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The Effect of Mother-Infant Bonding on Maternal Attitude

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The Effect of Mother-Infant Bonding on Maternal Attitude

A Thesis

Presented to the
Department of Psychology
and the
Faculty of the Graduate College
University of Nebraska

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
University of Nebraska at Omaha

by
Roxanne Hughes
September, 1981
THESIS (OR FIELD PROJECT) ACCEPTANCE

Accepted for the faculty of the Graduate College, University of Nebraska, in partial fulfillment of the requirements for the degree (Master of Arts), University of Nebraska at Omaha.

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Abstract

The attachment relationship that develops between parents and their infants has been the focus of extensive research. The results suggest that parent-infant attachment can be crucial to the survival and development of the infant. Research has further shown that strong feelings of affection could be easily disturbed or altered permanently if prolonged separation between parents and their newborn occurs during the immediate postpartum period (first few hours). This study investigated whether differing amounts of early postpartum contact between mothers and their normal full term infants would be reflected in maternal attitude toward the newborn infant documented through a questionnaire administered during the first three days of the infant's life and at six-10 weeks postpartum. Comparisons were also made between mothers that had roomed-in with their infants during the early postpartum hospitalization and mothers that had not roomed-in, multiparous and primiparous mothers, and maternal ratings of male and female infants. Relationships between early contact and breast feeding as well as postpartum depression were also examined. The subjects were 46 females and their newly delivered babies. The subjects were divided into three groups based on the amount of early extended contact they had experienced with their baby immediately after delivery. The data analysis indicated that rooming-in and sex of the
infant influenced the mothers choice to breast feed. In the early postpartum period (1-3 postpartum days) the opportunity to room-in increased the chance that a mother would breast feed, however by six-10 weeks postpartum rooming-in no longer influenced breast feeding. At follow-up significantly more mothers of females were breast feeding than mothers of males. Significant differences were not found between rooming-in and non rooming-in subjects on any other questionnaire items at one-three days postpartum or at follow-up. No differences were found between the extra contact, intermediate contact, and no contact subjects in the initial period or at follow-up on the issue of breast feeding. The results did not replicate the Hittelman et al. findings on the questionnaire items of infant irritability, cuteness, prettiness, cuddliness, and length of time spent sleeping. At follow-up contact was shown to influence the mother's perceptions of her infant's cuddliness and difficulty feeding. Parity did not influence maternal ratings of infants initially or at follow-up. Based on the Beck Depression Inventory the contact and no contact mothers did not differ in the number that were mildly or moderately depressed at follow-up. The supportive companionship of a friend or relative during labor and/or deliver was investigated as a possible intervening variable to explain the obtained results. The investigation yielded findings with important implications for future research on maternal attitude.
Chapter I
Introduction

Statement of the Problem

In the last century, increasing emphasis has been placed on the medical and scientific aspects of birth, but less attention has been paid to the equally valid psychological and social aspects. Inherent in the psychological and social aspects of the birth experience is the attachment relationship that develops between parents and their infant. Klaus and Kennell (1976) have researched extensively on the development of attachment from parent to infant. They conclude that attachment is crucial to the survival and development of the infant. Clinical studies, performed during the early postpartum period, have also provided evidence to support the idea of a "maternal sensitive period" (Klaus & Kennell, 1976, pg. 51). It has further been shown that strong feelings of affection could be easily disturbed or altered permanently during the immediate postpartum period due to prolonged separation of parents from their newborn.

Some researchers (e.g., Fanaroff, Kennell, & Klaus, 1972; Seashore, Leifer, Barnett & Leiderman, 1973) have shown that the bond formed in the "sensitive period" can also be reflected in the attitude the mother develops toward her infant. The expressed maternal attitude can in turn affect the social/emotional development of the child. It has been shown that general maternal presence during the early years, can affect a
child's cognitive development in a positive direction (Korner, 1973). Therefore, the nature of the mother's interaction with her infant is a possible mechanism that could dynamically affect the child's total development.

The present study had as its objective to investigate whether early postpartum contact between parents and their normal full term infants would be reflected in maternal attitude toward the newborn infant documented through a questionnaire administered during the first three days of the infant's life and at six-10 weeks postpartum. Previous findings (e.g. Broussard, 1971, 1976) suggested that a study designed to assess maternal attitude toward her newborn infant after early contact has been facilitated, might yield a better understanding of the factors that contribute to a positive and sensitive mother-infant relationship. Of particular interest was the social/emotional development of infants and how that may relate to the mother's initial perception of the child. By studying maternal attitudes, among dyads with normal full term infants, more effective predictors of developmental outcomes could be developed. Also, a better understanding of the development of parent-child relationships might be facilitated by exploring similarities and differences between dyads with differing early experiences.

Review of Relevant Literature

Maternal-infant bonding. Our lives are filled with the rich-
ness of the relationships we maintain with others. We maintain a uniquely close attachment or bond with only a few individuals. Much of the sorrow and joys of life occur around these attachments or close relationships. This section of the literature review specifically addresses research investigating the nature of a very special attachment, the bond formed between a mother and her newborn infant.

An attachment or bond has been defined as a unique and specific relationship between two people that endures through time (Klaus & Kennell, 1976). In light of the mother-infant relationship Bowlby (1958, 1969) identifies attachment behaviors as those behavioral patterns employed by the infant for maintaining proximity or contact to the mother. Behaviors that indicate attachment are fondling, kissing, cuddling, and prolonged gazing. The development of attachment behaviors indicate a high probability for the successful development of a healthy mother-child relationship. There are several behaviors that can be observed in the early postpartum period that signal how the mother feels about herself and her developing relationship with her child (Ludington-hoe, 1977). These behaviors include active reaching-reaching for the infant when the nurse places the child about three feet from the mother's chest; touch progression-touch progresses from the use of the fingertips to palmer touch, to use of arms for embrace and snuggling the infant up against the chest where the heart beat can be heard; eye-to-eye
contact-mother and child must be in "en-face" position, mother's face is rotated so that her eyes and those of the infant meet fully in the same vertical plane of rotation (Robson, 1967).

It has been noted by other researchers that similar patterns of maternal behavior exist in humans and other mammals (Klaus & Kennell, 1976). In order to gain a better understanding of maternal behavior in humans it is valuable to explore maternal behavior in other mammals. Among goats, it has been shown that separation of the mother and infant immediately after birth for a short period of time may result in distortions of mothering behavior. For example, the failure of mother goats to care for their young may include butting of offspring, driving them away, and feeding their own and other infants indiscriminately (Klopfer, 1971). In contrast, if mother goats and their infants are allowed to remain together for awhile after delivery and then separated, the mother will resume the characteristic mothering behavior of her species upon reunion. Thus, there appears to be a sensitive period immediately following delivery of the infant in the adult goat during which maternal bonding to the infant occurs. If the pair are separated during this period, aberrant mothering behavior may result. The bond formed between a mother and her young has been found to be stable, specific and rapidly formed. Klopfer (1971) has found that the response of the mother goat to her young is formed in as little as five minutes, and is specific to the infant with
which contact is made and its siblings.

It is worth considering the extent to which this sensitive period for maternal infant bonding occurs with humans. Several researchers have obtained evidence to support the existence of a sensitive attachment period shortly after birth in the adult woman (Klaus, Jerauld, Kreger, McAlpine, Steffon & Kennell, 1972; Hopkins & Vietze, Note 1). Furthermore, contact during the special attachment period has been shown to have a powerful effect on the behaviors exhibited in the mother-infant relationship and consequently the infant's later development (Klaus, et al., 1972).

Klaus et al. (1972) obtained their data via observations of twenty-eight mother-infant pairs one hour after delivery. The control subjects were fourteen primiparous mothers and their full term infants that had been allowed to experience the traditional contact with their infants (a glimpse of their infant shortly after birth, then brief contact and identification at six to twelve hours, and visits for 20 to 30 minutes every four hours for bottle feeding). The fourteen experimental mothers were given their babies for one hour during the first three hours after birth and also for five extra hours on each afternoon of the three days after delivery. Klaus et al. reported that the control group, scored lower on all dependent measures than the extended contact group. Fondling and "en face" scores for the extended contact group were significantly
greater than those for the control group. The extended contact group was in the "en face" position 11.6 percent of the time and fondling behavior was observed 6.1 percent of the time. However, the control group spent 3.5 percent of the time "en face" and 1.6 percent of the time fondling.

Timing of sensitive period. Studies of the duration of the sensitive period and the mechanisms that initiate its occurrence are of vital importance in order that clinical personnel can provide the necessary environment for the maximization of the mother-infant bond at the crucial time. Hopkins and Vietze (Note 1) obtained data that suggested that contact must occur within the first three hours following birth in order to facilitate a good mother-infant relationship. One hundred and four mother-infant dyads were utilized to examine the effects of early versus extended mother-infant contact on infant-maternal interactional behaviors. The observations were done during the fourth or fifth feeding that occurred during the hospital stay. The results for the most part supported the idea of quality (early contact) rather than quantity (extended contact) as having the greatest effect on the mother-infant relationship. They found that the quantitative model as represented by extended contact, primarily influenced the number of items mothers completed on an infant temperament survey. Furthermore, they suggested that the contact occurring within three hours postpartum may influence both mother and infant behaviors in a way that
could be observed during the feeding situation. Hales, Kennell, and Sosa, (1976) concluded that the sensitive period was less than twelve hours in length. These studies support the concept of a maternal sensitive period that is extremely short in duration. Something apparently occurs in the space of a few minutes after parturition which prepares the mother to attach to the infant.

The question of whether the actual timing of the contact is more important than the length of the mother-infant contact has been studied by Kontos (1978). Previously, extended mother-infant contact was defined as initial postpartum contact along with contact for several hours on a daily basis. In this study, Kontos (1978) observed particular attachment behaviors that indicated a positive mother-infant relationship (i.e. looking, smile, song, hold close, kiss, hold "en face", etc.). An attachment summary score was computed based on the number of particular attachment behaviors occurring during the observation period. The analysis which examined the differences in effects of extra initial mother-infant contact from no extra initial contact, and extended contact on a daily basis (rooming-in) from no rooming-in, showed that the contact occurring immediately after birth had a strong effect on observed attachment behaviors exhibited by the mother. The mothers experiencing early extended contact had significantly higher attachment scores than the mothers who were separated after birth. The
mother that roomed-in had significantly higher attachment scores than mothers that did not room-in. Mothers that had experienced early extra contact plus had roomed-in with their infants had

But the mechanism that influences the sensitive period is not well understood. Klopfer (1971) has suggested that the cervical dilation accompanying birth induces the release of a substance with a time course similar to that of oxytocin. Apparently, the oxytocin stimulated specific central ganglia or altered the sensitivity of peripheral receptors to which it was normally unresponsive. Thus, a short term sensitivity is produced during which the basis for a longer term bond is created. In order for the maternal behavior to be maintained, a period during the first three days after parturition is necessary when control of maternal responsiveness transfers from internal (hormonal) to primarily external support (Klaus & Kennell, 1976). At this point, the presence of the infant appears to be sufficient to maintain maternal responsivity.

Early contact and the mother-infant relationship. Immediate postpartum contact between mothers and infants has been shown to facilitate mother-infant adaptation and to affect subsequent maternal behaviors. The effects on maternal behavior have been reflected in length of breast feeding (Sosa, Kennell, Klaus & Urrutia, 1976; Lozoff, Brittenham, Trause, Kennell & Klaus, 1977; DeChateau & Wiberg, 1977a), amount of affectionate behaviors such as soothing and fondling (Hales et al., 1976;
Klaus et al., 1972); attentiveness (Klaus & Kennell, 1970) and linguistic behaviors (Ringler, 1976).

The mothers of the Klaus et al., (1972) study were later interviewed and observed during a physical examination of their infants at one year of age (Kennell, Jerauld, Wolfe, Chesler, Kreger, McAlpine, Steffa & Klaus, 1974). The scores on the interview questions showed that of the mothers who returned to school or work, the extended contact mothers were more preoccupied with their babies than the control mothers. During the physical examination, half of the extended contact mothers spent 31 to 40 of the total 15 second time periods within the ten minute observation period assisting the physician while their behavior was noted for only two of the control mothers.

Length of breast feeding is another important indicator of maternal involvement with the infant. Sosa et al. (1976), followed 160 Guatemalan women that were separated into experimental and control subjects. The experimental subjects received extra contact with their infants on the delivery table for 45 minutes. The control subjects first received their infants for routine feeding at 12 or 24 hours postpartum. The early contact mothers reportedly breast fed twice as long as the controls during the first year. In a study by DeChateau and Wiberg (1977a), that involved a three month follow-up visit to mothers who had experienced fifteen minutes of extra contact at birth, more mothers in the extra contact group were breast feeding, than the
comparison control mothers not receiving extra contact at birth.

Affectionate behaviors such as looking at the baby ("en face") talking to the baby, fondling, kissing and smiling have also been observed to occur more often among mothers who had early contact as compared to mothers with delayed contact (Hales et al., 1976; Klaus et al., 1972). Early and extended contact has also been shown to influence the linguistic development of children (Ringler, Trause & Klaus, 1976). Mothers that experienced early contact with their infant were found to use more adjectives, questions, words per preposition, fewer content words, and imperatives to their two year old children than mothers who had not experienced early contact. At age five, the children in the early contact group comprehended significantly more complex phrases than the control children. It was concluded that the children in the early contact group exhibited greater maturity in syntactic development than the comparison control group.

Sex has also been found to influence the behavior of both the infant and the mother contingent on the opportunity for bonding immediately at birth. DeChateau and Wiberg (1977b) observed at 36 hours postpartum the influence of the immediate postpartum care, and found the effect to be greater on males and their mothers than females and their mothers. The difference between the contact group mothers and routine care mothers of males occurred for close body contact and frequency
The early contact mothers were in close body contact with their male infants significantly more often than the comparison group mothers (DeChateau and Wiberg, 1977b). The male infant whose mother received routine care cried more frequently. No significant differences were found for early contact mothers and routine care mothers and their female infants at 36 hours postpartum (DeChateau and Wiberg, 1977b). By three months of age, significant differences have been reported for both male and female infants as a result of the early postpartum care (DeChateau & Wiberg, 1977b). Male infants with no early contact were found to be significantly more alert (eyes open) and the females of this group cried more frequently (DeChateau & Wiberg, 1977b).

Both the male and female infants who experienced early contact were alert and their mothers in turn looked at them more often (DeChateau & Wiberg, 1977b). The mothers of boys did spend a significantly longer proportion of time in the "en face" position.

These results suggest that females are more able, in the early postpartum period, to withstand the negative consequences resulting from denial of the early bonding experience. However, with the passage of time the effects of early interactional deprivation begin to influence the behaviors exhibited during interaction by the mother and her female infant. Whether or not the observable early differences are related to
the inherent male/female physiological differences augmented at the time of birth remains an important research area.

The studies discussed have shown that when bonding is allowed to occur during the early postpartum period, long term positive effects can be observed in both the mother and infant.

**Maternal attitude.** The mother-child relationship develops as a cyclical system; each maintains the potential to influence the other in a pervasive manner. When a woman becomes a mother she has certain expectations as to what kind of infant she will have. The mother provides the environment essential to the child's survival. Her sensitivity to the infants needs will enable her to provide an optimal environment that will foster healthy development. The way the mother relates to the child will be modified by her perception of his/her appearance and behavior. His/Her behavior will, in turn, be affected by her handling of him.

Just as lack of early contact has been shown to affect the type and amount of stimulation provided to the infant, other data indicate that denial of early mother-infant interaction has a negative effect on maternal self confidence (Seashore, Leifer, Barnett & Leiderman, 1973). Seashore et al. (1973) used a paired comparison questionnaire administered at one month post discharge and asked 21 mothers to choose themselves or one of five other caregivers as best able to perform caregiving tasks or respond appropriately to the baby. The
separated primiparous mothers were the least likely of both
groups of mothers in the study to select herself. The results
obtained in this study support the hypothesis that primiparous
mothers denied early contact may have lower self confidence
than mothers of infants permitted the early bonding experience.

It appears that separation or lack of interactive experi-
ence may contribute to a lowered level of participation and
self confidence among mothers. The concept of maternal self
confidence may therefore reflect the attitude that the mother
has toward the infant or the attitude that could develop over
time.

During the first few weeks of life the mother and infant
are intimately involved in an interchange that evolves around
the "getting to know you" phenomenon. Basically the mother
is concerned with problems related to the infant's major
activities, such as sleeping, feeding, spitting up, elimi-
nation, crying, predictability. During this time the inter-
change occurring is reciprocal in nature, characterized by
rythmicity. A mother's demonstrated awareness of her infant's
individual rhythm and her ability to respond appropriately to
that rhythm are very important in the developing relationship.
As the infant experiences repeated gratification of its needs
s/he learns to confidently expect that his/her cues will be
understood. Also, the extent to which a mother acquires a
sense of confidence in her ability to "know" and meet her
baby's needs is important in facilitating an optimal mutuality between mother and child.

Very little information exists that relates the effect of the mother's attitude toward the infant on its subsequent emotional development. One method that has been developed to aid in identifying a population of infants at high risk for subsequent emotional difficulty is the Neonatal Perception Inventory (Broussard & Hartner, 1971). The inventory is an easily administered screening instrument using the mother's concept of the average baby as a comparison for her own infant's behavior. The behavioral items included in the inventory are: crying, spitting, feeding, elimination, sleeping, and predictability.

The original sample on which the inventories were used consisted of 318 primiparous mothers. The Neonatal Perception Inventories were administered on the first or second postpartum day (Time I) while the mothers were in the hospital and again when the infants were approximately one month of age (Time II). Data collection at two points permitted time comparisons.

The analyses showed that maternal perception of the infant at Time I was not correlated with problems in infant behavior at one month of age. However, perception of the infant at Time II was correlated with problems in infant behavior at one month of age. Based on the Neonatal Perception Inventory at
Time II, the population was categorized into high risk and low risk groups for the development of subsequent emotional disorder. Mothers who did not perceive their infants as better than average at one month (negative perception) were judged to have infants at risk. Infants rated better than average (positive perception) were considered low risk. In order to determine the extent that the mother's initial perception or attitude regarding the infant could predict the child's subsequent emotional development, the original population of first borns was tested again at 4\% years, and 104 subjects in the sample were retested at 10-11 years of age. It was found that: Children considered to be low risk at one month of age had fewer emotional disorders at 4\% years of age than those considered to be high risk. At 10 to 11 years of age, the proportion of children rated as high risk was reported as identical to the proportion in the original and 4\% year groups.

In addition to Broussard's (1976) work on maternal attitude and infant emotional disorder, Hittelman, O'Donohue, Zilkha and Parekh (Note 2) have obtained results on the positive effects of extra contact on maternal activity. In the Hittelman et al. (Note 2) study early contact was found to enhance maternal attitude toward her baby and decrease postpartum depression. Ninety subjects, separated into three groups, were evaluated by Hittelman et al. Maternal behaviors were assessed for only two of the three groups. The three
groups of subjects consisted of: Group I - the LeBoyer method of childbirth, Group II - early mother-infant contact, and Group III - routine hospital care. In the early postpartum period (1-2 days) differences were noted for irritability, attractiveness, cuteness, cuddliness, and sleep length. At the six-eight week follow-up, differences were found on ratings of infant irritability, difficulty sleeping, spitting up, and knowing mother sooner. At one-two days postpartum, extra contact mothers described their infants as less irritable, cuter, prettier and cuddlier, and at the six-eight week follow-up as less irritable and having less difficulty sleeping. The routine care mothers initially described their babies as sleeping for shorter periods of time and at follow-up, as spitting up the most and taking more time to know their mothers.

The need to measure maternal attitude assumes greater importance in light of the research done by Broussard (1976) and Hittelman et al. (Note 2). Broussard (1976) has shown that a child's emotional development can be directly affected by the positive or negative attitude displayed by the mother toward her infant, and Hittelman (Note 2) has shown that early contact can affect maternal attitude. The results suggest that if a child's emotional development has been fostered by a mother with a positive attitude, the nature of the mother-infant interaction will be positive, with positive social behaviors exhibited by both mother and infant. However, if maternal
attitude is clouded with negative feelings toward the child, due to either internal maternal characteristics or an unrewarding interaction with a perceived difficult child, severe emotional problems may be observed in the mother-infant interaction patterns.

Further considerations. The studies discussed thus far strongly suggest that persistent changes in the interaction of the mother and child can be observed as a result of extended contact immediately after birth (Kennell et al., 1974; Klaus et al., 1972). The effects on mother-infant interaction were shown by Klaus and Kennell (1976) to persist for up to one year postpartum. Recent studies, however, have been unable to replicate the Klaus and Kennell (1976) results, and therefore some investigators are questioning the earlier findings.

Schaller, Carlsson and Larsson (1979) examined 46 mother-infant pairs. The subjects were separated into three groups: Extended contact plus new routine; Extended contact plus old routine; Limited contact plus old routine. The results during the first week after parturition showed that mothers having extended body contact with their babies immediately after delivery exhibited more tactual contact with their newborns. However, the difference between the groups disappeared by five weeks postpartum.

In a follow-up study involving 50 patients randomly selected from the same original study as the previous Schaller
et al. (1979) report, Carlsson, Fagerberg, Horneman, Hwang, Larsson, Rodholm and Schaller (1979) showed that extra contact did not increase the likelihood that affective behaviors would predominate the mother-infant interaction that occurred during nursing at six weeks postpartum. Taylor and his associates (Taylor, Taylor, Campbell, Maloni & Dickey, Note 3) tested the hypothesis that an hour of extra contact between mothers and infants beginning about one-half hour after delivery would be associated with more secure attachment of infant to mother at one year, and better subsequent cognitive and social-emotional development. Their results showed that extended contact mothers did not choose to spend more time with their infants while in the hospital; they did not express greater concern than control mothers for their one-month old infants, and they did not perceive their infants any differently at two days and one-month postpartum. Extra contact was found to be associated only with better quality interaction during feeding for mother-male infant pairs, but not for mother-female infant pairs at two days and one month. These data regarding the qualitative difference in interaction patterns related to infant sex supports the findings of DeChateau and Wiberg (1977b) that extra contact is associated with better quality feeding interactions at two days for males. At eight months of age, 56 of the original 65 patients in the Taylor et al. (Note 3) study, completed the Carey Infant Temperament Questionnaire.
The analyses showed that extra postpartum mother-infant contact in the first hour of life did not enhance maternal perceptions of infant temperament at eight months.

The failure to replicate the Klaus and Kennell (1976) findings indicates that additional research is needed to determine when the effects of mother-infant contact dissipate, and what measures remain reliable for the measurement of its effects. The findings to date suggest that bonding may have questionable effects. When comparing the earlier studies to more recent work, differences can be found in the subject populations used. Kennell et al. (1974) used primarily low socioeconomic status young single women, while the mothers participating in the Carlsson et al. (1979) and Schaller et al. (1979) studies were relatively well educated, and living under stable social economic conditions. Also, the findings of the Kennell et al. (1974) study lacked robustness, because they did not associate the 15 extra hours of postpartum contact experienced by the extra contact mothers with the differences obtained in the outcome measures of the two groups, and they did not control for special treatment.

**Purpose of Study**

Because studies employing subject populations differing in socioeconomic status produce contradictory results, one can ask: Is there a difference in maternal attitude between lower and middle class populations? And if so, is it the case
that poor mothers feel they are being treated differently, therefore special, when they are solicited to become subjects in a research study, and therefore behave differently than they would ordinarily? In order to reduce the possibility of this "halo effect" the present naturalistic study was developed to test hypotheses based on the experimental study conducted by Hittelman et al. (Note 2).

Hypotheses

In the present study it was assumed that extra contact intermediate contact and no contact mothers and their babies would not differ significantly regarding socioeconomic status, length of labor, infant age in hours at time of first interview, maternal age, infant birthweight, and one minute and five minute Apgar scores.

The present study also assumed that manipulation of immediate extended postpartum contact between mothers and their infants would significantly affect maternal perception of the infant, as assessed by a maternal attitude questionnaire administered during the early postpartum period and at six-10 weeks postnatally. The following directional hypotheses were advanced:

(1) Mothers who had experienced rooming-in with their infants would rate their infants more favorably on the maternal attitude questionnaire than mothers that had not experienced rooming-in. Also, it was hypothesized that more rooming-in
mothers would choose to breast feed their infants in the early postpartum period.

(2) Based on the Hittelman et al. (Note 2) results, it was expected that extended contact (EC) mothers would describe their babies as less irritable, cuter, prettier and cuddlier than the no contact (routine care) mothers. Further, no contact mothers were expected to describe their infants as sleeping least. The ratings by the intermediate contact mothers on the same five items were expected to fall between the extra contact and no contact mother's results.

(3) No differences were predicted between the ratings by the three groups of mothers on the infant's anticipated difficulty in settling down to a predictable pattern, amount of spitting up or vomiting, difficulty with bowel movements, difficulty sleeping, difficulty feeding, infant size, strength, firmness or softness and alertness.

(4) Due to DeChateau's (1977b) finding of increased breast feeding in mothers having received extra contact. It was hypothesized that more extra contact mothers would choose to breast feed their infants than no contact mothers. The intermediate contact mothers were expected to fall between the extra contact and no contact mothers in the number who chose to breast feed.

The enhancement of maternal attitude toward her baby resulting from early extended contact was hypothesized to continue into the follow-up period.
(5) The effects of rooming-in were expected to persist into the follow-up period; therefore rooming-in mothers were expected to rate their infants at follow-up more favorably than mothers that had not roomed-in with their infants. Breast feeding was expected to be more prevalent in rooming-in than non rooming-in mothers at follow-up.

(6) At follow-up, mothers in the group who had experienced early postnatal contact (even if only minimal early contact and intermediate contact mothers), would rate their infants as less irritable, spitting up less, and having less difficulty sleeping. No contact mothers were expected to describe their infants as spitting up the most.

(7) Based on the results obtained by Hittelman et al. (Note 2) with respect to postpartum depression, at follow-up more no contact mothers were expected to be mildly or moderately depressed based on the Beck Depression Inventory (Beck & Beamesderfer, 1974).

The following non-directional hypotheses were also advanced:

(8) No prior predictions were made for infant feeding problems, maternal enjoyment while feeding the baby, and the father's reaction to the new baby. In the early postpartum period (1-3 postpartum days) and at six-10 weeks follow-up.

(9) Initially (1-3 postpartum days) and at six-10 weeks follow-up mothers were not expected to differ significantly
in their infant ratings based on their parity–multiparous mothers were not expected to rate their infants significantly different from primiparous mothers.

(10) The infant's sex was not expected to influence maternal ratings. Significant differences were not expected between the infant ratings by mothers of males compared to ratings given by mothers of females initially (1–3 postpartum days), and at six–10 weeks follow-up.
Chapter II
Method

Subjects
The 46 female subjects were randomly drawn from a population of obstetrical patients located on the sixth floor at Kings County Hospital, Brooklyn, New York. Socioeconomic status was determined by prenatal clinic status. At Kings County Hospital the medical bills of the majority of clinic patients are paid for by the United States Government through welfare benefits. The total number of patients recruited for the study was 77, however 19 subjects reported that they did not want to hold their baby in the delivery room and were subsequently dropped from the study. Also, 12 subjects were dropped in order to balance the groups for rooming-in versus non rooming-in, sex of infant, parity of mother, and Apgar score of infant. The remaining subjects were interviewed during the mother's hospitalization. Twenty-six (or 57%) of the subjects were able to be contacted at follow-up (6-10 weeks postpartum). The racial breakdown of the mothers was Black (N=41) Latin American (N=3) and Asian (N=1 Oriental, and 1 East Indian). Their mean age was 23.71, with a range of 16 to 38. Little or no premedication was received by the mothers. When given, the medication consisted of low levels of analgesia (1% Lidocaine). Magnesium sulfate was administered
frequently during labor to lower the blood pressure of some of the mothers (magnesium sulfate is routinely administered at Kings County Hospital.)

The 46 mothers who desired to hold their babies at delivery, were healthy, had delivered their babies with minimal or no complications and had experienced a normal vaginal delivery. The infants, judged free of abnormalities and illnesses at birth, were full term single births. The birth weights were within normal limits (2380 grams - 4620 grams). Infant one minute Apgar scores were seven points or greater, and five minute Apgar scores were eight points or greater. All infants were discharged from the hospital either with their mother or within 72 hours of their mother's discharge.

The subjects were separated into three groups based on the amount of early extended contact the mother had experienced with the infant, and the desire to hold the infant. Information regarding amount of contact was ascertained from the maternal protocol. Extended contact was defined as mother being able to hold the infant for at least a five-10 minute period during the delivery and recovery. Intermediate contact was defined as mother being able to hold her infant for at least one minute and no longer than ten minutes during the delivery and recovery period. No contact was defined as mother not having held her infant at any time during the delivery and recovery period.
Group I contained 12 mothers and their infants (8 males and 4 females) who had received early extended contact. The time holding infant reported by these mothers ranged from five to 65 minutes (see Table 1) in the period immediately following the infant's birth. Group II contained 17 mothers and their infants (10 females and 7 males) who had received early contact for an intermediate length of time in the first few minutes postpartum. Holding time for these mothers was from one minute to ten minutes (see Table 1). Group III consisted of 17 mothers and their infants (8 males and 9 females) who had not experienced any early postpartum contact. In each family the mother functioned as the child's primary caretaker. Mothers primarily spoke English.

Instruments. A questionnaire composed of 21 items was utilized for the initial interview, which was administered within the first day and a half postpartum (see Appendix A). Six of the items included in the questionnaire constituted the Neonatal Perception Inventory (NPI) developed by Broussard et al. (1971). However, the NPI items were not administered or scored according to the method prescribed by Broussard et al. (1971). Answers to the maternal attitude questions were responded to on a scale of 1-5. The value of the answer was contingent on the nature of the question. The frequency that individual answers were chosen by the mothers was tabulated for each question. The frequency data was then combined so
Table 1

Amount of Contact Time Experienced by Subjects

**Group I (Early Extended Contact)**

<table>
<thead>
<tr>
<th>Number of Subjects</th>
<th>Time in Minutes (delivery room)</th>
<th>Time in Minutes (recovery room)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1-5</td>
<td>10-20</td>
</tr>
<tr>
<td>3</td>
<td>1-5</td>
<td>5-10</td>
</tr>
<tr>
<td>1</td>
<td>10-20</td>
<td></td>
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<td>1</td>
<td>5-10</td>
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</tr>
<tr>
<td>1</td>
<td>1-5</td>
<td>45-60</td>
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<tr>
<td>1</td>
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<td>45-60</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>30-45</td>
</tr>
<tr>
<td>1</td>
<td>10-20</td>
<td>5-10</td>
</tr>
</tbody>
</table>

**Group II (Intermediate Contact)**

<table>
<thead>
<tr>
<th>Number of Subjects</th>
<th>Time in Minutes (delivery room)</th>
<th>Time in Minutes (recovery room)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>1-5</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>1-5</td>
</tr>
<tr>
<td>2</td>
<td>1-5</td>
<td>1-5</td>
</tr>
</tbody>
</table>
that two categories remained to be compared and half of the answers chosen for each question were in each of the two categories. The remaining questionnaire items related to the baby's cuteness, cuddliness, prettiness, size, strength, firmness or softness, alertness and amount of time spent sleeping. There were also items relating to prenatal training, clinic attendance, whether the mother was accompanied by a friend or relative during labor and/or delivery, feeding problems, whether mother enjoyed feeding the baby milk, feeding method used and the father's present reaction to the baby. These questions were answered with a yes/no response where applicable. The reliability of the maternal attitude questionnaire was tested by Hittelman et al. (Note 2) with the test-retest method. The average agreement over subject from day one to day two was 85.09%. Individual item agreement (+ n - 1 point) averaged 90.23%. Fourteen subjects were employed in the reliability test but validity was not evaluated. Rather it was considered valid because of the content of the questionnaire. Therefore, the questionnaire was felt to possess face validity.

A maternal protocol (see Appendix B) was also utilized in the study. The protocol assessed the duration of contact that had occurred inside the delivery room, in the recovery area and the maternal motivation to hold the infant.

At the six-10 week follow-up phone call, a maternal attitude questionnaire similar to the one administered
initially was administered to the mothers with a few items omitted. The omitted items related to prenatal training, clinic attendance, and whether the mother was accompanied by a friend or relative during labor and/or delivery (see Appendix C).

During the six-10 week follow-up conversation, the Beck Depression Inventory (Beck & Beamesderfer, 1974) was administered to the subjects (see Appendix D). This Inventory contained 21 categories of symptoms and attitudes. Each category describes a particular manifestation of depression and consists of a series of four self-evaluative statements which are assigned values from 0 to 3 to indicate the degree of severity. The inventory was evaluated for internal consistency using two methods. First the protocol of 200 consecutive cases were analyzed and the scores for each of the 21 items were compared with the total score on the Depression Inventory for each patient. The Kruskal-Wallis Non-Parametric Analysis of Variance by Ranks was used for the evaluation and it was found that all categories showed a significant relationship to the total score for the inventory. The split-half reliability, using 97 cases, was .86. The Spearman-Brown correction for attenuation raised the coefficient to .93 (Beck & Beamesderfer, 1974).

Procedure. The experimenter provided information to the nursing staff regarding the importance of facilitating early
mother-infant bonding. The staff were told that the project underway was concerned with behaviors that occur when contact is permitted between an infant and it's mother. The experimenter visited the nursery daily and was informed of the birth of any new potential subjects. The experimenter determined a subject's appropriateness for the study based on information obtained from the birth records. Information of interest included Apgar scores, gestational age, racial origin, birth order, birth weight, and birth complications. The experimenter did not know the group membership of the infant until the data were collected.

After the experimenter confirmed a subject's appropriateness for the study, a brief explanation of the procedures were given to the parents. The subjects were also given a letter informing them that they were participating in a study (see Appendix F). Permission was solicited from the patients by the use of the Informed Consent Form (see Appendix E), and a copy of the form was placed in the mother's hospital chart. A short explanation was provided to the mothers regarding the completion of the protocol (see Appendix B). The experimenter had the subject place the completed protocol in a folder. The experimenter requested that the subject not divulge any information regarding the protocol to the experimenter at any time during the study. A questionnaire designed to assess the mother's perception of her infant was verbally adminis-
tered to the mother by the experimenter within the first day and half postpartum (see Appendix A).

During a post discharge telephone conversation (six-10 weeks postpartum) a questionnaire designed to assess the mother's perception of her infant was again administered (see Appendix C). The Beck Depression Inventory (Beck & Beamesderfer, 1974) was also administered at six-10 weeks postpartum (see Appendix D).

During the course of the study the post delivery procedure was changed on the sixth floor at Kings County Hospital. The procedure implemented in June, 1980 was a rooming-in procedure. Rooming-in was defined as having mothers of healthy babies care for them at their bedside on the ward. The infants remained with their mother from wake up (7 AM) to bedtime (10 PM), except during visiting hours. During visiting hours babies were placed back in the nursery. Previous to the implementation of rooming-in, the babies were kept in the nursery most of the day and evening, and were only brought out to the mothers for feedings. However, mothers were allowed to visit the nursery and interact with their infant at any time.
Chapter III

Results

Overall, the analyses indicated that in the initial hospital period (1-3 days postpartum) mothers that had roomed-in with their infants were breast feeding significantly more often than mothers that had not roomed-in, ratings on the other maternal attitude items did not distinguish the groups. The results did not replicate the findings of the Hittelma et al. (Note 2) experimental study on the items of infant irritability, cuteness, prettiness, cuddliness, and length of time spent sleeping. Breast feeding was not significantly more prevalent among extra contract mothers than intermediate or no contact mothers. The follow-up data obtained at six-10 weeks postpartum indicated that mothers that had roomed-in did not rate their infants differently on maternal attitude questionnaire items. Further, no significant difference in breast feeding now appeared between mothers that had roomed in and those that had not. At follow-up (6-10 Weeks) contact was shown to influence mother's perceptions of their infant's cuddliness and difficulty feeding. Parity did not influence maternal ratings of infants initially or in the follow-up period. Sex of the infant did not influence maternal ratings in the initial, period, but by follow-up sex did determine if the mother would
be breast feeding. Mothers of females were breast feeding significantly more often than mothers of males at follow-up. Using the Beck Depression Inventory to test for mild clinical depression, at follow-up there was no difference between the number of contact and no contact mothers that were mildly or moderately depressed.

**Descriptive Data**

Chi-square and Fisher exact probability tests were used to test the hypothesis that extra contact, intermediate contact and no contact mothers and their babies would not differ significantly regarding socioeconomic status, attendance at prenatal clinic classes, presence of mother in labor and/or delivery, marital status, length of labor, infant age in hours age in hours at time of first interview, maternal age, infant birth weight, and one minute and five minute Apgar scores. The descriptive data presented in Tables 2 and 3 show no significant differences between the three groups on any of the tabled items.

**Early Postpartum (1-3 days)**

During the course of the study, the post delivery hospitalization procedure was changed to a rooming-in procedure. This changed could have affected maternal attitude because mothers would have spent more time with their infant prior to the experimenter's interview. Also, rooming-in may have affected maternal attitude at follow-up. To rule out this
<table>
<thead>
<tr>
<th></th>
<th>Extra Contact</th>
<th>df</th>
<th>Intermediate Contact</th>
<th>df</th>
<th>No Contact</th>
<th>df</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Attended Clinic</td>
<td>91.67</td>
<td>11</td>
<td>88.64</td>
<td>16</td>
<td>94.12</td>
<td>16</td>
</tr>
<tr>
<td>2.</td>
<td>Attended Clinic Classes(^a)</td>
<td>9.09</td>
<td>10</td>
<td>33.33</td>
<td>14</td>
<td>25.00</td>
<td>15</td>
</tr>
<tr>
<td>3.</td>
<td>Accompanied</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a.</td>
<td>labor</td>
<td>33.33</td>
<td>11</td>
<td>70.59</td>
<td>16</td>
<td>64.71</td>
<td>16</td>
</tr>
<tr>
<td>b.</td>
<td>delivery</td>
<td>8.33</td>
<td>11</td>
<td>29.41</td>
<td>16</td>
<td>29.41</td>
<td>16</td>
</tr>
<tr>
<td>4.</td>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>a.</td>
<td>Single</td>
<td>66.67</td>
<td>11</td>
<td>82.35</td>
<td>16</td>
<td>76.47</td>
<td>16</td>
</tr>
<tr>
<td>b.</td>
<td>Married</td>
<td>25.00</td>
<td>11</td>
<td>17.65</td>
<td>16</td>
<td>17.65</td>
<td>16</td>
</tr>
<tr>
<td>c.</td>
<td>Divorce</td>
<td>8.33</td>
<td>11</td>
<td>0.00</td>
<td>16</td>
<td>5.88</td>
<td>16</td>
</tr>
</tbody>
</table>

\(^a\)Based on subjects that had been clinic patients.
Table 3
Descriptive Data in Mean Values for Subjects

<table>
<thead>
<tr>
<th>Extra Contact n=12</th>
<th>Intermediate Contact n=17</th>
<th>No Contact n=17</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of Labor (hrs.)</td>
<td>8.12</td>
<td>8.8</td>
<td>6.62</td>
</tr>
<tr>
<td>Infant age in hours at 1st interview</td>
<td>39.29</td>
<td>31.86</td>
<td>37.13</td>
</tr>
<tr>
<td>Maternal Age</td>
<td>23.08</td>
<td>22.35</td>
<td>25.71</td>
</tr>
<tr>
<td>Infant Birth-weights (gms.)</td>
<td>3328.17</td>
<td>3161.47</td>
<td>3294.24</td>
</tr>
<tr>
<td>Apgar Scores</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. One minute</td>
<td>8.67</td>
<td>8.41</td>
<td>8.41</td>
</tr>
<tr>
<td>b. Five minute</td>
<td>9.83</td>
<td>9.24</td>
<td>9.47</td>
</tr>
</tbody>
</table>
possibility, those subjects obtained before the change in procedure were compared to the subjects who were tested after the new procedure was implemented.

**Hypothesis 1 (Rooming-in).** It was hypothesized that mothers who had experienced rooming-in with their infants would rate their infants more favorably on the maternal attitude questionnaire than mothers that had not experienced rooming-in. Also it was hypothesized that more rooming-in mothers would choose to breast feed their infants in the early postpartum period. The data pertaining to the first hypothesis involved ratings from two independent samples (rooming-in mothers, non-rooming in mothers). In order to determine the significance of differences between the two independent groups, the chi-square test for two independent samples was used to evaluate the data.

The feeding method employed was significantly different between the rooming-in and non rooming-in mothers ($\chi^2(1)=3.23$, $p < .10$). More rooming-in mothers were breast feeding or supplementing breast feeding with the bottle (57%) on the first to third postpartum day than non rooming-in mothers (26%). The subjects that experienced rooming-in (n=23).with their babies during the early postpartum period did not rate their infants any differently than the non rooming-in subjects (n=23) for infant crying, settling down to a predictable pattern,
spitting up and vomiting, difficult bowel movements, cuteness, difficulty sleeping, cuddliness, feeding difficulty, prettiness, size, strength, firmness or softness, alertness, and length of time spent sleeping. The chi-square values for the aforementioned items ranged from 0 to 2.57. There was a trend for more rooming-in mothers to rate their infants as very cuddly (83%) compared to non rooming-in mothers (53%) but the difference was not significant ($\chi^2(1)=2.57$).

**Hypothesis 2 (Contact).** Based on the Hittelman et al. (Note 2) results it was expected that extended contact mothers would describe their babies as less irritable, cuter, prettier and cuddlier than the no contact (routine care) mothers. The ratings by the intermediate contact mothers were expected to be at a midpoint between the extra contact and no contact mothers' results. The no contact mothers were expected to describe their infants as sleeping least. This hypothesis was tested by using the chi-square test for independent samples. The analyses did not confirm some of the previous findings reported by Hittelman et al. (Note 2). The non-confirmed findings were those regarding maternal rating of infant irritability, cuteness, prettiness, cuddliness, and length of time spent sleeping. The ratings of infant irritability (crying), cuteness, prettiness and cuddliness were not significantly different among the mothers in the three groups. The
chi-square values ranged from .633 to 3.62. Maternal rating of length of time spent sleeping was not significant. The results for this variable were in the opposite direction to that predicted. Extra contact mothers rated their infants as sleeping least ($\chi^2(2)=6.26, p.<.05$). There were no differences among the groups in ratings of infant irritability (crying), cuddliness and prettiness. On infant cuteness, more intermediate contact mothers rated their infant as very cute (71%) than either the extra contact (25%) or no contact mothers (59%). On sleep length intermediate contact mothers (71%) rated their infants as sleeping most which was similar to the no contact mothers (77%), rather than at the predicted midpoint between extra contact and no contact mothers.

**Hypothesis 3 (Contact).** No differences were expected between the ratings of the three groups of mothers on their infants anticipated difficulty in settling down to a predictable pattern, amount of spitting up or vomiting, difficulty feeding, infant size, strength, firmness or softness and alertness. The chi-square test for independent groups was used to test this hypothesis. No differences were found between the three groups of mothers on ratings of their infants anticipated difficulty in settling down to a predictable pattern, amount of spitting up or vomiting, difficulty with bowel movements, difficulty sleeping, difficulty feeding, infant size, strength, firmness or softness and alertness. The chi-square values ranged
from 0 to 4.41. Therefore, this hypothesis was supported.

**Hypothesis 4 (Breast feeding).** Due to DeChateau's (1977b) finding of increased breast feeding in mothers having received extra contact, it was hypothesized that more extra contact mothers would choose to breast feed their infants than no contact mothers. The intermediate contact mothers were expected to be intermediate to the extra contact and no contact mothers on the issue of breast feeding. The information on feeding method was obtained by asking the mothers their feeding method of choice. The choices were breast, bottle, or breast plus bottle. Breast, and breast plus bottle choices were combined for the analysis. The chi-square test for independent samples was also used to evaluate this hypothesis.

Breast feeding was not significantly more prevalent among extra contact mothers than intermediate or no contact mothers ($X^2 = 1.56$). However, a larger percentage of intermediate contact mothers (53%) were breast feeding on the first postpartum day than either extra contact (33%) or no contact (35%) mothers. Thus, the intermediate contact mothers were very different than the other two groups of mothers with regard to the method chosen.

**Follow-Up (6-10 weeks)**

To evaluate the effects of rooming-in at follow-up (six-10 weeks) the subjects were compared based on the postpartum
hospital procedure they had experienced (rooming-in versus non rooming-in). The follow-up data was also evaluated with regard to the mother's parity and sex of the infant. Due to subject loss only 43.48% of the original number of subjects were contacted at follow-up (26 subjects).

**Hypothesis 5 (Rooming-in).** The effects of rooming-in were expected to persist into the follow-up period; therefore, rooming-in mothers were expected to rate their infants at follow-up more favorably than mothers that had not roomed-in with their infants. Breast feeding was expected to be more prevalent in rooming-in than non rooming-in mothers at follow-up. At follow-up there were 14 subjects in the non rooming-in sample and 12 subjects in the rooming-in. Because the sample sizes for both groups were small, Fisher's exact probability test was used to test the difference between the groups. Mothers that had roomed-in with their infants during the early postpartum period did not rate their infants any differently than mothers that had not roomed-in on any of the questionnaire items. The significant finding of increased breast feeding among mothers that were rooming-in with their infants at the initial interview was not supported.

**Hypothesis 6 (Contact).** At follow-up it was hypothesized that mothers who had experienced early postnatal contact, (even minimal early contact which included the intermediate contact
mothers) would rate their infants less irritable, spitting up less, and having less difficulty sleeping. No contact mothers were expected to describe their infants as spitting up the most. At follow-up only five extra contact mothers, eight intermediate contact, and 13 no contact mothers were able to be evaluated. Forty-three percent of the subjects were lost because they could not be contacted. Because the samples to be evaluated were small the extra contact and intermediate contact samples were combined. The data analyses compared two samples (combined contact versus no contact), with a Fisher's exact probability test.

The results obtained at follow-up did not confirm those obtained by Hittelman et al. (Note 2). No differences were found between the two groups with regard to irritability, spitting up and difficulty sleeping. No contact mothers did not attribute more spitting up to their infants. Rather, differences were found between the combined contact and the no contact group with regard to ratings of infant cuddliness, and difficulty of feeding. More early contact mothers (92%) rated their infants as very cuddly (Fisher's $p < .05$). Upon further investigation it was found that the extra contact and intermediate contact mothers rated their infants similarly for both cuddliness, and feeding difficulty. Therefore, contact apparently was responsible for the difference obtained
between the contact and no contact subjects at follow-up on the measure of cuddliness and difficulty feeding.

Hypothesis 7 (Depression). Based on the results obtained by Hittelman et al. (Note 2) with respect to postpartum depression at follow-up, more no contact mothers were expected to be mildly or moderately depressed based on the Beck Depression Inventory. An independent samples t test was used to evaluate the mean Beck Inventory scores obtained by the subjects contacted at follow-up. The groups did not differ with respect to postpartum depression at follow-up as measured by the Beck scores, t (24)=.1312, ns. The combined contact group (M=9.15, SD=5.93) was not significantly more depressed than the no contact group (M=8.77, SD=8.60). Using a score of 10 or more as a general guideline for mild clinical depression, the groups did not differ in the number of mothers who were mildly or moderately depressed. There was no difference between the number of contact (46.15%) and no contact (30.77%) mothers in this category.

Hypothesis 8 (Contact). No prior predictions were made for infant feeding problems, maternal enjoyment while feeding the baby and the father's reaction to the new baby, in the early postpartum period (1-3 postpartum days) and at six-10 weeks follow-up. Statistical tests were not used to analyze the initial postpartum (1-3 days) data because most of the
mothers answered these questions in a similar manner, resulting in small frequencies in some categories. Therefore, the data are discussed in terms of percentages. The follow-up data was analyzed using Fisher's exact probability test.

There were few differences between the groups (extra contact, intermediate contact, and no contact) in the initial postpartum period regarding feeding problems. There was a slight trend for more no contact mothers (18%) to report problems than either the extra contact (8%) or intermediate contact (6%) mothers. All of the extra contact mothers reported that they enjoyed feeding the baby milk "very much", compared to 77% for both the intermediate contact and no contact groups respectfully. All of the extra contact (n=11) and intermediate contact (n=15) mothers that answered the question regarding the father's initial reaction to the baby stated that he was very pleased. Ninety-four percent of the no contact mothers (n=16) reported that the father was very pleased with the infant. No differences were found at follow-up with regard to feeding problems, maternal enjoyment while feeding the baby milk, and the father's current reaction to the new baby.

**Hypothesis 9 (Parity).** Initially (1-3 postpartum days) and at six-10 weeks follow-up, mothers were not expected to differ in their infant ratings based on their parity. Multiparous mothers were not expected to rate their infants signi-
significantly different from primiparous mothers. The infant ratings of the two parity groups, multiparous (n=25) and primiparous (n=21) were compared. A chi-square test for independent samples was used for the analysis of the early postpartum data. The follow-up data was analyzed by the Fisher exact probability test. In the initial postpartum period no significant differences were found between the multiparous and primiparous mothers on any of the items in the maternal attitude questionnaire. The chi-square values ranged from 0.01 to 1.86. Breast feeding was not more popular with primiparous mothers than the multiparous mothers. At follow-up multiparous (n=12) and primiparous (n=14) mothers did not differ in their ratings of their infants on any of the maternal attitude questionnaire items.

Hypothesis 10 (Sex differences). The infant's sex was not expected to influence maternal ratings. Significant differences were not expected between the infant ratings by mothers of males compared to ratings given by mothers of females initially (1-3 days postpartum) and at six-10 weeks postpartum. The maternal ratings given during the initial period were analyzed by the chi-square test for independent samples. At follow-up the Fisher exact probability test was used for analysis. Initially no significant differences were found between the mothers' ratings based on the sex of the infants (mothers of males, n=23; mothers of females, n=23). A trend
regarding infant alertness was evident in the data. More mothers of female infants rated their infants as very alert (61%) compared to mothers of male infants (35%); however, the differences were not significant.

Significantly more mothers of females were breast feeding at follow-up than mothers of males (Fisher's p. < .05). Initially 34.78% of the male infants were being breast fed. However, by follow-up only 8.33% of them were still on the breast. On the other hand, the percent of females that were being breast fed increased slightly over the follow-up period, from 47.83% to 50% by the six-10 week follow-up. Although only about half of the male and female subjects were contacted at follow-up, the differences in feeding method at follow-up were noteworthy. Six of the seven mother of female infants had maintained breast feeding throughout the postpartum period. One of the mothers had switched from bottle feeding in the initial hospital period to breast plus bottle by follow-up. Eleven of the 12 mothers of males were bottle feeding by follow-up and the only breast feeding mother had switched from using the bottle exclusively in the initial period. Differences between mothers of males and mothers of females did not reach significance for any other items on the maternal attitude questionnaire.
Chapter IV
Discussion

The results obtained in the early postpartum period (1-3 days) did not confirm any of the differences found by Hittelman et al. (Note 2) between groups that had experienced differing amounts of early extended contact. Although the Hittelman et al. study utilized a population similar to the one in the present study, there were several design differences. The Hittelman et al. study employed a controlled experimental design and utilized 90 subjects. The subjects had been solicited for the study previous to their delivery. The amount of contact experienced by the subjects was tightly controlled such that individuals within the three groups had fairly similar amounts of extra contact. The naturalistic design utilized in the present study did not afford strict control over the amount of early extra contact. The amount of contact was ascertained from maternal self report which may have lacked accuracy. Because the subjects in the Hittelman et al. (1979) study had been solicited previous to the delivery they may have felt singled out and special. The "halo effect" or the feeling of being treated differently is one possible reason for the inability to replicate the results obtained by Hittelman et al.
Because the obtained results did not confirm any of the hypothesized differences between mothers receiving early extended contact with their infants and mothers not receiving such contact, the data were subjected to additional analyses to detect any differences among groups. It was found that more mothers that had received intermediate or no contact were among those that had been accompanied in the labor room by a friend or relative. Seventy-one percent of the intermediate contact and 65% of the no contact mothers had been accompanied in the labor room, compared to 33% of the extra contact mothers. It appeared that the personnel in the delivery room were more willing to allow mothers that had been alone during labor to experience extra contact once their infants were born. The nurses apparently did not either feel it was important for accompanied mothers to experience extra contact, or were eager to bring mothers with a companion out of delivery and reunite them with their companion.

Although the difference between the three groups was not significant there was an obvious trend. This trend was also prevalent for those mothers accompanied during delivery. Several issues were investigated with respect to the results used to test the second hypothesis. To evaluate the results the subjects were separated into two groups based on whether they were accompanied or not accompanied in labor. The five
questionnaire items of interest - crying, cuteness, cuddliness, prettiness and sleep length - were evaluated with regard to the new groupings. The results were as follows: There was no significant difference between the accompanied and non accompanied subjects for any of the five items. Although a trend emerged for more accompanied subjects than non accompanied to rate their infants as crying least (44% vs. 21%) and sleeping most of the time (74% vs 42%).

The ratings of the extra contact, intermediate contact, and no contact mothers that were accompanied in labor were then compared with each other. No significant differences were found between the three groups. However, a trend appeared for accompanied mothers that had received extra contact to rate their infants as crying least. The trend for extra contact mothers to rate their infants as sleeping least was present. Mothers within each of the three groups that were not accompanied in labor were also compared. No significant differences were found for ratings of infant crying, cuteness, cuddliness, prettiness and sleep length. The trend for extra contact mothers, who were not accompanied, was to rate their infants as not cute and as sleeping least.

Although the comparison of individuals on ratings of infant crying, cuteness, cuddliness, prettiness and sleep length did not yield significant results, the trend for more accompanied subjects to rate their infants as crying least and sleeping
most, points to the possible importance of being accompanied during labor. Also, extra contact mothers that were accompanied in labor showed a trend toward rating their infants as crying least.

Sosa, Kennell, Klaus, Robertson, and Urrutia (1980) have investigated the effect of a supportive companion during labor on various perinatal problems during labor and delivery. Their results indicate that the presence of a companion during labor reduces the incidence of problems during labor and delivery and may enhance some aspects of maternal behavior in the first hour after delivery. The observations of these experimenters suggest that major benefits may accrue during the labor and delivery period by having human support during labor. Thus human support at a time when a woman might be anxious, scared, and in the unfamiliar hospital environment may have just as much or more of a positive effect than extra contact with the infant. Sosa et al. (1980) have noted that the effect of a supportive companion could be exaggerated among individuals who had not attended prenatal classes, and were exposed to crowded hospital conditions, as were the subjects in the present study. Social support has also been found to decrease or increase the effects of extra contact depending on the social class of the mother (Anisfeld & Lipper, Note 4). Precisely it appears that mothers from lower social classes with low social support (defined as 2-4 of the
following being true: unmarried, receiving public assistance, non high school graduate, and unaccompanied in delivery room) benefit more from extra contact than mothers from middle class environments with good social support systems.

Although the majority of subjects in this study were from low income environments, some were able to experience a measure of positive support before delivery. Thus, it is possible that these subjects were not as strongly damaged by the lack of extended early contact. And the subjects from poor social support systems (exemplified by non accompaniment during labor) may have benefited so much from the extra contact experience that their ratings of their infants did not differ that much from the subjects with positive social support. Therefore, social support may very well be just as important as extra contact for low socioeconomic mothers. If more accompanied mothers had been offered extra contact with their infants the differences between the three groups could have been much more significant.

In the initial hospital period, rooming-in appeared to influence the mothers choice to breast feed. Breast feeding must begin in the early postpartum period in order for it to be maintained for any length of time. Therefore, the finding in this study, of more breast feeders in the rooming-in group, during the 1-3 day hospitalization, provides some evidence that the rooming-in experience may have influenced
the decision regarding the feeding method employed. It is well known that many factors other than maternal feelings may influence a mother's decision to breastfeed. The fact that only 26% of the 23 mothers that did not room-in, chose to breastfeed as opposed to 57% of the 23 mother that had roomed-in, may be attributed to the rooming-in experience. Kontos (1978) has reported results regarding the significantly more positive attachment behaviors exhibited by rooming-in mothers towards their infants. Thus, in light of Kontos' (1978) study, it is not unusual that mothers that roomed in with their infants chose to breastfeed.

At the time of follow-up, breast feeding did not distinguish the rooming-in mothers from the non rooming-in mothers; however, the differences in feeding method were significant between males and female infants. More mothers of females were breast feeding by follow-up. However, contact did not appear to influence the mother's decision to breastfeed. Thus, the present results do not support those of DeChateau and Wiberg (1977b) that found the extra contact mothers exhibiting more affectionate behaviors to their male infants, and the results of Anisfeld and Lipper (Note 5) that found increased affectionate behavior between extra contact mothers and their female infants. Possibly the results in the present study are different because the extra contact and intermediate contact subjects were combined in order to
increase the sample size at follow-up. At follow-up contact was shown to influence mothers perceptions of their infant's cuddliness and difficulty feeding. While the support was weak for the hypothesis that facilitation of early extended contact would affect maternal attitude toward her infant during the early postpartum period, early contact did show some effect at the follow-up period.

The results of the present study did not replicate the findings of the Hittelman et al. (1979) experimental study, but, the present findings suggest some areas to consider in future research. Allowing mothers with very little social support to experience early extra contact seems to alleviate some of the effects of the lack of support, evidenced by those mothers rating their infants similarly to mothers with positive social support (presence of friend or relative in labor room). Also, rooming-in and sex of infant influenced mothers choice of feeding method. In the early postpartum period, rooming-in seems to increase the chance that a mother will breast feed. However, the effect of rooming-in on breast feeding disappears by six-10 weeks postpartum. The sex of the infant, on the other hand, seems to determine whether the mother will be breast feeding six-10 weeks postpartum. Mothers of females continue to breast feed longer than mothers of males. Extra contact influenced maternal perception of infants cuddliness and feeding difficulty at
follow-up, thus showing that allowing early contact can influence maternal perception up to six-10 weeks postpartum. Individual differences in previously established maternal responses to newborns based on the social support, may influence the bonding process. Thus, based on this naturalistic experiment, there is evidence that early mother-infant contact influences maternal attitude, especially for mothers with poor social support, and may in turn be reflected in the quality of later, mother-infant attachment.

Follow-up studies that utilize a naturalistic method of inquiry yet control for the amount of contact, are needed in order to provide stronger support for the results of the present study. Also, nursing personnel need to be encouraged to provide extra contact to all mothers when possible, and not exclude those women fortunate enough to have a supportive companion with them during labor. Follow-up studies that systematically observe mother-infant interaction and measure maternal attitude over time, are needed to provide better support for the long-term influence on maternal behavior of early extended contact.
Reference Notes


References


DeChateau, P. & Wiberg, B. Long-term effect on mother-infant behavior of extra contact during the first hour postpartum. I: First observations at thirty-six hours. Acta Paediatrica Scandinavica, 1977, 66, 137-143. (a)


Ringler, N., Trause, N. A., Klaus, M. Mother's speech to her two-year old, its effect on speech and language comprehension at five years. Pediatric Research, 1976, 10, 307.


APPENDIX A

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 is like now. I'm going to ask you some questions and you tell me which of the answers best describes your baby.

1. How much crying do you think your baby will do?
   (5) a great deal
   (4) a good bit
   (3) a moderate amount
   (2) very little
   (1) none

2. How much trouble do you think that your baby will have settling down to a regular pattern of eating and sleeping?
   (1) none
   (2) very little
   (3) a moderate amount
   (4) a good bit
   (5) a great deal

3. How much spitting up or vomiting do you think your baby will do?
   (5) a great deal
   (4) a good bit
   (3) a moderate amount
   (2) very little
   (1) none

Hittelman, O'Donohue, Zilkha & Parekh (Note 2)
4. How much difficulty do you expect your baby to have with bowel movements?
   (1) none
   (2) very little
   (3) a moderate amount
   (4) a good bit
   (5) a great deal

5. How cute is your baby?
   (5) very cute
   (4) quite cute
   (3) moderately cute
   (2) not very cute
   (1) not cute at all

6. How much difficulty do you think your baby will have sleeping?
   (1) none
   (2) very little
   (3) a moderate amount
   (4) a good bit
   (5) a great deal

7. How cuddly is your baby?
   (5) very cuddly
   (4) quite cuddly
   (3) moderately cuddly
   (2) not very cuddly
   (1) not cuddly at all
8. How much trouble do you think your baby will have feeding?
   (1) none
   (2) very little
   (3) a moderate amount
   (4) a good bit
   (5) a great deal

9. How pretty is your baby?
   (5) very pretty
   (4) quite pretty
   (3) moderately pretty
   (2) not very pretty
   (1) not pretty at all

10. How big is your baby?
    (1) very little
    (2) quite little
    (3) moderately big
    (4) quite big
    (5) very big

11. How strong is your baby?
    (5) very strong
    (4) quite strong
    (3) moderately strong
    (2) not very strong
    (1) not strong at all
12. If you had to describe your baby as firm or soft, would you say your baby is
   (1) very soft
   (2) quite soft
   (3) moderately firm
   (4) quite firm
   (5) very firm

13. When your baby is awake, how alert or wide awake is your baby?
   (5) very alert
   (4) quite alert
   (3) moderately alert
   (2) not very alert
   (1) not alert at all

14. How much does your baby sleep?
   (1) hardly ever
   (2) very little
   (3) a moderate amount
   (4) most of the time
   (5) all of the time

15. Did you attend clinic?

16. Did you attend any classes in the clinic?
   How many?

17. Was someone you knew with you during labor?
   During delivery?
18. Is your baby breast or bottle fed?

19. Do you have any feeding problems?
   Specify problems

20. Do you enjoy giving your baby milk?
   (5) very much
   (4) somewhat
   (3) neutral
   (2) dislike somewhat
   (1) dislike very much

21. What was/is the father's reaction to the new baby?
   (5) very pleased
   (4) somewhat pleased
   (3) neutral
   (2) somewhat unhappy
   (1) very unhappy
APPENDIX B

PROTOCOL FOR MOTHERS

Baby's Last Name: ____________________________  Today's Date

Date of Birth: ____________________________

1. In the minutes following delivery, did you request to see or hold your baby?
YES NO

2. Following delivery, were you offered your baby by the medical staff?
YES NO
(a) Were you able to hold your baby when offered?
YES NO  If no, why not?
(b) Would you have wanted to hold your baby?
YES NO

3. Were you able to hold your baby on the delivery room table?
YES NO
(a) If yes, for approximately how long?
(1) 1 – 5 minutes  (2) 5 – 10 minutes  (3) 10 – 20 minutes
(4) 20 – 30 minutes  (5) 30 – 45 minutes  (6) 45 – 60 minutes

4. Were you able to hold your baby in the recovery area (outside hall)?
YES NO
(a) If yes, for approximately how long?
(1) 1 – 5 minutes  (2) 5 – 10 minutes  (3) 10 – 20 minutes
(4) 20 – 30 minutes  (5) 30 – 45 minutes  (6) 45 – 60 minutes
APPENDIX C

Your Baby at Six Weeks\(^a\)

You have had a chance to live with your baby for six weeks. Please indicate which answer you think best describes your baby.

1. How much crying has your baby done?
   
   (5) a great deal
   (4) a good bit
   (3) a moderate amount
   (2) very little
   (1) none

2. How much trouble has your baby had in settling down to a predictable pattern of eating and sleeping?
   
   (1) none
   (2) very little
   (3) a moderate amount
   (4) a good bit
   (5) a great deal

3. How much spitting up or vomiting has your baby done?
   
   (5) a great deal
   (4) a good bit
   (3) a moderate amount
   (2) very little
   (1) none

\(^a\)Hittelmann, O'Donohue, Zilkha & Parekh (Note 2)
4. How much difficulty did your baby have with bowel movements?
   (1) none
   (2) very little
   (3) a moderate amount
   (4) a good bit
   (5) a great deal

5. How cute is your baby?
   (5) very cute
   (4) quite cute
   (3) moderately cute
   (2) not very cute
   (1) not cute at all

6. How much difficulty has your baby had sleeping?
   (1) none
   (2) very little
   (3) a moderate amount
   (4) a good bit
   (5) a great deal

7. How cuddly is your baby?
   (5) very cuddly
   (4) quite cuddly
   (3) moderately cuddly
   (2) not very cuddly
   (1) not cuddly at all
8. How much trouble has your baby had feeding?
   (1) none
   (2) very little
   (3) a moderate amount
   (4) a good bit
   (5) a great deal

9. How pretty is your baby?
   (5) very pretty
   (4) quite pretty
   (3) moderately pretty
   (2) not very pretty
   (1) not pretty at all

10. How big is your baby?
    (1) very little
    (2) quite little
    (3) moderately big
    (4) quite big
    (5) very big

11. How strong is your baby?
    (5) very strong
    (4) quite strong
    (3) moderately strong
    (2) not very strong
    (1) not strong at all
12. If you had to describe your baby as firm or soft, would you say your baby is

(1) very soft
(2) quite soft
(3) moderately firm
(4) quite firm
(5) very firm

13. When your baby is awake, how alert or wide awake is your baby?

(5) very alert
(4) quite alert
(3) moderately alert
(2) not very alert
(1) not alert at all

14. How much does your baby sleep?

(1) hardly ever
(2) very little
(3) a moderate amount
(4) most of the time
(5) all of the time

15. Is your baby breast or bottle fed?

16. Do you have any feeding problems?

Specify problems?
17. Do you enjoy giving your baby milk?
   (5) very much
   (4) somewhat
   (3) neutral
   (2) dislike somewhat
   (1) dislike very much

18. What was/is the baby’s father’s reaction to the new baby?
   (5) very pleased
   (4) somewhat pleased
   (3) neutral
   (2) somewhat unhappy
   (1) very unhappy
APPENDIX D

BECK INVENTORY

| Name ________________________________ | Date __________________________ |

On this questionnaire are groups of statements. Please read each group of statements carefully. Then pick out the one statement in each group which best describes the way you have been feeling the **PAST WEEK, INCLUDING TODAY**! Circle the number beside the statement you picked. If several statements in the group seem to apply equally well circle each one. Be sure to read all the statements in each group before making your choice.

<table>
<thead>
<tr>
<th>1 0 I do not feel sad.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I feel sad.</td>
</tr>
<tr>
<td>2 I am sad all the time and I can't snap out of it.</td>
</tr>
<tr>
<td>3 I am so sad or unhappy that I can't stand it.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 0 I am not particularly discouraged about the future.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I feel discouraged about the future.</td>
</tr>
<tr>
<td>2 I feel I have nothing to look forward to.</td>
</tr>
<tr>
<td>3 I feel that the future is hopeless and that things cannot improve.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3 0 I do not feel like a failure.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I feel I have failed more than the average person.</td>
</tr>
<tr>
<td>2 As I look back on my life, all I can see is a lot of failures.</td>
</tr>
<tr>
<td>3 I feel I am a complete failure as a person.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4 0 I get as much satisfaction out of things as I used to.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I don't enjoy things the way I used to.</td>
</tr>
<tr>
<td>2 I don't get real satisfaction out of anything anymore.</td>
</tr>
<tr>
<td>3 I am dissatisfied or bored with everything.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5 0 I don't feel particularly guilty.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I feel guilty a good part of the time.</td>
</tr>
<tr>
<td>2 I feel quite guilty most of the time.</td>
</tr>
<tr>
<td>3 I feel guilty all of the time.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6 0 I don't feel I am being punished.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I feel I may be punished.</td>
</tr>
<tr>
<td>2 I expect to be punished.</td>
</tr>
<tr>
<td>3 I feel I am being punished.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>7 0 I don't feel disappointed in myself.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I am disappointed in myself.</td>
</tr>
<tr>
<td>2 I am disgusted with myself.</td>
</tr>
<tr>
<td>3 I hate myself.</td>
</tr>
</tbody>
</table>
8 0 I don't feel I am any worse than anybody else.
   1 I am critical of myself for my weaknesses or mistakes.
   2 I blame myself all the time for my faults.
   3 I blame myself for everything bad that happens.

9 0 I don't have any thoughts of killing myself.
   1 I have thoughts of killing myself, but I would not carry them out.
   2 I would like to kill myself.
   3 I would kill myself if I had the chance.

10 0 I don't cry anymore than usual.
    1 I cry more now than I used to.
    2 I cry all the time now.
    3 I used to be able to cry, but now I can't cry even though I want to.

11 0 I am no more irritated now than I ever am.
    1 I get annoyed or irritated more easily than I used to.
    2 I feel irritated all the time now.
    3 I don't get irritated at all by the things that used to irritate me.

12 0 I have not lost interest in other people.
    1 I am less interested in other people than I used to be.
    2 I have lost most of my interest in other people.
    3 I have lost all of my interest in other people.

13 0 I make decisions about as well as I ever could.
    1 I put off making decisions more than I used to.
    2 I have greater difficulty in making decisions than before.
    3 I can't make decisions at all anymore.

14 0 I don't feel I look any worse than I used to.
    1 I am worried that I am looking old or unattractive.
    2 I feel that there are permanent changes in my appearance that make me look
      unattractive.
    3 I believe that I look ugly.

15 0 I can work about as well as before.
    1 It takes an extra effort to get started at doing something.
    2 I have to push myself very hard to do anything.
    3 I can't do any work at all.

16 0 I can sleep as well as usual.
    1 I don't sleep as well as I used to.
    2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
    3 I wake up several hours earlier than I used to and cannot get back to sleep.

17 0 I don't get more tired than usual.
    1 I get tired more easily than I used to.
    2 I get tired from doing almost anything.
    3 I am too tired to do anything.
18 0 My appetite is no worse than usual.
   1 My appetite is not as good as it used to be.
   2 My appetite is much worse now.
   3 I have no appetite at all anymore.

19 0 I haven't lost much weight, if any lately.
   1 I have lost more than 5 pounds.  
      I am purposely trying to lose weight 
      by eating less.  Yes  No
   2 I have lost more than 10 pounds.
   3 I have lost more than 15 pounds.

20 0 I am no more worried about my health than usual.
   1 I am worried about physical problems such as aches and pains; or upset stomach; 
      or constipation.
   2 I am very worried about physical problems and it's hard to thing of much else.
   3 I am so worried about my physical problems, that I cannot think about anything 
      else.

21 0 I have not noticed any recent change in my interest in sex.
   1 I am less interested in sex than I used to be.
   2 I am much less interested in sex now.
   3 I have lost interest in sex completely.
The procedure(s) have been explained to me by

and I completely understand the nature of the procedure(s) to be as follows:

I am conducting a survey here at Kings County. We are interested in finding out how patients feel about the care they have received here. Gathering opinions from patients like yourself will help us to know how to improve the care for future patients. We are also interested in knowing about the behavior of normal healthy newborns. We would like to ask you some questions about your baby and how he/she compares to other babies.

A. POTENTIAL RISKS: None

B. POTENTIAL BENEFITS: None

I understand that I may withdraw from this study at any time for any reason.

Signature of Witness

Signature of Patient

Address

Signature of Interpreter if required
Dear __________________

We are conducting a survey here at Kings County Hospital to learn about the behavior of normal healthy newborns. In six weeks we would also like to contact you to find out how you are doing and how the baby is developing.

If you have any questions or your address and/or telephone number should change within the next six weeks please call us at 270-2598 or 774-6434. If we are not in the office at that time please leave your name and number on the answering machine and we will call you back as soon as possible.

All the information given to me in this survey will be kept strictly confidential. You are free to withdraw from the study at any time for any reason.

Thank you.

Sincerely yours,

Joan Hittelman, Phd.

Roxanne Hughes
Infant Behavior Lab.