	2	3	4	5	6	7
Strongly agree	Moderately agree	Agree	Neither	Disagree	Moderately disagree	Strongly disagree

Example:

Sunday is the first day of the week. 1

Statement:	Your answer
1. Families usually understand when a mother tries to do the right things for her children.	1. _____
2. I was not criticized too much by either of my parents.	2. _____
3. I usually felt I did not deserve the punishment I got as a child.	3. _____
4. I sometimes fear that my mate is too easy on the children and is spoiling them.	4. _____
5. In order for them to grow into decent human beings, children must be punished in a firm way.	5. _____
6. I am close to other people.	6. _____
7. I never become angry with my children.	7. _____
8. My mother and I have always gotten along well.	8. _____
9. Children should know, even before the age of 2 years, what parents want them to do.	9. _____
10. No one has ever really listened to me.	10. _____
11. Sometimes it is hard for me not to feel jealous of my mate.	11. _____
12. I am always good to other people.	12. _____
13. When people try to help me with my baby, I feel awful.	13. _____
14. Whenever I have a problem, there is always someone to whom I can turn for help.	14. _____
15. I am afraid of many things.	15. _____
16. I plan to raise my children basically in the way my parents raised me.	16. _____
17. When I am pregnant I become very depressed. (or) When my mate is pregnant she becomes very depressed.	17. _____

1	2	3	4	5	6	7
Strongly agree	Moderately agree	Agree	Neither	Disagree	Moderately disagree	Strongly disagree

18. Children are rarely ready to be toilet trained at one year of age. 18. _____

19. I am always being criticized by other people. 19. _____

20. My child(ren) is (are) always good. 20. _____

21. The main thing that I remember from my childhood is the love and warm feelings my parents showed me. 21. _____

22. At least one of my parents wanted too much from me. 22. _____

23. My marriage couldn't be happier. 23. _____

24. Most children should walk well by 9 or 10 months of age. 24. _____

25. Sometimes my mate doesn't seem to want to talk to me and this really bothers me. 25. _____

26. I have never felt really loved. 26. _____

27. At least one of my children remind me of someone I don't like. 27. _____

28. When I was a child my parents used severe physical punishment on me or at least one of my siblings. 28. _____

29. Most people say parents automatically feel love for their children, but it's not that easy. 29. _____

30. It seems that when I needed her the most, my mother has been least helpful. 30. _____

31. Although my mother tries (tried) to make helpful hints to me, it ends up sounding more like criticism. 31. _____

32. Children need to be taught, before the age of 2, to respect and obey their parents. 32. _____

33. I am very well liked by everyone. 33. _____

34. At least one of my parents didn't really listen to me or understand my feelings. 34. _____

35. A good mother should be home all of the time with her children. 35. _____

36. I have often felt that my mother would (or would have) take over completely and run my life if I gave her half a chance. 36. _____

1	2	3	4	5	6	7
Strongly agree	Moderately agree	Agree	Neither	Disagree	Moderately disagree	Strongly disagree

37. It is extremely important for me to have my children behave well even when they are babies. 37. _____

38. Children under 3 years of age often play with their food. 38. _____

39. It bothers me alot when my baby grabs the spoon and food gets slopped all over while he is eating. 39. _____

40. My mate understands my problems. 40. _____

41. I am always friendly to others. 41. _____

42. Often when my baby cries, I don't know what to do about it. 42. _____

43. Sometimes I just feel like running away. 43. _____

44. It bothers me alot when anybody criticizes the way I take care of my children. 44. _____

45. I have always been very close to my mother. 45. _____

46. I go through times when I feel helpless and unable to do the things I should do. 46. _____

We also want to ask you about what else has been going on in your life in addition to dealing with a new baby.

The first set of questions are about what things have happened in your life recently, some of which are good and others not as good.

The second set of questions are about your feelings about your relationship with your mate.

Check all of the following events which have happened in your life in the last 3 months.

_____ 1. Marriage

_____ 2. Troubles with the boss

_____ 3. Detention in jail or other institution

_____ 4. Death of a spouse

_____ 5. Major changes in sleeping habits (a lot more or a lot less sleep, or change in part of day when asleep)

_____ 6. Death of a close family member

_____ 7. Major change in eating habits (eating a lot more or a lot less, or very different meal times or surroundings)

_____ 8. Foreclosure on a mortgage or loan

_____ 9. Change of personal habits (dress, manners, associations, etc.)

_____ 10. Death of a close friend

_____ 11. Minor violations of the law (such as traffic tickets, jaywalking, disturbing the peace, etc.)

_____ 12. Outstanding personal achievement

_____ 13. Major change in the health or behavior of a family member

_____ 14. Sexual difficulties

_____ 15. In-law troubles

_____ 16. Major changes in number of family get-togethers

_____ 17. Major change in financial state (a lot worse off or a lot better off than usual)

_____ 18. Gaining a new family member other than your new baby (such as through adoption or an oldster moving in)

_____ 19. Change in residence

_____ 20. Son or daughter leaving home

_____ 21. Marital separation from mate

_____ 22. Major change in church activities (a lot more or less than usual)

_____ 23. Marital reconciliation with mate

_____ 24. Being fired from work

_____ 25. Divorce

_____ 26. Changing to a different line of work

_____ 27. Major change in the number of arguments with spouse (either a lot more or a lot less than usual regarding childrearing, personal habits, money, etc.)

_____ 28. Major change in responsibilities at work (such as promotion, demotion, or transfer)

_____ 29. The woman of the house starting or stopping work outside the home

_____ 30. Major change in working hours or conditions

_____ 31. Major change in usual type and/or amount of recreation

_____ 32. Taking on mortgage greater than $10,000 (such as for purchasing a home or business)

_____ 33. Taking on a mortgage or loan less than $10,000 (such as for purchasing a car, TV, freezer, etc.)

_____ 34. Major personal injury or illness

_____ 35. Major business readjustment (such as bankruptcy, merger, or reorganization)

_____ 36. Major change in social activities (such as clubs, visiting, movies, etc.)

_____ 37. Major change in living conditions (such as building a new home, eviction, deterioration of home or neighborhood, etc.)

_____ 38. Retirement from work

_____ 39. Vacation

_____ 40. Changing to a new school

_____ 41. Beginning or ceasing formal schooling

1. Encircle the dot on the scale below which best describes the degree of happiness, everything considered, of your present marriage or relationship with your mate. The middle point, "happy," represents the degree of happiness which most people get from their relationship. The scale gradually ranges on one side to those few who are very unhappy in their relationship and on the other, to those few who experience extreme joy or felicity in their relationship.

.	.	.	.	.	.	.
Very Unhappy			Happy			Perfectly Happy

State the approximate extent of agreement between you and your mate on the following items. Please encircle the appropriate dots.

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
2. Handling family finances:	.	.	.	.	.	.
3. Matters of recreation:	.	.	.	.	.	.
4. Demonstrations of affection	.	.	.	.	.	.
5. Friends	.	.	.	.	.	.
6. Sex Relations	.	.	.	.	.	.
7. Conventionality (right, good or proper conduct)	.	.	.	.	.	.
8. Philosophy of life	.	.	.	.	.	.
9. Ways of dealing with in-laws	.	.	.	.	.	.

10. When disagreements arise, they usually result in: husband/man giving in ____, wife/woman giving in ____, agreement by mutual give and take ____.

11. Do you and your mate engage in outside interests together? All of them ____, some of them ____, very few of them ____, none of them ____?

12. In leisure time do you generally prefer: to be "on the go" ____, to stay at home ____? Does your mate generally prefer: to be "on the go" ____, to stay at home ____?

13. Do you ever wish you had not married or decided to live with your mate? Frequently ____, occasionally ____, rarely ____, never ____.

14. If you had your life to live over, do you think you would: marry or live with the same person ____, marry or live with a different person ____, not marry or live with a mate at all ____?

15. Do you confide in your mate: almost never ____, rarely ____, in most things ____, in everything ____?

APPENDIX B

ADDITIONAL TABLES

Table B-1

Correlations of Infant Medical Variables[a]

Variable	Gestational Age at Birth	Birth Weight	Apgar at 1 min	Apgar at 5 min	Days in Primary Intensive Care	Days on Respirator	Maximum O_2 Concentration	Severity of Illness	Age at Discharge	Sex
Gestational Age at Birth		.88***	.36	-.02	-.30	-.19	-.35	-.38*	-.64***	.03
Birth Weight			.19	-.33	-.23	-.16	-.26	-.30	-.58***	-.03
Apgar at 1 min				.74***	-.28	-.29	-.42*	-.44*	-.37*	-.06
Apgar at 5 min					-.24	-.09	-.29	-.18	-.09	.13
Days in Primary Intensive Care						.77**	.41*	.76***	.83***	.19
Days on Respirator							.49**	.82***	.65***	.20
Maximum O_2 Concentration								.86***	.53**	.13
Severity of Illness									.76***	.20
Age at Discharge										.07

[a] N = 28 for Apgar at 5 minutes; N = 29 for Apgar at 1 minute; maximum O_2 concentration; N = 31 for all other variables.

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

Table B-2

Correlations of Infant Competence Measures[a]

Variable	Visual Orientation	Auditory Orientation	Pictures Attended	Mean Fixation Time	Total Fixation Time	Fixation Time First Three	First Stripe	Stripe Mean	First Face	Face Mean	First Scrambled Face	Scrambled Face Mean	Unsuccessful Trials	Sex
Visual Orientation		.30	.21	-.10	.15	.08	.08	.01	-.27	.04	.27	.03	-.12	-.25
Auditory Orientation			.22	.02	.11	.08	-.07	.02	-.08	.07	.13	.33	-.31	.07
Pictures Attended				.00	.88	.53**	.37*	.05	-.20	-.21	.02	.02	-.39*	-.06
Mean Fixation					.50	.68	.46	.84	.35	.68	.42	.60	-.08	-.18
Total Fixation						.35	.48	.45	.03	.18	.22	.43	-.22	-.11
Fixation First Three							.75	.71	.77	.81**	.84	.69	-.48**	-.16
First Stripe								.71	.28	.49**	.15	.31	-.27	.10
Stripe Mean									.26	.63**	.31	.60**	-.20	-.08
First Face										.60	.52*	.37*	.09	.18
Face Mean											.52*	.70**	-.11	-.12
First Scrambled Face												.54	-.12	-.02
Scrambled Face Mean													-.15	-.09
Unsuccessful Trials														.19

Note. Controlling for age at discharge.

[a]N = 25 for visual orientation; N = 26 for auditory orientation; N = 30 for unsuccessful trials and pictures attended; N = 29 for all other variables. Only independent measures are marked for significance.

*$p \leq .05$

**$p \leq .01$

Table B-3

Correlations of Medical Variables and Infant Competence Measures[a]

Medical Variables	Infant Competence Measures												
	Visual Orientation	Auditory Orientation	Pictures Attended	Mean Fixation Time	Total Fixation Time	Fixation Time First Three	First Stripe	Stripe Mean	First Face	Face Mean	First Scrambled Face	Scrambled Face Mean	Unsuccessful Trials
Apgar 1 min	.07	.37	.35	-.16	.10	.40*	-.08	-.15	.15	-.07	.02	-.12	.07
Apgar 5 min	.04	.28	.09	-.14	-.10	.18	.05	-.12	.14	.06	-.09	-.10	.22
Combined Apgar	.04	.33	.33	-.07	.14	.40*	.20	-.02	.23	.06	.03	-.05	.12
Gestational Age	.03	.17	-.01	.08	-.07	-.10	-.11	-.03	.26	-.10	.12	.04	-.05
Birth Weight	-.05	.13	-.01	.13	.03	-.24	-.11	.04	.12	-.11	.06	.08	-.17
Days in Primary Intensive Care	-.07	-.28	.07	.12	.24	-.09	.07	.05	.38*	.07	-.02	.00	.14
Days on Respirator	.30	.01	-.06	.05	-.04	.04	-.03	.00	.16	.12	.01	.00	-.02
Max. 0_2 Concentration	.14	.08	-.07	-.07	.00	-.29	-.06	.04	-.23	.03	.11	-.16	-.38*
Severity of Illness	.06	-.12	-.09	-.08	-.04	-.29	-.09	-.02	-.01	-.04	.01	-.22	-.21
Sex	-.25	.07	-.06	-.18	-.11	-.16	.10	-.08	.18	-.12	-.02	-.09	.19

Note. Controlling for age at discharge.

[a]N = 25 for visual orientation; N = 26 for auditory orientation; N = 27 for Apgar 1 + 5; N = 28 for Apgar at 5 min; N = 29 for Apgar at 1 min, Max. 0_2, all visual fixation variables; N = 30 for unsuccessful trials and pictures attended; N = 31 for all other variables.

*$p \leq .05$

Table B-4

Correlations of Maternal Feeding Behaviors[a]

Variable	Time Looking	Affectionate Touching	Bottle Feeding	People Present	People Interacted With	Baby Age At Feeding	Sex
Time Looking		.27	-.20	-.24	-.51**	-.16	-.22
Affectionate Touches			-.57**	-.08	-.04	-.00	.34
Bottle Feeding (Bottle = 1)				.04	.21	.40*	-.19
Number of People Present					.71	.30	-.05
Number of People Interacted With						.40*	.00

[a]N = 31 for Sex; N = 28 for Bottle Feeding; N = 25 for Looking; N = 20 for Touching; N = 23 for People Present; N = 22 for People Interacted With.

*$p \leq .05$

**$p \leq .01$

Table B-5

Correlations of Maternal Contact Behaviors[a]

Variable	Frequency of Calls	Frequency of Visits	Frequency of Feedings	Total Contact	Miles	Transport	Car	Age Sib	Children	Welfare	Parents Living Together	Race
Frequency of Calls		.25	.42*	.52**	-.20	-.28	-.21	.10	.05	-.32	-.43*	-.45*
Frequency of Visits			.68***	.80***	-.38*	-.45*	.19	-.03	-.12	-.29	.14	.23
Frequency of Feeding				.94***	-.16	-.36*	-.01	-.39*	-.08	-.24	-.09	.03
Total Contact					-.24	-.45*	.06	-.29	-.01	-.26	-.05	.06

[a]N = 31 for Calls, Visits, Feeding, Total Contact.

*$p \leq .05$

**$p \leq .01$

***$p \leq .001$

Table B-6

Correlations of Maternal Personality Variables[a]

Variable	Maternal Personality Variables													
	Anxiety	Hostility	Fearful	Neg. Attitudes	Ignoring	Irritability	Worry	Stress	Responsiveness	Marital Adjustment	Planned	Response to Conception	Intrapunitive	Extrapunitive
Depression	.82***	.53**	.60***	.30	-.18	.46**	.26	.04	-.13	-.15	-.46*	-.11	.20	-.17
Anxiety		.52**	.37	.29	.07	.43*	.15	.23	-.14	-.12	-.40*	-.02	.10	.43*
Hostility			.47*	.09	.04	.37	.06	-.17	-.17	-.37	-.18	-.04	-.07	-.23
Fearfulness				.51**	.18	.51**	.44*	-.11	.02	-.17	-.14	.04	.19	.04
Neg. Attitudes					-.17	.61***	.55**	.25	.01	-.11	.13	.00	.35*	.10
Ignoring						-.05	.17	.04	.28	-.25	.18	-.21	.42*	.62***
Irritability							.50**	-.13	-.10	-.11	.24	.07	.11	-.23
Worry								-.21	.29	-.17	.15	-.11	.51**	.41*
Stress									-.24	.07	-.30	-.18	.14	.31
Responsiveness										-.06	.02	.19	.27	.16
Marital Adjustment											.20	-.01	.14	-.20
Planned												.40*	.13	.24
Response to Conception													-.37	-.11
Intrapunitive														.48*
Extrapunitive														

[a] N = 28 for all variables.

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

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