MATERNAL PERCEPTION OF THE INFANT AFTER NEONATAL SEPARATION

by

Mary Elizabeth Lott

A Thesis Submitted to the Faculty of the

COLLEGE OF NURSING

In Partial Fulfillment of the Requirements
For the Degree of

MASTER OF SCIENCE

In the Graduate College

THE UNIVERSITY OF ARIZONA

1 9 7 8

STATEMENT BY AUTHOR

This thesis has been submitted in partial fulfillment of requirements for an advanced degree at The University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgment of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Mary Elizabeth Latt

APPROVAL BY THESIS DIRECTOR

This thesis has been approved on the date shown below:

Agnes M Aamodt

AGNES M. AAMODT
Associate Professor of Nursing

July 30, 1978
Date

ACKNOWLEDGMENTS

The author would like to express her appreciation to the members of her thesis committee for their advice and assistance in the process of completing this research. The committee included Agnes M. Aamodt, chairperson; Gayle Ann Traver, and Phyllis Fitzgerald.

The support and encouragement of many people facilitated this endeavor. My parents, Kenneth and Felicia, and my grandparents, Harry and Kathryn Morse, gave their love, confidence, and encouragement continuously. And Joe, who kept me working with this project, had no doubt this thesis would some day be completed.

Gratitude is expressed to Dorothy Damewood, Dean, University of Texas School of Nursing at Galveston, Texas, and Anna Pearl Rains, Director, Department of Nursing, University of Texas Medical Branch Hospitals, Galveston, Texas.

This thesis research was supported in part by a Nurse Specialty Award from the American Lung Association.

TABLE OF CONTENTS

TABLE OF CONTENTS--Continued

LIST OF TABLES

LIST OF TABLES--Continued

ABSTRACT

This study evaluated mothers of infants, hospitalized at birth, one month after the infants' discharges from the hospital to determine the relationship between maternal-infant neonatal separation and maternal perception of the infant. The research also investigated the relationship between factors influencing bonding in three time periods, prehospitalization, hospitalization, and posthospitalization, and maternal perception of the infant.

Nineteen English-speaking, married primiparous women completed four brief questionnaires, the Neonatal Perception Inventory, consisting of two forms, the "Average Baby" and the "Your Baby;" the Degree of Bother Inventory, and the Subject Information Inventory, developed by the author. The mothers' perceptions were no different than those of mothers who had not been separated from their infants, as reported in previous studies. One trend was identified, however, negative perceptions of infants' sleeping, elimination, and predictability behaviors were weakly related to factors influencing bonding.

Recommendation is made for the development of an instrument which is sensitive to maternal perception of the infant after neonatal separation.

CHAPTER 1

INTRODUCTION

Warm, intimate, and continuous interaction between a mother and her newborn infant is considered by many students of maternal-child behavior as necessary for the future development of satisfying interpersonal relationships as well as social interaction (Harlow, 1961; Spitz, 1965; Ainsworth, 1969; and Bowlby, 1969). The affectionate relationship between a mother and her child is an attachment. This tie develops through a continuous interaction between the pair. Separation of a mother from her newborn infant due to the infant's long-term hospitalization interferes with the beginnings of the normal interactional process and thus with maternal bonding to her infant.

This study was intended to examine the relationship between long-term separation of a mother from her newborn infant and the mother's perception of her infant's behaviors. Neonatal and pediatric health care professionals, with increased knowledge of maternal-infant interaction, will be able to select among alternative methods of intervention and ameliorate the influence of this necessary separation of mothers from their newborn infants.

Statement of the Problem

What is the influence of a necessary separation of a mother and an infant on the process by which a mother develops an attachment to her infant?

Purpose of the Study

The investigation was designed to examine the relationship of necessary separation of mothers and infants, due to the infants' hospitalizations, to maternal perceptions of the infant, a facet of the maternal bonding process. The study was also designed to identify factors which may influence the bonding process in three time periods, prehospitalization, hospitalization, and posthospitalization.

Significance of the Study

As medical science and technology have progressed, infants, who in the past might not have survived the neonatal period, are surviving. Long-term hospitalization is frequently required for this recovery. The consequences of this separation of a mother from her newborn infant are not completely understood. The increased incidence, however, of non-organic failure to thrive as well as child abuse in children with preterm births or serious illness has been documented (Elmer and Gregg, 1967; Shaheen et al., 1968; Klein and Stern, 1971; and Evans, Reinhart, and Suceap, 1972). Early identification of those mother-infant pairs who are at high risk for mothering disorders or developmental delays is essential if intervention is to be preventative.

Conceptual Framework

Concepts selected for the prrsent research relating separation of a mother-infant pair and maternal perception of the infant are attachment, bonding, components of the bonding process (caregiving and mother-infant interaction), and sensitive time periods for bonding.

The immaturity of the human infant at birth is such that a long period of dependency on a care-giver is necessary for the infant's survival (Bowlby, 1969). The development of a feeling of affection and warmth for the infant by the care-giver during this time may be important for the continued well-being of the child. Attachment is the conceptual referrant for the affectional tie to a specific individual which endures through time (Ainsworth, 1969). Maternal attachment refers to the affectional tie a mother develops to the fetus and later to the infant. Bonding is the term used to describe the process during which the affectional tie of a mother to her child develops (Klaus and Kennell, 1976; and Rubin, 1977).

The process of bonding begins during the pregnancy and the attachment continues to specify after the birth of the child. If the pregnancy has been planned, bonding may begin even before conception. During the pregnancy the mother must come to terms with the fact that she is to be a mother; she must identify the fetus within her body as a part of herself (Bibring et al., 1961). As the pregnancy progresses and quickening occurs the mother must change her concept of the fetus and recognize the fetus will be a living baby and a separate individual (Bibring et al., 1961). At this time the mother also begins to fantasize about the infant's specific characteristics. After the birth of the child, the mother continues to bond with her infant. She does this by becoming acquainted with her infant, examining his body, studying his features and characteristics, and observing how he responds to her (Rubin, 1963; Kennedy, 1973; and Rubin, 1977).

Bonding of a mother to her infant continues for several months after birth, until the mother is able to say that the infant occupies a significant place in her life (Robson and Moss, 1970). The period of time following the birth the mother is particularly vulnerable as the impressions she has of her infant will influence her future parenting (Erickson, 1976). The mother's perceptions of her infant will influence the manner in which she interacts with the baby (Brazelton, 1973). The infant's behaviors and responses are influenced by her interactions with and handling of him. In turn, the infant's responses provide a form of feedback and reinforcement for the mother's perceptions of the infant (Erickson, 1976).

To tap into the feelings of a mother for her infant in the postnatal period Broussard and Hartner (1967) developed the Neonatal Perception Inventory. The tool is based upon the belief that in the American culture great emphasis is placed upon being "better than average." The mother's perception of the "average" infant is used as a basis of comparison for her perceptions of her own infant.

The postnatal formation of a maternal attachment appears to require close proximity of a mother to her newborn infant as well as an opportunity for frequent interactions in all sense modalities. In the usual situation existing with mothers and their infants--early discharge and early caregiving responsibilities--caregiving offers an opportunity for such conditions to exist at a time when the mother's perceptions of her infant are still vulnerable. The very word care, in fact, implies the existence of a positive feeling by the provider toward the recipient of the care. Throughout the caregiving process of caring for her infant

the mother is near her baby; the pair is able to interact in a variety of ways, through touch, vision, smell, sound, vastibular and kinesthetic sensations and perhaps even taste. In the case of the mother of a premature infant, however, the opportunity for caretaking is, quite frequently, delayed. Klaus and Kennell (1976) note that mothers who are separated from their infants are hesitant and more clumsy when they begin to care for their infants. Caregiving is, therefore, an important step in maternal bonding (Klaus and Kennell, 1970).

Critical periods in the development of the maternal-infant relationship in animal species have been reported by Collias (1956), Hersher, Moore, and Richmond (1958), Rosenblatt and Lehrman (1963), and Klopfer, Adams, and Klopfer (1964). These studies describe species-varying critical periods of time during which close proximity of the mother to the young animal and the opportunity to give care are essential for the development of attachment to her young. Sensitive or optimal time periods may also exist for the human species, during which the mother can optimally develop a feeling of affection for her infant. The timing of these periods is not as rigid as is the case with animal species nor is the outcome as irreversible. A separation, however, of a human mother from her newborn infant during the period of time following birth may predispose to disturbances in the maternal child relationship.

Definition of Terms

For the purpose of this study the following definitions were selected.

1. Separation. A physical separation of a mother from her newborn infant during the immediate postpartum period as a result of hospitalization of the infant. The separation has a duration of one week to two months.

2. Mother. A woman who has given birth to an infant and, after the infant's discharge from the hospital, is the primary caregiver for that infant.

3. Infant. A young child who has been hospitalized for one week to two months and at the time of data collection is five weeks to three months of age.

4. Maternal Perception. A mother's thoughts, feelings, and interpretations of her infant as measured by the Neonatal Perception Inventory.

Limitations

1. The subject population in the research project, consisting of 19 women, was small.

2. Results of this research can only be generalized to women whose infants were hospitalized at a southern university hospital and who obtain health care for their infants from the Premature Infant Clinic at the same institution.

3. Individuals may not always indicate their true feelings on questionnaires.

CHAPTER 2

REVIEW OF LITERATURE

This chapter will discuss reports which relate to the issue that was investigated in this study. The topics of discussion are attachment behaviors of parents, the infant's ability to interact with the parents, the influence on mothers' perceptions of prematurity and illness in the newborn infant, infant behaviors related to caregiving, and studies of maternal perception.

Attachment Behaviors of Parents

The existence of an attachment by one human being for another is difficult to measure. Consequently, behaviors which occur during the process of attachment must be utilized to determine whether this phenomenon exists. Rubin (1967) reports a series of behavior which the pregnant mother experiences as she changes from her previous role to that of the role of mother. Five operations appear to be occurring at this time. The mother progresses through mimicry, role play, fantasy, introjection-projection-rejection, and grief work cyclically. At an end point, the women is able to assume the identity of "mother."

Rubin (1977) also discusses the process of "binding-in."

> A conceptual model of the binding-in processes might be like the weaving of a tapestry . . . . Rather a large creative work, framed between the child and the mother's own significant social world, systematically and progressively developed for durability against time and stress to form the substance of her own identity and the fabric of her relationship with this particular child (Rubin, 1977:67).

The processes of binding-in are identification, claiming, and polarization. The mother has an intense need to identify her infant through all senses: vision, touch, smell and sound; she must collect information to replace the fantasy image of the infant during pregnancy. Claiming occurs as the mother likens various features of the infant to those of others close to the mother. A part of claiming is the reciprocal claiming of the infant by the mother's significant others. Polarization occurs as the mother physically and psychologically separates the infant from herself. This stage completes itself in about a month after the infant is born and may be observed as the mother is able to leave the infant for a period of time and reestablish herself as an individual.

The identification process has been studied in depth by Rubin (1963). The mother explores her infant's extremities first with her fingertips; with "encouragement" from the infant, she progresses to the contact with the infant's trunk with the palms of her hands. According to Rubin the full extent of this progress does not occur until the third to fifth post partum day. Klaus and associates (1970) report the same exploratory behaviors; they report, however, that progress from fingertips to palmar contact and "en face" positioning were established. Mothers of both full term and preterm infants were studied; the behavioral pattern was the same between groups but the mothers of preterm infants moved more slowly.

Robson (1967) proposes that eye to eye contact between a mother and her newborn infant is very important in the process of bonding. Interaction with another human being requires some type of response to continue.

> The human mother is subject to an extended, exceedingly trying and often unrewarding period of caring for her infant. Her neonate has a remarkably limited repetoire with which to sustain her. . . . Nature has been wise in making eye to eye contact, and the social smile that it often releases in these early months, behaviors that at this stage of development generally foster positive maternal feelings and a sense of payment for services rendered (Robson, 1967:15).

Robson and Moss (1970) describe primiparous mothers' subjective patterns and determinants of bonding to their infants. Attachment in this study was a feeling by the mother that the infant occupied an essential position in the mother's life. Components of this phenomenon are feelings of warmth, a sense of possession, devotion, protectiveness and concern for the infant's well-being. At the first real contact between the mother and her infant, 34 percent of the mothers felt neutral toward their infants, the infants were generally seen as inanimate objects, however, the mothers rapidly sought to learn their infant's individuality.

> For the first three to four weeks at home the mothers were tired and insecure. Their energies were focused on mastering tasks of infant care and on appeasing the unpredictable demands of their offspring (Robson and Moss, 1970:978).

The modal mother felt positive feelings about her infant in the third week of life. At the fourth to sixth week of life a transition began; mothers related their infants as becoming a person at this time. The seventh to ninth week the mothers felt their infants responded to them as individuals. By the end of the third month the modal mother felt strongly attached to her infant.

The father must also relate to his infant and has a behavioral repertoire in relating to his child. Greenberg and Morris (1974) have used the term "engrossment" to describe the impact of the infant on the

father. Studying groups of first-time fathers, it was found that the fathers showed evidence of strong feelings and involvement with their infants. Fathers develop a feeling of preoccupation, absorption and interest in the infant. Parke (1974) also studied reactions of fathers with their newborn children both with and without the presence of the mother. The father is more likely to hold and visually attend to the infant than the mother when the three are together. Behavioral patterns of father-infant and mother-infant interactions are very similar; the only difference is that mother is more likely to feed the infant.

Animal studies have indicated the vital importance of early contact and caretaking for the development of maternal bonding. Klaus, Kennell and their associates believe there is also a sensitive period of time during which a mother and her newborn infant are especially ready for interaction. They propose this period is in the first few days after birth. There are several reports of mother-infant pairs who were given an increased opportunity for interaction (Barnett et al., 1970; Leifer et al., 1972; Klaus et al., 1972; and Kennell et al., 1974). In a study of 28 primiparous mothers of full term infants, extended contact (16 hours over three days) was allowed for one group while the control group were allowed contact with their infants only according to the hospital's routine. One month after manipulation of the independent variable the mothers in the experimental group scored higher on measurements of attachment behaviors: response to crying, response to brief separation from infant, "en face" positioning and fondling. The authors concluded that for the human mother there may be a sensitive period for interaction in the early post partum period. This group of subjects was

assessed again one year after the infant's birth. The difference between groups was still evident at one year.

Barnett and associates (1970) and Leifer et al. (1972) studied the impact of added opportunity for interaction between mothers and their preterm infants. Although no differences in attachment behaviors were observed between the separated group and the extra contact group at one year after the infant's birth, two of the mothers from the separated group had relinquished their infants and five of the marriages in this group had dissolved. The authors concluded that "early separation of mother and infant may seriously disrupt normal maternal behavior" (Leifer et al., 1972:1214).

The Infant's Ability to Interact with the Parents

The infant is born with behavioral abilities which ensure that human contact will be maintained. The newborn infant is able to interact in several sense modalities. The neonate is able to see at birth. He can fixate upon an object and follow it for a short time, has the ability to focus on objects eight to nine inches from his eyes and demonstrates preferences for certain patterns (Fantz, 1966). The infant also responds to sound, especially the high pitched sounds of the human female voice (Wolff, 1963). The human infant demonstrates the concept of entrainment; his bodily movements are coordinated with the structure of adult human speech (Condon and Sander, 1974).

The neonate is able to discriminate sensory input and ot selectively respond to those stimuli, that is, give feedback to encourage their continuance. Rheingold (1961) has studied the human infant's

abilities to attend to certain stimuli. The infant responds by a decrease in heart rate, respiratory rate and motor activity. The most attending producing stimulus is the moving human face. The human face is attended for activity longer than any other stimulus (Rheingold, 1961; and Kagen and Lewis, 1965).

Infant state is a concept which has significance when studying infant-maternal interaction. Six separate infant states of arousal or consciousness have been identified (Wolff, 1959; and Rosenthal, 1973). These states range from screaming to deep sleep. An important state for mother-infant interaction is the quiet, alert state. The infant is especially able to interact with the environment in this state. Maternal attentiveness and caregiving can activate the quiet alert state, when an infant is stressed or crying (Rubinstein, 1967; and Korner and Thorman, 1970).

Also significant for the study of infant maternal interaction is the concept of individual differences in infant temperament, differences which exist from birth (Thomas et al., 1963; Korner, 1971; and Carey, 1970). An infant's behavioral style influences how others, especially the mother will react to him. The mother, in caring for her infant, responds to his temperament.

Influence on Mothers of Prematurity and Illness in the Newborn Infant

The influences of prematurity and/or illness of the newborn on the mother's feelings about herself and her infant have been studied. Anxiety and guilt are feelings mothers of premature infants have expressed (Praugh, 1953). Mothers of premature infants are often forced

to take a peripheral position in caring for their infants. Kaplan and Mason (1960) and Caplan (1960) have described the birth of a preterm infant as a crisis with which the mother must cope before beginning the attachment process. The mother of an infant born prematurely must pass through several stages: grieving for the loss of her fantasy infant, acknowledging her failure to produce a normal infant, resuming the process of relating to her infant by showing hope and anticipation, and, finally, understanding the differences between a preterm infant and a full-term infant, as well as the infant's special needs for growth and care (Kaplan and Mason, 1960).

The preterm infant is small and emaciated; his responses to the environment differ from those of the full term infant. The differences may negatively influence the mother (Johnson and Grubbs, 1975). Powell's study (1974) demonstrated that mothers who were allowed to provide extra stimulation for their infants did not have a change in mothering behavior once the infant was at home.

Infant Behaviors Related to Caregiving

Certain behaviors of the infant are germaine to the caretaking process: eating, sleeping, elimination, crying, vomiting or spitting up, and settling down to a predictable pattern of eating and sleeping. Several studies of these behaviors have been reported (Wolff, 1959; Brazelton, 1962; Parmalee, 1964; and Bell and Ainsworth, 1972). Craig (1970) has described the patterns of feeding, elimination and sleep-wakefulness of the newborn infant. Patterns of feeding are related to whether the infant is breast or bottle fed and to the parity of the

mother. Elimination patterns are related to the amount and frequency of feedings although differences exist between breast and bottle fed infants. Sleep and wakefulness patterns are in part determined by the mother's habits but settle to a predictable pattern within a few days of life. Fussing or crying occurs about 20 to 25 percent of the waking time. Parmalee and his associates have studied the sleep states of both full term and preterm infants. Preterm infants were found to have a single state of sleep which resembled adult REM sleep (Parmalee et al., 1967). This state gradually differentiated into quiet and active sleep as the infant developed.

Studies of Maternal Perception of Infants

Broussard and Hartner (1967) studied mothers' written perceptions of their infants using the Neonatal Perception Inventory (NPI). The NPI was developed on the assumption that being better than average is an American cultural value. The NPI consists of two forms, the "Average Baby" form and the "Your Baby" form. A mother's perception of the average infant is used as a basis of comparison for the perception of her own infant. Using the NPI at two times, 316 primiparous women were studied. At Time I, within 48 hours after delivery, 46.5 percent of the mothers rated their infants as being better than average. One month later, Time II, 61.2 percent rated their infants as being better than average. Broussard and Hartner state:

> . . . the processes for successful mother-child interaction have been set in motion by the time the infant is one month old. . . . The establishment of a maternal perception that is predictive seems to come about after the mother has had a real, albeit short, experience in living with her infant (Broussard and Hartner, 1967:440).

The Degree of Bother Inventory (Broussard and Hartner, 1967) was designed to rate the extent to which an infant's behaviors bother the mother. This measurement is taken at Time II; mothers' negative perceptions at this time are correlated with mothers' stated problems in behaviors.

In a follow-up study by Broussard and Hartner (1970), children who at one month of age were rated by their mothers as not being better than average were, at four and one-half years of age, rated as having more psychopathology evident than those children whose mothers rated them as being better than average. Broussard and Hartner (1970) conclude that infants who are not rated as better than average at one month of age are at high risk for future emotional problems.

This literature review has provided insight in areas of mother-infant behavior and interaction. The impact of separation of the mother-infant pair were alluded to in other studies. These reports support the need for the research question of this investigation, what is the impact of separation on mothers' perceptions of their infants?

CHAPTER 3

RESEARCH DESIGN

The purpose of the study was to evaluate the relationship of the separation of a mother and her newborn infant to the mother's perception of her infant. A determination of the relationship between factors which may influence the bonding process and maternal perception of the infant was also made. These factors have impact during three time periods, prehospitalization, hospitalization, and posthospitalization. The research design of this exploratory survey provided for one interview with the subject. The subject completed four brief questionnaires at the time of the interview. The time of the data collection was one month after the subject's infant had been discharged from the hospital. This chapter will present the selection of the sample, protection of human rights, the tools for data collection, the data collection, and the method of data analysis for the thesis research.

Population and Sample

The population for the study consisted of mothers whose infants receive health care at a premature infant outpatient clinic in a southern university hospital. A simple random sample of 30 mothers meeting sample selection criteria was obtained. The criteria for sample selection are described below:

1. The infant of the mother had been hospitalized for one week to two months immediately after birth.

2. The infant was the mother's first-born child.
3. The mother was married.
4. The mother was able to speak, and read English.
5. The mother was the primary caretaker of the infant after discharge from the hospital.
6. The mother lived within 150 miles of the investigator's home.

The 30 mothers identified were requested to participate in the study by reading the Subject Consent Form. Of these, 20 agreed to sign the Subject Consent Form. One subject was not included in the data collection as she could not be located for the questionnaire administration. The final sample subjected to analysis consisted of 19 mothers.

Protection of Rights of Human Subjects

Permission to conduct the study was obtained from The University of Texas Medical Branch Office of Sponsored Research (see Appendix A). Verbal permission to utilize the outpatient clinic to collect the data was obtained from the Director of the Division of Perinatology. In addition, each mother who agreed to participate in the study was asked to sign an approved consent form (see Appendix A) prior to the administration of the questionnaires (see Appendix B). All mothers of infants were informed of the purpose of the study, the process of the data collection, and that their participation or refusal would in no way influence the health care received by their child. Individual anonymity and confidentiality of replies were assured.

Research Tools

Four questionnaires were utilized in obtaining the data for the study (see Appendix B). The Neonatal Perception Inventory, consisting of two questionnaires; the Degree of Bother Inventory, and the Subject Information Inventory were the data collection tools. The Broussard and Hartner Neonatal Perception Inventory and the Broussard and Hartner Degree of Bother Inventory were used with permission of the authors.

The Neonatal Perception Inventory (NPI) (see Appendix B) is made up of two forms, each consisting of six single answer scales. The "Average Baby" form elicits a mother's perceptions of the average infant's selected behaviors: crying, feeding, vomiting, or spitting up, sleeping, elimination, and predictability of sleeping and eating patterns. The "Your Baby" form seeks the mother's perception of her own infant's same selected behaviors. The subjects were requested to rate the amount or difficulty of each behavior for the infant (average or her own). A Likert Scale was used in these ratings: a great deal, a good bit, moderate amount, very little, and none. Both forms of the NPI have shown construct and criterion validity (Broussard and Hartner, 1967).

The Degree of Bother Inventory (see Appendix B) assesses the extent to which a mother is bothered by a particular behavior as exhibited by her own infant. Six single answer Likert scales were used to collect this data: a great deal, somewhat, very little, and none. The Degree of Bother Inventory has high face validity (Broussard and Hartner, 1967).

The Subject Information Inventory was developed by the researcher to obtain additional data from the subjects. This tool was not tested for validity or reliability, however, the content and construction of

the tool was assessed by three experts in maternal child nursing. The reliability of the tool was assessed by requesting a mother meeting the sample selection criteria to complete the tool twice with an interval of two weeks between each measurement. This mother was not included among the sample.

The Subject Information Inventory (see Appendix B) was designed to elicit data from mothers that may influence the bonding process. The rationale for each item of the tool was based upon literature review or the author's clinical experience. A woman's response to the idea of her pregnancy is the beginning of her bonding to an infant. How she feels about the pregnancy will be influenced by many factors. Maternal age and education were chosen as factors which would provide insight into the mother's background and previous experience. An older woman and a woman with relatively more education would be expected to have greater developmental maturity. This woman would more easily take on the maternal role and bond with an infant. Planning a pregnancy was believed to be indicative of a desire for a child and to be a mother; thus, bonding to an infant would be facilitated if the pregnancy was intended.

Factors identified which influence maternal bonding during a newborn infant's hospitalization were preterm delivery, seeing the baby just after birth, the length of the hospitalization, the frequency of the mother's visits to the infant during the hospitalization and the fear that the infant might die during the hospitalization. A premature delivery would be interpreted as a failure by the mother; she would need to come to acceptance of her grief before being able to bond with her infant. Seeing the infant just after birth may initiate the

identification process. The time just after birth has been postulated as a sensitive period for the initiation of human interaction. The length of the hospitalization and the frequency of visits by the mother both provide insight into the length of separation and the opportunities the mother had for interaction with her infant. It is difficult to form an attachment to a person while grieving the loss of a significant other. The existence of a mother's fear that her infant might due during the hospitalization may indicate the presence of anticipatory grieving. This grieving may impair the formation of an attachment.

After hospitalization, as a mother cares for her infant, other factors will influence the bonding process. The mother's previous experience caring for young infants will influence her reaction to her own infant. Previous experience may serve to orient the mother to reality or may distort reality. The person giving the mother advice about child care may also influence how the mother will respond toward her infant. Wanting the infant to be better than average will also influence a mother's perception of and response to her infant.

Data Collection

The "Average Baby" and "Your Baby" forms of the Neonatal Perception Inventory (NPI), the Degree of Bother Inventory (DBI), and the Subject Information Inventory were administered to the subjects approximately one month after their infants had been discharged from the hospital. Data collection took place in the subjects' homes. Subjects were identified in an outpatient clinic for premature infants. A chart review of the clients appointed to attend the clinic each week was made to identify infants whose mothers might meet sample selection criteria.

Using a simple random sampling technique, those mothers meeting some sample criteria and attending the clinic were requested to participate in the study. Each mother was approached by the researcher who briefly explained the purpose of the study and requested her participation. If the mother agreed, the researcher ascertained whether other criteria were met by the mother, for example, the potential subject's marital status and her ability to speak and read English and if she were the infant's primary caregiver. If all sample selection criteria were met the woman was asked to read and sign the Subject Consent Form as agreement to participate in the study (see Appendix A). A convenient day and time for the data collection to occur were agreed upon by the subject and the researcher.

Data collection took place within two days of the mother's infant having been home for one month. One to two days prior to the scheduled visit, the researcher contacted the subject by telephone to reconfirm the day and time of the visit.

The sequence and protocol of administration of the Neonatal Perception Inventory (NPI) and the Degree of Bother followed that of Broussard and Hartner (1967) at the one month assessment. Instructions for the inventories were briefly described by the researcher when given to the mother. The mother was first given the "Average Baby" form of the NPI to read and check her responses; she was then given the "Your Baby" form of the NPI. The Degree of Bother Inventory was administered next. The Subject Information Inventory was the last tool to be administered. The maximum time needed for subjects to complete the data collection tools was 30 minutes. The investigator had planned that if

questions about general or specific child care were asked, answering would be deferred until data collection had been completed. None of the mothers sampled asked questions that related to infant or child care.

Analysis of Data

Scoring of the Neonatal Perception Inventory and the Degree of Bother Inventory was according to the method used by Broussard and Hartner (1967). Each form of the Neonatal Perception Inventory has six single-item Likert scales which can be answered none, very little, moderate amount, a good bit, or a great deal. An answer of "none" was valued as one point; and answer of "a great deal" was valued as five points. The score of each form of the Neonatal Perception Inventory is the sum of points allotted to each of the six scales; no attempt is made to weight any of the scales. The Neonatal Perception Score is determined by subtracting the score of the "Your Baby" form from the score of the "Average Baby" form. A positive Neonatal Perception Score indicates the mother had a positive perception of her infant, whereas, a zero or negative Neonatal Perception score indicates the mother did not perceive her infant as being better than average. Infants whose mothers do not have positive Neonatal Perception score are identified to be at high risk for the development of emotional difficulties.

The single-item answer scales of the Degree of Bother Inventory were scored similarly to the Neonatal Perception Inventory. The Degree of Bother Inventory has six single-item Likert scales which can be answered none, very little, somewhat, and a great deal. An answer of "none" was valued as one; an answer of "a great deal" was valued at

four. The total score of the Degree of Bother Inventory was determined by adding the scores on each of the six scales.

Data were analyzed by determining the association between the scores of the two forms of the Neonatal Perception Inventory, as well as between the scores of the "Your Baby" form of the NPI and the scores of the Degree of Bother Inventory. A test of association was also performed to determine the degree of relationship between the scores of both forms of the NPI of subjects who had positive Neonatal Perception scores as well as those with negative Neonatal Perception scores.

To determine the relationship of those factors elicited by the Subject Information Inventory on maternal perception, a dichotomy of the subject responses to each item was formed. In items with a possible response of "yes" or "no" the division was formed accordingly. In items with variable responses the division was made arbitrarily, placing approximately half of the total sample in each group (for example, mother's age: less than 20 years and 20 years and above). Using modal scores of both forms of the NPI, comparisons were made between subclasses of the dichotomies. A higher modal score for the "Your Baby" form on any item was considered to be a negative maternal perception.

The relation of each factor influencing bonding to mothers' perceptions of their infants' selected behaviors, as measured by the NPI, was also determined. The same dichotomies used in evaluating maternal perception of the infant were used in the comparison of the selected infant behaviors to those factors influencing bonding. Modal scores for both forms of the NPI for each selected infant behavior of each subclass of the dichotomies were compared. A higher modal score for

the "Your Baby" form on any item of the Subject Information Inventory was considered to be a negative maternal perception.

This chapter has described the methodology of the study to assess the impact of separation of mother-infant pairs during the immediate postpartum period on maternal perception of an infant. Discussions of research design, sample selection, the protection of rights of human subjects, data collection tools, data collection, and analysis of data were made.

CHAPTER 4

PRESENTATION OF FINDINGS

The findings and analysis of data collected by four questionnaires from mothers who had experienced long-term separation from their newborn infants are presented in this chapter. The findings related to the mothers' perceptions of their infants are described first. The factors influencing bonding and their relationship to maternal perception were analyzed according to three time periods in maternal experience: prehospitalization, hospitalization, and posthospitalization. The final section of this chapter will be an analysis of the relationship of the bonding factors to the subjects' perceptions of selected infant behaviors according to the tool of Broussard and Hartner (1967).

Mothers' Perceptions of their Infants

The sample consisted of 19 married English-speaking primaparous women who had been separated from their infants from birth due to the infant's hospitalization. At the time of data collection the infants of the subjects had been home for one month; the mothers had been the primary care provider during that month. Table 1 presents the analysis of the subjects' perceptions of their infants.

A mother's Neonatal Perception score is the differential score of the "Average Baby" form and the "Your Baby" form scores. A positive

Table 1. Numbers of mothers with positive and negative perception of their infants

	Number	Percent
Positive	13	68
Negative	6	32

value for the Neonatal Perception score indicates the mother perceives her infant as being better than average; whereas, a negative value for the Neonatal Perception score indicates the mother does not perceive her infant as being better than average. Thirteen (68%) of the 19 subjects had positive Neonatal Perception scores. Six (32%) of the mothers had negative Neonatal Perception scores. The Spearman Rank Order Correlation Coefficient (Roscoe, 1969) was used to test the strength of the relationship between the scores of the "Average Baby" form and the "Your Baby" form of those mothers with both positive and negative perceptions of their infants; this was done to determine if the mother's perception of the average infant was influencing her perception of her own infant. A correlation factor of 0.57, a moderately high relationship, was found for mothers with positive perceptions of their infants. A correlation factor of 0.26, a slight relationship, was found for mothers with negative perceptions of their infants (see Figure 1). The correlation of "Average Baby" form and "Your Baby" form scores for the entire sample was 0.003, indicating no relationship. The correlation factor between scores of the "Your Baby" form of the NPI and the Degree of Bother Inventory scores was found to be moderately positive, 0.53.

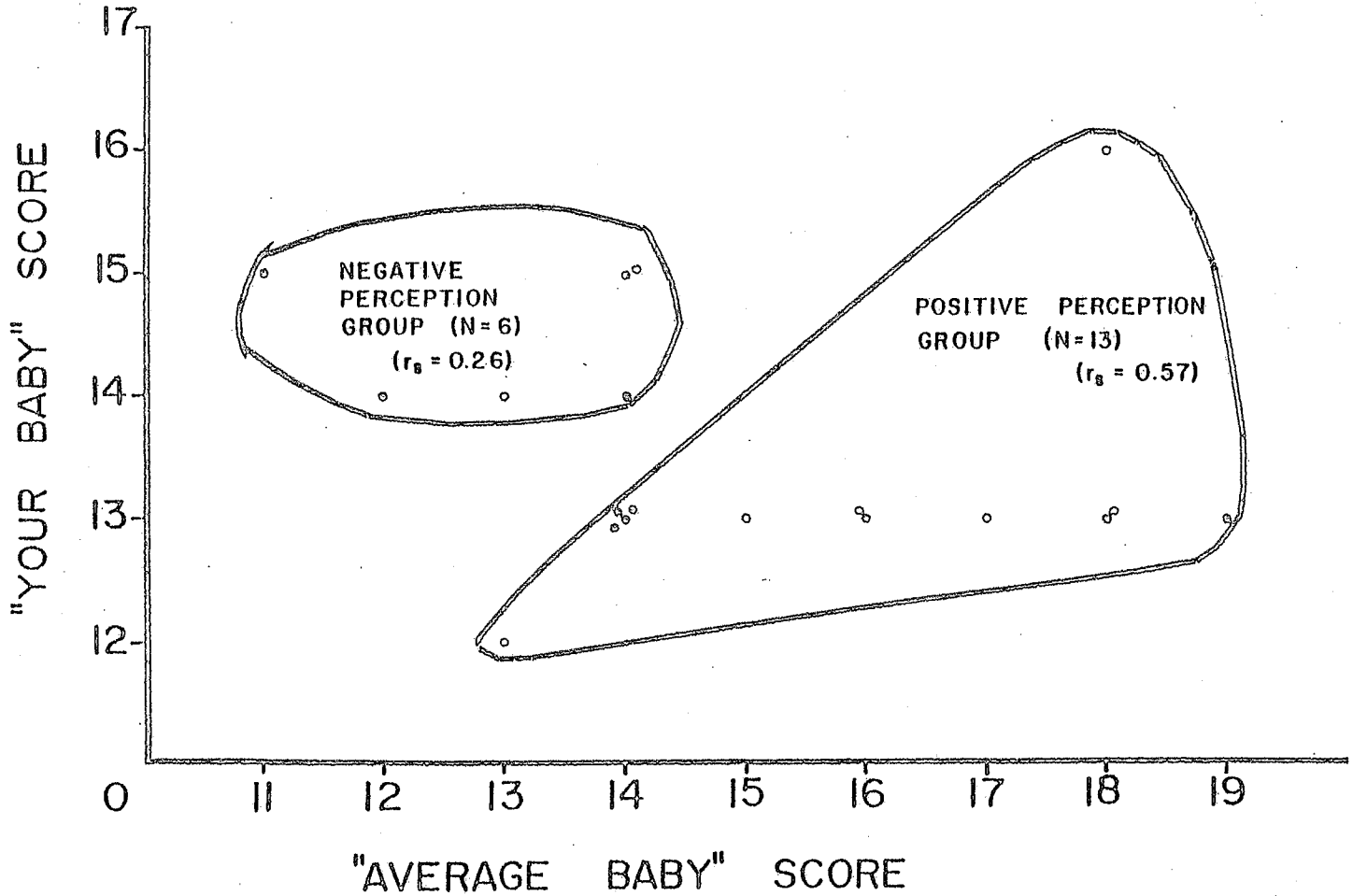

Figure 1. Correlation of scores of the "Average Baby" form and the "Your Baby" form of the Neonatal Perception Inventory of mothers with positive and negative perceptions of their infants

Analysis of Factors Influencing Bonding

The Subject Information Inventory was developed to collect data which may have an influence on the maternal bonding process. During the time before birth (prehospitalization) many things influence the developing bond a mother forms to the fetus; age, education, and planning the pregnancy were factors this study chose to evaluate. Table 2 presents the data of maternal age, years of education and whether the pregnancy was planned for each subject of the investigation. The range of ages for the subjects was from 16 to 30 years with a mean age of 19.5 years. The range of years of education was from eight years to 14 years; the mean number of years of education was 11.95 years. Six (32%) mothers stated their pregnancies had been planned.

There are also many influences on the maternal bonding process after the infant's birth. This study chose to investigate factors related to the hospitalization of the infant. These factors were preterm delivery, the mother seeing the infant just after birth, the length of the infant's hospitalization, the frequency of visits by the mother to the infant during the hospitalization, and fear that the infant might die while hospitalized. Table 3 presents the data related to these factors. Fourteen (74%) of the mothers stated their infant had been born prematurely. Only six (32%) of the mothers saw their infants just after birth. Five (26%) mothers' infants were hospitalized for one week while four (21%) were hospitalized for one month. Four (21%) mothers were able to visit their infants every other day; six visited once a week. Four (21%) said they had been afraid their infant would due during hospitalization.

Table 2. Factors influencing bonding during the pre-hospitalization period: mothers' age, education and plan for pregnancy

Subject	Mother's Age	Years of Education	Planned Pregnancy
1	30	12	No
2	25	14	Yes
3	21	10	Yes
4	19	11	No
5	16	9	No
6	19	12	No
7	18	11	No
8	20	12	No
9	17	11	No
10	16	8	Yes
11	19	13	Yes
12	21	12	Yes
13	17	10	No
14	18	12	No
15	21	13	Yes
16	20	12	No
17	16	10	No
18	18	11	No
19	20	12	Yes

Table 3. Factors influencing bonding during hospitalization period: preterm delivery, seeing infant just after birth, length of hospitalization, frequency of mother's visits during hospitalization and fear infant would die

Subject	Preterm Delivery	Infant Seen Just After Birth	Length of Hospitalization	Frequency of Mother's Visits	Fear That Infant Would Die
1	Yes	No	1 month	Once a month	No
2	Yes	No	3 weeks	Every other day	No
3	Yes	No	2 weeks	Every other day	Yes
4	Yes	No	1 month	Every 2 weeks	No
5	Yes	No	1 month	Every 2 weeks	No
6	No	No	1 week	Once a week	No
7	Yes	No	1 week	Once a week	No
8	Yes	No	1 week	Every day	No
9	Yes	No	3 weeks	Every 2 weeks	No
10	Yes	No	10 days	Every day	No
11	Yes	Yes	2 months	Every 2 weeks	Yes
12	Yes	No	2 weeks	Every other day	No
13	Yes	Yes	1 month	Every 2 weeks	No
14	Yes	No	10 days	Every other day	No
15	No	Yes	1 week	Once a week	No
16	No	Yes	1 week	Once a week	No
17	Yes	No	3 weeks	Once a week	Yes
18	Yes	No	1-1/2 months	Once a month	Yes
19	No	Yes	2 weeks	Once a week	No

Three factors were identified for study which related to the mother's experience while caring for her infant at home after discharge from the hospital (posthospitalization period). These factors were a desire for her infant to be better than average, the person who gives the mother advice about child care and the mother's past experience caring for young infants (see Table 4). Four mothers (21%) said they wanted their infants to be better than average. Eleven mothers said that their mother or mother-in-law gave them advice about child care. Ten of the mothers (53%) stated they had very little experience caring for young infants.

Relationship of Factors Influencing Bonding to Maternal Perception

This research project sought to elucidate any relationship between the factors identified for study which influence bonding and mothers' perceptions of their infants. Consequently, a comparison of modal scores of the two forms of the Neonatal Perception Inventory (NPI) were compared to each portion of the dichotomy of the bonding factors. Table 5 presents data relating those bonding factors during pregnancy to NPI scores. In no instance was the "Your Baby" form score higher than the "Average Baby" form score. This indicated that none of these factors were related to a mother's negative perception of her infant.

Table 6 presents data comparing the relationship of factors which influence bonding to the infant during hospitalization with mothers' scores on the two forms of the NPI. No factor appeared to be related to a negative maternal perception of her infant.

Table 4. Factors influencing bonding during posthospitalization period: person giving advice about child care, past experience caring for young infants and desire for infant to be better than average

Subject	Person Giving Advice	Previous Experience with Young Infant	Desire for Infant to be Better than Average
1	No one	Moderate amount	No
2	Mother or Mother-in-law	None	Yes
3	Friend	Moderate amount	No
4	Friend	Moderate amount	No
5	Mother or Mother-in-law	Very little	No
6	Mother or Mother-in-law	None	No
7	Mother or Mother-in-law	A good bit	No
8	Friend	Very little	Yes
9	Mother or Mother-in-law	Very little	No
10	Grandmother	Moderate amount	No
11	Godmother	Moderate amount	Yes
12	Friend	Very little	Yes
13	Mother or Mother-in-law	Moderate amount	No
14	Mother or Mother-in-law	Very little	No
15	Mother or Mother-in-law	Very little	No
16	Mother or Mother-in-law	Very little	Yes
17	Mother or Mother-in-law	Very little	No
18	Friend	Very little	No
19	Mother or Mother-in-law	Very little	No

Table 5. Relationship of factors influencing maternal bonding during prehospitalization period, age, education, and planned pregnancy, to Neonatal Perception Inventory scores

Factor (number)	Average Baby		Your Baby	
	Modal Score	Percent	Modal Score	Percent
Mother's Age				
Under 20 years (11)	14	36	13	55
20 years and older (8)	14	38	13	50
Mother's Education				
Fewer than 12 years (9)	14	22	13	67
12 years or more (10)	14	50	13	40
Planned Pregnancy				
Yes (7)	18	29	13	44
No (12)	14	50	13	50

Table 6. Relationship of factors influencing bonding during hospitalization, preterm delivery, seeing infant just after birth, length of hospitalization, frequency of visits by mother during hospitalization and fear infant would die, to Neonatal Perception Inventory scores

	Average Baby		Your Baby	
	Modal Score	Percent	Modal Score	Percent
Preterm delivery				
Yes (14)	14	60	13	80
No (5)	14	29	13	43
Infant seen by mother just after birth				
Yes (6)	14	50	13	67
No (13)	14	31	13	38
Length of hospitalization				
Two weeks or less (10)	14	40	13	50
Longer than two weeks (9)	14	33	13	56
Frequency of visits by mother during hospitalization				
At least once a week (12)	14	33	13	50
Less often than once a week(7)	14	43	13	57
Fear infant would die during hospitalization				
Yes (4)	No modal score		No modal score	
No (15)	14	40	13	60

No factor having influence during the mother's caregiving experience, the posthospitalization period, was found to be related to negative perception (see Table 7). According to the data collected by the tools of this study and as analyzed, no relationship was found between maternal perception of the infant according to the total score of the Neonatal Perception Inventory (Broussard and Hartner, 1967) and the factors influencing bonding of this investigation.

Table 7. Relationship of factors influencing maternal bonding during the posthospitalization period, desire for infant to be better than average, person giving advice about caregiving, and past experience with caring for young infants, to Neonatal Perception Inventory scores

	Average Baby		Your Baby	
	Modal Score	Percent	Modal Score	Percent
Desire for infant to be better than average			16	40
Yes (5)	17	40	13	40
No (14)	14	43	13	57
Advice about child care	14	38	13	62
Mother-figure (13)	18*	33	16**	33
Other (6)	14	33	15	33
			13	33
Experience caring for young infants				
Very little or less (7)	14	29	13	57
Moderate amount or more (12)	14	33	13	50

* Bimodal distribution
**Trimodal distribution

Relationship of Factors Influencing Bonding to Maternal Perception of Selected Infant Behaviors

A final analysis of data was made to determine the relationship of bonding factors identified by this study to individual infant behaviors. Three time periods were utilized to categorize the factors influencing bonding: prehospitalization, hospitalization, and posthospitalization. Responses to items of the Subject Information Inventory for the purpose of comparison. The six behaviors were those utilized by Broussard and Hartner (1967) in the Neonatal Perception Inventory: crying, feeding, vomiting, sleeping, elimination, and predictability.

Table 8 presents the analysis of the relationship between factors influencing bonding in the prehospitalization period and selected infant behaviors. Mothers under 20 years of age had a negative perception of their infants' elimination behaviors, while mothers 20 years and older expressed negative perceptions of their infants' sleeping behaviors. Mothers with relatively more education also had negative perceptions of their infants' sleeping behavior. Mothers who had planned their pregnancies expressed a negative perception of their infants' predictability.

The relationship of identified factors influencing bonding during the infant's hospitalization to the infant's behaviors is presented in Table 9. Mothers who did not see their infants just after birth had a negative perception of their infants' sleeping behaviors. Mothers whose infants experienced a shorter period of hospitalization had a negative perception of their infants' sleeping behaviors.

Table 8. Relationship between factors influencing bonding during prehospitalization and maternal perception of infant behaviors

Factors Influencing Bonding	Modal Scores of Infant Behaviors											
	Crying		Feeding		Vomiting		Sleeping		Elimination		Predictability	
	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby
Maternal Age												
Under 20 years	3/2*	3	2	2	3/2*	2	2	2	2	3+	2	2
20 years and older	3	3/2*	2	2	3	2	2	3+	2	2	3/2*	3
Maternal Education												
Fewer than 12 years	3	3	2	2	3	2	2	2	3/2*	3	2	2
12 years or more	3/2*	3/2*	3/2*	2	3	2	2	3+	2	2	3	3
Planned Pregnancy												
Yes	3	3/2*	2	2	2	2	4/3*	2	3/2/1**	2	2	3+
No	3	3	3	2	3	2	2	2	2	2	2	2

Scoring
5 A Great Deal
4 A Good Bit
3 Moderate Amount
2 Very Little
1 None

* Bimodal Distribution
** Trimodal Distribution
+ Negative Neonatal Perception Score

Table 9. Relationship between factors influencing bonding during hospitalization and maternal perception of infant behaviors

Bonding Factors	Modal Scores of Infant Behaviors											
	Crying		Feeding		Vomiting		Sleeping		Elimination		Predictability	
	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby
Preterm Delivery												
Yes	3	3	2	2	3	2	2	2	2	2	2	2
No	2	2	3	2	3	2	3/2*	2	2	2	3	3
Seeing Baby Just After Birth												
Yes	3	2	2	2	2	2	2	2	2	2	3	3/2*
No	3	3	2	2	3	2	2	3+	2	2	2	2
Length of Infant's Hospitalization												
2 weeks or less	3	3	3	2	3	2	2	3+	2	2	3	2
3 weeks or longer	3	2	2	2	3/2*	2	2	2	3/2*	2	2	2
Frequency of Mother's Visits												
At least once a week	3	2	3	2	3/2*	2	2	3+	2	2	3/2*	3
Less than once a week	3	3	2	2	3	2	2	2	3	3/2*	2	3
Fear that Baby Would Die												
Yes	3	3	2	2/1*	3	2	2	2	2/1*	2	2	3/2*
No	3	2	2	2	3	2	2	2	2	2	2	2

Scoring: 5, A Great Deal; 4, A Good Bit; 3, Moderate Amount; 2, Very Little; 1, None
* Bimodal Distribution; + Negative Neonatal Perception

Table 10 presents an analysis of the relationship between factors which influence bonding in the posthospitalization period by the mother. Mothers who wanted their infants to be better than average expressed negative perceptions of both sleeping and elimination behaviors. Those mothers who received advice from someone other than a mother-figure regarding care of her infant, had negative perceptions of their infants' sleeping behaviors and the infants' predictability.

Thus, the factors this study identified as influencing maternal bonding during three time periods were found to be associated with negative maternal perception of selected infant behaviors as defined by the Neonatal Perception Inventory (Broussard and Hartner, 1967).

Table 10. Relationship between factors influencing bonding during posthospitalization and maternal perception of infant behaviors

Bonding Factors	Modal Scores of Infant Behaviors											
	Crying		Feeding		Vomiting		Sleeping		Elimination		Predictability	
	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby	Avg. Baby	Your Baby
Desire for Baby to be "Better than Average"												
Yes	4/3*	3	2	2	3	2	2	3+	2	3+	4/3*	3
No	3	3/2*	2	2	3/2*	2	2	2	2	2	2	2
Advice about Child Care												
Mother-Figure	2	2	2	2	2	2	2	2	2	2	2	2
Other	2	2	3	2	3	2	2	3+	2	2	2	2
Experience with Young Infants												
Moderate amount or more	3	3	2	2	2	2	2	2	3	3	2	2
Very little or none	2	2	2	2	3	2	2	3+	2	2	2	3+

Scoring: 5, A Great Deal; 4, A Good Bit; 3, Moderate Amount; 2, Very Little; 1, None
* Bimodal Distribution; + Negative Perception

CHAPTER 5

DISCUSSION AND CONCLUSIONS

A discussion of interpretations of the findings and conclusions of the present study are contained in this chapter. The areas of discussion are selected elements from the conceptual framework, mothers' perceptions of their infants, the relation of mothers' perceptions to the bonding process, negative perception and infant behaviors of sleep, elimination, and predictability. Finally, the implications of this study for nursing practice are presented.

Mothers' Perceptions of Their Infants

The subjects of this study were 19 married, English-speaking primiparous women who had been separated from their infants at birth due to the infants' hospitalizations. The separation of mother from infant had a duration of one week to two months. The purpose of this study was to examine the relationship between this separation and maternal perception. Data were collected from the mother one month after the infant had been discharged from the hospital using the Neonatal Perception Inventory, the Degree of Bother Inventory and the Subject Information Inventory.

According to the literature the separation of a mother from her newborn infant immediately following birth may be detrimental to the maternal bonding process (Barnett et al., 1970; Klaus et al., 1970;

Klaus et al., 1972; Leifer et al., 1972; and Kennell et al., 1974). Bonding and the resulting attachment of a mother to an infant are said to be vital to the infant's healthy development (Bowlby, 1966; Ainsworth, 1969; and Bowlby, 1969). Maternal perception is an element of bonding as the mother's perceptions of her infant influence her interactions with the infant. Her reactions to the infant also influence his response to his mother and the rest of his environment.

The subjects were 19 married, English-speaking, primiparous women who brought their infants for health care to a premature infant outpatient clinic at a southern university hospital. Data were collected by four questionnaires: the Neonatal Perception Inventory, the "Average Baby" form and the "Your Baby" form; the Degree of Bother Inventory, and the Subject Information Inventory. The questionnaires asked a mother her perceptions of the "average" infant and her own infant's behavior. These perceptions were based on specific infant behaviors. The mother was also asked to describe the bothersomeness of these same behaviors. Finally, the mothers were asked to provide some information concerning the factors influencing bonding.

The findings of this study were that 68 percent of the study's participants perceived their infants as being better than average, a positive perception, while 32 percent did not perceive their infants as being better than average, a negative perception. Using the Spearman Rank Order Correlation test of association, it was found that the relationship between scores on the Neonatal Perception Inventory of mothers who had a positive perception of their infants was moderately positive, 0.57. The relationship between scores of the Neonatal Perception

Inventory of mothers who had a negative perception of their infants was slightly positive, 0.26. The relationship of scores on the "Your Baby" form of the Neonatal Perception Inventory and scores on the Degree of Bother Inventory was moderately positive, 0.53. There was no relationship found between scores of the "Average Baby" form and scores of the "Your Baby" form of the Neonatal Perception Inventory, 0.003.

In the present study 13 (68%) of the women perceived that their infants were better than average; the correlation between scores of the two forms of the Neonatal Perception Inventory was 0.57, a moderately high association. Six (32%) of the mothers did not perceive their infants as being better than average, with a correlation of 0.26, a slightly positive association. Broussard and Hartner (1967) evaluated maternal perception of 318 primiparous women; one month after the birth of the infant 61.2 percent perceived their infants positively and 38.8 percent perceived their infants as not being better than average. Furthermore, in the present study no greater percentage of negative maternal perceptions was found in mothers who had been separated from their infants than in Broussard's and Hartner's (1967) study of mothers who had not been separated from their newborn infants. A possible trend of a relation between separation and maternal perception was indicated, however, by mothers' negative perceptions of selected infant behaviors.

Reasons for the lack of a definitive relationship can be explained. The one month period of time the mother was able to care for her infant before data were collected and the imprecision of the tool in evaluations of mothers of infants older than one month are postulated as possible influences of the results. Mothers of the present study had an

opportunity to care for their infants for one month before data were collected. Klaus and Kennell (1976) state that caregiving is an important part of establishing a maternal bond to an infant. Kaplan and Mason (1960) identify steps through which a mother of a premature infant must pass before she can bond with her infant, the last of the steps is knowing the differences between full term and preterm infants and their needs for care. It may be that the mothers in this sample who had positive perceptions of their infants had overcome the impact of the separation as a result of the opportunity to care for their infants and identify and meet their needs.

The results of the correlational studies of the two forms of the NPI indicated a moderately positive relationship between the scores of mothers with positive perceptions of their infants. This result signifies that these mothers' perceptions of their own infants were indeed based upon their perceptions of the average infant. Results of the correlation of scores of the two forms of the NPI of mothers who had negative perceptions of their infants was only slightly positive. This finding indicates that negative perceptions of the infant were not based solely on the mother's perception of the average infant.

Relation of Factors Influencing Bonding to Mothers' Perceptions

The relation of factors influencing bonding in three time periods, prehospitalization, hospitalization, and posthospitalization, to maternal perception was analyzed. In this study none of the factors influencing maternal bonding were found to be related to a mother's negative perception of her infant, when measured at one month after discharge from the

hospital. It may be postulated that the opportunity for mothers to care for their infants outweighed any influence the factors may have had on the mothers' perceptions. Broussard and Hartner (1967) studying primiparas with apparently healthy infants measured maternal perception twice, within 48 hours of the infant's birth and again at one month. At the time of the second data collection, fewer mothers perceived their infants as not being better than average than at the time of the first measurement. Broussard and Hartner concluded that the one month of caring for the infant was for some mothers sufficient to modify their perception of the infant.

Negative Perception and Sleeping, Elimination, and Predictability Behaviors

The infant behaviors of sleeping, elimination, and predictability were found to be associated with mothers' negative perceptions. The factors influencing bonding were categorized by three time periods, prehospitalization, hospitalization, and posthospitalization. These factors were analyzed to determine their relationship with maternal perception of selected infant behaviors, crying, feeding, vomiting, sleeping, elimination, and predictability. During the prehospitalization time period the factors which influence bonding that were associated with negative perceptions of selected infant behaviors were the age of the mother, relatively more education, and having planned the pregnancy. During the hospitalization period factors which influence bonding that were associated with negative perceptions of selected infant behaviors were not seeing the infant just after birth, shorter hospitalizations, and more frequent visiting by the mother. During the posthospitalization period

factors which were associated with negative perceptions of infant behaviors were a desire for the infant to be better than average, receiving advice from someone other than a mother-figure, and the mother having very little experience with caring for young infants.

Robson (1967) has suggested that the human being requires some indication of response in order to continue an interaction with another human being. This is the case for the human mother and her infant. Eye to eye contact, entrainment, attending to the human face and, later, social smiling are believed to be the reinforcing responses that are available to the infant for interpersonal interaction. In this study those infant behaviors not associated with negative perception were crying, feeding and vomiting. All three behaviors not related to negative perception are associated with the infant's head, the locus of many interactive behaviors of the infant. A crying infant will enter a state of quiet alertness when picked up or spoken to by another human being (Brazelton, 1962; and Klaus and Kennell, 1976). During the feeding process the infant enters the quiet alert state and is especially ready for interaction with another person (Klaus and Kennell, 1976). These phenomena suggest the mother derives greater benefit and reinforcement from caregiving activities which allow the infant to use his interactive abilities.

Implications for Nursing Practice

Whereas the overall results of this study do not dictate explicit recommendations for nursing practice, support for quality maternal-infant care can be identified in some of the findings. It was not possible to identify any period of time which was related to negative maternal

perception of an infant. Nurses working with hospitalized neonates and their families, however, are able to utilize concepts of this study. The concepts are that infants and mothers have different temperaments and respond to situations individually; the role of the nurse is to interpret behaviors of both the infant and mother and support both in becoming acquainted. Maternal perceptions influence the mother in her response to the infant and in turn his response to her. Hospitalization and separation of the mother and infant inhibits the usual interactions mothers and infants are able to experience. Differences in temperament of mother and infant influence response and contribute to communication patterns between mother and infant. Nurses can and do use concepts of individual differences, perception, and behavioral abilities of the infant in interpreting and facilitating comprehension of the infant by the parents.

Health care in the future must provide facilities and human resources so that mothers and families can interact with the young infant who must be hospitalized for extended periods of time.

Recommendations

The recommendations based on this study are the following:

1. A similar study using a similar population from a different health care facility.
2. A similar study of maternal perceptions of infants following separation following Broussard's and Hartner's protocol for times of measurements and one additional measurement at one month after discharge.

3. A tool be developed which accurately measures maternal perception of the older infant.
4. A study using this tool to assess fathers' perceptions of their infants and the relationship with maternal perception.

CHAPTER 6

SUMMARY

A mother's attachment to her infant is influenced by a variety of factors. These factors include influences before the child's birth as well as those occurring after the birth. The perception a mother has of her infant will influence the process of bonding. Perceptions of the infant and his behaviors will have an impact on the mother's care of and feelings about the infant. In turn, her attitude toward the infant will influence his responses toward her and ultimately towards his significant others.

This exploratory study was designed to provide insight into the influence of long term separation of mothers and infants on the mother's perceptions of their infants. The influence of several factors related to bonding were evaluated. Based upon a literature review and the author's experience, factors which influence maternal bonding to a newborn infant were selected for investigation. The factors were the mother's age and education, planned pregnancy, preterm birth of the infant, seeing the infant just after birth, length of hospitalization, the person giving the mother advice about child care, the mother's experience caring for young infants, fear by the mother that the baby might die during hospitalization and wanting the infant to be better than average.

Trends were identified which related negative maternal perception of selected infant behaviors, sleeping, elimination, and predictability, to factors which influence the bonding process of mothers who have been separated from their newborn infants. Evaluation of the relationship of those factors, however, demonstrated that none were associated with mothers' negative perceptions of the infant as a whole person.

Encouraging opportunities for interaction between the separated mother-infant dyad and keeping lines of communication open between families of hospitalized infants and the health care team are suggested until further studies of long-term separation of mother and infant at birth can be made. The findings of this study regarding the impact of mother-infant separation and the relationship of the factors which influence bonding allow few recommendations for selective intervention by health care professionals to ameliorate the impact of the separation.

APPENDIX A

PERMISSION TO CONDUCT STUDY

April 18, 1977

MEMORANDUM

TO: Ms. Mary Elizabeth Lott
School of Nursing

FROM: /s/ Spencer G. Thompson, M.D.
Associate Dean and Coordinator of Sponsored Programs

SUBJECT: Human Research Protocol - OSR #77-41
"Maternal-Infant Separation: The Mother's Perception"

Having met the conditions set forth by the Research Committee at its meeting of March 23, 1977, your research protocol is now approved.

SGT/meg

SUBJECT CONSENT FORM

You are being asked to be in a study to find out what effect long-term separation of a mother from her newborn infant has on the mother. The title of this project is "Maternal-Infant Separation: The Mother's Perception." The study is intended to provide additional knowledge to pediatric and neonatal professionals in order that they may give care to mothers and infants.

You will be asked to complete four questionnaires in a one hour home visit.

The possible risk involved in the interview is that you could feel slightly uncomfortable when answering questions about your child's behavior. Feel free to discuss your concerns with the interviewer.

There will be no cost to you for participating in the study and there will be no money paid for your time. You will, however, have an opportunity to ask the researcher about general child care.

You are free to ask questions about the study at anytime. You are also free to withdraw from the study at anytime without risk to your relationship with your child's doctor or the nurse.

The information obtained in the questionnaires will remain confidential to the extent that no names will be revealed. No other person besides the researcher will have access to your name. All names will be given a code number and the list of names will be destroyed after the study is completed. The information obtained in this study will not be used for any purposes other than reports on this study. Any information which is used will be related to the entire group of subjects and not to individuals.

I have read the above statements about the study: the nature, demands, risks, and benefits of the project have been explained to me. I understand that I may ask questions and that I am free to withdraw from the project at any time without ill will.

1. I understand that informed consent is required of all persons in this project.

2. The principal and alternate procedures, including the experimental procedures in this project, have been identified and explained to me in language that I can understand.

3. The risks and discomforts from the procedures have been explained to me.

4. The expected benefits from the procedures have been explained to me.

5. An offer has been made to answer any questions that I may have about these procedures.

6. I have been told that I may stop my participation in this project at any time, without prejudice.

I voluntarily consent to participate in the research project referenced above.

Date	Signature of Subject

Using language that is understandable and appropriate, I have discussed this project, and the six items listed above with the subject and/or his authorized representatives.

Date	Signature of Project Director or his Representative

APPENDIX B

DATA COLLECTION TOOLS

Date _____

Code No. _____

NEONATAL PERCEPTION INVENTORY *

AVERAGE BABY

You probably have some ideas of what most little babies are like. Please check the blank you think best describes the AVERAGE baby.

How much crying do you think the average baby does?

a great deal	a good bit	moderate amount	very little	none

How much trouble do you think the average baby has in feeding?

a great deal	a good bit	moderate amount	very little	none

How much spitting up or vomiting do you think the average baby does?

a great deal	a good bit	moderate amount	very little	none

How much difficulty do you think the average baby has in sleeping?

a great deal	a good bit	moderate amount	very little	none

How much difficulty does the average baby have with bowel movements?

a great deal	a good bit	moderate amount	very little	none

How much trouble do you think the average baby has in settling down to a predictable pattern of eating and sleeping?

a great deal	a good bit	moderate amount	very little	none

*Used by permission of author

Date _____

Code No. _____

NEONATAL PERCEPTION INVENTORY*

YOUR BABY

You have had a chance to live with your baby for a month now. Please check the blank you think best describes your baby.

How much crying has your baby done?

a great deal	a good bit	moderate amount	very little	none

How much trouble has your baby had feeding?

a great deal	a good bit	moderate amount	very little	none

How much spitting up or vomiting has your baby done?

a great deal	a good bit	moderate amount	very little	none

How much difficulty has your baby had in sleeping?

a great deal	a good bit	moderate amount	very little	none

How much difficulty has your baby had with bowel movements?

a great deal	a good bit	moderate amount	very little	none

How much trouble has your baby had in settling down to a predictable pattern of eating and sleeping?

a great deal	a good bit	moderate amount	very little	none

*Used by permission of author

DEGREE OF BOTHER INVENTORY*

Listed below are some of the things that have sometimes bothered other mothers in caring for their babies. We would like to know if you were bothered about any of these. Please place a check in the blank that best describes how much you were bothered by your baby's behavior in regard to these.

Crying	a great deal	somewhat	very little	none
Spitting up or Vomiting	a great deal	somewhat	very little	none
Sleeping	a great deal	somewhat	very little	none
Feeding	a great deal	somewhat	very little	none
Elimination	a great deal	somewhat	very little	none
Lack of Predictable Schedule	a great deal	somewhat	very little	none
Other (Specify)	a great deal	somewhat	very little	none
.....	a great deal	somewhat	very little	none
.....	a great deal	somewhat	very little	none
.....	a great deal	somewhat	very little	none
.....	a great deal	somewhat	very little	none

*Used by permission of author

SUBJECT INFORMATION INVENTORY

Listed below are some questions about you, your baby, and what you felt and thought during the time your baby was in the hospital. Please answer in the space provided.

1. How old are you?

   _____ years

2. How many years of education have you had?

   _____ years

3. Was your pregnancy planned?

   _____ yes _____ no

4. Was your baby born prematurely?

   _____ yes _____ no

5. Did you see your baby just after birth?

   _____ yes _____ no

6. How long was your baby in the hospital?

   _____

7. How frequently were you able to visit your baby in the hospital?

_____	_____	_____	_____	_____
every day	every other day	once a week	every two weeks	once a month

8. Do you want your baby to be better than average?

   _____ yes _____ no

9. Who gives you advice about taking care of your baby?

   _____ mother or mother-in-law _____ close relative

   _____ friend _____ other, please explain

   _____

10. How much experience have you had giving care to young babies?

a great deal	a good bit	a moderate amount	very little	none

11. Were you ever afraid your baby was going to die during the hospitalization?

_____ yes _____ no

APPENDIX C

RAW SCORES OF THE "AVERAGE BABY" FORM AND THE "YOUR BABY" FORM OF THE NEONATAL PERCEPTION INVENTORY AND THE DEGREE OF BOTHER INVENTORY

Raw Scores of the "Average Baby" form and the "Your Baby" form of the Neonatal Perception Inventory and the Degree of Bother Inventory

Subject	Average Baby	Your Baby	Degree of Bother
1	14	15	13
2	17	13	13
3	11	15	14
4	18	13	13
5	13	14	14
6	14	15	14
7	16	13	14
8	17	16	13
9	15	13	14
10	19	13	12
11	13	12	10
12	18	16	14
13	14	13	13
14	14	14	13
15	14	13	14
16	14	13	14
17	12	14	14
18	14	13	13
19	18	13	13

REFERENCES

Ainsworth, Mary D. S. Object Relations, Dependency, and Attachment: A Theoretical Review of the Infant-Mother Relationship, Child Development, 40:969-1027 (1969).

Barnett, Clifford, P. Herbert Leiderman, Rose Grobstein, and Marshall Klaus. Neonatal Separation: The Maternal Side of Interactional Deprivation, Pediatrics, 45:197-204 (1970).

Bell, Sylvia M. and Mary D. S. Ainsworth. Infant Crying and Maternal Responsiveness, Child Development, 43:1171-1190 (1972).

Bibring, Grete L., Thomas F. Dwyer, Dorothy S. Huntington, and Arthur F. Valenstein. A Study of the Psychological Processes in Pregnancy and of the Earliest Mother-Child Relationship. I. Some Propositions and Comments, Psychoanalytical Study of Children, 16:9-27 (1961).

Bowlby, John. Maternal Care and Mental Health. New York: Schocken Books, 1966.

Bowlby, John. Attachment and Loss, Vol. I, Attachment. New York: Basic Books, Inc., 1969.

Brazelton, T. Berry. Crying in Infancy, Pediatrics, 29:579-588 (1962).

Brazelton, T. Berry. The Effect of Maternal Expectations on Early Infant Behavior, Early Child Development and Care, 2:259-273 (1973).

Broussard, Elsie R. and Marium S. Hartner. Further Considerations Regarding Maternal Perception of the First Born. In Helmuth, Jerome, ed. Exceptional Infant: Studies in Abnormalities, Vol. 2. New York: Brunner/Mazel, Inc., 1967.

Broussard, Elsie R. and Marium S. Hartner. Maternal Perception of the Neonatal as Related to Development, Child Psychiatry and Human Development, 1:16-25 (1970).

Caplan, Gerald. Patterns of Parental Response to the Crisis of Premature Birth, Psychiatry, 23:365-374 (1960).

Carey, William B. A Simplified Method for Measuring Infant Temperament, Journal of Pediatrics, 77:188-194 (1970).

Collias, Nathaniel. The Analysis of Socialization in Sheep and Goats, Ecology, 37:228-239 (1956).

Condon, William S. and Louis W. Sander. Neonate Movement is Synchronized with Adult Speech: Interactional Participation and Language Acquisition, Science, 183:99-101 (1974).

Craig, Margarete. Normal Neonatal Behavior Patterns: The First Week of Extra-uterine Life, Child and Family, 9:303-306 (1970).

Elmer, Elizabeth and Grace S. Gregg. Developmental Characteristics of Abused Children, Pediatrics, 40:596-602 (1967).

Erickson, Marcene L. Assessment and Management of Developmental Changes in Children. St. Louis: C. V. Mosby Company, 1976.

Evans, Sue L., John B. Reinhart, and Ruth A. Suceap. A Study of 45 Children and Their Families, Journal of the American Academy of Child Psychiatry, 11:440-454 (1972).

Fantz, R. L. Pattern Discrimination and Selective Attention as Determinants of Perceptual Development from Birth, In Kidd, Aline J. and Rivoire, Jeanne L. (eds.), Perceptual Development in Children. New York: International Universities Press, 1966.

Greenberg, Martin and Norman Morris. Engrossment: The Newborn's Impact upon the Father, American Journal of Orthopsychiatry, 44:520-531 (1974).

Harlow, Harry F. The Development of Affectional Patterns in Infant Monkeys, In Foss, Brian M. (ed.), Determinants of Infant Behavior, Vol. I. New York: Wiley (1961).

Hersher, Leonard , A. Ulric Moore, and Julius B. Richmond. Effect of Postpartum Separation of Mother and Kid on Maternal Care in the Domestic Goat, Science, 128:1342-1343 (1958).

Johnson, Suzanne H. and Judith P. Grubbs. The Premature Infant's Reflex Behaviors: Effect on the Maternal Child Relationship, Journal of Obstetric Gynecologic and Neonatal Nursing, 4: 15-21 (1975).

Kagen, Jerome and Michael Lewis. Studies of Attention in the Human Infant, Merrill-Palmer Quarterly, 11:95-106 (1965).

Kaplan, David M. and Edward A. Mason. Maternal Reactions to Premature Birth Viewed as an Acute Emotional Disorder, American Journal of Orthopsychiatry, 30:539-552 (1960).

Kennedy, Janet C. The High-Risk Maternal-Infant Acquaintance, Nursing Clinics of North America, 8:849-856 (1973).

Kennell, John H., Richard Jerould, Harriet Wolfe, David Chesler, Nancy C. Kreger, Willie McAlpine, Meredith Steffa, Marshall H. Klaus. Maternal Behavior One Year After Early and Extended Postpartum Contact, Developmental Medicine and Child Neurology, 16:172-179 (1974).

Klaus, Marshall H., Richard Jerould, Nancy C. Kreger, Willie McAlpine, Meredith Steffa, and John H. Kennell. Maternal Attachment, Importance of the First Postpartum Days, New England Journal of Medicine, 286:460-463 (1972).

Klaus, Marshall H. and John H. Kennell. Mothers Separated from Their Newborn Infants, Pediatric Clinics of North America, 17:1015-1037 (1970).

Klaus, Marshall H. and John H. Kennell. Maternal-Infant Bonding. St. Louis: C. V. Mosby Company, 1976.

Klaus, Marshall H., John H. Kennell, Nancy Plumb, and Steven Zuehlke. Human Maternal Behavior at the First Contact with Her Young, Pediatrics, 46:187-192 (1970).

Klein, Michael and Leo Stern. Low Birth Weight and the Battered Child Syndrome, American Journal of Diseases in Children, 122:15-18 (1971).

Klopfer, Peter H., Donald K. Adams, and Martha S. Klopfer. Maternal "Imprinting" in Goats, Proceedings of the National Academic of Sciences, 52:911-914 (1964).

Korner, Analeise F. Individual Differences at Birth: Implications for Early Experience and Later Development, American Journal of Orthopsychiatry, 41:608-619 (1971).

Korner, Analeise F. and Evelyn B. Thorman. Visual Alertness in Neonates as Evoked by Maternal Care, Journal of Experimental Child Psychology, 10:67-74 (1970).

Leifer, A. D., P. Herbert Leiderman, Clifford R. Barrett, and J. A. Williams. Effects of Mother-Infant Separation on Maternal Attachment Behavior, Child Development, 43:1203-1218 (1972).

Parke, Ross D. Father-Infant Interaction, In Klaus, Marshall H., Treville Leger, and Mary Anne Trause (eds.), Maternal Attachment and Mothering Disorders: A Roundtable. Sausalito, California: Johnson and Johnson Co., 1974.

Parmalee, Arthur H., Waldemar H. Wenner, Yoshio Akigoma, Marvin Schultz, and Evelyn Stern. Sleep Status in Premature Infants, Developmental Medicine and Child Neurology, 9:70-77 (1967).

Parmalee, Arthur H., Waldemar H. Wenner, and Helen R. Schulz: Infant Sleep Patterns: From Birth to Sixteen Weeks of Age, Journal of Pediatrics, 65:576-582 (1964).

Powell, Louisa F. The Effect of Extra Stimulation and Maternal Involvement on the Development of Low-Birth-Weight Infants and on Maternal Behavior, Child Development, 45:106-113 (1974).

Praugh, Dane G. Emotional Problems of the Premature Infant's Parents, Nursing Outlook, 1:461-464 (1953).

Rheingold, Harriett. The Effect of Environmental Stimulation on Social and Exploratory Behavior in the Human Infant, In Foss, Brian M. (ed.), Determinants of Human Behavior, Vol. I. New York: John Wiley and Sons (1961).

Robson, Kenneth S. The Role of Eye to Eye Contact in Maternal Infant Attachment, Journal of Child Psychology and Psychiatry, 8: 13-25 (1967).

Robson, Kenneth S. and Howard A. Moss. Patterns and Determinants of Maternal Attachment, Journal of Pediatrics, 77:976-985 (1970).

Roscoe, John T. Fundamental Research Statistics for the Behavioral Sciences. New York: Holt, Rinehart, and Winston, Inc., 1969.

Rosenblatt, J. S. and D. Lehrman. Maternal Behavior of the Laboratory Rat, In H. Rheingold (ed.), Maternal Behavior in Mammals. New York: Wiley (1963).

Rosenthal, Miriam K. The Study of Infant-Environment Interaction: Some Comments on Trends in Methodologies, Journal of Child Psychology and Psychiatry, 14:301-317 (1973).

Rubin, Reva. Maternal Touch, Nursing Outlook, 2:828-831 (1963).

Rubin, Reva. Attainment of the Maternal Role, Part I--Processes, Nursing Research, 16:237-245 (1967).

Rubin, Reva. Binding-In in the Postpartum Period, Maternal Child Nursing Journal, 6:67-75 (1977).

Rubinstein, Judith. Maternal Attentiveness and Subsequent Exploratory Behavior in the Infant, Child Development, 38:1089-1100 (1967).

Shaheen, Eleanor, Doris Alexander, Marie Truskowsky, and Guilio J. Barbero. Failure to Thrive--A Retrospective Profile, Clinical Pediatrics, 7:255-261 (1968).

Spitz, Rene A. The First Year of Life. New York: International Universities Press, 1965.

Thomas, Alexander, Stella Chase, H. G. Birch, M. E. Hertzig, and S. Korn. Behavioral Individuality in Early Childhood. New York: New York University Press, 1963.

Wolff, Peter H. Observations on Newborn Infants. Psychosomatic Medicine, 21:110-118 (1959).

Wolff, Peter H. Observations on the Early Development of Smiling, In Foss, Brian M. (ed.), Determinants of Infant Behavior, Vol. 2. New York: John Wiley and Sons, 1963.