

A STUDY OF THE INFLUENCE EARLY AND EXTENDED CONTACT
HAS ON THE DEVELOPMENT OF MATERNAL ATTACHMENT

A THESIS
SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE
IN THE GRADUATE SCHOOL OF THE
TEXAS WOMAN'S UNIVERSITY

COLLEGE OF NURSING

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DENTON, TEXAS

May 1978

The Graduate School
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Denton, Texas

April 17 1978

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our supervision by Rosalie Tuttle
entitled "A Study of the Influence Early and Extended
Contact Has On the Development of Maternal Attachment"

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DEDICATION

To my husband, Stan, who was always there
to encourage me

To my daughter, Elizabeth, who tolerated
a part-time mother

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CHAPTER I

INTRODUCTION

The first few days of a newborn's life are very important for both the mother and the infant. It is during this time period that the mother begins to develop an attachment for her infant. This attachment, which for the purposes of this study will be called maternal attachment, will influence not only the way a mother will relate to her infant now and in the future, but will also influence the development of that infant (Klaus and Kennell 1976, p. 14).

Rooming in allows a mother the opportunity to begin to get acquainted with her infant. It allows her extra time with her infant: time in which she can begin to form a close relationship with that infant. Many obstetrical services have found that by placing the infant in the room with his mother, his mother is given the opportunity to learn how to care for her infant, to get acquainted with her infant, and to begin to build the

basic bond of attachment that is of the utmost importance to the mother-infant relationship (Klaus and Kennell 1976, p. 14).

It was the aim of this study to determine if the development of maternal attachment in a primigravida was influenced by early and extended contact.

Statement of the Problem

Is the development of maternal attachment in a primigravida influenced by early and extended contact with her infant?

Statement of Purposes

The purposes of this study were:

1. To determine the methodology for operationalizing maternal attachment
2. To examine maternal attachment in primigravidas who did have early and extended contact with their infants
3. To examine maternal attachment in primigravidas who did not have early and extended contact with their infants

4. To determine if early and extended contact influences maternal attachment

Background and Significance

Mary Slater Ainsworth defines attachment as, "an affectional tie that one person forms to another specific person" (Caldwell and Ricciutti 1973, p. 1). Bowlby (1969, p. 194) further defines attachment as, "seeking and maintaining proximity to another individual." Attachment is heralded by certain behaviors that promote contact with specific individuals. Beginning at birth the infant exhibits behaviors that attempt to bring him closer to his care-taking figure. These behaviors have been identified as rooting, sucking, postural adjustment, looking, listening, smiling, vocalizing, crying, and grasping (Caldwell and Ricciutti 1973, p. 13). Bowlby (1969, p. 178) speaks to an attachment theory called the "theory of secondary drive," in which the child becomes attached to a particular care-taking individual through the meeting of certain physiological needs such as warmth and food.

In order for the attachment process to progress, certain environmental conditions are necessary. The newborn must have the opportunity to interact with the care-

taking individual. The interaction that takes place during the neonatal period is influenced not only by the mother, but by the infant's response to his mother. If the mother while stimulating the infant receives a positive response from the infant, she will be encouraged to provide further stimulation (Clark and Affonso 1976, p. 97).

A mother approaches parenthood with preconceived ideas concerning her infant. The attachment process which begins when a woman finds out she is pregnant is built upon throughout the pregnancy. She approaches the birth of her child with a mental image of what her infant will look like and of how she will respond to her infant (Clark and Affonso 1976, p. 96). If this mental image is incongruent with what the infant is actually like, the attachment process may be delayed.

A woman's mothering behavior is based on a combination of factors. Klaus and Kennell (1976) designed a diagram (Figure 1) that denotes the factors that influence the mother-infant relationship and the disturbances that may result. Many of the factors that influence the mother-infant relationship are fixed, but some are alterable. The behavior of the hospital personnel, the

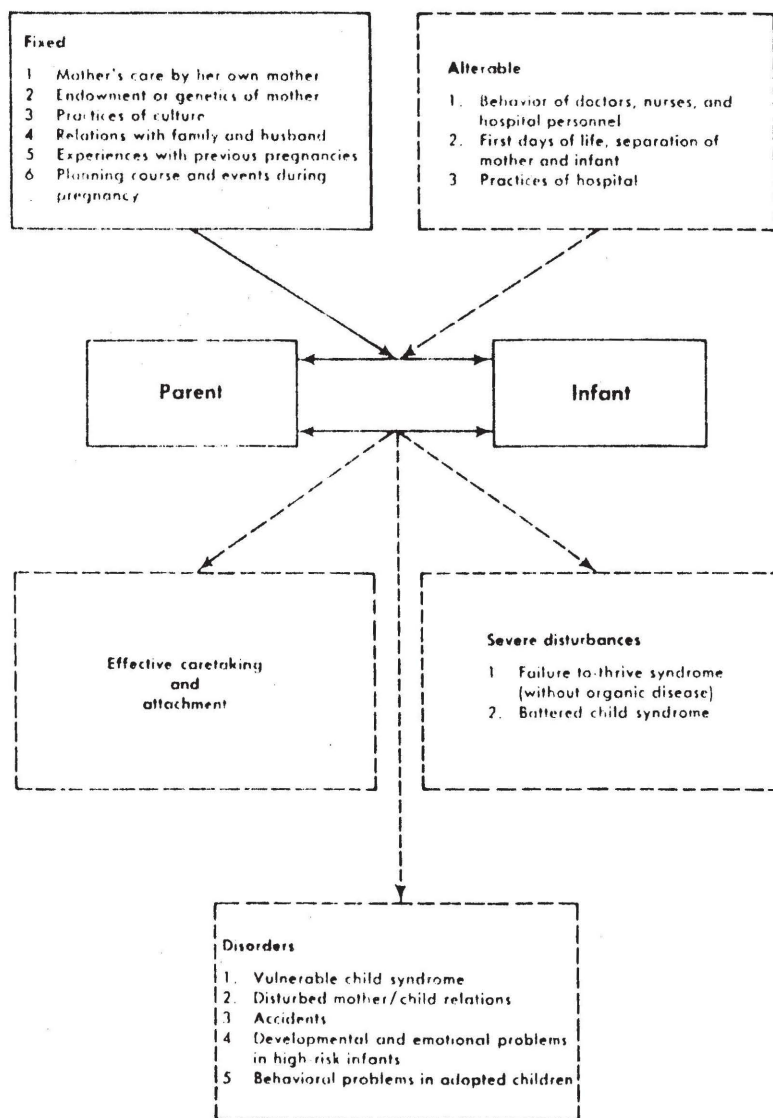


Figure 1. Hypothesized Diagram of the Major Influences on Maternal Behavior and the Resulting Disturbances. (Solid lines represent unchangeable determinants; dotted lines represent alterable determinants.) (Klaus and Kennell 1970, p. 13)

practices of the hospital, and the experiences of the first days of life may be altered to either positively or negatively influence the mother-infant relationship (Klaus and Kennell 1976, p. 12).

Hypothesis

H₀ Early and extended contact will not influence the maternal attachment a primigravida develops for her infant.

Definition of Terms

The following terms were defined for the purposes of this study:

1. A cesarean section mother - a woman who delivers her infant by an incision through the abdominal wall and uterus without further complications and is ready to room in with her infant on the third postpartum day. It is the policy of the agency not to allow the mothers who are delivered by cesarean section to room in with their infants until the third postpartum day.

2. Early contact - Placing a mother and her infant together during the first hour of life
3. Extended contact - Following the newborn physical an infant is placed in the room with his mother so that the mother can care for her child twenty-four hours a day during hospitalization
4. Late contact - Placing a mother and her infant together for the first time six to twelve hours following delivery
5. Maternal attachment - A relationship that is characterized by a bond that strongly ties a mother to her infant through her positive perceptions of that infant
6. A normal infant - An infant who does not require resuscitation, is at least thirty-six weeks gestation, and who presents with a normal newborn examination
7. A normal mother - A mother who has an uncomplicated vaginal delivery
8. Primigravida - A woman who is in her first pregnancy

Limitations

This study described, but did not control for, the following variables:

1. The extra instruction, excluding the infant care classes, received from the members of the staff who were on duty.
2. Prenatal classes attended by the members of the sample.
3. The family interactional patterns that occurred before the labor and delivery experience.
4. The educational level of the members of the sample.
5. The age of the sample members.
6. The type of feedings the infant received. Bottle feeding and breast feeding mothers were included in the sample.
7. The ethnic backgrounds of the individuals in the sample.
8. The presence of the father in the delivery room.
9. The Hawthorne effect.

Delimitations

This study controlled for the following variables:

1. The infant care instructions the patients received while in the hospital. An infant care class was held daily.
2. The number of days that the members of the sample had contact with their infants. The data were collected on the third postpartum day.
3. The language spoken by the members of the sample. Only mothers who spoke English were included.
4. The condition of the infant. Only infants who were at least thirty-six weeks gestational age and who presented with a normal newborn physical were included.

Assumptions

1. It was assumed that the members of the sample would complete the questionnaires honestly.

2. It was assumed that the neonatal perception inventory was a reliable indicator of maternal attachment.
3. It was assumed that the investigator observing the maternal-infant interaction would elicit an accurate picture.

Summary

This chapter has introduced the study of the influence that early and extended contact has on the development of maternal attachment in the primigravida. This chapter has taken a beginning look at the maternal-infant bond and the importance it plays in determining the quality of mothering the infant will receive. The succeeding chapters will look at a review of the current literature pertaining to rooming in, maternal attachment, and the effects that infant separation has on both the mother and the infant. Chapter Three will look at how the data were collected, the sample size, the tools that were used, and how the data were analyzed. Chapter Four, in examining the analysis of the data, will present the statistical findings. Chapter Five will summarize the study by examining all the possible facts that may be

obtained from the study and how they can be applied in the appropriate circumstances. The paper is concluded with recommendations for further study.

CHAPTER II

REVIEW OF LITERATURE

Maternal attachment is defined by Bowlby (1969, p. 179) as, "a product of the activity of a number of behavioral systems that have proximity to mother as a predictable outcome." In discussing maternal attachment Bowlby (1969, p. 179) has listed the behaviors crying, smiling, following, clinging, and sucking as infant responses that lead to attachment. When elicited, these behaviors encourage the mother to respond to her infant in a positive manner. Maternal attachment is further defined by Ainsworth (1969, p. 971) as, "an affectional tie that one person forms to another specific individual." In this manner attachment is discriminating, specific, and long lasting.

Bowlby (1969, p. 178) reviews four theories regarding the development of the maternal-infant bond. These are: 1) the theory of secondary drive, 2) the theory of primary object sucking, 3) the theory of primary object clinging, and 4) the theory of primary

return to the womb craving. The theory of secondary drive hypothesizes that the infant becomes attached to an individual through the meeting of certain physiological needs such as food and warmth. The theory of primary object sucking states that the infant relates to the mother through nursing the human breast. According to the theory of primary object clinging, infants have a built-in need to touch or cling to a human being, and it is this need that brings them close to their mother. The theory of primary return to the womb craving states that the infant attaches himself to his mother because he resents being taken from the womb and wishes to return. Up until the late 1950's the most widely held theory was that of secondary drive, in which the child becomes attached to an individual through the meeting of certain physiological needs such as food and warmth.

Animal studies have proved important in providing valuable information concerning maternal attachment. Harlow's work with rhesus monkeys placed the theory of secondary drive in doubt. His experiments with rhesus monkeys demonstrated that contact comfort led to attachment behavior while food did not (Harlow, Harlow and Hansen 1963, p. 80).

Klopfer (1971, p. 404) in studying the maternal behavior of goats, found that if mothers were allowed at least five minutes of contact with their young that they would be more likely to accept their young after three hours of separation. It has been found that goats generally form a family circle in which aliens are excluded and that the maternal bond is formed rapidly between the mother and her own kid. From his studies, Klopfer (1971, p. 407) concluded that

. . . something happens in the space of a few minutes after parturition which makes her ready then and only then to attach herself to a kid. Once she is attached she displays many of the human signs of distress on the removal of the kid.

Rosenblatt and Lehrman (1963, p. 37) in studying the maternal behavior of rats found that separation of a mother rat from her young immediately after birth may be harmful. They found that when the mother rat and her young were separated immediately after birth and were then reunited four days later, all of the pups died within five days.

In conducting studies concerning mother-infant interaction in monkeys, Sackett and Ruppenthal found that mother-infant separation may adversely affect the

mother's behavior. In his study, maternal motivation or the desire to be near infant monkeys rather than older monkeys was measured. It was found that maternal separation during the first hour after birth resulted in a maternal preference for infants, while a maternal-infant separation lasting for twenty-four hours resulted in a maternal preference for older monkeys (Sackett and Ruppenthal 1974, p. 165).

When a human infant is born, he is equipped with a number of behavioral systems, which when activated allow him to interact with his environment. The infant's ability to interact with his environment aids in the formation of a beginning maternal-infant relationship. In the development of maternal attachment the mother must be motivated to care for the infant, and the interaction between the infant and his mother must be reciprocal.

Literature has been written concerning what some authors believe to be a sensitive period for the development of maternal attachment. Klaus and Kennell (1976, p. 65) believe that during the first few minutes and hours after birth, there is an optimal time for the attachment process to begin. When the infant is in the

quiet alert state his eyes are open and he is ready to interact with his environment. Desmond, Rudolph, and Phitaksphraisen (1966, p. 656) found that the infant is in this state of consciousness during the first hour after birth. As a result of these findings, the first hour after birth is the ideal time for the parents and infant to become acquainted and for the attachment process to begin.

The importance of this early maternal-infant contact was demonstrated in a study conducted by Hales, Trause, and Kennell (1976, p. 448). In this study sixty primigravida Guatemalan mothers were randomly assigned to three groups. Twenty of the mothers had skin-to-skin contact with their infants under a heat panel for forty-five minutes after delivery. The second group of twenty mothers had the same experience as the first did, but twelve hours after delivery. The third group of twenty mothers were separated from their infants. When the mothers were observed at thirty-six hours postpartum, it was found that the mothers who had had contact with their infants forty-five minutes after delivery showed significantly more affectionate behavior toward their infants.

An increasing amount of literature has been written on the process of attachment and the behaviors

that lead to attachment. Klaus and Rubin have both examined the behaviors that lead to maternal attachment.

In one study Klaus observed a group of mothers during their initial contacts with their infants and described their behaviors. He found that,

. . . human mothers of full-term infants have an orderly and predictable pattern of behavior when presented with their nude infants shortly after birth. Starting with fingertip touch of the infant's extremities, they proceeded in four to eight minutes to massaging, encompassing, and palm contact on the trunk (Klaus 1970, p. 188).

Rubin (1961, p. 683) in examining some of the different behaviors that lead to the development of maternal attachment looked quite extensively at maternal touch. She described the mother's progression through maternal touch as progressing from fingertip exploration of her infant's body, to hand to body contact, and finally to a point where the mother is using her arms as an extension of her body to enfold her infant.

Rubin (1961, p. 683) differs from Klaus (1970, p. 188) in that Rubin describes the orderly progression of maternal touch as occurring over the first few postpartum days, while Klaus describes these events as occurring in a four to eight minute time frame. Also,

according to Rubin (1961, p. 683) the multipara must move through the stages of touch just as the primigravida does, even though she may move through them at a faster rate, while the Klaus (1970, p. 188) study showed no significant differences in the time factor between primigravidas and multiparas.

Robson (1967, p. 13) attempted to establish eye-to-eye contact as a releaser of maternal care-taking response. Robson states that the intensity of an infant's tie to his mother's face is affected by the infant's characteristics and his environment. This interchange facilitates the maternal-infant attachment process.

Harrison (1976, p. 112) in discussing nursing intervention with the failure to thrive family identifies categories of adaptive and maladaptive mothering behaviors. Harrison defines adaptive behaviors as those behaviors which promote mother-infant attachment. The feeding behaviors that were identified as adaptive behaviors were:

1. Offers appropriate amounts and/or types of food to infant
2. Holds infant in comfortable position during feeding
3. Burps baby during and/or after feeding
4. Prepares food appropriately
5. Offers food at a comfortable pace for infant

Cropley, Lester, and Pennington (1976, p. 27) developed a tool that was used to evaluate the level of maternal attachment through maternal behaviors. The maternal behaviors were rated from 0 to +5. Eleven mothers were observed during the first fifteen minutes of the mother's first interactions with their infants. This tool which was used to quantitatively measure differences in maternal behavior, proved useful in monitoring the progression of maternal attachment and determining when nursing intervention was required.

An increasing amount of literature has been written on the process of attachment following birth. Some of the more recent studies have shown that the attachment process the mother and the infant go through during the first few days of life can influence the way a mother will respond to her infant in the future (Klaus 1972, p. 463).

Klaus (1972, p. 463) has done a great deal of work on the topic of maternal attachment. In one study he provided an experimental group of mothers with sixteen additional contact hours with their infants. It was shown that the mothers who had extended contact with their infants were reluctant to leave their babies with

someone, exhibited a greater interest in their infants by fondling them more, and assumed the en face position more frequently. Klaus also found that these extended contact mothers usually stood by their babies during the physical examination and tried to soothe the infants when they cried. This study suggests that,

. . . this may be a special attachment period for an adult woman--special in the sense that what happens during this time may alter the later behavior of the adult toward a young infant for at least as long as one month after delivery.

Peter de Chateau (1976, pp. 152-153) also examined the effect that early contact may have on maternal and infant behavior. His sample was composed of two groups: early contact and routine care. The early contact group was given ten to fifteen minutes of extra contact approximately fifteen minutes postpartum, while the routine care group was not allowed this extra contact. When the mothers and infants of both groups were observed at thirty-six hours postpartum, the results showed that the mothers who had the extra contact with their infants were holding and encompassing their infants more than the mothers who did not have this extra contact time. When these same mothers and infants were observed at three

months postpartum it was found that the extra contact mothers spent more time looking en face at their infants and kissing their infants than the group of routine care mothers.

The attachment process may be greatly influenced by the interactional pattern that develops between mother and infant. Affonso (1976, p. 9) states that, "interaction involves a two-way interchange of both intake and output." The infant plays an important role in the development of the mother-infant relationship, not only as a recipient of stimuli, but also as an active interactor in his environment. This active role the infant displays is vital to the parent-infant orientation, which

. . . is the process whereby both parent and child explore and familiarize themselves with each other toward the development of a relationship which will sustain them in their daily living (Affonso 1976, p. 9).

If in stimulating her infant a mother receives no positive feedback from her infant, she will diminish the amount of stimulation. Since these initial mother-infant interactions provide a foundation by which the infant begins to perceive himself and his world, it is very important that these be positive, meaningful interactions.

Broussard looks at the effects that a mother's perceptions of her child have on her development of maternal attachment. She states that after delivery, the mother, by being sensitive to her infant's needs, helps to provide an environment that will foster the development of a healthy child. The way this new mother perceives her child will be reflected in the way she cares for the child. If she does not perceive her infant in a positive manner she will not progress through the process of attachment. Broussard states that,

. . . the way the mother relates to the child will be modified by her perception of his appearance and behavior. His behavior will in turn be affected by her handling him (Broussard and Hartner 1971, p. 432).

Kennedy (1973, pp. 552-553) further described the maternal-infant acquaintance process and how a mother's perceptions of her infant are developed. At birth a mother begins to acquaint herself with her infant. In examining her infant she is trying to find out what her baby is like and how he feels about her. An infant's positive or negative responses to his mother's care-taking behaviors will influence the mother-infant relationship. Kennedy conducted a study of the early

acquaintance process involving ten mothers and their infants. It was found that when a mother perceived her infant's response to her as positive she was inclined to develop a positive attitude toward her baby and was encouraged to stimulate and interact with him, while if a mother perceived her infant's response to her as negative, she was inclined to develop a negative attitude towards her infant.

Maternal separation and the effects it can have on maternal attachment have been investigated by Leifer, Leiderman, Barnett, and Williams (1972, p. 1214). They noted that in comparing mothers of premature infants who had experienced separation with the mothers of full term infants who did not experience separation, that the mothers of full term infants smiled at their infants more and held them in an encompassing position more frequently than the mothers of premature infants.

Barnett (1970, p. 198) also investigated the effects that maternal-infant separation have on maternal attitudes and behavior. Barnett brought out the fact that,

. . . separation from her infant in the neonatal period may not permit the mother to develop an attachment to her infant at the time when she is most sensitized to be responsive to him.

In investigating the feasibility of modifying care in the premature nursery so as to allow mothers to have physical contact with their infants, forty-one mothers were allowed to touch and handle their infants as early as the second day of life. This study demonstrated that it is possible to allow mothers in the premature nursery without endangering the infant or disrupting the infant's care. In conclusion Barnett hypothesized that,

. . . the mother who is not attached to her infant because of her separation from him shortly after birth may, in turn, deprive her infant of adequate stimulation when she becomes largely responsible for his care.

In summary the attachment process which begins within the first few minutes of life is important to both the mother and the infant. A new mother explores her infant to find out exactly what he is like and how he feels about her as a mother. In order for the attachment process to begin the infant must respond to and interact with the mother. The interaction must be reciprocal. During the first few days after birth the mother begins to develop her feelings about the infant. The type of feelings a mother develops for her infant, be they

either positive or negative, will influence the relationship the mother and infant develop and the care the infant receives.

The following chapter outlines the methodology utilized in determining the levels of maternal attachment in both mothers who experienced early and extended contact and mothers who received routine postpartum care.

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CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

Introduction

Quasiexperimental designs are experiments that are carried out under conditions when it is not possible to randomly assign sample members to groups (Leedy 1974, p. 152). In this study it was not feasible to randomly assign the sample members. This chapter will describe the setting, the population, the tools utilized, and the methodology used to collect and analyze the data.

Setting

The study was conducted in the obstetrical unit of a two hundred and fifty bed federal hospital located in central Texas. The labor and delivery area was equipped with two labor rooms, containing three beds each, two delivery rooms, and a recovery room. The postpartum units were located on two separate floors. The rooming in unit which was located on the third floor consisted of four

semiprivate rooms, two private rooms, and a six-bed ward. This unit was staffed with a registered nurse and an assistant. The postpartum unit which was located on the second floor near the labor and delivery unit and the nursery consisted of eight semiprivate rooms and was staffed with a registered nurse and either a licensed vocational nurse or an assistant.

Population

The sample consisted of thirty primigravidas who were conveniently drawn from the population of all women delivering at the previously mentioned hospital during the months of October and November. Primigravidas who delivered vaginally without medical complications and remained in the hospital for seventy-two hours postpartum were considered for inclusion in the study. Primigravidas who delivered by cesarean section without complications and were ready to room in with their infants on the third postpartum day were considered for inclusion in the study. The primigravidas who were delivered by cesarean section were considered for inclusion in the study only if they were sectioned for cephalopelvic disproportionment, did not acquire a postoperative infection, maintained normal

vital signs, and did not require a blood transfusion. Before the sample members were asked to participate, permission to conduct the study was obtained from the thesis committee, the Texas Woman's University Human Rights Committee, and the agency involved (Appendix A).

Primigravidas with expected dates of confinement of either October or November were contacted by phone and asked to participate in the study. Also, primigravidas who were delivered by cesarean section were contacted on the first postoperative day and were asked to participate. Following an explanation of the study, the sample members were asked to sign the oral description consent form.

The sample was split into two groups, Group A and Group B. Group A consisted of primigravidas who delivered vaginally and their normal full term infants. The members of this group received early and extended contact. Group B consisted of primigravidas who delivered by cesarean section and their normal full term infants. The members of Group B only held their infants during the scheduled feeding times, up until the third postpartum day or until they roomed in.

Tools

The tool, the Neonatal Perception Inventory (NPI), was administered to both Groups A and B on the third postpartum day. Also on the third postpartum day, the members of both groups were observed during a fifteen-minute feeding session for the occurrence of certain identified maternal behaviors that have been identified as indicative of maternal attachment. Both tools may be found in the appendix.

The NPI was first developed by Elise R. Broussard. Broussard used this scale to measure how a mother's relationship with her child was influenced by her perceptions of him. Broussard states that,

. . . the way the mother relates to the child will be modified by her perception of his appearance and behavior. His behavior will in turn be affected by her handling of him (Broussard and Hartner 1971, p. 432).

In completed the NPI, the mother describes what she thinks the average baby is like, and what she thinks her baby will be like. The NPI score consists of the score of the average baby minus the score of the mother's own baby.

If a mother has a positive perception of her infant and is progressing through the attachment process, she is not experiencing dissonance and will have a zero or a positive score on the NPI. If a mother has a negative perception of her infant and is not progressing through the attachment process, she is experiencing dissonance and will have a negative score on the NPI.

Ann L. Clark (1976, p. 106) also looked at Broussard's Neonatal Perception Inventory. She modified it slightly and used it to determine how a mother's perception of her infant at two to three days of age related to the perception she had of her infant at six weeks of age. Clark states that if at two to three days postpartum the mother is experiencing dissonance in her perceptions of her infant, she and her infant will be at risk for not developing a good mother-infant relationship. In this study, the Neonatal Perception Inventory was used to measure a primigravida's perceptions of her infant on the third postpartum day.

The NPI may be considered a reliable indicator of a mother's positive or negative perceptions of her infant. Both Clark (1976) and Broussard (1971) found that if at two to three days postpartum the mother is

experiencing dissonance then she is at risk for not developing a good maternal-infant bond.

The NPI proposed to have both face and content validity. According to Broussard (1971, p. 433) the items selected for inclusion in the NPI were selected from past clinical experience relating to the expressed concerns of mothers. These concerns will in turn influence a mother's perceptions of her infant.

The mothers were also observed during a feeding session with their infants on the third postpartum day. These observations were made in addition to administering the NPI. While the mother's perceptions are measured by the NPI, these perceptions have not been proven to be reliable indicators of maternal attachment. Because of this, the maternal behavior tool was developed and implemented on the third postpartum day. At this time the mothers were observed for certain listed behaviors that have been defined as indicative of maternal attachment.

The maternal behavior tool may be considered to have both content and face validity. Each of the listed maternal behaviors have been identified in the review of the literature as indicators of maternal attachment.

Data Collection

The data were collected on the third postpartum day. Both Groups A and B were observed by the investigator during a fifteen-minute feeding period for the presence of the previously identified maternal behaviors. Following the observation period the mothers were asked to fill out the NPI.

Protocol for Group A

1. The members of this group were allowed to have their infants with them in the recovery room during the first hour after birth.
2. Following the mother's transfer to the rooming in unit and the infant's newborn physical approximately six to twelve hours after delivery, the infant was placed in the room with his mother. The infant remained in the mother's room for the remainder of their hospitalization.
3. On the third postpartum day the investigator observed the mother and her infant during a fifteen-minute feeding period for the occurrence of maternal behaviors that have been identified as indicative of maternal attachment.

4. The mother was asked to fill out the NPI.

Protocol for Group B

1. The members of this group received the routine postpartum care given to a cesarean patient. Following their initial encounter six to twelve hours after delivery, the mothers had their infants with them only during the regularly scheduled feeding times, until they roomed in on the third postpartum day.
2. On the third postpartum day the investigator observed the mothers and their infants for fifteen minutes during a feeding period. At this time the investigator noted the frequency of each of the maternal behaviors that had been identified as indicative of maternal attachment.
3. The mother was asked to fill out the NPI.

Treatment of Data

Group A and Group B were analyzed for similarity by a quantitative comparison of the demographic data that were obtained from all sample members. The demographic data questionnaire may be found in the appendix. The observed frequency of the identified maternal behaviors

of both Groups A and B were analyzed through the use of a frequency histogram. The Neonatal Perception Inventory scores of both Groups A and B were quantitatively compared to each other by the use of the t-test. The observed frequency of the identified maternal behaviors of both Groups A and B were compared to each other through the use of a frequency histogram.

The sample was split into two groups containing fifteen members each. Group A was defined as the early and extended contact group, while Group B received the routine care given to cesarean section patients. Group A experienced early and extended contact with their infants while Group B experienced late contact and did not room in with their infants until the third postpartum day. The maternal attachment of both groups was compared through the use of the NPI and through the use of a list of identified maternal behaviors. The data were analyzed utilizing a frequency histogram and t-test. The following chapter will display in detail an analysis of the obtained data.

CHAPTER IV

ANALYSIS OF THE DATA

The purposes of this study were to determine the methodology for operationalizing maternal attachment, to examine maternal attachment in both primigravidas who did experience early and extended contact, and primigravidas who did not experience early and extended contact, and finally to determine if early and extended contact influenced maternal attachment.

The thirty primigravidas who participated in this study were divided into two groups containing fifteen members each. Group A was composed of primigravidas who experienced early and extended contact, while Group B was composed of primigravidas who did not experience early and extended contact.

The data which were collected on the third postpartum day were quantitatively analyzed. The demographic data were compared in order to determine the similarity of the groups. The NPI scores of both groups were compared

utilizing the t-test. Finally, the maternal behaviors observation tool was analyzed utilizing a frequency histogram and a t-test.

In comparing Groups A and B for similarity, certain identified demographic data were examined. The ages of the members of Group A and B were compared. As can be seen in Table 1, it was found that the mean age for the mothers in Group A was 21.6, while the mean age for the mothers in Group B was 21.06. The ages of Group A ranged from 17 - 30, and the ages of Group B ranged from 17 - 27.

Table 1
COMPARISON BETWEEN GROUPS BY AGE

Age	Group A		Group B	
	Number	Percent	Number	Percent
15-20	6	40	7	46.66
21-25	6	40	6	40
26-30	3	20	2	13.33

Range: 17-30
Mean: 21.6
Median: 21
Mode: 22

Range: 17-27
Mean: 21.06
Median: 21
Mode: 22

When the ethnic backgrounds of Group A and B were compared, it was found that 80 percent of Group A were Caucasians, while only 66.6 percent of Group B were Caucasians. It was also found that 6.6 percent of Group B were Mexican-Americans, while there were no Mexican-Americans in Group A (Table 2).

Table 2

COMPARISON BETWEEN GROUPS BY RACE

Race	Group A		Group B	
	Number	Percent	Number	Percent
Caucasian	12	80	10	66.66
Black	3	20	4	26.66
Mexican-American	0	0	1	6.66

In examining the educational levels of Groups A and B, it was found that the mean educational level for Group A was a high school education, while the mean educational level of Group B was the eleventh grade. Both groups ranged from the eighth grade to a college graduate. The median and mode of both groups was the twelfth grade (Table 3).

Table 3

COMPARISON BETWEEN GROUPS BY EDUCATION

Highest educational level completed	Group A		Group B	
	Number	Percent	Number	Percent
Eighth grade	1	6.66	1	6.66
Ninth grade	2	13.33	3	20.0
Tenth grade	0	0	2	13.33
High school	8	53.33	7	46.66
One yr. coll.	1	6.66	0	0
Junior coll.	0	0	0	0
College grad.	3	20.0	2	13.33

Range: Eighth grade to college grad.

Mean: High school

Median: High school

Mode: High school

Range: Eighth grade to college grad.

Mean: High school

Median: High school

Mode: High school

All sample members were from military families. In both groups the husband's rank ranged from private to captain. The mean rank for Group A was specialist five, while the mean rank for Group B was specialist four (Table 4).

Table 4

COMPARISON BETWEEN GROUPS BY HUSBAND'S MILITARY RANK

Husband's military rank	Group A		Group B	
	Number	Percent	Number	Percent
Private	3	20.0	4	26.66
Private First Class	2	13.33	1	6.66
Specialist Four	2	13.33	6	40.0
Specialist Five	3	20.0	1	6.66
Specialist Six	1	6.66	1	6.66
Specialist Seven	1	6.66	0	0
Lieutenant	1	6.66	1	6.66
Captain	2	13.33	1	6.66

Range:	Private-Captain	Range:	Private-Captain
Mean:	Specialist Five	Mean:	Specialist Four
Median:	Specialist Five	Median:	Specialist Four
Mode:	---	Mode:	Specialist Four

The infants of Groups A and B were compared according to sex and weight. It was found that 46.66 percent of Group A were males, and 53.33 percent were females, while 53.33 percent of Group B were males, and 46.66 percent were females (Table 5). In looking at the infant's weight, it was found that the infants in Group A ranged from 5 pounds to 10 pounds, with a mean weight of 7 pounds 2 ounces, while the infants in Group B ranged from 5 pounds to 11 pounds, with a mean weight of 7 pounds 15 ounces (Table 6).

Table 5

COMPARISON BETWEEN GROUPS BY INFANT'S SEX

Infant's Sex	Group A		Group B	
	Number	Percent	Number	Percent
Male	7	46.66	8	53.33
Female	8	53.33	7	46.66

Table 6

COMPARISON BETWEEN GROUPS BY INFANT'S WEIGHT

Infant's Weight	Group A		Group B	
	Number	Percent	Number	Percent
5-6 pounds	1	6.66	1	6.66
6-7 pounds	3	20.0	3	20.0
7-8 pounds	8	53.33	1	6.66
8-9 pounds	2	13.33	5	33.33
9-10 pounds	1	6.66	7	26.66
10-11 pounds	0	0	1	6.66

Range:	5-10 pounds	Range:	5-11 pounds
Mean:	7 pounds, 2 ounces	Mean:	7 pounds, 15 ounces
Median:	7 pounds, 8 ounces	Median:	8 pounds, 11 ounces
Mode:	8 pounds, 4 ounces	Mode:	8 pounds, 4 ounces

When the number of years the couple has been married was examined, it was found that both Groups A and B had a mean and median of 2 years. As can be seen from Table 7, Group A ranged from 0.5-7 years, and Group B ranged from 0.5-5 years.

Table 7

COMPARISON BETWEEN GROUPS BY NUMBER OF YEARS MARRIED

Number of Years Married	Group A		Group B	
	Number	Percent	Number	Percent
0.5	1	6.66	3	20.0
1	4	26.66	3	20.0
1.5	1	6.66	1	6.66
2	5	33.33	3	20.0
2.5	1	6.66	0	0
3	0	0	3	20.0
3.5	1	6.66	0	0
5	1	6.66	2	13.33
7	1	6.66	0	0

Range: 0.5-7
Mean: 2
Median: 2
Mode: 2

Range: 0.5-5
Mean: 2
Median: 2
Mode: -

Whether or not the members of the sample attended prenatal classes was examined. As can be seen in Table 8, 60 percent of Group A attended prenatal classes, while only 33.33 percent of Group B attended prenatal classes.

Table 8

COMPARISON OF GROUPS BETWEEN PRENATAL CLASS ATTENDANCE

Prenatal class attendance	Group A		Group B	
	Number	Percent	Number	Percent
Yes	9	60	5	33.33
No	6	40	10	66.66

The method used by sample members to feed their infants was compared. As can be seen from the results in Table 9, the groups were similar.

Table 9

COMPARISON BETWEEN GROUPS BY TYPE OF FEEDING METHOD

Method of Feeding	Group A		Group B	
	Number	Percent	Number	Percent
Bottle	9	60	10	66.66
Breast	6	40	5	33.33

Finally, the groups were compared as to whether or not the members had previous child care experience. The results depicted in Table 10 show that the groups were exactly the same.

Table 10

COMPARISON BETWEEN GROUPS BY CHILD CARE EXPERIENCE

Previous child-care experience	Group A		Group B	
	Number	Percent	Number	Percent
Yes	11	73.33	11	73.33
No	4	26.66	4	26.66

The NPI scores of Group A were compared to the NPI scores of Group B utilizing the t-test. The results are presented in Table 11.

Table 11

COMPARISON BETWEEN GROUPS BY NPI SCORES

	Mean	Standard Deviation	t-score
Group A	1.26	2.3556	1.075
Group B	.8	2.056	

df=28

 $\alpha = .05$ $p > 2.05$

On the basis of a two-tailed test at a .01 level of significance, H_0 would be rejected if it were outside the range of $-t .995$ to $t .995$, which, for 28 degrees of freedom, is the range of -2.76 to 2.76 . Since $t = 1.075$, H_0 cannot be rejected.

On the basis of a two-tailed test at a .05 level of significance, H_0 would be rejected if t were outside the range of $-t .975$ to $t .975$ which, for 28 degrees of freedom, is -2.05 to 2.05 . Since $t = 1.075$, H_0 cannot be rejected.

The frequency scores of the maternal behaviors were obtained for both Groups A and B and were compared to each other through the use of a frequency histogram (Table 12).

When the frequency scores of the maternal behaviors, "Holds bottle where milk flows easily into infant's mouth" and "Feeds infant at a comfortable pace" were compared, it was found that all but two of the mothers who bottle-fed their infants held the bottle where the milk flowed easily into the infant's mouth and fed their infants at a comfortable pace.

Mean
Frequency

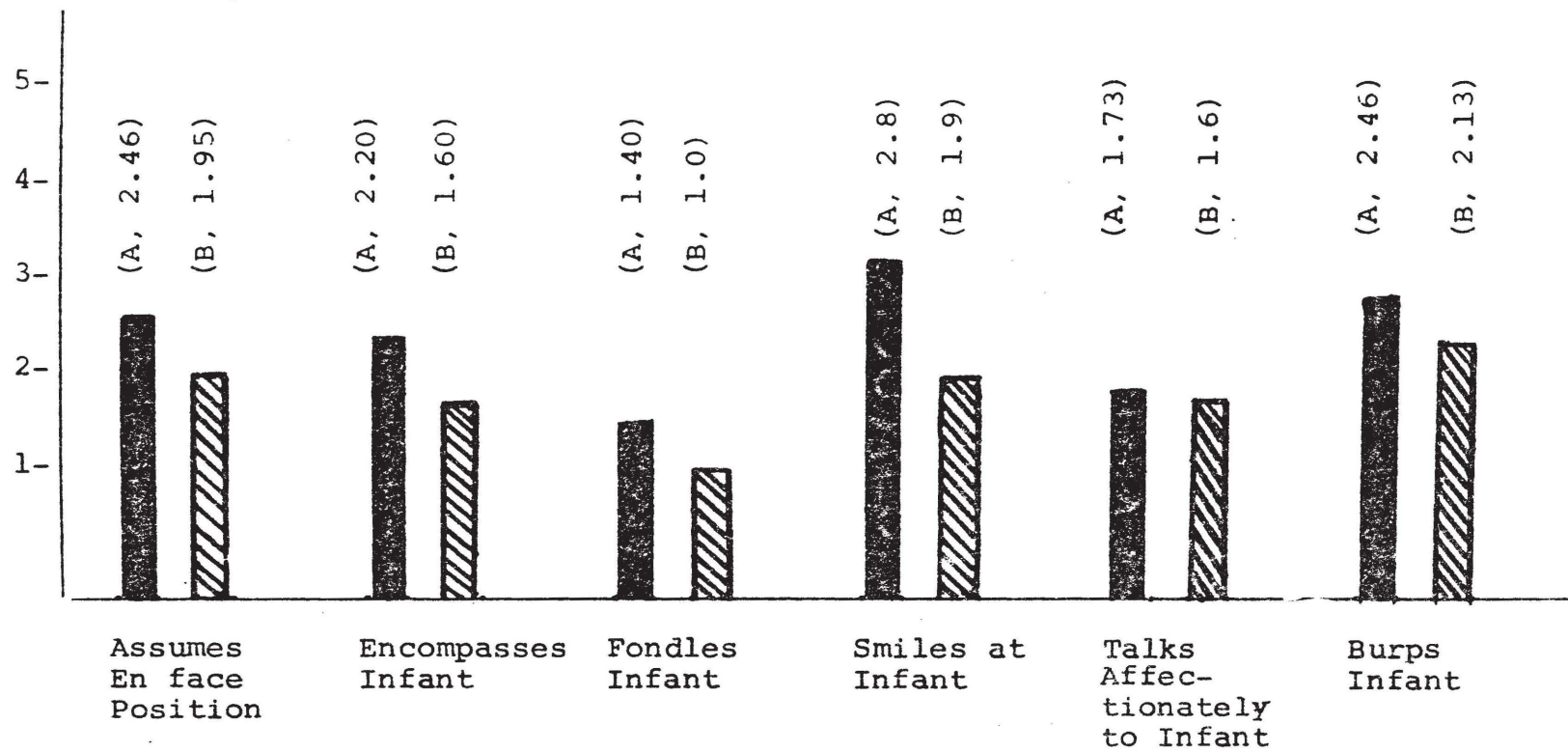


Table 12
MATERNAL BEHAVIORS

In order to determine if there were any significant differences between the maternal behavior scores of Groups A and B, a t-test was performed on each of the behaviors. It was found that there was a significant difference at the .05 level of significance between Groups A and B in the frequency scores of two behaviors. It was found that the mothers in Group A encompassed their infants, and smiled at their infants, significantly more than the mothers in Group B (Table 13).

Table 13

SIGNIFICANT MATERNAL BEHAVIORS

Maternal Behaviors	Mean	t-score
Encompasses Infant		
Group A	2.20	
Group B	1.60	2.678
Smiles at Infant		
Group A	2.80	
Group B	1.90	2.19
df = 28 $\alpha = .05$ $p > 2.05$		

Only one demographic variable was identified as possibly influencing the results of the study. The variable of prenatal class attendance was found to be 60 percent in Group A and 33.33 percent in Group B.

The findings of this study revealed no significant differences in the NPI scores of Groups A and B. Thus, the null hypothesis could not be rejected.

However, significant differences at the .05 level of significance were found in two of the maternal behaviors. The behaviors of "encompasses infant" and "smiles at infant" were identified as significantly greater in Group A. Thus, the null hypothesis may be rejected for these two variables.

The final chapter will summarize the study, make conclusions related to the study, state the implications this study has, and make the appropriate recommendations for further study.

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Maternal attachment has been discussed as a significant concept in the maternal child health care field. The many factors that influence maternal attachment have been identified and discussed. Maternal attachment, if encouraged to progress normally, may influence the mothering the infant receives.

Summary

The attachment process which begins within the first few minutes of life is important to both the mother and the infant. A new mother explores her infant to find out exactly what he is like and how he feels about her as a mother. In order for the attachment process to begin, the infant must respond to and interact with his mother. The interaction must be reciprocal. During the first few days after birth, the mother begins to develop her feelings about the infant. The type of feelings a mother develops

for her infant, be they either positive or negative, will influence the relationship the mother and infant develop and the care the infant receives.

The purposes of this study were: 1) to determine the methodology for operationalizing maternal attachment, 2) to examine maternal attachment in primigravidas who did have early and extended contact with their infants, 3) to examine maternal attachment in primigravidas who did not have early and extended contact with their infants, and 4) to determine if early and extended contact influences maternal attachment.

The sample consisting of thirty primigravidas and their normal full term infants was split into two groups containing fifteen members each. Group A was exposed to the early and extended contact experience, while Group B received the routine care given to cesarean section patients. On the third postpartum day both groups were asked to fill out the NPI and were observed during a fifteen-minute feeding period for the defined maternal behaviors that have been identified as indicative of maternal attachment.

The NPI scores of Groups A and B were quantitatively compared utilizing the t-test. The results showed no significant difference in the scores.

The mean frequencies of the identified maternal behaviors were compared utilizing a frequency histogram and a t-test. The results showed two of the maternal behaviors to be statistically significant. The behaviors "encompasses infant" and "smiles at infant" were found to occur significantly more in Group A than in Group B.

Conclusions

The investigator concluded that:

1. The results of this study may not be generalized to a larger population because of the small sample size and the non-randomized sampling method used
2. There was no significant difference in the NPI scores of Groups A and B. The NPI measures the perceptions or fantasies a mother has of her infant. These perceptions were not found to be related to the level of maternal attachment
3. There was no significant difference in the frequency of the maternal behaviors,

"assumes en face position," "fondles infant," "talks affectionately to infant," and "burps infant." This may have resulted from the fact that Group B consisted of cesarean section mothers. These mothers may have still been so concerned with themselves and the changes that were taking place in them that they could not begin to attach themselves to their infants.

4. There was a statistically significant difference between the frequency scores of Groups A and B, on the behaviors "encompasses infant" and "smiles at infant."
5. The fact that Group B consisted of cesarean section mothers may have influenced the frequency of the behavior "encompasses infant." As a result of an abdominal incision, the mothers in Group B may not have been comfortable holding their infants in an encompassing embrace.

Implications

The implications of this study are directed toward nurses who work in the maternal child health care field. Parents should be encouraged to touch, hold, and get acquainted with their infants immediately after birth. Mothers should further be encouraged to interact with their infants. If a mother receives positive feedback that she is doing a good job, she will be further encouraged to interact with her infant.

The orderly progression of the attachment process should be evaluated and appropriate intervention begun when necessary. This may especially be needed in situations where the infant and mother are separated for a time period immediately after birth.

The maternal-infant bond may be greatly influenced by the interaction that takes place during the immediate postpartum period. The maternal child health nurse has the opportunity to observe the progression of the maternal-infant process and to begin intervention when appropriate.

Recommendations

The recommendations for further study are:

1. The maternal observation tool be enlarged to include more maternal behaviors that have been identified as indicators of maternal attachment
2. This enlarged tool be utilized to examine the level of attachment for a larger sample
3. Sample members be observed both at three days postpartum, at six weeks, and at six months for appropriate maternal-infant interaction
4. The sample members be observed at a time when they are not aware that someone is watching them. A two-way mirror may be used for this purpose. In this manner the Hawthorne effect may be prevented
5. The study be repeated using two groups of primigravidas who delivered vaginally
6. Group B be observed again on the fifth postpartum day
7. The study be repeated again using participant observers
8. A study be done to evaluate the influence the NPI has on maternal attachment

APPENDIX 1

PERMISSION FOR THE STUDY

56
TEXAS WOMAN'S UNIVERSITY
DALLAS, TEXAS 75235



COLLEGE OF NURSING

July 18, 1977

Ms. Rosalie Tuttle

Dear Ms. Tuttle:

Your prospectus, "A Study of the Influence Early and Extended Contact has on the Development of Maternal Attachment," has been approved by the Human Research Review Sub-committee. A copy of this letter will be forwarded to Dr. Phyllis Bridges, Graduate Dean, by the chairperson of your thesis committee. Also, the prospectus will be forwarded to Dr. Carolyn Rozier, the newly appointed chair person for the main committee on the Denton Campus. If she has any question she will notify you. In the meantime, agency and/or client permission.

Thank you.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Geri Goosen'.

Geri Goosen, R.N., M.S.
Assistant Professor
Graduate Medical/Surgical Nursing

cc: Dr. Phyllis Bridges
Graduate Dean

CG:js

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57
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AGENCY PERMISSION FOR CONDUCTING STUDY*

THE _____ (NAME OF INSTITUTION ON FILE)

GRANTS TO Rosalie E. Tuttle

a student enrolled in a program of nursing leading to a Master's Degree at Texas Woman's University, the privilege of its facilities in order to study the following problem:

Is the development of maternal attachment in a primi-
gravida influenced by early and extended contact with her infant?

The conditions mutually agreed upon are as follows:

1. The agency (~~may~~) (may not) be identified in the final report.
2. The names of consultative or administrative personnel in the agency (~~may~~) (may not) be identified in the final report.
3. The agency (wants) (~~does not want~~) a conference with the student when the report is completed.
4. The agency is (willing) (~~unwilling~~) to allow the completed report to be circulated through interlibrary loan.
5. Other: _____

Date 4 Oct 77

Rosalie E. Tuttle
Signature of student

(SIGNATURE ON FILE)
Signature of Agency Personnel

Cheryl A. Anderson
Signature of Faculty Advisor

*Fill out and sign three copies to be distributed as follows: Original -- Student; first copy -- agency; second copy -- T.W.U. College of Nursing.

APPENDIX 2

INFORMATION SHEET

APPENDIX 2 - INFORMATION SHEET

Wife's age: _____ Husband's age: _____
Race: _____ Race: _____
Educational Level: _____ Educational Level: _____

Number of years you and your husband have been married:

Did you and your husband attend prenatal classes? _____

Was your husband present for the delivery? _____

Are you breastfeeding or bottle feeding? _____

Husband's rank: _____

Infant's sex: _____

Infant's birth weight: _____

What past experience have you had in caring for children?

APPENDIX 3

NEONATAL PERCEPTION INVENTORY I

APPENDIX 3 - NEONATAL PERCEPTION INVENTORY I

Average Baby

Although this is your first 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
5	4	3	2	1

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

a great deal	a good bit	moderate amount	very little	none
5	4	3	2	1

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

a great deal	a good bit	moderate amount	very little	none
5	4	3	2	1

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

a great deal	a good bit	moderate amount	very little	none
5	4	3	2	1

APPENDIX 3 - NEONATAL PERCEPTION INVENTORY I

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

a great deal	a good bit	moderate amount	very little	none
5	4	3	2	1

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
5	4	3	2	1

APPENDIX 3 - NEONATAL PERCEPTION INVENTORY I

Your Baby

While it is not possible to know for certain what your baby will be like, you probably have some ideas of what your baby will be like. Please check the blank that you think best describes what your baby will be like.

How much crying do you think your baby will do?

a great deal	a good bit	moderate amount	very little	none
5	4	3	2	1

How much trouble do you think your baby will have feeding?

a great deal	a good bit	moderate amount	very little	none
5	4	3	2	1

How much spitting up or vomiting do you think your baby will do?

a great deal	a good bit	moderate amount	very little	none
5	4	3	2	1

How much difficulty do you think your baby will have sleeping?

a great deal	a good bit	moderate amount	very little	none
5	4	3	2	1

APPENDIX 3 - NEONATAL PERCEPTION INVENTORY I

How much difficulty do you expect your baby to have with
bowel movements?

<u>a great deal</u>	<u>a good bit</u>	<u>moderate amount</u>	<u>very little</u>	<u>none</u>
5	4	3	2	1

How much trouble do you think that your baby will have
settling down to a predictable pattern of eating and
sleeping?

<u>a great deal</u>	<u>a good bit</u>	<u>moderate amount</u>	<u>very little</u>	<u>none</u>
5	4	3	2	1

APPENDIX 4

MATERNAL BEHAVIORS

APPENDIX 4 - MATERNAL BEHAVIORS

Maternal Behaviors	Frequency Observed
1. Assumes en face position	
2. Encompasses infant	
3. Fondles infant	
4. Smiles at infant	
5. Talks affectionately to infant	
6. Burps infant	
7. Holds bottle where milk flows easily into infant's mouth	
8. Offers milk at comfortable pace for infant	

APPENDIX 5

DEFINITIONS OF TERMS USED IN THE TOOLS

APPENDIX 5 - DEFINITIONS OF TERMS USED IN THE TOOLS ---

1. En face - When the mother aligns her face in the same vertical plane of rotation as the infant (Klaus 1972, p. 461)
2. Fondling - Any active spontaneous interaction initiated by the mother (Klaus 1972, p. 461)
3. Encompassing - The act of the mother placing her upper arm, lower arm, and hand around the infant's body (de Chateau 1976, p. 153)

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