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MATERNAL SELF-ESTEEM AS AFFECTED BY
INFANT HEALTH, INFANT BEHAVIOR AND FAMILY SUPPORT

A Dissertation Presented

By

ELIZABETH M. SHEA

Submitted to the Graduate School at the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

February, 1984

Department of Psychology

Elizabeth M. Shea



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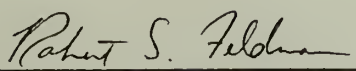
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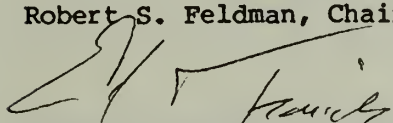
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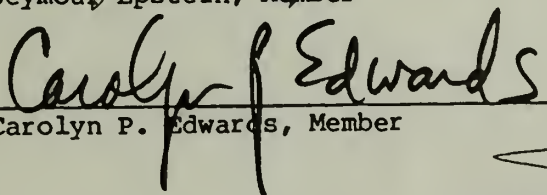
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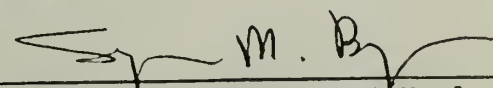
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ABSTRACT

Maternal Self-Esteem As Affected By Infant Health, Infant Behavior and Family Support (February, 1984)

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Directed by: Professor Robert S. Feldman

The process of maternal adaptation to motherhood was examined during the newborn period by assessing maternal self-esteem. It was hypothesized that maternal self-esteem was the psychological final common pathway mediating the effects of a host of biosocial factors that affect a mother's adaptation during the postpartum period and in turn affect her infant's functioning.

This study was designed to identify variables which predict maternal self-esteem during the first postpartum month. Two separate studies were conducted: The first identified variables predicting maternal self-esteem among a group of relatively healthy infants and mothers; the second was a replication of the first study, but with a more high-risk and heterogeneous group of mothers and infants.

In the first study, thirty mother-infant pairs were randomly selected from a normal nursery population. In the newborn period and at one month, mothers were administered the Maternal Self-Report Inventory (Shea, 1982) and Family Support Questionnaire (Shea, 1982), and infants'

behavior was assessed with The Brazelton Neonatal Behavioral Assessment Scale (Brazelton, 1973). In the second study, a stratified random sampling procedure was used to select thirty-four mother-infant pairs ranging from twenty-eight to forty-two weeks gestational age. The same scales and procedures as used in Study 1 were used in Study 2.

In the first study, stepwise multiple regression indicated that during the newborn period 67% of the variance of maternal self-esteem was accounted for by infant health and family support. At one month, family support and infant health accounted for 60% of the variance in maternal self-esteem.

In the second study, stepwise multiple regression indicated that in the newborn period 59% of the variance of maternal self-esteem was accounted for by family support, infant health, parity and separation of the mother and baby. One month after the infant's discharge from the hospital, infant health, family support, and the Brazelton Exam accounted for 58% of the variance.

The results were discussed in terms of the implications for early interventions.

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CHAPTER I

INTRODUCTION

Maternal Adaptation

A mother's social-emotional adaptation and her ability to deal with her role as a mother has been found to have a strong impact on the functioning of the newborn and young infant, as well as the mother's continued development (Bibring, 1959). However, while there has recently been a plethora of research concerning the role of the mother in her child's development (Schaffer, 1977; Stern, 1977), there has been relatively little empirical investigation concerning how a woman adapts to her new role as "mother" and how a mother copes with problems concerning this adaptation period. Most of the theories concerning the psychological issues of pregnancy and mothering have been derived from clinical theories (e.g., Bibring, 1959). According to these theories, motherhood is viewed as a developmental process whereby a woman must continually adjust to and adapt to each new stage in the mothering process, including pregnancy, birth and child rearing (Bibring, 1959). The way in which a mother will adapt to these new roles is determined by many factors, including her past experiences with her own parents, her family support and relationship with the baby's father, societal expectations, her physical health and her intellectual abilities to name a few (Kennell, Trause, & Klaus, 1975).

For some women, the role of motherhood is seen as a "maturational crisis" which involves a dramatic upheaval of psychological processes (Bibring, 1959). Bibring found that such a crisis can result when the new demands of the motherhood role force a woman to give up former integral needs and ways of living, and accept new goals and behaviors for which she is not yet prepared. Brazelton (1976) reported that primiparous mothers frequently have feelings of resistance to becoming parents, which often lead to fears of inadequacy in facing their new roles of readjustment to new life styles and emotional demands with a new infant. He conducted prenatal psychoanalytical interviews with normal healthy primiparous women and found high levels of anxiety, suggesting great pathology. The results of the interviews left him feeling worried about these women and their capacity to adapt to the role of motherhood. Yet when seen again after delivery, it was found that this anxiety had "become a force for reorganization, for readjustment to an important new role" (Brazelton, 1976). To quote Brazelton:

"...the shakeup in pregnancy as readying the circuit for new attachments; as preparation for the many choices which she must be ready to make in a very short, critical period; as a method of freeing her circuits for a kind of sensitivity to the infant and his individual requirements which might not have been easily or otherwise available from her earlier adjustment. Thus, this very emotional turmoil of pregnancy and of the neonatal period can be seen as a positive force for the mother's healthy adjustment and for the possibility of providing a more individualizing, flexible environment for the infant" (Brazelton, 1974).

Other research and clinical psychologists have expressed agreement with these findings (see for example, Shereshefsky & Yarrow, 1973) Brody,

1956; Mahler, Pine, & Bergman, 1975).

While pregnancy is thus recognized as a time of normal anxiety and "psychological turmoil," a mother's ability to adapt to her role as "mother" and deal with this developmental crisis will affect her attitude toward her infant. Many mother's experience a feeling of euphoria after delivering their baby, and if the baby is healthy, they quickly adjust to their new role, and feel confident in this new role. However, this is not always the case and disturbances arising from many sources can result in such maternal problems as post-partem depression (Deutsh, 1945). Additionally, as Bibring (1959) has pointed out:

"In a number of cases, reorganization of the psychic equilibrium has not yet taken place when the woman is confronted with the reality of the newborn and the further demands this places on her. These disturbances in the earliest attitudes of the mother to the newborn baby may lead to the establishment of a vicious cycle in the form of mutually induced negative reactions of frustration and rejection between the mother and the child, and finally result in the well-known chronic malformation in this relationship".

Cohler, Weiss, and Grunebaum (1970) have also indicated that the mother's manner of dealing with this developmental crisis will not only affect her attitude towards her infant, but will also affect the child's development and the mother's continued development. Mothers who are making an appropriate adjustment are thought to be more responsive and sensitive to their infants' needs and better able to support their infants' development. Mothers who fail to negotiate the crisis are found to establish negative feedback cycles with their infants. Such negative cycles result in less than optimal development for the infant and even failure-to-thrive, neglect or child abuse.

There are many events occurring during and immediately following pregnancy which can have a profound effect on the expectations of motherhood and the mother's feelings of self-esteem. Winnicott (1971), in his analysis of the significance of early mother-infant interactions, has emphasized the importance of a mother feeling secure in her own ability in order to provide security and physical and emotional nurturance for her infant.

Maternal Self-Esteem

It is clear then that the process of adaptation to motherhood requires a special period of adjustment. It is hypothesized in the context of the present study that it is through maternal self-esteem that the effects of a host of factors affecting maternal adaptation are mediated and that maternal self-esteem is the psychological common pathway for those factors. It also appears that there are specific feelings which comprise maternal self-esteem which are unique to this period of adaptation and which differ from those factors which comprise a person's feelings of general self-esteem (Shea, 1982). For the purposes of this study, maternal self-esteem is defined as a mother's feelings of self-confidence in her mothering ability.

In an earlier study, (Shea 1982) a questionnaire referred to as the Maternal Self-Report Inventory (MSI), was developed for the purposes of assessing maternal self-esteem. The results of this study indicated that even within the context of normal infants and their mothers,

maternal self-esteem was significantly correlated with infant health status, family support, mother-infant interaction and maternal perception of her infant. Additionally, in order to assess how maternal self-esteem related to general self-esteem, mothers were also assessed using the Epstein-O'Brien Self-Report Inventory (SRI) which is a measure of general self-esteem. While there was a highly significant correlation between maternal self-esteem and general self-esteem, the MSI correlated more strongly with both infant and maternal variables than did the SRI. This finding lends support to the hypothesis that there are specific feelings which comprise maternal self-esteem and which differ from those factors which comprise a person's feelings of general self-esteem.

Purpose of the Study

The purpose of the present study is to identify those variables which predict maternal self-esteem during the first post-partum month and to investigate the interactional relationship between maternal self-esteem and such neonatal variables as health and behavioral responsiveness and such maternal variables as family support and maternal health.

In order to investigate those variables which predict maternal self-esteem, two separate studies were conducted and both will be presented in this paper. The purpose of the first study was to identify those variables which predict maternal self-esteem during the first post-partum month among a group of normal and relatively healthy infants and mothers. In this first study, it was hypothesized that within the

context of normal, healthy infants and mothers, individual differences exist in maternal self-esteem which can be predicted by individual differences in maternal experiences and newborn characteristics. As a first study, it was necessary to initially demonstrate that even within the context of healthy mothers and infants who have not experienced the dramatic effects of separation, that there are differences in maternal self-esteem which can be predicted by differences in newborn characteristics and maternal experiences.

The purpose of the second study was to replicate and extend the first study by including infants who were born prematurely, who encountered more severe health complications and who had been separated for prolonged periods of time from their mother. This allowed for the examination of prematurity, severe health complications and separation as predictors of maternal self-esteem, as well as the examination of how changes in infant health and behavior predict to changes in maternal self-esteem. Additionally, this allowed for a comparison of those factors influencing and predicting to maternal self-esteem among a relatively healthy group of mothers and infants and a group of mothers and infants who have encountered more severe health complications and disruptions during the period of maternal adaptation.

The following introduction will present a review of the development of the scale to measure maternal self-esteem (Maternal Self-Report Inventory) and a review of those factors which are expected to predict maternal self-esteem.

Review of the Maternal Self-Report Inventory

While the clinical literature has demonstrated the importance of maternal self-esteem to a mother's adaptation to motherhood, until recently there existed no comprehensive tool for assessing maternal self-esteem. Therefore, a questionnaire which formalized many of the clinical descriptions was designed specifically to measure maternal self-esteem (Shea, 1982).

In depth accounts of the feelings and attitudes of mothers toward pregnancy and motherhood have been provided by Leifer (1977); Shereshefsky & Yarros (1973); Greenberg & Hurley (1971); Blau, Slaff, Easton, Welkowitz Spingain & Cohen (1963); Schaefer and Bell (1958); Cohler et al. (1970); Bibring (1959); Benedick (1949); and Blake (1954). Their descriptions of maternal feelings and attitudes are based on years of observations, clinical interviews with mothers, and data from questionnaires designed to identify and assess the critical factors comprising maternal adjustment toward motherhood.

Based on these reports, seven dimensions of maternal attitudes and feelings which comprise maternal self-esteem were identified. These dimensions have been found to be related to successful adaptation to motherhood, and infant development. These seven dimensions are: 1) maternal caretaking ability; 2) general ability as a mother; 3) acceptance of the baby; 4) expected relationship with the baby; 5) complications during labor and delivery; 6) parental influence; and 7) body image and maternal health. About 15 questions for each dimension, a

total of 100 self-report items, were written to measure how a mother rates her own feelings on each. These questions were compiled in a self-report questionnaire of maternal self-esteem entitled the Maternal Self-Report Inventory (see Appendix A). All items were written in the first person and mothers were requested to indicate on a 5-point scale how accurately each statement described how she felt by circling the answer which best expressed the degree to which the statement was true for her.

Items from the seven dimensions were randomly intermixed throughout the scale and an equal number of positive and negative items were written for each dimension and randomly interspersed throughout the questionnaire in order to avoid response sets. This questionnaire was completed by 30 mothers of full-term "normal" infants two days after delivery, and again one month later. Reliability and validity analyses of the scale demonstrated that the MSI is a highly reliable and valid measure of maternal self-esteem (see Table 11). Support for the construct validity of the MSI was demonstrated by the large number of high correlations between those variables which were predicted to be related to maternal self-esteem as well as those variables which were not expected to be directly related to maternal self-esteem.

Factors Expected to Predict Maternal Self-Esteem

There are many factors which may affect a mother's feelings of competence including maternal experiences, infant characteristics and

other life circumstances. After an extensive review of the literature concerning maternal adaptation and infant development, a number of variables were identified which are hypothesized will predict maternal self-esteem. In the following section, those variables which are expected to predict maternal self-esteem will be discussed.

The health and physical appearance of the infant

Researchers (Rose, Boggs, & Alderstein, 1960; Kennell & Rolnick, 1960; Shea, 1982) have found that even relatively mild and very temporary illnesses (which separate the mother and infant following delivery) have long lasting effects on the mother's behavior which can disturb the mother-infant interaction. Typical reactions reported in such cases include feelings of emotional emptiness, anger, anxiety and "post-partum blues" (Blake, 1954). Often these feelings drain mothers of their energies needed for caretaking and developing a relationship with the infant. Shea (1982) found that mothers whose babies had even very minor health complications during the newborn period, had significantly lower maternal self-esteem at 2 to 3 days after delivery and one month after delivery.

One particular health complication frequently encountered is a feeding problem during the newborn period. Problems encountered with breast feeding have been found to be related to maternal feelings of failure and incompetence (Coopersmith, 1967; Brazelton, 1976; Shea, 1982). Feeding problems occurring during the first post-partum month will be recorded and the relationship of such problems with the MSI

examined. It is hypothesized that mothers who encounter feeding problems with their infants will have lower maternal self-esteem than mothers who do not encounter infant feeding problems.

There have been many studies, based on clinical observations and interviews, which have reported feelings of anxiety, guilt, incompetence, and failure experienced by mothers after delivering an infant prematurely (Mason, 1963; Klaus & Kennell, 1976; Caplan, Mason, & Kaplan, 1965; Kaplan & Mason, 1969; Prugh, 1953). "The birth of a premature infant is a severe blow to the mother's self-esteem, mothering capabilities, and feminine role. It is conceived of as a loss of body part, an insult to her bodily integrity, and a sign of inner inferiority" (Klaus & Kennell, 1976).

More serious infant health problems have also been found to disrupt mother-infant interactions. Feelings of inadequacy and failure are reportedly even more dramatic when an infant is born with a congenital anomaly or a chronic disease (Greenberg, 1979). Mothers are reported to perceive the infant as representing "the defective or bad part of the self" (Greenberg, 1979). Often mothers of a premature or handicapped infant are unable to care for the baby, which heightens feelings of failure and causes the mothers to withdraw even more from their infants. This often results in the development of aberrant relationships between mother and infant, which only reinforces the mother's feelings of failure and inadequacy, and often can lead to cases of maternal deprivation and child abuse or neglect (Klaus & Kennell, 1976).

Analysis of this problem of maternal guilt, anxiety and inadequacy and consequent disturbed mother-child relationship has relied strongly on the psychoanalytical concept of narcissism (Greenberg, 1979; Klaus & Kennell, 1976). "Narcissism is the investment of love and interest in the self-image, the body and its contents. Although this form of love is centripetal, directed towards the self, other currents of love are centrifugal, directed towards people and the external world. This is object love" (Klaus & Kennell, 1976).

Bibring, Dwyer, Huntington, & Valenstein, (1961) in an attempt to further understand the relationship between a mother and her premature infant, developed a theory of narcissistic injury. Such an injury causes lowered self-esteem and difficulty accepting and adapting to the birth of an infant born prematurely. However, it is the hypothesis of this author, that feelings of failure and continued feelings of lowered self-esteem need not necessarily be explained solely by this theory. Rather, despite this possible initial narcissistic injury, the development of maternal self-esteem will largely depend on the mother's success in interacting and caring for her infant. In general, the more competent infant will facilitate caretaking decisions and provide more feedback cues and rewards for the mother. An infant who is behaviorally less competent is more difficult to care for and creates more problems for the caretaker. It is thus expected that as the premature infant matures and becomes more responsive to the mother's caretaking, the mother's feelings of competence and self-esteem will in turn increase.

Although this analysis was not specifically stated in the above mentioned studies (Bibring et al., 1961; Greenberg, 1979; Klaus & Kennell, 1976), analysis of the cases presented clearly indicated that the restoration of a positive mother-infant relationship and positive maternal self-concept only began after the mother became more proficient at understanding her baby's cues and needs and was able to satisfy his needs. Such experiences will reinforce a mother's feeling of competence in her mothering capacity and further reinforce the infant's competence at communicating with his/her mother.

Handicaps which most seriously and obviously interfered with the infant's ability to provide the necessary cues to elicit maternal responses (such as cleft palate and lip, and cataracts) interfered most negatively with a mother's feelings of competence. Intervention which focused on teaching parenting skills, helping parents to focus on positive qualities of their infant's behavior and sharing their concerns with others appeared to be most successful in restoring maternal confidence and a positive relationship between mother and infant (Blake et al., 1975).

Research concerning infants diagnosed as "failure-to-thrive" further supports the hypothesis that a mother's ability to successfully adapt to her "mothering" role is influenced by the health and behavior of her infant (who is in turn influenced by his mother's own feelings of competence). Researchers of this problem frequently report mothers of failure-to-thrive infants lacking in self-esteem and additionally being unable to assess their infants' needs and their own worth to their

infants (Barbaro, 1968; Leonard, Rhymes, & Solnit, 1966; Coleman & Provence, 1957; Fischhoff, 1975). All of the above mentioned studies were conducted retrospective to the infant's diagnosis, and assessment of maternal adaptation relied on clinical impression. Statements concerning cause and effect can not be made from such studies. However, it is hypothesized that the infant's health status will predict a mother's ability to adapt to her newborn and develop a feeling of competence in her "mothering" role.

Separation of mother and infant

Another factor which has been demonstrated to disrupt the early relationship between a mother and her infant is prolonged separation during the first weeks following birth (Barnett, Leiderman, Grobstein, & Klaus, 1970; Liefer, Leiderman, Barnett, & Williams, 1972). Seashore, Liefer, Barnett and Leiderman (1973) in a more empirically controlled study, investigated the effects of separation on the self-confidence of mothers of premature infants. They hypothesized that mothers who were permitted early contact with their infants would have more self-confidence in their mothering ability than mothers who were denied early contact.

Aside from the Shea study previously mentioned (1982) the Seashore et al. study is the only one in which maternal self-confidence was assessed through the use of a measurement tool as opposed to assessed through clinical impressions. Seashore et al. (1973) constructed a paired comparison questionnaire in which a mother had to compare herself

and five other possible caretakers: father, grandmother, experienced mother, pediatric nurse, and doctor. Comparisons were made for six caretaking tasks, three of which were classified as social tasks (calming the baby, understanding what the baby wants, and showing affection to the baby) and three of which were classified as instrumental tasks (diapering, feeding and bathing the baby). Mothers were also rated on their level of self-confidence during interviews. One group of mothers was denied physical interaction with their premature infants, while the other group, the contact group, was allowed to care for their premature infants in the hospital nursery during the first weeks following birth. By controlling for prematurity, Seashore et al. (1973) were trying to focus solely on the effect of separation on self-confidence, rather than the experience of delivering a premature baby, birth weight and the physical condition of the baby.

Mothers in the separation group demonstrated significantly lower self-confidence (fewer choices of self) for primiparous mothers but not for multiparous mothers. However, disregarding parity, mothers who were initially low in self-confidence and were in the separation group, were more likely to maintain low self-confidence than mothers in the contact group. However, even for multiparous mothers, separation had a negative effect on those who were initially low in self-confidence.

In analyzing their results, Seashore et al. emphasize the importance of early contact in order to assist a mother, who may be initially uncertain of her ability to fulfill her "mothering" role, in developing and strengthening her maternal feelings. A mother who has previously

cared for an infant of her own is more secure in her mothering ability and can use this past experience to bolster her self-confidence.

However, a primiparous mother may feel more biologically and socially incompetent. Their study also demonstrated that initial feelings of incompetence and inadequacy alone cannot account for later low self-confidence.

Although this study indicated the importance of early interaction between mother and infant in aiding mothers who are at risk for developing attachment and interaction problems, the major limitation of the study is that it did not take into account the effect the infant's behavior actually had on altering a mother's self-confidence or the effect of a premature delivery on maternal self-esteem. A more valid analysis of this relationship must consider the effect of the type and quality of contact between mother and infant on the mother's self-confidence and the infant's development. If a mother's contact with her infant is typically disconcerting (i.e., the mother is unable to soothe an irritable infant) then the experience is likely to become negatively reinforced as the mother receives negative feedback on her ability to care for her infant. As Sroufe and Waters (1977) have clearly demonstrated with older infants, it is the quality of the reciprocal interaction between mother and infant which is of importance for social development, not the frequency. This is a hypothesis which this proposed study plans to test. Additionally this paper plans to examine the effect of brief as well as long term separations on a mother's feelings of competence. It is hypothesized that mother-infant separation will have a negative effect on maternal self-esteem.

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Newborn characteristics--their effect on mother-infant interaction and self-esteem.

In recent years, the model of the infant's social and cognitive world has undergone important changes as research has revealed that infants have sophisticated cognitive and sensory capacities and play an active role in structuring and adapting to the environment. Research concerning mother-infant interaction no longer focuses solely on the effects of maternal attitudes and caretaking on the infant, but focuses on the role of the infant in affecting the interaction, and how maternal characteristics and infant characteristics affect each other (Sameroff, 1976; Bell, 1971).

Previous research has found that infant characteristics such as sex (Moss, 1967), age (Lewis, 1972b), birth order (Thoman, Turner, Leiderman, & Barnett, 1970) and gestational age (Field, 1977) effect the mother-infant interaction. In regard to infant sex, Seashore et al. (1973) found that infant sex did not predict maternal self-confidence. However, all of the infants in Seashore et al.'s study were premature and it is possible that this infant health risk may have obscured the effect of infant sex. The literature concerning the effect of newborn sex on mother-infant relationships has found differences in how mothers interact with male infants vs. female infants. For example, mothers tend to verbalize more to female infants and spend more time holding

male infants (Moss, 1967). Additionally, Lewis (1972a) reports that the first characteristic of the infant attended to by parents, is the infant's sex, even more so than physical health. In the present study, the sex of the infant will be assessed in relation to maternal self-esteem, although no specific differences are expected to be found, it is expected that maternal self esteem will be more influenced by infant health variables than the sex of the infant.

The competent infant has been defined by Goldberg (1977) as one who can elicit responses from the environment, provide "readable" cues of his/her needs, and respond contingently to his/her environment. More specifically, Goldberg (1977) states "A competent infant is one who sucks and roots efficiently, alerts to stimulation, selects what he or she will or will not respond to, modulates states of arousal and cries loudly when uncomfortable."

Recent research has demonstrated that habituation patterns, newborn alertness, cuddliness, irritability, activity levels and responsiveness to stimulation effect the mother-infant interaction (Brazelton, 1974; Goldberg, 1977; Field, 1977). These behaviors serve to elicit care-taking responses from the mothers. Variations of these behaviors, either within the same infant over time or between different infants, will effect the interactive behavior of the mother (Brazelton et al., 1975). For example, newborns differ in their capacity to receive and shut-out various stimuli. They also differ in their ability to demonstrate responsive behavior which will elicit attachment behavior from the mother. This research then supports the shift in focus from

only studying the effects of stable individual differences (such as sex, birth order), to investigating the effects of the infant's social competence on the mother-infant interaction.

In 1973, Brazelton developed the Neonatal Behavioral Assessment Scale (NBAS), designed to evaluate newborn neurological maturity and behavioral responsiveness. The four major clusters of behavior measured by the exam are interactive capacities, motoric capacities, organizational capacities, and physiological responses to stress (Tronick & Brazelton, 1975). This exam is the most widely used scale for assessing newborn behavior and development. It has been used for a number of different purposes including: (1) with normal full term infants to predict "easy" or "difficult" to care for babies; (2) to identify premature infants who have suffered neurological insults from those who have not (Sostek, Quinn, & Davitt, 1979); (3) to assess the effect of medication, given mothers during delivery, on the infant's behavior (Tronick, Wise, Als, Adamson, Scanlon, & Brazelton, 1976); (4) to study disturbed interactions of mothers with high risk infants (Brown, 1975); and (5) to assess the behavior of infants born addicted to heroin (Strauss, 1975). In these studies, the NBAS has been used as a predictor of the infant's competence in eliciting caregiving from his/her environment.

Osofsky and Danzger (1974) conducted a study concerned with investigating the relationships between neonatal styles, as assessed by the NBAS, and the early mother-infant relationship as assessed by an observation during feeding. They observed 51 non-white mothers and their 3 day old infants and found: (1) consistencies in infant states

and behavioral styles during the individual exams and in the interaction situations, and (2) consistencies in infant styles and patterns of behavior with mother's styles and patterns of behavior. Infants who were alert and responsive to social stimulation during the NBAS, were also alert and responsive to maternal stimulation and tended to have mothers who were attentive and responsive to their needs. They concluded that styles of mother-infant interaction are established very early, during the first few days, and newborns do contribute to the patterning and style of mother-infant interaction. However, the direction of influence (i.e., infant influencing maternal style or maternal style influencing infant behavior) cannot be determined from these results.

Interactive deficits among infants who appear physically normal, but who have suffered neurological damage, have predicted later interaction disturbances. Prechtl and Beintema (1964) found such infants elicited frustration, anger, and rejection from their parents even before the infants were diagnosed with neurological problems. This finding lends supports for the hypothesis that impairment of the infant's normal eliciting and feedback mechanisms alters the mother's behavior and affect.

To further test this hypothesis, Field (1980) assessed mother-infant interaction with two groups of infants at risk: (1) the premature group who had interactive deficits as assessed by the Brazelton Exam but were not separated from their parents, and (2) the premature group who had interactive deficits as assessed by the Brazelton Exam but

were separated (from 4 to 18 weeks) from their parents during hospitalization. Interactive deficits included a lack of responsiveness to social stimuli, lack of cuddliness, being difficult to console, and either hypertonicity or hypotonicity. Infant interactive deficits predicted to disturbed mother-infant interactions for both groups. Such disturbed interactions were typified by overactive and intrusive behaviors on the mother's part, fussing and squirming behavior on the infant's part, and mutual gaze aversion during feeding. Field (1980) discussed the circular process going on whereby "the infant's inattentiveness seems to evoke overactivity on the part of the parents which is counterproductive, inasmuch as it elicits more of the same inattentiveness."

Premature infants have been found to be generally less socially competent at birth and for the first few months following delivery (Lester, Emory, Hoffman, & Eitzman, 1976). Specifically, they demonstrate poorer motor development, less responsiveness to stimulation and are less alert as measured by the NBAS (Leiderman et al., 1973; Lester et al., 1976; Brown & Bakeman, 1978). Divitto and Goldberg (1980) found significant differences in both neonatal behavior and mother-infant interaction during feeding, among infants who had medical problems associated with prematurity and those who did not. They found that the fewer the medical problems the baby had, the more apt the baby was to be alert and socially responsive. Consequently, infants with fewer medical problems had significantly better interaction with their mothers during

feeding observations. In addition, infants who were alert and responsive to stimulation during the Brazelton exam were also more likely to be alert and to look at their parents during feeding, which thus facilitated caretaking.

This study clearly documented the effect of newborn behavior on the development of the mother-infant interaction. Divitto and Goldberg further hypothesized that as the newborn's medical problems increased, maternal self-confidence would decrease as the sick newborn is less capable of providing experiences which will enhance maternal self-confidence. No measures of self-confidence were taken or reported and so this hypothesis still needs to be further verified with empirical data. However, the model proposed by Goldberg, that good mother-infant interactions will be facilitated by high levels of maternal self-confidence and infant social competence, will be tested by this proposed study.

Another group of infants who have been found to have significantly different behaviors and interactions with their parents are infants diagnosed as small-for-gestational-age (SGA). These are infants who are born full-term, but malnourished while in utero which causes intrauterine growth retardation.

These infants, on more gross measures, typically appear normal, are cared for in regular nurseries, and go home from the hospital with their mother. The most distinguishing physical differences are their thinness, wrinkled skin and wide-eyed expressions. Als, Tronick, Adamson, & Brazelton (1976) demonstrated the behavioral deficits typical

of these infants as assessed by the BNAS. Generally, these infants demonstrate poor motor tone, jerky movement, a lack of responsiveness to stimulation, poor alertness, were not cuddly, and were difficult to console once aroused.

"He gives the overall impression of stress when handled and his facial expression when brought to an alert state signals strain, discomfort and exhaustion. He wants to be left alone.... One feels that he is overwhelmed by the environment and if put down after even a brief interaction session he looks exhausted, and in fact is too exhausted to go to sleep."
(Als et al, 1976).

During the newborn period parents commented about their difficulties in caring for these "undemanding" infants but no data was collected concerning mother-infant interactions or maternal attitude. On following-up visits six weeks to nine months later, mothers were interviewed, and eight of the ten mothers reported having difficulties dealing with their babies who were reported to be easily overstimulated, unpredictable and highly reactive (as assessed by the Carey Infant Temperament Scale). Further research is needed with more precise measures of maternal responses, mother-infant interaction and a larger group of infants. However, the study suggests that the small-for-gestational-age infants, who seem to "want to be left alone," may create feelings of insecurity and inadequacy which again becomes cyclical as this increases the tension inherent in the interaction.

These studies have clearly demonstrated that infant responsiveness and clarity of signaling have an effect on the quality of the mother's interaction with her infant. In addition, these studies demonstrate that mother-infant interaction is a reciprocal process, whereby the

behavior of one partner affects the other's response in a transactional manner. Brazelton (1976) further explains this reciprocal process in the following way:

"When an infant attends to and becomes intensely involved with a familiar adult, the infant attends to the adult with a cyclic pattern of attention, withdrawal and recovery that resembles a homeostatic curve. A mother or father who is sensitive to the baby's needs reflects this self-regulatory mechanism and regulates her or his affective and cognitive information to the infant's requirements. An insensitive parent overloads the neonate, and their interaction becomes stressed."

When the infant's behavior and level of competence fit the mother's needs and expectations, the interaction thus becomes mutually rewarding. With mutually rewarding interactions, it is proposed that mothers will gain competence in their role, and thus gain confidence in themselves as mothers. In the proposed study, individual differences in infant's behavior and social competence will be assessed with the NBAS in order to evaluate the ability of the baby to precipitate positive interactions and high maternal self-esteem. It is hypothesized that the more competent infant will facilitate caretaking decisions, provide more feedback cues and rewards for the mother, and increase her feelings of self-worth. The infant who is less competent will be more difficult to care for and will not provide the necessary reinforcement and feedback, thus lowering maternal self-esteem.

Although in a previous study (Shea, 1982) the Brazelton Exam scores were not found to correlate on the maternal self-esteem, the majority of infants performed well within the "normal" range. Previous studies

which have so clearly demonstrated the effect of the lack of infant responsiveness and disorganization on maternal behavior and interaction with her infant were dealing with the more high risk population. It is hypothesized that with a more high risk population in which babies demonstrate more worrisome interactive behavior, the Brazelton Exam will predict maternal self-esteem.

Demographic variables

The individual characteristics and behaviors of the infant and the mothers have been demonstrated to effect the developing mother-infant relationship as well as later child development. However, when assessing this developing relationship, not only must both infant's and mother's behavior and physical health, maternal feeling of competence, and perceptions of her baby be considered, but other life circumstances must also be considered. These life circumstances include demographic variables such as socio-economic status (SES), educational status, religion, race, and occupation.

SES has been identified by many researchers to effect maternal health and newborn medical status (Sameroff, 1976). Poor maternal health and impaired newborn medical status have in turn been found to adversely effect later child development (Sameroff & Chandler, 1975; Sameroff & Zax, 1976). In addition, Rutter and Quinton (1977) found that maternal depression, marital problems, and mild psychiatric disorders were much more frequent among low SES mothers.

Although studies which have examined the effect of SES on general self-esteem have generally found that higher SES is related to higher self-esteem, the differences between groups are not as large or predictive as one might expect. While persons with low income are most likely to report lower self-esteem, studies have shown that generally an equal number of low income people report high self-esteem as low self-esteem (Healy, 1969). The studies on the effects of self-esteem have found that different social classes aspire to different ideals of self (Rosenberg, 1965), but none have reported differences in reference to maternal competence. One of the key factors may be success experiences in what one values and one's treatment in their own interpersonal environment. Therefore, it appears that many people define success not in terms of some external, abstract standard, but in more direct terms of their daily personal relationships.

"...the psychological bases of esteem are more dependent on close, personal relationships and the immediate environment than upon material benefits or prestige rankings in the community at large. In effect, they (these studies) suggest that the definition of success is a matter of personal interpretation rather than a direct and immediate consequence of one's social class" (Healy, 1969).

Based on these findings, it is hypothesized in the following study that while there may be a correlation between SES and maternal self-esteem, it will not be as large as the correlation between more personal and proximal variables such as family support.

Other demographic variables which have been studied in relation to self-esteem include age, religion, parental education, race, and

occupation. No previous studies have suggested that maternal self-esteem would differ as a function of maternal age. While older women have been found to have more negative attitudes toward pregnancy (Westbrook, 1978), these negative attitudes are typically resolved shortly after the birth of the child. Additionally, as older women are often multiparous mothers, it is not expected that maternal age would correlate with or predict Maternal Self-Esteem.

Concerning religion, the self-esteem literature has not indicated any significant differences in self-esteem reported by members of different religious affiliations (McDonald & Gynther, 1963; Hill, 1957; Rosenberg, 1965). It is not expected that religious affiliation would significantly correlate with or predict Maternal Self-Esteem.

Concerning race, which is highly correlated with SES, no clear or definite pattern of relationships between race and self-esteem has been identified (Rosenberg, 1965; Hill, 1957; Healy, 1969). However, race has been found to be related to general self-esteem in many studies (Coopersmith, 1967). As no research has previously examined the relationship of race specifically to maternal self-esteem, this relationship will be examined, but no hypothesis made concerning the relationship.

Occupation and other job related variables have not been found to be strongly related to general self-esteem (Lefkowitz, 1967). However, one of the occupation categories which was included on the occupation scale was that of mother and homemaker. As Epstein (1979c) has found that specific evaluations of self-esteem have been related to specific

areas of experience and success, it is possible that mothers who identify their occupation as full-time homemakers, may have higher maternal self-esteem than mothers who identify themselves as having other careers.

The other demographic variable to be measured was maternal education. Although educational achievement has been found to show some relationship to general self-esteem (Rosenberg, 1965; Coopersmith, 1967), this relationship is not as strong as one might expect. However, maternal education has been found to be related to mother-infant interaction on a teaching task (Barnard & Gortner, 1977), maternal modes of stimulation and childrearing techniques (Yarrow & Jankowski, 1972). Spietz and Eyres (1977) found that mothers with more schooling gave more positive feedback to their infants, encouraged independence and were more verbal with their children. Based on these findings, it is hypothesized that mothers with more education may feel more confident in their competence as mothers. In order to assess the effect of these and other demographic variables and control for them in the analysis, questions concerning race, religion, age, parental education, and total family income will be included in an interview questionnaire used during the one month follow-up visit. Although in the previous study conducted by Shea (1982), none of the above mentioned demographic variables significantly correlated with the maternal self-esteem, the sample population represented a very narrow and limited range of demographic variables.

Family support

Although many psychologists writing about maternal adaptation have addressed the importance of familial support in helping the mother to adjust to her new role as mother, there has been relatively little research demonstrating how a mother's family support system effects her adjustment. Cohen (1966) has found that any significant stress experienced by a mother, either during or immediately following delivery, can affect a mother's adaptation. He suggests that events such as moving, infidelity, death of a friend or relative, which cause a mother to feel insecure and unsupported, can lower her self-confidence and may also disrupt the mother-infant relationship and the mother's perception of her infant. Mason (1963) found familial support was one of the factors which predicted positive maternal attitudes for mothers of premature infants. Even for mothers of normal healthy infants, the demands of motherhood represent only a portion of a mother's time. Other demands of readjustment and daily living are generally still present. The support a mother receives in coping with these demands is likely to influence her self-confidence and should be evaluated when assessing maternal self-esteem. Shea (1982) found that family support significantly correlated with maternal self-esteem two to three days after delivery and at one month after delivery.

The important role that the father plays in infant development has just recently been recognized in child development research (Pederson, 1975; Lamb, 1977). Research and common sense indicate the necessity of examining the father's role in providing emotional and caretaking

support for mothers and infants (Pederson, 1975). Clinical findings (Cohen, 1966) have suggested that the lack of paternal support or infidelity, during or immediately after pregnancy, will lower a mother's feeling of self-esteem, cause her to worry about either the health of the baby or herself, and predict later attachment problems.

Herzog (1980) has suggested that some mothers, particularly mothers of high-risk infants, require more nurturing from their husbands for the first month or so after delivery, than at any other time in their relationship. "To be a mother one must have a mother, perhaps not only in one's personal past experience, but also in one's personal present" (Herzog, 1980).

Herzog has reported clinical findings concerning the importance of paternal support for facilitating mother-infant attachment among "high-risk" couples. He identified the following two major ways in which the father's participation interfered with maternal attachment: (1) the father competed with the mother for the care and nurturing of the newborn and, (2) the father withdrew from both mother and infant and was not involved in the care of the infant. In both cases, fathers were unable to provide the increased nurturance and support required for their wives who had just given birth to a high risk infant.

Barnard and Gortner (1977) assessed the quantity and quality of paternal support as reported by mothers in the last trimester of pregnancy through the baby's first 12 months of life. Of particular relevance are their findings that mothers who reported negative feelings

toward themselves and their infants at one month, also reported significantly less paternal involvement, either through caretaking or emotional support.

In addition to assessing paternal support, researchers have also examined the role of family support in the absence of a father. Aug and Bright (1970) compared the effect of family support systems on young wed and unwed mothers. The results of the study suggested that the attitudes toward mothering and their infants, of single mothers who had support from other family members and relatives, did not significantly differ from married mothers. However, those single mothers who did not have support from other family members or relatives indicated more negative attitudes toward their infants and themselves. In a more recent study, Feiring and Taylor (1978) found that maternal perceptions of a high amount of positive support received from the "secondary parent" (father, grandmother, aunt, etc.) correlated with the high ratings of maternal involvement with her infant, as well as positive mother-infant interactions. In this study a scale was developed to assess "socio-emotional support" from the "secondary parent," which included measures of resourcefulness, cooperativeness, respect vs. disrespect, supportiveness, acceptance and critical vs. praising attitudes. The findings from this study suggest that marital status alone is less predictive of positive feelings toward mothering, than is family support. In the present study it is therefore hypothesized that while marital status will most likely correlate with Maternal Self-Esteem, it will be less significant a correlate than Family Support. In the present study, it is

hypothesized that Family Support will predict Maternal Self-Esteem to Maternal Self-Esteem during the first post-partum month.

Mother-infant interaction

All of the research cited thus far has emphasized the importance of the early mother-infant interaction for normal child development. Synchrony, reciprocity, and mutual regulation of behavior also have been found to be the necessary components for a successful interaction (Brazelton et al., 1975). Research which has begun to look more closely at the nature and structure of the interaction has revealed that both the characteristics of the mother and the infant contribute to "an ongoing process of mutual modification of behavior" (Thoman, 1975). The contingent responsiveness of the mother to the infant's cues leads to the development of a sense of competence and effectiveness for the infant in communicating intent and being able to regulate one's behavior. This sense of competence contributes to the child's ability to have an effect on his/her environment and consequently to the development of mastery of the object world and participation in the interpersonal-social world (Stern, 1974).

Thus, research supports a transactional theory of infant development which stresses the changing nature of both the environment and the infant, and the active role which the child plays in organizing and structuring his world (Sameroff, 1976). I have already discussed at length variations in infant behavior and how these variations effect mother-infant interaction. In addition I have discussed how the mother

also brings a host of already existing attitudes and behavior patterns to her interaction with her infant. Individual differences in development thus have to do with constitutional variables of both the infant and mother, the interaction between the two, and the ability of both to adjust to each other. Therefore, in order to assess and predict the development of the infant, a model which examines the transactions between the infant and environment is necessary. These transactions involve: (1) the ability of the infant to emit cues concerning his needs; (2) the sensitivity and responsivity of the mother to respond to the infant's cues; (3) the responsiveness of the infant to the mother's intervention, and (4) the context that surrounds mother and infant and contains the host of factors that elicit 1, 2, and 3.

A number of different methods have recently been developed for assessing mother-infant interaction including feeding observations (Osofsky & Danzger, 1974; Bakeman & Brown, 1977), face-to-face interactions (Tronick, 1977), "still face" face-to-face interaction (Tronick, 1975), and play situations (Stern, 1974) to name a few.

However, very few methods of assessment of mother-infant interaction have been reported for measuring interaction as early as one month. For the purpose of directly assessing mother-infant interaction in the present study, a teaching task and rating scale developed by Spietz and Eyres (1977) was chosen. This rating scale provides a method for directly assessing mother-infant interaction including maternal behaviors, infant behaviors, and the reciprocal interactions between the two.

The decision to use the teaching task situation to assess interaction was based on both practical and theoretical considerations. Concerning the practical reasons, pilot testing of both interaction in teaching task and a feeding situation (Spietz & Eyres, 1977) revealed a number of problems with the feeding situation. At one month of age the infant's feeding schedule frequently was quite variable which thus made it difficult to schedule home visits so as to be able to observe feeding interactions. This often required that the observers visit for up to six hours in order to observe a feeding, and the time restraints of the observers in some cases prohibited this. In addition, subjects in the proposed study were going to include both mothers who were breast feeding and mothers who were bottle-feeding. In the pilot testing, the observers did encounter more difficulty in accurately assessing infant behaviors for those babies who were breast-feeding and inter-observer reliability differed for the two groups. Although video-taping feeding interactions has been used in previous studies (Bakeman & Brown, 1977) to rate behavior during feeding and to solve reliability problems, video equipment was not available for the present study and thus interobserver reliability was expected to be problematic. In addition, other researchers (Waters, 1977) have argued that the feeding situations involve a highly structured situation which imposes natural restraints on the dyad and thus does not reflect the full repertoire of either maternal or infant behaviors. Although important information can be gained through assessing interaction in the feeding context, the structure of the

activity may serve to obscure more subtle cues of communication and competence.

Stern (1974) has used observations during free-play mother-infant interaction to investigate the nature and development of normal and abnormal communication between mothers and their infants. Such unstructured "broad band" assessment (Waters, 1977) have much to offer in terms of being able to assess the widest range of variables. However, again there is a paucity of information concerning one month old infants in such interactions. In addition, this method of studying interactions typically involves taking samples of behavior for many hours and even days, which in turn requires many observers, time and resources. In order to overcome some of these problems and to develop an assessment measure which would be practical for use in clinical settings, Spietz and Eyres (1977) developed the rating scale for assessing interaction during a teaching task.

The advantages of using this scale for the proposed study are that: (1) the observations are based on discrete behaviors and an interaction which has a clearly definable beginning and end; (2) the teaching task allowed for flexibility as to the timing of observations and required less time to observe than an entire feeding; (3) the teaching situation focuses on maternal style of stimulating her infant as well as on infant responsiveness; (4) the scale assesses maternal affect, comfort, and sensitivity which it is hypothesized will correlate positively with maternal self-esteem; (5) because the task is not as structured a task

as feeding, it allows for observation of more subtle behaviors and individual differences, and (6) because the task is not as natural or routine as a feeding interaction, it involves a more stressful situation which researchers have also found tends to reveal more subtle differences in behavior. These last two advantages have been recently supported by research by Brazelton et al. (1975), Tronick (1977) and Waters (1974).

Brazelton et al. (1975) hypothesizes that interactions which lack the

"supporting constraints of functional tasks, occur at a faster rate and in shorter time units...will more subtly predict and reflect a failure in appropriate communicative capabilities of either or both partners. This is especially true during infancy when the infant's physiological and psychological needs are great because of his immaturity. Unless they are met his already fragile at-risk physiological and psychological balance is threatened. Ergo, this requires that a mother be flexible and give up her own needs to meet his. She can then become able to shape to his individuality by giving up something of her own" (p.11).

In addition, Waters (1974) and Tronick (1975) contend that stressful structures are most useful for identifying individual differences as they force the individual to draw on all of his abilities in order to adjust to, and compensate for the stressful situation.

Although more empirical evidence is needed to validate these hypotheses, such situations do appear to provide an opportunity for a closer examination of both the infant's and the mother's coping and adaptive abilities.

In developing the conceptual dimensions to be measured by the scale, Spietz and Eyres (1977) drew largely from research concerning

interactive patterns by described Kaye (1977) and Lee (1975). Kaye found that during the first few months, it was the role of the mother to imitate the turn-taking and make temporal adjustments to keep in synchrony with the infant during interactions. He sees the natural rhythms, patterns and cycles of the infant as being built-in structures, and by behaving contingently, the caretaker can give these structures a function and meaning. Kaye found individual differences in sensitivity, quickness of response and consistency of responsiveness with some indications that the smoother the reciprocity, the greater the attention paid to the mother. He also found that the infant's cues and signals continued to change during the first 3 months, and some mothers were more sensitive and responsive to these changes than others.

Lee (1975), who applies a cognitive perspective to interpersonal development, conducted a study which sought to identify the process through which infants acquire information about the social world. He found that the structures and schemes that influence the development of cognitive skills are found in early interactions between the infant and his/her mother. Again, he points out that the development of social and cognitive competence is dependent upon contingent responses from the infant's caretakers and environment, such as, 'If I do this, she'll do that.' Only then can the infant go on to develop "strategies" to use in initiating, prolonging, and ending interactions.

Based on this research as well as other research by Bee, Van Eggersen, Streissguth, Nyman and Leckie (1969) and Brophy (1970) concerning maternal teaching styles with older children, Spietz and

Eyres devised the scale in order to assess 5 major aspects of interactive behavior: (1) affect, including the mother's comfort and the infant's pleasure or displeasure in the situation; (2) responsiveness, including the use of contingent feedback to the mother; (3) maternal teaching style including her sensitivity to the infant's cues, her timing and types of strategies used to engage the infant (i.e., modeling, physical guidance or forcing); (4) maternal management of both the infant and materials (i.e., positioning, freedom to explore, safety); and (5) initial state of the infant when the mother begins teaching her infant the task. As Spietz and Eyres (1977) state, "The general purpose is to observe how the mother structures the learning situation, how the infant responds and the type of feedback the mother provides." Besides using the scale as a vehicle for assessing present mother-infant interaction in a clinical setting, Spietz and Eyres are collaborating in a comprehensive longitudinal study in which they are using the scale to explore how early interactions in the teaching situation are related to later developmental outcomes.

In this situation, the mother is given standardized instructions asking her to help her infant learn two tasks in any way which she thinks will be helpful. The tasks are adapted from the Bayley scales with the first task appropriate at the infant's age plus .5 months (the easy one) and the second task is 1.5 to 2.5 months in advance of the infant's age level (the hard one). Some of the ratings are based on frequency counts while others are based on qualitative assessments with

specific examples of qualitatively different behaviors provided for different developmental ages.

The results of the Spietz and Eyres study, which was part of a comprehensive longitudinal study including 200 mothers and infants from a homogeneous non-risk, middle-class population from Seattle, aged 1 month through 12 months (Barnard & Gortner, 1977), provided reliability and validity data in support of the scale. Inter-observer reliability data was generally around 65-70% across various ages for the 5 major clusters. For the 1 month old infants, inter-observer reliability ranged from 60% to 84% with an average of 74%. More reliability data concerning both short-term stability and long-term stability is needed however.

Concerning the validity of the scale, Spietz and Eyres found that mothers with higher education gave more positive feedback, more contingent feedback and were more sensitive to their infant's needs and cues than mothers with less education. This finding is consistently supported by studies of pre-school children and their mother's teaching style (Bee et al., 1969; Caldwell, 1967). This study also indicated that mothers who were more sensitive and responsive to their infants had infants who were more involved in the task and elicited more contingent feedback and positive messages from their mothers. This data is in agreement with data from other studies (Thoman, 1975; Field, 1980), and supports the transactional model of interaction. Differences were found in both maternal and infant behavior between the "easy" and "hard" task with the hard task revealing more individual differences.

Contributing to the content validity of the scale was the finding that there was a significant positive correlation between high maternal scores on the teaching task and high scores on the Caldwell Home Stimulation Inventory. Further support for the construct validity of the scale has been demonstrated with a more heterogeneous population which included both healthy and at-risk mothers and infants (Disbrow, Doers, & Caulfield, 1977). Disbrow et al. employed the scale in an extensive study of child abuse and found a highly significant negative relationship between maternal sensitivity and responsiveness and child abuse, as well as a significant positive correlation between irritable and noncompliant infant behavior and child abuse. These findings suggest that the teaching scales are measuring important aspects of interaction, particularly on the role of the mother.

In summary, the scale demonstrated good construct and content validity. The scale revealed changes in infant and maternal behaviors as well as interactive behaviors over time as the infants developed. Although the scale revealed inconsistency between individuals over time, there was a significant relationship between mother and infant behavior at each age assessed. These findings are consistent with other developmental research concerning the discontinuity of development (Sameroff, 1976) and support the transactional model of assessing mother-infant interaction. As Spietz and Eyres state "This all suggests to us that during the first year mothers and babies experience times of 'going apart' in their interactions and their 'coming together' again."

Besides providing a means for assessing maternal-infant interaction, it is hypothesized that the ratings of maternal affect, comfort and sensitivity will predict to measures of maternal self-esteem. In an earlier study (Shea, 1982) it was found that mothers with low levels of maternal self-esteem were less facilitative and demonstrated less contingent positive feedback to their infants. Mothers who were more effective in interacting with their infants, had infants who were more receptive and responsive to their help and had more self-confidence in her maternal abilities. Although these behavioral measures of competence are not expected to be identical to measures of self-esteem, it is hypothesized that maternal competence will contribute to a mother's feeling of self-worth. It should be noted that not all people evaluate their self-worth on the basis of competence and mastery, but rather are more concerned with being lovable, moral and self-sacrificing (Rosenberg, 1979). However, previous research has indicated that the more effective the mother is in her mothering ability, the more self-confident she will be, and the more willing she will be to continue interacting with her infant. On the other hand, when a mother is ineffective, she tends to become less confident in her feeling of competence as a mother and the interaction is no longer reinforcing (Sameroff, 1976). The proposed study attempts to demonstrate empirical support for this theory.

Caesarean Section

As was discussed earlier, many researchers have recently reported that following a Caesarean Section delivery, many mothers experience significantly more feelings of depression, anxiety and negative feelings toward pregnancy and motherhood (Pederson et al., 1980; Grossman, 1980; Field & Widmayer, 1980). Klaus and Kennell (1976) have suggested that the temporary separation of mother and infant following a Caesarean Section may lead to a delayed attachment between the mother and infant. Field and Widmayer (1980) found that after 2-3 days following delivery, Caesarean Section mothers showed less positive attitudes and more anxieties toward labor and delivery. Pederson et al. (1980) found that Caesarean Section mothers reported feeling more apprehensive about their infant's well-being and worried about their ability to assume normal caretaking responsibilities. Additionally, Grossman (1980) found that Caesarean Section mothers experienced significantly more medical complications, anxiety and post-partum depression following delivery, than did women who delivered vaginally. Shea (1982) found a tendency for mothers who delivered via Caesarean Section to have lower Maternal Self-Esteem scores than mothers who delivered vaginally shortly after delivery but not by one month after delivery. All of the above studies also found that by four months these negative attitudes and feelings of depression had subsided. They attributed the increase in positive feelings largely to the increased caretaking and emotional support from the baby's father. Therefore, in the present study it is hypothesized that shortly

after delivery, Caesarean Section mothers will have significantly lower maternal self-esteem than mothers who delivered vaginally.

Another similar variable which is hypothesized will correlate with Maternal Self-Esteem is Maternal Health following delivery. Based on the literature concerning Caesarean Delivery, as well as the literature concerning maternal feelings of inadequacy following a difficult and complicated delivery (Grunebaum et al., 1975), it is hypothesized that mothers who experience health complications during and following their pregnancy will have lower self-esteem than mothers who do not develop health complications. Therefore, in addition to assessing feelings toward pregnancy, labor and delivery as part of the MSI, it is hypothesized that reported maternal medical complications (from the medical records) will correlate with MSI scores. However, it is hypothesized that the health and behavior of the infant will be of more importance in predicting to Maternal Self-Esteem than the mother's health.

Parity

Much of the clinical and obstetrical literature concerned with maternal adaptation to childbearing and childrearing has focused on the psychological problems of primiparous mothers. Bibring (1959) and Sheresheksky and Yarrow (1973) have reported that primiparous mothers experience more difficulties in labor and delivery and often experience more difficulties in adjusting to their role as a mother. Others (Gordon, 1967) have reported that primiparous mothers tend to be happier

and more positive about the birth of their first child than are multiparous mothers. Westbrook (1978) reviewed the literature concerning the differences in attitudes and adaptation of primiparous vs. multiparous mothers. She concluded that many conflicting findings had been reported and no conclusive statements could be made. However, in a study of 200 women which she conducted, Westbrook found that while multiparous women did tend to have more negative attitudes toward childbearing, there was no difference in maternal warmth expressed toward the infant or the level of anxiety reported by the mothers.

Shea (1982) found that in the sample of healthy mothers and infants, multiparous mothers tended to have higher maternal self-esteem than did primiparous mothers, although the correlation was not significant.

To date, only two studies have been conducted which specifically examined the self-confidence of primiparous vs. multiparous mothers. Seashore et al. (1973) found that multiparous mothers of premature infants had greater self-confidence than did primiparous mothers of premature infants regardless of whether or not they were separated from their premature infant. They suggested that a mother who has experience in caring for an infant of her own would be less susceptible to doubt about her biological competence as a mother. Additionally, Seashore et al. (1973) found that the separation experience had little effect on multiparous mother's self-confidence, but did significantly lower the self-confidence of primiparous mothers. These findings are consistent with findings from the self-esteem literature which have found that

previous success in a difficult endeavor has led to more positive self-evaluations (Epstein, 1979c). Based on the above review it is hypothesized that multiparous mothers will have higher maternal self-esteem than primiparous mothers, both among the mothers of healthy and less healthy infants. However, by one month following delivery, it is expected that the successful experience of interacting with one's infant will have given primiparous mothers increased self-confidence. Therefore, it is hypothesized that by one month, the maternal self-esteem of primiparous and multiparous mothers will not differ significantly.

Maternal perception of child and maternal self-esteem

It is another hypothesis of this study that how the mother experiences her infant and child will influence her feelings of maternal competence as well as the mother-child interaction and the child's development.

A study by Broussard and Hartner (1971) lends support to this hypothesis. In a longitudinal study of over 300 mothers and infants, maternal perceptions of their own infants at one month were significantly correlated with attitudes of negative feelings toward childrearing as measured by Schaefer's Postnatal Research Inventory (1958). Mothers who rated their infants as being below average and bothersome also expressed negative attitudes toward childrearing. In this study, mothers were asked to rate their infants' feeding, sleeping, crying, elimination, vomiting and regularity of behavior as compared to the average infant, at 3 days after birth and again at one month of age

using the Neonatal Perception Inventory (Broussard & Hartner, 1971). Mothers were asked questions such as "How much trouble do you think the average baby has in feeding?" and then "How much trouble has your baby had feeding?" Independent clinical assessments were made four and one-half years later. Broussard found that evaluations made at birth were not related to later outcome. However, ratings made at one month were significantly correlated with psychological, social and academic functioning at four years. Those children whose mothers rated their infants as less than average and expressed negative attitudes toward childrearing at one month, were experiencing significantly more psychological problems than those children whose parents rated them more positively and had more positive attitudes toward childrearing. Broussard and Hartner (1971) concluded that the way a mother interacts with her infant would be modified by her perception of her infant's appearance and behavior, which in turn would effect the infant's behavior and development. They proposed that problematic mother-infant interactions can occur when the infant's behavior does not "match" the mother's perception of what a baby ought to be like. The Neonatal Perception Inventory provides a measure of what the mother thinks a baby ought to be like, her perceptions of her own baby, and any discrepancies between them. However, no assessments were made of infant behavior during the newborn period and so it is not possible to know how and to what degree the infant contributed to their mother's negative perceptions.

A more recent study by Barnard and Gortner (1977) lends some clarity to this issue. Barnard and Gortner (1977) conducted an

extensive study examining the contribution of infant characteristics, maternal perceptions, maternal feeling toward motherhood, and family support on the development of the infant and corresponding mother-infant interaction over the first 42 months of life.

Barnard and Gortner found that mothers who had negative attitudes toward childrearing and negative feeling about their family role at one month, perceived their infants negatively, irrespective of the baby's behavior as measured by the Brazelton Neonatal Behavioral Assessment Scale at one month. However, these same mothers also rated their infants as having difficult temperaments.

Although Barnard suggests that the negative temperament ratings might be more of a statement about the mother's disposition than the baby's, the present author suggests that what might have led to these negative perceptions was a mismatch between the mother's needs and expectations, and the infant's behavior and demands. On the other hand, Shea (1982) found that mothers who perceived their infants to be "better than average" also felt that they were better than average mothers, and for these mothers there appears to have been a better match between the mother's expectations and her baby's behavior.

In summary, the above mentioned studies indicate that a mother's perception of her infant does appear to contribute to her attitudes towards herself and vice versa. Thus, rather than expecting a direct relationship between maternal self-esteem and childrearing attitudes, the more salient and relevant factor which would be expected to relate to a mother's feelings of competence is her perception of her infant.

As the mother's perception of her infant appears to influence her attitudes toward childrearing and her interaction with her infant, Broussard and Hartner's Neonatal Perception Inventory will be given to the mothers one month after her baby is born, and the relationship to the MSI investigated. It is hypothesized that mothers who perceive their infants as being less than average will have lower maternal self-esteem than those mothers who rate their infants as being average or better than average.

Summary

In summary, two studies were conducted for the purpose of identifying those variables which predict maternal self-esteem during the first few days following delivery and then one month after the baby was discharged home from the hospital. The first study specifically investigates those variables which predict maternal self-esteem among a group of relatively healthy infants, all of whom were discharged home with their mothers. The second study investigates those variables which predict maternal self-esteem among a more heterogeneous group of mothers and infants which included less healthy and premature infants who were not discharged home from the hospital with their mothers.

In both studies it is hypothesized that differences exist in maternal self-esteem which can be predicted by differences in maternal experiences and newborn characteristics. In both studies based on the above review of the literature, a number of factors were a priori

selected for investigation of their relationship to maternal self-esteem. As many of these factors interact with one another, linear multiple regression analyses, which assess the independent contribution of the independent variables to the dependent variable, will be used to identify those variables which predict maternal self-esteem. The determination of the predictor variables and the determination of the order of these variables as predictor variables are based on the hypothesized importance of each of these variables for predicting maternal self-esteem first in a relatively healthy sample of mothers and infants and in the second study among a more heterogeneous and high risk sample of mothers and infants.

Specifically, in the first proposed study, it is hypothesized that with a group of normal full-term mothers and infants, maternal self-esteem during the immediate postpartum period will be predicted by the following variables: (1) the infant's health; (2) the behavioral organization and social competence of the infant; (3) the family support system; (4) the type of delivery (i.e., Caesarean section vs. vaginal delivery); and (5) parity. The determination of the order of these variables is based on the hypothesized importance of each of these variables for predicting maternal self-esteem.

Additionally, it is hypothesized that maternal self-esteem one month after delivery will be predicted by the following five variables: (1) the behavioral organization and social competence of the infant; (2) the health of the infant; (3) the mother-infant interaction; (4) the family support system; and (5) maternal perception of her

infant. Again, the determination of the order of these variables is based on the hypothesized importance of each of these variables for predicting maternal self-esteem at one month after the baby's discharge home.

The third major hypothesis of the first proposed study is that maternal self-esteem one month after delivery will have changed as a function of the following: (1) changes in the infant's health status; (2) changes in the infant's behavior and social competence; and (3) changes in the amount of family support available to the mother. Again the ordering of these change variables is based on the hypothesized importance of each variable in relation to maternal self-esteem. These hypotheses are based on a transactional model which stresses the changing nature of both the environment and the infant, and emphasizes the active role which the infant plays in organizing and structuring his/her world (Sameroff, 1975). It is therefore also hypothesized that changes in maternal self-esteem will affect the infant's social responsiveness and behavioral organization.

CHAPTER II

METHOD, STUDY 1

Subjects

Thirty normal, term infants and their mothers were recruited from the newborn nurseries at the Baystate Medical Center in Springfield, Massachusetts. A research assistant who was blind to the purposes of the study recruited the infants and mothers and did not communicate any of the demographic or health variables to the principle investigator. A stratified random sampling procedure was used in order to assure selection of a heterogeneous sample. This procedure involves complete random sampling within each of a number of strata, such that all strata are represented equally in the sample, whether or not they are represented equally in the population. The only variable which was used as a selection variable in this study was gestational age. This variable was used as a selection variable because previous research (Field, 1980) has indicated that infants of various gestational ages demonstrate a wide range of behavioral and medical complications. Thus, stratifying the variable gestational age was done in order to ensure variability of other factors including infant health and behavior. For the purposes of the present study it was specifically decided not to include sick infants in the study despite the fact that this would truncate the data. Sick infants who were not discharged home from the hospital with their

mother were excluded from the study. It was decided that the Maternal Self-Report Questionnaire might be an additional stress for these mothers and therefore the MSI should first be used and evaluated with a normal, relatively healthy and unstressed population. This sampling procedure thus ensured that a wide range of "normal" mothers and infants were represented in the sample, but it had the effect of severely limiting the variability of the data. It is thus biased against finding significant relationships.

Infants ranging from 38 to 45 weeks gestational age, who were discharged home from the hospital along with their mother, were included in the study. Infants with transitory minor complications, such as elevated bilirubin levels, transient tachypnea, feeding problems, low apgar scores, infection and minor anomalies were included in the study as long as they were discharged home at the same time as their mothers. This criteria was also necessary in order not to confound the impact of other variables on maternal self-esteem with the impact of separation from the infant on maternal self-esteem. As a first study, it was necessary to demonstrate that even within the context of "normal" mothers and infants who have not experienced the dramatic effects of separation, that there are differences in maternal self-esteem which are related to differences in newborn characteristics.

The sample population included 7 infants of gestational ages between 38 and 39 weeks, 8 infants of 40 weeks, 7 infants of 41 weeks gestation, and 8 infants who were classified as postmature, with gestational ages between 42 and 45 weeks gestational age. Gestational age in

most cases was determined by the mother's report of the data of her last menstrual period. However, when the mother was uncertain of her due date or when there was a discrepancy greater than one week between the physician's assessment of gestational age using the Dubowitz Infant Maturity Exam (Dubowitz, Dubowitz, & Goldberg, 1970) and the mother's assessment, the physician's assessment of gestational age was used. The sample consisted of 13 males and 17 females, equally distributed along gestational age. Initially, there were 18 males and 18 females, but 5 male infants and 1 female infant and their mothers dropped out of the study following discharge from the hospital. The final sample consisted of 3 infants who were assessed as being small-for-gestational age and eight infants assessed as being postmature according to gestational age (greater than 42 weeks).

As was previously mentioned, no selection strategies were used concerning demographic variables, obstetric variables, or any other variables related to maternal status. The maternal obstetric and demographic information was collected during the course of the study, and the analysis of this information is reported in Chapter III.

Assessment Methods

Newborn behavior

All infants were examined using the Brazelton Neonatal Behavioral Assessment Scale (Brazelton, 1973).

The Brazelton Examination assesses the newborn's neurological intactness on 20 reflexes and the newborn's interactive behavior on 26 items. The interactive behaviors assessed include the infant's need for and use of stimulation, alertness, consolability, irritability, cuddliness, motor maturity, and ability to organize states. These interactive behaviors are summarized by four a priori scoring dimensions labeled interactive processes, motoric processes, organizational processes-state control, and organizational processes, physiological response to stress (Adamson, Als, Tronick, & Brazelton, 1975). Each dimension is scored such that high scores reflect poor performance and low scores reflect optimal performance. In the present study, the scores from the four dimensions were totaled to produce a summary score. Again, low summary scores reflected more optimal performance and high summary scores, poor performance.

Infant health

Each infant was assessed using the Parmelee Postnatal Complications Scale (PMS) which assesses the infant's postnatal course including 10 possible risk factors such as respiratory distress, hyperbilirubinemia, metabolic and temperature disturbances and congenital anomalies. This information was obtained from each infant's medical record as well as maternal reports. The total number of medical complications was used as the index of infant's health, with high scores reflecting increased risk to the infant's health.

Maternal perception of her infant

In order to assess the mother's perception of her infant, the Neonatal Perception Inventory (Broussard, 1971) was used. This inventory consists of two derived scores, the first being the discrepancy score and the second being the bothersome score. To derive the discrepancy score, the inventory asks the mother to first rate the average baby on six measures of behavior on a 1 to 5 scale, and then these ratings are summed. Then the mother is asked to rate her baby on the same six measures on a 1 to 5 rating scale. Low scores are considered optimal. The discrepancy between the "average baby score" and the "your baby score" constitutes the NPI Discrepancy Score. A mother is considered to have a positive perception of her baby if she perceives her baby to be better than the average baby and thus has a positive score. A mother who perceives her own baby to be the same as or worse than the average baby is considered to have a negative perception of her infant. The other score, the Bothersome Score, is derived by summing the number of bothersome behaviors which the mother perceives her infant to have, and the degree of difficulty the mother perceives with the problem behavior. A high bothersome score reflects a more "bothersome" infant.

Maternal self-esteem

Maternal Self-Esteem was assessed using the Maternal Self-Report Inventory as described in Chapter I. The scale consists of the following seven dimensions: Caretaking Ability (26 items), General Ability as a Mother (25 items), Acceptance of Baby (9 items), Expected

Relationship with the Baby (10 items), Complications During Labor and Delivery (15 items), Parental Acceptance (6 items), and Body Image and Health after Delivery (9 items). Each item is rated by the mother on a one to five scale. The total number of questions on this Likert Scale was 100 and are listed according to each dimension in Appendix A.

Instructions for the questionnaire were provided on the front page of the questionnaire. They instruct mothers to indicate how accurately each statement describes how she feels.

Because of the great number of items included in the Maternal Self-Report Inventory (MSI), it was desirable to use a shortened version of the Epstein-O'Brien Self-Report Inventory (SRI) to concurrently assess general self-esteem. This was accomplished by selecting half of the items used on the SRI and randomly intermixing them with the items from the MSI. This was done in order to: (1) avoid response sets, and (2) provide a more diversified sets in hopes of maintaining the subjects' interest. As with the MSI items, an equal number of positive and negative items were selected from the SRI and randomly dispersed. An equal number (5) of items from each subscale on the SRI was selected, except for the subscale concerning Body Image, which included 9 items, three from each of the subscales comprising Body Functioning and Appearance. See Appendix C for items from the Epstein-O'Brien Self-Report Inventory.

On the full scale version of the SRI, each item was matched with a similar item in order to assess internal consistency. As these item pairs did demonstrate high correlations between each other, for each subscale only one of the items from the matched item pairs was included

in the shortened version of the scale. This method of item selection assured greater reliability of the shortened version of the scale. Additionally, half of the items from the original subscale assessing Defensiveness were included in the shortened version of the scale in order to assess the degree of social desirability associated with the scale. As mentioned above, these, as well as all other items from the shortened version of the SRI were intermixed with items on the MSI. However, for purposes of data analysis, items from the MSI and SRI will be analyzed separately.

Family support

Based on the findings of studies cited, a questionnaire was designed to assess the amount of emotional and caretaking support provided for the mother by the family. These questions were designed in order to assess the effect of paternal and family support on maternal self-esteem. Specifically, the questionnaire includes questions concerning the father or secondary caretaker's involvement in caretaking activities, participation in decision making (Barnard & Gortner, 1977) and the mother's satisfaction with her relationship with the baby's father. The items on the Family Support Questionnaire were written in the first person and mothers were requested to indicate on a Likert Scale how accurately each statement described how she felt by circling the answer which best expressed the degree to which the statement was true for her.

As was done with the items from the Self-Report Inventory (Epstein & O'Brien, 1976), the 16 items from the Family Support Questionnaire were intermixed with the questions from the Maternal Self-Report Inventory in order to provide a more heterogeneous scale. See Appendix B for a list of items on the Family Support Inventory.

Assessment of home visit

A home interview questionnaire was devised in order to obtain various information which was not included in the other maternal questionnaires, and which was not overtly observable or available from medical records. This included such information as demographic variables, present concerns and feelings about taking care of the infant, infant and maternal health problems, the infant's sleeping and eating habits, the mother's developmental expectations and a description of the mother's typical day. Many of the interview items were obtained from the home interview format used by Barnard and Gortner (1977), whose questionnaire was designed for the purpose of obtaining information from mothers which would be useful in identifying risk factors and predicting which families were at risk for later developmental and/or environmental problems. (See Appendix C for a copy of the home interview questionnaire).

Clinical rating of maternal self-esteem

The author and a research assistant, who were both unaware of the findings on the MSI, each independently rated the mothers on the degree

of maternal self-esteem which was demonstrated. For the purposes of clarity and objectivity, maternal self-esteem in this case was defined as the confidence and self-assurance in one's mothering ability which was demonstrated and projected either by verbal statement and/or actions made by the mother during the home visit. Verbal statements were recorded by both investigators on a recording sheet by recording the number of positive (+) and negative (-) statements. Examples of positive statements included such remarks as "I love taking care of my baby and don't even miss work," "I just love caring for my baby," and "Everything about it feels great." Examples of negative statements included such remarks as "I'm too tired and feel depressed," "I feel lost without my work," "I resent all the time it takes," "I really get shook up when I can't stop her from crying," "I don't know what to do" and "I felt really bad when he got the diaper rash, I know it was my fault."

Maternal behavior during the home visit was also noted and recorded. Examples of such behavior included how relaxed the mother appeared when handling the baby, the mother's apparent enjoyment in playing with, diapering, feeding and/or holding the baby, and how the mother handled her infant when he/she was crying. Immediately following the home visit, both the author and the research assistant examined this recorded information and then rated each mother independently on a 1 to 3 scale, with 1 being low self-esteem and 3 being high self-esteem. Inter-rater reliability ranged from .86 to .92 with a mean reliability of .90.

Mother-infant interaction assessment

A teaching task, designed by Spietz and Eyres (1978) was used to assess maternal and infant behavior in an interactive situation. In this assessment the mother is asked to teach her infant two tasks, an easy and a hard task. The easy task for the one month old infants was adapted from the Bayley Scales of Infant Development and involved teaching the infant to turn to look at a small shielded flashlight, and follow the light as it is moved through several excursions from left to right. The "hard" task, also adapted from the Bayley Scales of Infant Development, involved teaching the infant to follow a red ring for at least 30 degrees to each side. Mothers were not given any instructions as to how to engage their infant in the tasks and if they asked, they were told to do what they felt would work best for their baby. The two tasks were presented in succession but the length of time spent on each task was determined by the mother and recorded by the investigator. The following standard instructions were given to each mother by the investigator:

"I have two tasks I would like you to help your baby to learn. You may position your baby in any way that you like and take as much time as you wish. Just let me know when you are finished with the first task and then I will take a few notes and give you the second task."

Following the second task, reinforcement was given and mothers were reassured that the second task was a difficult one and in advance of the infant's age. At the end of each task, the author and research assistant both rated the maternal and infant behaviors using the manual

and scoring sheet designed by Spietz and Eyres (1978). As was previously noted, the principle investigator and research assistant pilot tested a few infants in order to clarify the scale items and obtain inter-rater reliability at a minimum of 80%. Throughout most of the home observations, dual observations were made in order to check on inter-rater reliability. Inter-rater reliability across both teaching tasks ranged from .65 to .90, with a mean of .81. For the purposes of data analysis, the ratings of the principle investigator were used.

Scores on these tasks consisted of a total maternal score, referred to as the Maternal Disbrow Score, with higher scores reflecting more positive and optimal maternal behaviors, and an Infant Disbrow Score, with lower scores reflecting more attentive and responsive infant behaviors. In addition, specific dimensions of the Maternal Disbrow Score were analyzed including Maternal Sensitivity and Techniques. Maternal Sensitivity scores reflect "the degree to which the mother appears tuned into her infant's communication and task performance, and the frequency with which she responds to the infant's various cues, whether potent or subtle, during the task" (Spietz & Eyres, 1978). Techniques scores reflect the success of various techniques such as infant positioning, task handling and timing used by the mother to teach her infant the task. For both of these variables, a high score reflects more positive and optimal maternal behaviors.

Procedure

The research assistant who performed the screening and subject selection, reported to the principle investigator the names of potential subjects for the study. The principle investigator then contacted each infant's mother and discussed with her the nature and purpose of the study. If the mother wished to participate in the study, written consent from her was obtained.

Time 1

On day two or three after birth, each infant was examined using the Brazelton Neonatal Behavioral Assessment Scale. All examinations were conducted by the author who is a trained examiner and who was unaware of the mother's responses to any of the questionnaires. In order to assure that the examiner remained reliable throughout the course of the study, inter-rater reliability scores with another trained examiner were obtained twice during the course of the study. Inter-rater reliability was greater than or equal to 90% absolute agreement at both of these times. The Parmelee Postnatal Complications Scale was used to assess infant health status prior to discharge from the hospital. Additionally, prior to discharge from the hospital, each mother was asked to complete the Maternal Self-Report Inventory, including the items from the Family Support Scale and the Epstein-O'Brien Self-Report Inventory. Mothers were given the questionnaire prior to the administration of the Brazelton Exam. At this point in the study, only minimal

feedback was given to the mothers concerning their baby's performance on the exam so as not to bias their perception of their infant. However, on a few occasions, an infant demonstrated worrisome behavior on the Brazelton Exam and the author consulted with the Chief Neonatologist at the hospital and the infant's pediatrician to alert them to the problem.

Time 2

Prior to the one month home visit, the mothers were sent two questionnaires which they were asked to complete and return within one week or to give to the author at the time of the home visit. All mothers were given an addressed, stamped envelope with which to return the questionnaires. The four questionnaires included the NPI and the Maternal Self-Report Inventory, including the Family Support items and the Self-Report Inventory items. The same version of the MSI was administered at Time 1 and Time 2. Mothers were given the chance to read the assessment form, and if they had any questions, the investigator was available to answer them and make certain that the mothers understood the nature of the questionnaires. The investigator also called each mother to be sure that she received the questionnaires and to make arrangements for the one month home visit. During the home visit, made approximately one month after the baby was discharged home, the Brazelton Neonatal Behavioral Assessment Scale was used to assess newborn behavior. The Postnatal Complication Scale was again used at this time to assess infant health status. Clinical ratings of maternal self-esteem were also made at this time. The home interview was

conducted by either the author or the research assistant who was trained by the author in conducting the interview.

The Teaching Task, designed by Spietz and Eyres (1978) was administered to each mother and infant pair during the home visits, in order to assess mother-infant interaction variables. The investigator introduced the task to the mother following the Brazelton Exam, while the infant was awake, alert and apparently content. However, if the infant appeared distressed following the Brazelton Exam, the investigator waited until the infant was consoled and in an appropriate state of alertness before introducing the task. On a few occasions, the tasks were interspersed with the maternal interview.

Mothers were aware that they would be required to complete a number of questionnaires and participate in a number of specified activities throughout the course of the study. All mothers were assured of complete confidentiality concerning all the information obtained during the study as well as anonymity. At any point during the study, if any mother requested or appeared to require support services or counseling, the author was available to consult with the mother and make the appropriate referral. This occurred in four cases, two of which involved getting mothers involved with support groups for new mothers, one involved a social service referral, and the other involved referral for psychological services and mental health counseling.

After completion of all infant behavioral tests and maternal questionnaires, the author provided each mother with a description of the results of the infant developmental exams.

C H A P T E R I I I

RESULTS OF STUDY 1

Demographic Information

Maternal data

The demographic information for the 30 mothers participating in the study is presented in Table 1. These mothers represented a wide range of ages, occupations and incomes. The sample was limited as concerns race and religion, with the majority of the mothers being white and identifying themselves as Catholic. Although the majority of the mothers had completed 12 years of school or less, a large percentage had attended at least one year of college. A large majority of the mothers in this study were married and living with the father of their baby.

Paternal data

The demographic information for the fathers of the infants in this study is presented in Table 2. As can be seen from this table, the fathers represented a wide range of ages, educational experience and occupations. As with the maternal race representation, the majority of the fathers were reported to be white. Information concerning paternal religious affiliation was not obtained.

TABLE 1
MATERNAL DEMOGRAPHIC INFORMATION

<u>Maternal Age</u>			
<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	
24.2	4.65	17-33 years	
	N		%
<u>Religious Affiliation</u>			
Catholic	21		70
Protestant	9		30
Jewish	0		0
<u>Race</u>			
White	25		83.3
Black	3		10.0
Puerto Rican	2		6.7
<u>Occupation</u>			
Housewife	11		36.7
Clerical	6		20.0
Semi-Skilled, unskilled or student	7		23.3
Skilled	2		6.7
Sales, Managerial, or Professional	4		13.3
<u>Education</u>			
12 years or less	19		63.3
1 year of college or more	11		36.7
<u>Marital Status</u>			
Married	25		83.3
Separated	1		3.3
Single - living with baby's father	1		3.3
Single, not living with baby's father	3		10.0
<u>Family Income</u>			
0 - \$ 5,000	3		10.0
5 - \$10,000	8		26.7
10 - \$15,000	3		10.0
15 - \$20,000	7		23.3
20 - \$25,000	4		13.3
25 and up	5		16.7

TABLE 2
PATERNAL DEMOGRAPHIC INFORMATION

<u>Paternal Age</u>			
<u>Mean</u>	<u>S.D.</u>	<u>Range</u>	
27.6	6.62	17-44 years	
		N	%
<u>Race</u>			
White		24	80.0
Black		5	16.7
Puerto Rican		1	3.3
<u>Occupation</u>			
Unemployed		3	10.0
Student		2	6.7
Unskilled or semi-skilled		9	30.0
Skilled		2	6.7
Non-civilian		1	3.3
Clerical		3	10.0
Sales		3	10.0
Manager		4	13.3
Professional		3	10.0
<u>Education</u>			
12 years or less		15	50.0
1 year of college or more		15	50.0

Maternal obstetrical history

The obstetrical information for the mothers in the study is presented in Table 3. Mother's prenatal and obstetrical complications were assessed using the Obstetrical Complications Scale (OCS) designed by

TABLE 3
MATERNAL OBSTETRICAL HISTORY

	N	%
<u>Parity</u>		
Primiparous	16	60.0
Multiparous	14	40.0
<u>Type of Delivery</u>		
Vaginal	20	66.7
Repeat Caesarean	2	6.7
Emergency Caesarean Section	8	26.7
<u>Obstetrical Complications</u>		
<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
4.5	2.9	1-10

Lipman and Parmelee (1978). The majority of the mothers delivered vaginally although a large number of mothers delivered either via emergency or repeat caesarian section. The sample of mothers in this study represented a relatively healthy sample of mothers. Complications ranged from mild toxemia during pregnancy to complications during labor and delivery, such as the use of forceps, breech presentation and nuchal cord.

Infant health data

Infant health complications at both Time 1 and Time 2 are reported in Table 4. As can be seen from this table, at Time 1, the health

TABLE 4
INFANT HEALTH DATA

	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Infant Health Complications at Time 1	1.3	1.5	0-4
Infant Health Complications at Time 2	.77	.04	0-3

status of the infants in this study ranged from no medical complications, to one or two minor complications such as elevated biliruben levels, transitory feeding problems, to more major complications such as transitory respiratory distress and congenital anomalies. In three cases intensive care treatment was required for one or two days. However, all infants in the study were healthy enough to be discharged home with their mothers. Given the limited range of the health problems encountered by these infants and thus the trunkation of the data, the effects of infant health on maternal self-esteem are highly significant.

Concerning feeding methods, 46.7% of the infants in the study were breast fed, 43.3% were bottle fed, and 10% were both breast and bottle fed.

At Time 2, as can be seen from the table, mothers reported fewer health complications with their infants. At this time, health complications ranged from minor colds, diaper rash, and feeding problems and in a few cases more serious problems such as collick and weight loss.

Maternal Self-Report Inventory

Descriptive data

Summary scores from the Maternal Self-Report Inventory (MSI) at Time 1 and Time 2 are presented in Tables 5 and 6 respectively. Raw scores were computed for each subscale and distributions for the seven subscales, as well as the total scores, were obtained.

TABLE 5
SUMMARY DATA FROM MSI AT TIME 1

MSI - Time 1	Raw Score Means	Standard Deviations	Range	Number of Items
Caretaking Ability	110.83	9.30	90 - 127	26
General Ability as a Mother	111.40	9.93	77 - 125	25
Acceptance of Baby	41.97	5.07	28 - 50	10
Relationship with Baby	38.87	3.18	31 - 45	9
Body Image and Health after Delivery	35.83	6.39	21 - 45	9
Parental Influence	27.67	2.89	19 - 30	6
Pregnancy, Labor and Delivery	60.63	9.51	36 - 73	15
Total MSI Score	427.20	36.91	322 - 481	100

TABLE 6
SUMMARY DATA FROM MSI AT TIME 2

MSI - Time 2	Raw Score Means	Standard Deviations	Range	Number of Items
Caretaking Ability	113.23	8.61	93 - 128	26
General Ability as a Mother	112.83	10.92	80 - 124	25
Acceptance of Baby	43.27	4.86	28 - 50	10
Relationship with Baby	39.30	3.39	31 - 45	9
Body Image and Health after Delivery	36.40	5.76	22 - 45	9
Parental Influence	27.67	2.83	16 - 30	6
Pregnancy, Labor and Delivery	62.03	9.84	34 - 75	15
Total MSI Score	434.73	37.44	346 - 481	100

Correlation Between the MSI and Independent Variables

Table 7 presents the correlations between the demographic variables and the MSI as well as the SRI at Time 1. As can be seen from the table, there were no significant ($p < .05$) correlations between any of the demographic variables and either the MSI or the SRI. This was not

TABLE 7

PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN DEMOGRAPHIC VARIABLES
AND THE MSI AND SRI AT TIME 1

Demographic Variables	MSI	SRI
Mother's Age	.23	.07
Mother's Religion	-.01	-.04
Mother's Race	-.20	-.01
Mother's Occupation	-.21	-.01
Mother's Education	-.10	.07
Family Income	.27*	.12
Marital Status	-.23	-.07
Father's Age	.27*	.04
Father's Race	-.08	.06
Father's Occupation	.01	.14
Father's Education	.03	-.03

* $p < .10$

** $p < .05$

*** $p < .01$

surprising and based on theoretical expectations and past findings had been predicted. However, it should be noted that a number of the demographic variables, including mother's religion, mother's race, and marital status had very restricted ranges with subsequently reduced covariances and smaller correlations. Additionally, the distribution of

scores on these variables did not represent the normal distribution in the population, and this factor can significantly affect the size of the correlation coefficient. Although not significant, two of the variables had correlations which approached significance, including family income ($r = .27$, $p = .08$) and marital status ($r = .22$, $p = .11$). Both of these correlations are in the correct direction as would be expected. At Time 1, family income did tend to influence maternal self-esteem in that mother's with higher family incomes tended to have higher maternal self-esteem. However, as can be seen from Tables 18 and 19, family income did not correlate with the MSI at Time 2, and did not correlate with the SRI at Time 1 or Time 2. As will be seen, family emotional and physical support was far more significantly correlated with both measures of self-esteem than was family income.

As concerns marital status, despite the restricted variability, there was a correlation in the expected direction between marital status and the MSI, at Time 1 ($r = -.23$, $p = .11$) but not with the SRI ($r = -.07$, $p = .36$). At Time 1, married mothers tended to have higher maternal self-esteem than did non-married mothers. However, as can be seen from Table 19, at Time 2 there was no significant correlation between marital status and the MSI ($r = .02$, $p = .47$) or marital status and the SRI ($r = -.01$, $p = .48$).

Table 8 presents the correlations between these demographic variables and the MSI and SRI at Time 2. As can be seen from the table, none of the correlations approached significance at Time 2.

TABLE 8

PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN DEMOGRAPHIC VARIABLES
AND THE MSI AND SRI AT TIME 2

Demographic Variables	MSI	SRI
Mother's Age	.02	-.05
Mother's Religion	.08	-.03
Mother's Race	-.10	.08
Mother's Occupation	-.14	.12
Mother's Education	-.23	-.10
Family Income	.02	-.01
Marital Status	-.07	-.07
Father's Age	.08	-.02
Father's Race	.02	.11
Father's Occupation	.03	.30
Father's Education	-.09	-.05

* $p < .10$

** $p < .05$

*** $p < .01$

A number of independent variables were hypothesized a priori to correlated specifically with maternal self-esteem. At Time 1, it was hypothesized that the following variables would demonstrate a strong relationship with the MSI; the health of the infant, behavioral responsiveness of the baby, family support, type of delivery and parity, maternal health factors and brief maternal separations from the infant.

Table 9 presents the Pearson Product Moment correlation coefficients between all of the above variables with the MSI and SRI at Time 1.

TABLE 9

PEARSON PRODUCT-MOMENT CORRELATIONS, STUDENT'S t , AND
PROBABILITY LEVELS BETWEEN A PRIORI DEFINED INDEPENDENT VARIABLES
AND THE MSI AND SRI AT TIME 1

Independent Variables	MSI - 1	SRI
Infant Health Status	-.52***	-.30*
Brazelton Total Score	.04	.02
Brazelton Dimension I-- Interactive Processes	.15	.15
Brazelton Dimension II-- Motoric Processes	.03	.03
Brazelton Dimension III-- State Control	-.10	-.22
Brazelton Dimension IV-- Response to Stress	.05	.12
Family Support	.69***	.43***
Caesarean Section	$t = 1.07$	$t = .44$
Parity	$t = -1.21$	$t = .14$
Mother's Health	-.38**	-.32**
Maternal Separation	-.43***	-.14
Infant Sex	$t = 2.19**$	$t = .90$

* $p < .10$

** $p < .05$

*** $p < .01$

As had been expected, there was a highly significant negative correlation between the infant's health status and MSI scores, $r = -.52$, ($p = .002$). Mothers of healthy infants had higher maternal self-esteem, while mothers of unhealthy infants had significantly lower self-esteem.

There was also a significant negative relationship between maternal health status at Time 1 and MSI scores, suggesting that mothers who encountered more health problems during their pregnancy, labor and delivery, had lower self-esteem than did mothers who had fewer complications. However, type of delivery, as measured by whether or not the mother had a vaginal delivery, repeat caesarean section or emergency caesarean section did not significantly correlate with MSI scores, although the negative correlation coefficient of $-.20$ suggests a relationship in the direction expected. Mothers who delivered via caesarean section had lower self-esteem scores than did mothers who delivered vaginally. Because there were only 3 mothers who delivered via repeat caesarean section, the mothers who delivered via emergency and repeat caesarean section were pooled and a student t-test was conducted to compare the means of these two groups. The one-tailed probability resulting from the t-test was $.14$ which was not significant, but again in the direction expected in that mothers who delivered via caesarean section had lower self-esteem than did mothers who delivered vaginally.

A student t-test was conducted to assess whether multiparous mothers had higher self-esteem than primiparous mothers. Although the difference between the two means was not statistically significant ($p = .12$) the relationship between parity and maternal self-esteem was in

the logical and expected direction based on findings from previous research. Multiparous mothers had higher scores on the MSI than did primiparous mothers which lends further support to the construct validity of the MSI scale. Additionally, no correlation was found between the SRI and parity, which would not be expected.

Based on data from previous research, it was also expected that emotional, as well as physical, support from the baby's father and the mother's immediate family would affect maternal self-esteem. The relationship found between the family support measure and the MSI was very strong and in the expected direction. A correlation coefficient of .65 ($p = .001$) was found between the MSI and family support which is consistent with the literature on the importance of family support on self-esteem, particularly maternal self-esteem (Coopersmith, 1969; Fiering & Taylor, 1978).

The last variable which was expected to correlate with Maternal Self-Esteem at Time 1 was Maternal Separation from the Infant, which despite the small n ($n = 3$) had a correlation coefficient of $-.43$ ($p = .008$) with MSI scores. Mothers who were separated from their infant in the hospital had significantly lower MSI scores than mothers who were not separated. However, as this measure of separation was confounded by both maternal health factors and infant health factors, the findings are only suggestive of an interaction at this time.

The one variable which was predicted to significantly correlate with maternal self-esteem but which did not, was the behavioral responsiveness and competence of the infant as measured by the Brazelton

Neonatal Behavioral Scale. Virtually no correlation was found between scores from the Brazelton Exam total score or four a priori dimensions and the MSI, $r = .04$ ($p = .42$) for the total score correlation.

Of particular interest was the unexpected finding that there was a significant correlation between infant sex and maternal self-esteem. A student t-test was conducted in order to examine the difference between the mean MSI scores for mothers of female babies as compared to the mean MSI scores for mothers of male babies. A significant difference between mean scores was found, $p < .05$, indicating that mothers of male infants have higher maternal self-esteem than do mothers of female infants.

At Time 2, it was a priori hypothesized that a number of variables would relate to maternal self-esteem including the infants' health and behavioral responsiveness at one month, family support at one month after delivery, maternal perception of her infant and maternal-infant interaction at one month, problems concerning feeding the baby, and maternal concerns expressed during the home interview. Table 10 presents the Pearson Product Moment Correlation coefficients for all the above variables with MSI and SRI scores at Time 2.

The most significant correlation between the above variables and MSI scores was the correlation between Family Support and the MSI, $r = .79$ ($p < .001$).

The correlation between infant health status and MSI scores was not significant at Time 2, although still in the direction expected.

Mothers whose infants had more health complications following discharge

TABLE 10

PEARSON PRODUCT-MOMENT CORRELATIONS AND PROBABILITY LEVELS FOR
A PRIORI DEFINED INDEPENDENT VARIABLES
AND THE MSI AND SRI AT TIME 2

Independent Variables	MSI - 2	SRI
Infant Health Status - Time 1	-.41***	-.46***
Infant Health Status - Time 2	-.19	-.29*
Brazelton Total Score - Time 2	-.08	-.10
Brazelton Dimension I-- Interactive Processes	-.21	-.23
Brazelton Dimension II-- Motoric Processes	-.05	-.04
Brazelton Dimension III-- State Control	-.03	-.03
Brazelton Dimension IV-- Response to Stress	.18	.09
Family Support	.79***	.64***
Maternal Perception-- Discrepancy Score	-.36**	-.14
Maternal Perception-- Bothersome Score	-.36**	-.45***
Feeding Problems	-.35**	-.27*
Maternal Health	-.15	-.43
Maternal Disbrow Score	.33**	.19
Maternal Sensitivity	.38**	.28*

* $p < .10$

** $p < .05$

*** $p < .01$

from the hospital, had lower MSI scores than did mothers whose infants did not have health complications, $r = -.19$ ($p = .16$). It should be noted that there were fewer infants with health problems at Time 2 than Time 1, and thus less variability of the measure and less of a chance of finding a significant correlation. However, of interest is the finding that there was a significant correlation between the infant health measure at Time 1 (2-3 days of age) and the MSI scores at Time 2, $r = -.41$, $p < .01$.

Similar to the findings related to infant health, the correlation between maternal health complications and MSI scores was less at Time 2 than at Time 1, although this correlation was also in the direction expected. Mothers who had more health complications following delivery had lower MSI scores at Time 2, $r = -.15$ ($p = .212$). Again, there were fewer mothers with health problems at Time 2 than at Time 1, and thus less variability of the measure and less of a chance of finding a significant correlation.

Again, contrary to what was expected, the behavioral responsiveness and social competence of the infant was not significantly correlated with MSI scores, $r = -.08$ ($p = .34$). Although the correlation with the Brazelton Exam was very small, it was in the direction expected. The lower the total score, the more optimal the infant's performance, so a negative correlation indicated that there was some tendency for mothers of infants who were more responsive and behaviorally well organized to have higher self-esteem. The one dimension of the Brazelton Exam which showed the greatest correlation with MSI scores was the Orientation

Dimension. This measures the infants' quality of orienting behavior and degree of alertness. This correlation of $-.21$ ($p = .13$) indicated that mothers of highly alert and attentive infants tended to have higher maternal self-esteem. This was predicted and does lend some support to the original hypothesis.

Significant correlations were found between MSI scores and maternal perception of her infant variables at one month. Using the Broussard Neonatal Perception Inventory, two scores were derived. The first was the discrepancy score, indicating a positive to negative perception of one's infant, and the second was the bothersome behaviors which the mother perceives the child to have. See Chapter II for further explanation of these derived scores). The discrepancy score had a correlation coefficient of $=.36$ ($p = .03$) with the MSI, indicating that women who had higher self-esteem as measured by the MSI, perceived their infants more positively than did mothers with lower scores. Additionally, mothers who perceived their infants as being more bothersome, had lower MSI scores than did mothers who did not perceive their infants as being bothersome.

Another variable which was logically expected to correlate with MSI scores was the variable representing feeding problems encountered during the first month. Feeding problems were based on maternal report and rated by the investigator on a 1 to 6 scale, one indicating no problems and six indicating a feeding problem which had not been resolved despite intervention. Mothers whose infants had feeding

problems had significantly lower MSI scores than did mothers whose infants did not have feeding problems ($r = -.35$, $p = .03$).

Finally, it was proposed that mothers with high maternal self-esteem would be expected to behave in a positive manner when interacting with their infant, thus reflecting their feelings of confidence. The Disbrow score which is derived from the Mother-Infant Teaching Task was used as the criterion with which to compare MSI scores. As was discussed earlier, a high maternal Disbrow score reflects positive maternal behavior. A significant positive correlation ($r = .33$, $p = .05$) was found between maternal behavior during Teaching Task 1 (the easy task) and MSI scores, indicating that mothers with high maternal self-esteem interacted more positively and more competently with their infants during the teaching task. The correlation between MSI scores and Disbrow scores from the second task (the hard task), was not significant ($p = .11$), but still in the expected direction. Additionally, Maternal Sensitivity during the teaching task was compared to MSI scores. It was expected that Maternal Sensitivity scores would correlate positively with MSI scores. A significant positive correlation was found for the easy task, but not for the hard task, although this correlation of .22 was also in the expected direction.

Test-Retest Reliability

The construct measured by the MSI appears to have very good stability over time as indicated by the four week Test-Retest Pearson Product Moment Reliability Coefficient of .85. Examination of mean scores from Time 1 to Time 2 indicates that on the average, maternal self-esteem increased by approximately 7 points over this period of time. Further analysis of the correlation between MSI scores at Time 1 and Time 2 via a scatter diagram reveals a normal distribution of scores around the regression line.

TABLE 11

TEST-RETEST RELIABILITY COEFFICIENTS OF THE MSI AND SRI
OVER A 4-WEEK PERIOD

Scale	Reliability Coefficient
MSI	$r = .85^{***}$
SRI	$r = .81^{***}$

*** $p < .001$

Multiple Regression Analyses

Maternal self-esteem Time 1

Statistical analyses were performed to explore the relationship among, and joint effects of, the variables which were a priori hypothesized to predict to maternal self-esteem. These analyses were performed by stepwise multiple linear regression techniques.

The first dependent variable which was analyzed was maternal self-esteem at Time 1, during the mother's hospital stay. The maternal self-esteem scores consisted only of those items on the questionnaire which comprised the MSI questionnaire and not those questions which were included in the total inventory from the Epstein-O'Brien Self-Report Inventory.

The five variables which were hypothesized to predict to maternal self-esteem during the neonatal period were in the following order: 1) Infant Health Status; 2) The Brazelton Exam; 3) Support from the baby's father and mother's family; 4) Type of Delivery; and 5) Parity. Infant health was entered as the number of infant health risk scores as measured by the Postnatal Complications Scale (Littman & Parmelee, 1978). The Brazelton score entered was the total score on the four a priori scoring dimensions as referred to in Chapter II. The family support score entered was the total score from the Family Support Questionnaire, also referred to in Chapter II. Type of delivery was entered as a binomial variable, one if the delivery was caesarean section and zero if the delivery was a vaginal, either by forceps or natural. Parity was

also entered into the regression equation as a binomial variable, one if multiparous and zero if primiparous.

In a stepwise multiple linear regression analysis, the increment attributable to any variable may change considerably depending on when it appears in the hierarchy. Variables are typically ordered according to their temporally or logically determined causal priority, and any variable which antedates another variable must be considered the causally prior variable. As pertains to the first stepwise multiple regression analysis conducted, the first three variables entered into the equation were ordered both according to their temporal position as well as according to the logically determined causal priority as discussed in Chapter I. As these three variables were the primary focus of the study, they were entered into the equation first and in the specified order. The remaining two variables, Type of Delivery and Parity, were of interest secondarily and so despite their temporal relationship (which preceded the first three variables), they were entered into the equation after the primary variables of interest. This allowed for greater clarity in interpreting the power of the primary variables of interest to predict to MSI scores since Type of Delivery and Parity variables are not partialled from the first three variables. Additionally, this approach to the ordering of variables in the equation maximizes the statistical power of the test of the primary hypotheses.

Coefficients of the first-order intercorrelations among all the independent variables are shown in Table 12. As can be seen from Table 12, of the 5 predictor variables, the only variables which

TABLE 12: INTERCORRELATIONS BETWEEN 16 INDEPENDENT VARIABLES

	Infant Health 1	Infant Health 2	C-Sect.	Parity	Mother's Health 1	Mother's Health 2	Separation	Family Support 1	Family Support 2	Braz 1	Braz 2	Mat. Percept.	Mother-Infant Interaction	Infant Sex	Feeding Problem	SES
Infant Health 1	--															
Infant Health 2	.18	--														
C-Sect.	.06	-.11	--													
Parity	-.27	-.13	-.09	--												
Mother's Health 1	.29	.17	.65*	-.31*	--											
Mother's Health 2	.11	.57*	-.18	.28	-.08	--										
Separation	.37*	-.30*	.30*	.14	.16	-.09	--									
Family Support 1	-.10	-.33*	-.29	.05	-.48*	-.26	-.33*	--								
Family Support 2	-.26	-.24	-.21	.06	-.30	-.34*	-.34*	.85*	--			* = p	.05			
Braz 1	.16	-.19	.23	.31*	.04	.02	.21	-.17	-.24	--						
Braz 2	-.05	-.02	.19	.24	-.05	.05	.33*	-.35*	-.23	.20	--					
Mat. Percept.	-.06	-.22	.08	-.13	-.26	-.12	.59*	-.25	-.38*	-.26	.01	--				
Mother-Infant Interaction	-.06	-.26	-.13	.02	-.26	-.12	-.17	.49*	.33*	-.13	-.26	-.07	--			
Infant Sex	.14	.08	.11	-.20	.26	.13	.05	-.35*	-.52*	-.40*	.13	.09	-.05	--		
Feeding Problem	.16	.24	-.08	-.09	-.07	.53*	-.12	-.42*	-.49*	-.15	.25	.03	-.003	.40*	--	
SES	.01	-.37*	.03	-.01	-.17	.16	-.05	.44*	.15	.14	-.21	-.01	.31*	.12	.18	--

appeared to be significantly intercorrelated were the Brazelton Exam scores and Parity. Infants of primiparous mothers scored significantly better on the Brazelton Exam than did infants of multiparous mothers. The significance of this finding for the stepwise regression analysis is that both independent variables may be laying claim to largely the same portion of the variance of the MSI and consequently, neither may be able to indicate a unique contribution to explaining the variance (Cohen & Cohen, 1975). In order to assess the unique contribution to explaining the variance, both the Brazelton scores and Parity were entered into individual step-wise regression equations. Neither the Brazelton Exam nor Parity met the statistical criteria (F ratio level of 2.0) necessary to remain in the equation and neither contributed a significant amount to explaining the variance of MSI scores. The Brazelton scores had an F ratio of .596 and Parity had an F ratio of .506. Thus the correlation between these two independent variables did not constitute a problem of multicollinearity as neither variable was significantly related to MSI scores.

The results of the stepwise multiple linear regression analyses are shown in Table 13. The variables are listed in the order in which they were entered in the analysis, along with their final beta weights and associated F ratios. Of these variables in the stepwise multiple regression analysis, Infant Health and Family Support were the only two variables which entered the analysis with a significant incremental effect. Infant Health, the first variable entered in the equation, itself accounted for approximately 37% of the variance, which was

TABLE 13
STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS
OF MATERNAL SELF-ESTEEM AT TIME 1

Order of Entry	Variable	F Ratio	Beta Weight	Significance
1	Infant Health	15.23	-.487	.001
2	Brazelton Score	0.596	.166	.449
3	Family Support	20.386	.564	.000
4	Caesarean Section	1.417	-.251	.247
5	Parity	.0506	.153	.485

Summary Table
of Variables Which Entered and Remained in the Equation

Step	Variable	F Ratio	Significance	Simple R	R ²	R ² Change
1	Infant Health	13.45	.001	-.61	.37	.37
2	Family Support	20.39	.000	.67	.67	.30

N = 30

significant at $p < .001$. Family Support accounted for an additional 30% of the variance when the effect of Infant Health had been partialled out. This increment was significant at $p < .001$. Together Infant Health and Family Support accounted for 67% of the variance of the MSI at Time 1 which was significant at $p < .001$.

Of the other variables in the stepwise multiple regression analysis, the presence of the Brazelton Exam, Type of Delivery, and Parity

failed to enter the equation with a significant incremental effect ($f < 2.0$). This finding suggests that these three independent variables do not have a significant effect on predicting maternal self-esteem. In order to assess the contribution of these three variables, a second multiple regression analysis was conducted in which all five variables, in the specified order, were forced into the equation and allowed to remain in the equation without having to meet any predetermined statistically significant criteria. The results of this analysis are presented in Table 14. As can be seen from the table, the multiple regression analysis using all 5 variables accounted for 72% of the total

TABLE 14
FORWARD MULTIPLE REGRESSION ANALYSIS
OF MATERNAL SELF-ESTEEM AT TIME 1

SUMMARY TABLE						
Step	Variable	F Ratio	Significance	Simple R	R ²	R ² Change
1	Infant Health	13.45	.001	.61	.37	.37
2	Brazelton Score	2.60	.12	.04	.44	.07
3	Family Support	16.22	.001	.67	.68	.25
4	Caesarean Section	2.57	.12	-.35	.72	.04
5	Parity	.01	.94	.25	.72	.001

N = 30

variance of Maternal Self-Esteem scores. This indicated that the addition of the Brazelton Exam, Type of Delivery and Parity only accounted for an additional 5% of the variance beyond that which was contributed by Infant Health and Family Support. This additional contribution was not significant.

These findings indicate that as expected, Infant Health and Family Support do significantly predict to MSI scores at Time 1. However, the data did not support the expectation that Brazelton Exam scores, Type of Delivery or Parity significantly predicted to MSI scores. It does appear that the healthier the baby and the more support a mother receives from her husband and family, the higher her maternal self-esteem. Although the beta weight for Infant Health is larger than the beta weight for the Family Support variable, the difference is not significant. Additionally, when Infant Health was entered into the regression equation first, the Partial Correlation Coefficient for Family Support was .69. When Family Support was entered into another regression equation first, the Partial Correlation Coefficient for Infant Health was -.64. As there is no significant difference between these Partial Correlation Coefficients, it appears that Infant Health and Family Support both significantly contribute to MSI scores independent of each other and with approximately equal importance.

These findings from the multiple regression analyses are based on the assumption that the effects of the independent variables are additive and that the relationship between the dependent variables and any of the independent variables is the same across all values of the

remaining independent variables. Thus, in order to examine the effect of any interactions between the 5 independent variables, another regression analysis was conducted in which multiplicative terms (the product of 2 independent variables) were included in the regression equation. These multiplicative terms then were entered into the regression equation as new predictor variables. In this case, the goal was to test the null hypothesis that interaction effects are not significant using the hierarchal F test (Nie et al, 1975). The results of the multiple regression equation used to assess the effect of interaction variables is presented in Table 15. As can be seen from this table, two interaction variables entered the equation and contributed significantly

TABLE 15
STEPWISE MULTIPLE REGRESSION ANALYSIS
OF MATERNAL SELF-ESTEEM AT TIME 1,
INCLUDING INTERACTION VARIABLES

SUMMARY TABLE						
Step	Variable	F Ratio	Significance	Simple R	R ²	R ² Change
1	Family Support	18.49	.000	.67	.45	.45
2	Infant Health	15.23	.001	-.61	.67	.23
3	Infant Health/ Brazelton Score	3.03	.10	-.49	.71	.04
4	Infant Health/ Caesarean Section	5.76	.03	-.68	.78	.06

N = 30

to explaining the variance of MSI scores. These two variables were, the interaction of Infant Health and Brazelton Exams ($F = 3.03$, $p = .10$) and Infant Health and Caesarean Section ($F = 5.76$, $p = .03$). These two interaction variables appear to have contributed an additional 10.8% to explain the variance over and beyond the contribution of Infant Health and Family Support. However, the tolerance levels for both of these variables were both relatively low, with the tolerance levels for Infant Health-Brazelton Interaction being .07 and Infant Health-Caesarean Section Interaction being .269. This indicates that these interaction variables are highly correlated with Infant Health. This increases the error of estimate for Beta Coefficients and results can only be considered exploratory, especially with a small sample size of only 30 subjects. What the results do suggest is that mothers whose babies are healthy and do well on the Brazelton Exam (have negative scores on both of these measures) have significantly higher self-esteem on the MSI than do mothers who have infants who are less healthy and score less well on the Brazelton Exam. Additionally, mothers whose infants were less healthy and who had Caesarean Section Deliveries, had lower maternal self-esteem than did mothers whose infants were healthier and had delivered vaginally. The significance of these findings will be discussed in Chapter IV.

Maternal self-esteem Time 2

The second dependent variable which was analyzed was maternal self-esteem at Time 2, one month after delivery. The five variables which

were hypothesized to predict to maternal self-esteem scores at Time 2 were, in the following order: 1) Brazelton Exam scores at Time 2 (1 month); 2) Infant Health, at 1 month; 3) Mother-Infant Interaction at 1 month; 4) Family Support 2, at 1 month, and; 5) Maternal Perception at 1 month.

Infant Health was entered as the number of health complications reported by the mother. The Brazelton Score entered again was the total score from the four a priori scoring dimensions as referred to in Chapter II. The Family Support score entered was the total score from the support items on the questionnaire at Time 2, also referred to in Chapter II. Mother-Infant Interaction was entered as the Disbrow Score from Task 1 (the easy task), also referred to in Chapter II. Maternal perception of her infant was entered as the Discrepancy Score from the Neonatal Perception Inventory referred to in Chapter II.

In this stepwise multiple regression equation, the determination of the order of variables to be entered into the equation was based on logical and theoretical considerations discussed in Chapter I.

Coefficients of the first-order intercorrelations among the 5 variables are shown in Table 12. As can be seen from Table 12, the only variables which appear to have been significantly intercorrelated were Mother-Infant Interaction and Family Support ($r = .33$) and Maternal Perception of the Infant and Family Support ($r = -.38$). In the first case, mothers with higher Family Support scores had more positive interactions with their infants, or mothers with more positive interactions with their infants received more Family Support. The significance

of this finding for the stepwise regression analysis is that both independent variables may be laying claim to largely the same portion of the variance of the MSI at Time 2. Consequently, mother-infant interaction may be able to indicate a unique contribution to explaining the variance.

In order to determine the directionality of effects, a further analysis was conducted in which the Maternal Perception and Mother-Infant Interaction were entered into the regression analysis after first partialling out the effects of Family Support. By partialling out the effects of Family Support, the independent effects of Maternal Perception and Mother-Infant Interaction could be examined. Once Family Support was partialled out, Maternal Perception contributed only 11% of the variance (down from 38%) and Mother-Infant Interaction explained only 1% of the variance (down from 33%). Thus it is clear that the effects of Family Support on Maternal Self-esteem are not mediated by Maternal Perception or Mother-Infant Interaction. Rather Family Support appears to mediate the effects of these two variables on Maternal Self-esteem. In other words, mothers who interact more positively with their infant and/or who have more positive perceptions of their infant, receive more Family Support, and then have higher maternal self-esteem.

Also of interest was the finding that mothers who received more Family Support and had higher MSI scores at Time 1, were significantly more positive when interacting with their infant on the teaching task and had more positive perceptions of their infant.

The results of the stepwise multiple linear regression analysis in which all 5 variables are entered into the equation, are shown in

Table 16. The variables are listed in the order in which they were entered in the analysis, along with their final beta weights and associated F ratios. Of these variables in the stepwise multiple regression analysis, Family Support was the only variable which entered the analysis with a significant incremental effect, explaining 52% of the variance itself which was significant at $< .001$.

TABLE 16
STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS
OF MATERNAL SELF-ESTEEM AT TIME 2

Order of Entry	Variable	F Ratio	Beta Weight	Significance
1	Brazelton Exam ₂	1.36	-.24	.26
2	Infant Health ₂	0.63	-.05	.80
3	Mother-Infant Interaction	0.10	.01	.98
4	Family Support ₂	25.35	.72	.00
5	Maternal Perception	0.15	-.08	.70

Summary Table
of Variables Which Entered and Remained in the Equation

Step	Variable	F Ratio	Significance	Simple R	R ²	R ² Change
1	Family Support ₂	25.35	.000	.72	.52	.52

N = 30

Although Family Support had been expected to be a predictive factor of MSI at Time 2 it had been hypothesized that the Infants Behavioral Responsiveness and Competence, the Infant's Health and the Mother-Infant Interaction scales would be more predictive and that they would in turn influence the amount of support the mother received. However, the results of the stepwise multiple regression analysis indicate that the amount of Family Support the mother receives is the most predictive factor of MSI and may influence the Behavioral Responsiveness and Competence of the infant, the infant's health and how positively the mother interacts with her infant.

In order to assess the contribution of these three variables before the effects of Family Support have been partialled out, a forward multiple regression analysis was conducted in which all five variables, in the order originally hypothesized, were forced into the equation without having to meet any predetermined statistically significant criteria. The results of this analysis are presented in Table 17. As can be seen from the table, the multiple regression analysis using all 5 variables accounted for 56% of the total variance of Maternal Self-Esteem Scores at Time 2. This indicated that the addition of the Brazelton Exam, Infant Health 2, Mother-Infant Interaction and Maternal Perception only accounted for an additional 4% of the variance beyond that which was contributed by Family Support. This additional contribution was not significant.

These findings indicate that as expected, Family Support does predict to MSI scores at Time 2. However, the data did not support the

TABLE 17
FORWARD MULTIPLE REGRESSION ANALYSIS
OF MATERNAL SELF-ESTEEM AT TIME 2

SUMMARY TABLE						
Step	Variable	F Ratio	Significance	Simple R	R ² Change	R ² Change
1	Brazelton Exam ₂	0.093	.763	-.06	.004	.004
2	Infant Health ₂	0.43	.524	-.14	.02	.02
3	Mother-Infant Interaction	1.46	.241	.29	.09	.06
4	Family Support ₂	21.02	.000	.72	.55	.47
5	Maternal Perception	0.03	.870	-.33	.56	.001

N = 30

expectation that the Brazelton Exam Scores, Infant Health 2, Mother-Infant Interaction or Maternal Perception of her Infant significantly predicted to MSI scores at Time 2. The reasons why these variables failed to predict to MSI scores, as well as the implications for this finding, will be discussed in Chapter IV.

As in the case of the multiple regression analysis of MSI at Time 1, these analysis are based on the assumption that the effects of the independent variables are additive in that the relationship between the dependent variable and any of the independent variables is the same across all values of the remaining independent variables. Thus, in

order to examine the effect of any interactions between the 5 independent variables, a multiple regression analysis was conducted in which multiplicative terms were included in the regression equation. The multiple regression equation used to assess the effect of interaction variables indicated that none of the interaction variables were significantly contributing to explaining the variance of MSI scores at Time 2. Again, Family Support was the only variable which significantly predicted to MSI scores.

Post hoc analyses

After having completed the above multiple regression analyses, a number of additional regression analyses were conducted in order to assess what other variables might be significantly contributing to the variance of MSI scores at Time 1 or Time 2. It should be noted that these analyses were conducted post hoc, based on either correlations found between other independent variables and MSI scores or post hoc theoretical considerations. As these regression equations were secondary to the original hypotheses, the results should be considered as just exploratory since findings from these analyses may be capitalizing on chance.

MSI Time 1. As was mentioned earlier in this chapter, an unexpected significant relationship was found between Infant Sex and Maternal Self-Esteem. Table 18 presents the results from Student t-tests and MSI scores at Time 1 and Time 2. As can be seen from the table, there was a significant difference between MSI mean scores for

TABLE 18
MEANS AND STUDENT T-TESTS FOR MSI SCORES
AND OTHER INDEPENDENT VARIABLES ON INFANT SEX

Variables	Male	Female	T-Test
MSI at Time 1	442.23	415.71	$t = 2.19$ $p = .04$
MSI at Time 2	453.31	420.53	$t = 2.85$ $p = .009$
Infant Health, Time 1	1.15	1.41	$t = -.46$ $p = .65$
Infant Health, Time 2	1.54	1.94	$t = -1.05$ $p = .30$
Brazelton Exam, Time 1	7.77	6.59	$t = 1.80$ $p = .08$
Brazelton Exam, Time 2	6.54	6.82	$t = -.37$ $p = .71$
Family Support, Time 1	74.85	68.29	$t = 2.84$ $p = .009$
Family Support, Time 2	76.54	68.06	$t = 4.27$ $p = .000$

mothers of male babies and mothers of female babies, both at Time 1 and Time 2. Mothers of male babies had significantly higher MSI scores at Time 1 ($p = .04$) and Time 2 ($p < .01$), than mothers of female babies. As can be seen from the table, the correlation between Infant Sex and Maternal Self-Esteem increased over the course of one month. Also it is of interest to note that the infant's sex was not significantly related to SRI scores at Time 1 ($p = .38$) or at Time 2 ($p = .07$), although by Time 2, the mothers of male babies tended to have higher general self-esteem as measured by the SRI.

However, there was a significant relationship between infant sex and family support, both at Time 1 and Time 2. Mothers of male babies

received significantly more family support than did mothers of female babies at Time 1 ($p < .009$) and Time 2 ($p < .001$). As can be seen, this correlation increased from Time 1 to Time 2.

In order to further explore this unexpected relationship, two stepwise multiple regression analyses were conducted to assess the ability of infant sex to predict to Maternal Self-Esteem scores at Time 1. In the first stepwise regression analysis, Infant Sex was the first variable entered into the regression equation. The next variable entered in the equation was Family Support at Time 1, followed by Infant Health at Time 1. The rationale for this ordering of variables was based on the findings from the earlier stepwise regression analyses indicating that Family Support and Infant Health were the only two significant predictors of Maternal Self-Esteem at Time 1. The results from this stepwise regression analysis are presented in Table 19. The statistical criteria

TABLE 19

POST HOC STEPWISE MULTIPLE REGRESSION ANALYSIS OF MATERNAL
SELF-ESTEEM AT TIME 1 WITH INFANT SEX ENTERED
AS THE FIRST VARIABLE IN THE EQUATION

Order of Entry	Variable	F Ratio	Significance	R^2	Simple R
1	Infant Sex	2.10	.16	.08	-.29
2	Family Support ₁	16.79	.001	.45	.67
3	Infant Health ₁	14.34	.001	.67	-.61

N = 30

for entering the regression equation was an $F = 2.00$. As can be seen from Table 19, Infant Sex entered the equation with an F ratio of 2.10 ($p = .16$) and alone explained 8% of the variance of MSI scores at Time 1. However, as soon as Family Support entered the equation, the F ratio of Infant Sex dropped significantly, and Family Support explained an additional 37% of the variance. Infant Health also entered the equation and explained an additional 22% of the variance which was significant at $p < .001$.

A second regression analysis was conducted in which Family Support was the first variable entered into the equation, followed by Infant Health and then Infant Sex. This was done in order to assess the increment attributable to Infant Sex, once the effects of Family Support and Infant Health had been partialled out. The results of this stepwise regression analysis are presented in Table 20. Again a statistical

TABLE 20

POST HOC STEPWISE MULTIPLE REGRESSION ANALYSIS OF MATERNAL
SELF-ESTEEM AT TIME 1 WITH FAMILY SUPPORT,
INFANT HEALTH AND INFANT SEX

Order of Entry	Variable	F Ratio	Significance	R^2	R
1	Family Support ₁	18.5	.000	.45	.67
2	Infant Health ₁	15.23	.001	.67	-.61
3	Infant Sex	0.48	.82	-	-
(Did not enter equation)					

N = 30

criteria of $F = 2.00$ was set for variables to enter the equation. As can be seen from the table, once Family Support and Infant Health entered the equation, accounting for 67% of the variance, Infant Sex did not meet the criteria necessary to enter the equation, indicating that once the effect of Infant Health and Family Support had been accounted for and partialled out of the equation, Infant Sex did not contribute significantly to explaining the variance of MSI scores at Time 1.

As was reported, there was a significant relationship between Family Support and Infant Sex which appeared to be confounding the effect of Infant Sex on MSI scores. In order to further analyze the interaction of Infant Sex and Family Support, an analysis of co-variance was conducted. The results are presented in Table 21. The results from

TABLE 21

ANALYSIS OF COVARIANCE BETWEEN MATERNAL SELF-ESTEEM₁,
INFANT SEX AND FAMILY SUPPORT₁

Source of Variation	Sum of Squares	DF	F	Significance of F
<u>Covariates</u>				
Family Support ₁	18791.358	1	24.68	.001
<u>Main Effects</u>				
Infant Sex	153.888	1	.202	.657

N = 30

this analysis indicated that mothers of male infants received more family support and had higher maternal self-esteem than mothers of female infants. The effects of infant sex on maternal self-esteem appears to be mediated by the amount of support the mother receives for having had a male infant.

MSI Time 2. An additional regression analysis was conducted in order to assess the effect of Infant Sex on MSI scores at Time 2. Again, once Family Support was entered into the equation, Infant Sex no longer significantly contributed to explaining the variance of MSI scores at Time 2.

The next exploratory analysis involved analyzing the ability of the following four variables to predict to maternal self-esteem at Time 2; 1) Family Support at Time 2; 2) Infant Health at Time 1; 3) Type of Delivery; and 4) Maternal Perception of the Infant as measured by the Bothersome Score. These four variables were chosen based on their high correlation with MSI scores at Time 2. In this analysis, Family Support at Time 2 was once again entered as the total score from the support items on the questionnaire. Infant Health 1 was entered as the number of risk factors measured by the Postnatal Complications Scale. The Bothersome score was entered as the total number of behaviors which the mother finds bothersome and difficult to deal with. Type of Delivery was entered as a binomial variable with 1 = vaginal delivery, 2 = caesarean section delivery.

The results of the stepwise multiple linear regression analysis are shown in Table 22. The variables are listed in the order in which they

TABLE 22
POST HOC STEPWISE MULTIPLE REGRESSION ANALYSIS
OF MATERNAL SELF-ESTEEM AT TIME 2

Order of Entry	Variable	F Ratio	Beta Weight	Significance
1	Family Support ₂	21.92	.64	.000
2	Infant Health ₁	2.230	-.21	.14
3	Type of Delivery	3.40	-.25	.08
4	Bothersome Score	.80	.20	.38

Summary Table
of Variables Which Entered and Remained in the Equation

Step	Variable	F Ratio	Significance	Simple R	R ² Change	R ² Change
1	Family Support ₂	25.34	.000	.72	.52	.52
2	Infant Health ₁	2.90	.10	-.41	.60	.08
3	Type of Delivery	3.40	.08	-.36	.65	.05

N = 30

were entered in the analysis, along with their final beta weights and associated F ratios. Of these variables in the stepwise multiple regression analysis, Family Support 2 and Infant Health 1 entered the analysis with a significant incremental effect, explaining 60% of the variance. The Bothersome Score did not significantly contribute to explaining the variance of MSI scores. The addition of the variable, Infant Health at Time 1, contributed an additional 6% over Family

Support 2. Type of Delivery contributed an additional 6% to explaining the variance.

Changes in Maternal Self-Esteem

The third dependent variable which was analyzed was the change in MSI scores from Time 1 to Time 2. Traditionally, difference scores have been used in order to examine the relationship between observed natural variations of specified independent variables and changes in a dependent variable which is measured to two time periods. The problem with using difference scores where the measure at Time 1 and at Time 2 are measures of the same variable obtained on different occasions is that the reliability of the difference score is generally significantly lower than the reliability of both variables being differenced (Cohen & Cohen, 1976). This lowered reliability significantly lessens the correlation of the difference scores with other variables.

In order to avoid this problem a special case of the hierarchal model of multiple regression analysis was used to analyze changes in Maternal Self-Esteem scores from Time 1 to Time 2. Using this model to determine to what extent the hypothesized variables were associated with changes in MSI scores, the postscore (MSI at Time 2) was used as the dependent variable, and the prescore (MSI at Time 1) was entered as the first independent variable in the multiple regression hierarchy. Using this model, when the subsequent independent variables are entered into

the equation their partial correlations will be indicative of the relationship with postscores from which prescore influences have been removed or partialled out.

The first stepwise multiple regression analysis examined the effect of the following 5 variables on changes in maternal self-esteem;

- 1) Infant Health at Time 2, 2) Brazelton Exam scores at Time 2,
- 3) Mother-Infant Interaction at Time 2, 4) Family Support at Time 2, and
- 5) Maternal Perception of her Infant. These same 5 variables, in the same order, were also expected to predict to maternal self-esteem at Time 2, as was presented in the preceding section. In order to assess the change in MSI scores, MSI scores at Time 1 were entered into the equation first, followed by the above 5 variables, in the order specified. The results of this analysis are presented in Table 23.

As can be seen from the table, the only variable which entered and remained in the equation was Maternal Self-Esteem scores at Time 1. In other words, none of the above 5 variables significantly predicted to changes in maternal self-esteem.

Additionally, two other stepwise regression analyses were attempted in order to assess: 1) the effect of changes in the Infant's Health status upon changes in Maternal Self-Esteem and 2) changes in Family Support upon changes in Maternal Self-Esteem. Again, in both of these analyses, the only variable which entered the equation was Maternal Self-Esteem scores at Time 1. Neither changes in Infant Health nor changes in Family Support predicted to changes in Maternal Self-Esteem.

TABLE 23

STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS
OF CHANGES IN MSI SCORES FROM TIME 1 TO TIME 2
DEPENDENT VARIABLE = MATERNAL SELF-ESTEEM, TIME 2

Order of Entry	Variable	F Ratio	Beta Weight	Significance
1	Maternal Self-Esteem at Time 1	68.95	.87	.000
2	Infant Health at Time 2	0.87	.20	.360
3	Brazelton Exam at Time 2	0.76	.18	.394
4	Mother-Infant Interaction	0.74	-.02	.932
5	Family Support at Time 2	0.80	.19	.380
6	Maternal Perception of her Infant	0.38	-.13	.542

Summary Table
of Variables Which Entered and Remained in the Equation

Step	Variable	F Ratio	Significance	Simple R	R ² R ²	R ² Change
1	MSI at Time 1	68.95	.000	.87	.75	.75

N = 30

Because of the inability to identify predictors of changes in maternal self-esteem using the multiple regression analysis, an additional method of analyzing change over time was employed.

This involved computing difference scores for the three independent variables which were assessed at both Time 1 and Time 2, including Family Support, Brazelton Exam Scores and Infant Health. This method was chosen despite the lower reliability of the difference score, in order to see if some trends in the data might be revealed. It should be noted however, that this method lessens the correlation which could be expected. Changes in these three independent variables from Time 1 to Time 2 were computed and then correlated with MSI scores at Time 2. The only variable which was significantly correlated with MSI scores was the change in Family Support scores from Time 1 to Time 2. The Family Support Change score had a Pearson Product Moment Correlation of .41 ($p = .01$) with MSI at Time 2. This correlation indicates that mothers whose Family Support increases over the first month after delivery, have higher Maternal Self-Esteem at Time 2, than do mothers whose Family Support does not increase. The only other correlation which was high enough to indicate a trend ($r = .28$) was the correlation between MSI scores at Time 1 and changes in Infant Health from Time 1 to Time 2. This finding suggests that mothers who had higher maternal self-esteem at Time 1 tended to have infants whose health improved from Time 1 to Time 2.

C H A P T E R I V

DISCUSSION OF STUDY 1

Predictor Variables at Time 1

The primary purpose of the present study was to identify those variables which best predicted maternal self-esteem during the first few days after delivery, and then again at one month after the baby was discharged home. Additionally a number of neonatal and maternal variables were expected to predict to changes in maternal self-esteem.

Concerning the variables which predicted to Maternal Self-Esteem at Time 1, only two of the five variables which were expected to predict to the MSI, significantly accounted for the variance of the MSI scores. However, these two variables, Infant Health and Family Support, together accounted for a highly significant portion of the variance. In other words, by knowing an infant's health status and how much support the mother is receiving from her husband and family, one can predict, with a very high probability of success, how confident a mother feels about her ability to care for her infant. The powerful effect of Infant Health status, particularly soon after delivery, was not surprising. As was expected, this appeared to be an extremely important variable for predicting maternal self-esteem at this time. In fact, it appears that among this group of relatively healthy infants and mothers, even mild and very temporary illnesses have such a powerful and salient impact on

Maternal Self-Esteem that this outweighs the effect of other neonatal variables, such as the responsiveness and social behavior of the baby. In a similar manner, it appears that the effect of Family Support is so important that it overrides the effect of other maternal variables such as Type of Delivery and the Parity of the mother.

Of particular interest was the finding that Infant Health and Brazelton Exam scores interacted in predicting maternal self-esteem. Those mothers whose infants were healthy and did well on the Brazelton Exam had significantly higher MSI scores than mothers whose infants were healthy but scored poorly on the Brazelton Exam, or those mothers whose infants were less healthy, despite how they did on the Brazelton Exam. Also, mothers whose infants were healthy and who had been delivered vaginally had significantly higher MSI scores than mothers whose infants were healthy but delivered via caesarean section. They also had significantly higher MSI scores than those mothers whose infants were less healthy regardless of the method of delivery. These findings suggest that there may be an "optimal" group of mothers whose infants are healthy, perform well on the Brazelton Exam, who are delivered naturally and who receive a high amount of family support. This "optimal" group of mothers are very high in maternal self-esteem. Additionally, there appears to be a group of mothers whose infants are born with or develop even a minor health complication (including a feeding problem) and/or receive insufficient support from their family. These mothers may feel inadequate in their role as a mother, and may be at risk for later interactive problems with their infant. It should be noted that only a

very weak relationship existed between infant health and family support at Time 1, indicating that the health of the infant did not determine the degree of support a mother received from the baby's father or family. In many cases when the infant developed a health problem the family rose to the occasion and provided more care and support for the mother. However, in the cases in which the infants developed or were born with a health complication, and the family was not able to give the extra attention and support needed, or could not cope with the problem, the mothers reported very low feelings of competence and self-esteem. It is hypothesized that these mother-infant pairs are "at risk" for future interactional and developmental problems.

One variable which had been expected to be related to Maternal Self-Esteem but was not, was the behavior and responsiveness of the infant as measured by the Brazelton Exam. Two possible interpretations can be posed to explain this finding. The first explanation concerns the subject variability. Both at Time 1 and Time 2, there were only a very small number of infants (4) who would have been classified as "worrisome" according to the scoring criteria devised by Als et al. (1979). Although there was a good range of scores on the Brazelton Exam, the majority of infants performed well within the "normal" range. Previous studies which have so clearly demonstrated the effect of the lack of infant responsiveness and disorganization on maternal behavior and interaction with her infant, were dealing with a more high risk population including premature infants, postmature infants, and small for gestational age infants. Because of the limited number of subjects

in the present study, as well as the requirement that mother and infant be discharged from the hospital together, there were very few infants who demonstrated worrisome behavior. There was one premature infant in the study (birth weight 5 pounds, 3 ounces), but this baby was healthy and just barely premature. There was one infant who was diagnosed as being small for gestational age, and only two infants whose clinical symptoms classified them as postmature. The latter three babies all did have both medical problems and behavioral deficits, and two of these three mothers had less than average MSI scores. However, with such a small number of "worrisome" infants, the probability of finding a significant relationship was greatly diminished. It may be that unless a baby's behavior is very worrisome, mothers do not attend to their infants more subtle behavior.

However, one would have expected to have seen some trend in the data if indeed the infant's behavioral responsiveness was effecting maternal feelings of competence. Another possible explanation for the lack of any such finding may be that during the newborn period, mothers attend to more obvious, immediate and salient characteristics such as the baby's health, physical appearance, sex and weight. It may be these characteristics which effect the mothers perception of the baby and herself during the first month following delivery.

Additionally, it may be that a longer period of time of interacting with the baby is needed in order for the mothers to develop a perception of the baby which takes into account his/her particular behavioral characteristics. A future study which followed up mother-infant pairs

at perhaps 3 and then 6 months would be of interest to examine whether or not, and when, the infant's behavioral characteristics begin to affect maternal feelings of competence. It is not until around 3 months of age that the infant's social behavior develops intentional characteristics whereby the infant, though smiling, babbling, visually tracing and reaching actively tries to engage the mother in social interactions. Perhaps it is not until this begins to occur that the infant's social behavior will consciously effect the mother's feeling of competence.

Concerning why Type of Delivery and Parity did not predict to Maternal Self-Esteem scores at Time 1, the explanation may rest in their relationship to Family Support and changes in hospital practices. For example, although initially there was no significant difference between mean scores for Caesarean section mothers versus non-Caesarean section mothers, Caesarean section mothers as a group reported slightly higher Family Support scores than did non-Caesarean section mothers. As Family Support has been found to be such an important factor in bolstering maternal self-esteem, it is quite possible that high levels of Family Support counteracted the negative effects of having had a Caesarean section.

This is consistent with findings reported by Field and Widmayer (1979) and Pedersen (1979) who suggest that fathers of infants delivered via Caesarean section tend to assume more caregiving responsibilities and become more supportive in order to help mothers recover from the ordeal of the operation. This finding suggests that Maternal Self-Esteem is

not as vulnerable to maternal health or delivery complications as long as family support remains strong.

Additionally, obstetrical and hospital procedures have changed over the past few years in order to lessen some of the problems previously associated with Caesarean section deliveries. For example, nine out of the ten mothers who delivered via Caesarean section received spinal anesthesia so that they were awake during delivery and able to see and hold their infant immediately after birth. Klaus and Kennell (1976) have found that increased mother-infant contact immediately after delivery is related to more positive mother-infant interactions one month and one year later. Caesarean mothers at the hospital where this study was conducted were also encouraged to care for their baby soon after delivery and were discharged home generally after four days, instead of seven, which meant less of a separation from the baby's father and the family.

However, as was demonstrated in the post hoc analysis at Time 2, after being at home with the baby for one month, the mothers who had had Caesarean section deliveries had lower maternal self-esteem than mothers who delivered vaginally. It would seem that although having had a Caesarean section did not have a significant impact on maternal self-esteem shortly after delivery, by one month after discharge these mothers had not yet recovered from the physical and emotional stress of the delivery and may have felt too stressed by having to care for their babies.

Concerning why Parity was not predictive to MSI scores at Time 1, one reason may be that both primiparous and multiparous mothers reported receiving equal amounts of Family Support. In fact, the only significant difference between the multiparous and primiparous mothers was that the infants of the primiparous mothers performed significantly better on the Brazelton Exam than did the infants of the multiparous mothers. It may be that the effect of having a responsive and easy baby to care for counteracted the fears and insecurities of being a first time mother. Additionally, the hospital staff made a special effort to help primiparous mothers with any questions or problems and conducted teaching sessions twice a day concerning routine caretaking tasks. This special attention may also have attenuated some of the anxieties and apprehensions experienced by primiparous mothers.

While in this study Parity did not predict to Maternal Self-Esteem during the newborn period or one month after delivery, multiparous mothers had higher mean scores on the MSI than did primiparous mothers, although the difference was not significant. Again it must be kept in mind that this was a group of relatively healthy mothers and infants. The Seashore et al. (1973) study which reported that multiparous mothers had significantly more self-confidence than did primiparous mothers, did so in the context of a premature birth. Further examination of the effects of Parity among a more high risk population is necessary in order to more clearly understand how infant health complications affect maternal attitudes and behaviors for both primiparous and multiparous mothers.

Predictor Variables at Time 2

Concerning the variables which were expected to predict Maternal Self-Esteem at Time 2, only one of the five variables significantly accounted for the variance of MSI scores one month after delivery. However, this one variable, Family Support at Time 2, which itself accounted for more than 50% of the variance of MSI scores, was able to significantly predict to Maternal Self-Esteem one month after delivery. After being at home for one month with her baby, a mother's feeling of competence in her mothering ability was most successfully predicted by the amount of emotional and physical support she felt she received from the baby's father and her family.

Despite the significant correlations between Maternal Perception of her Infant and Mother-Infant Interaction with Maternal Self-Esteem, neither of these variables successfully predicted to MSI scores. Rather, these high correlations appear to have been mediated by their relationship to Family Support. Mothers who perceived their infants as being "better than average" and mothers who were more positive when interacting with their infant, received significantly more support from their family and thus had higher maternal self-esteem. However, Family Support was the only variable which directly predicted to Maternal Self-Esteem. However, the significant correlation between maternal behavior in the mother-infant interaction and the MSI provided strong support for the major hypotheses of this study in that the mothers who were more effective in interacting with their infants, had infants who

were more receptive and responsive to their help and had more self-confidence in their maternal abilities.

Concerning why infant health at one month did not predict to Maternal Self-Esteem at one month, one apparent explanation is that at one month, infants in this study generally had very few and less serious medical complications. The majority of complications reported by the mothers involved minor colds, diaper rash and feeding problems. Only three of the mothers reported complications which required either a doctor's visit or hospital visit for the baby. When an infant requires specialized medical care, this may communicate to a mother that she is not capable of providing the care needed by her infant hence is not competent in her job. Yet, all but three of the mothers in the present study were capable of handling the minor health complications which their infants had developed. In fact, very few of the infants were still sick or having a problem at the time of the home visit, indicating that the mothers were able to effectively handle the problems that their infants developed and thus successfully care for their infant. This may explain why the health of the infant did not predict to Maternal Self-Esteem at one month.

However, in a post-hoc analysis, Infant Health immediately after birth did significantly help to predict to Maternal Self-Esteem one month later, along with the amount of Family Support the mother was receiving at Time 2. Apparently, the effect of Infant Health immediately after birth has a significant and long lasting effect on how a

mother perceives her infant and herself. As Blake (1954) and Kenmell et al. (1975) have suggested, the effects of even minor and temporary illnesses appear to lead to maternal feelings of guilt, incompetence, and failure which can last for at least one month after delivery.

This is also in agreement with findings of Minde, Brown and Whitelaw (1981) who reported that it was not until 3 months after discharge from the hospital that parents of healthy, premature infants were able to engage in appropriate parent-infant social interactions and had recovered emotionally enough to develop a healthy attachment to their infants. This delay occurred despite the fact that the infants had recovered from their earlier illnesses and were doing very well. The period of time immediately after birth may be one of vulnerability to insults as would be expected by Brazelton's and Bibring's characterization of maternal psychological disorganization at this time.

Although Brazelton Exams did not predict to Maternal Self-Esteem, an interesting relationship between MSI scores at Time 1 and Brazelton Exam scores at Time 2 did exist. Mothers with high Maternal Self-Esteem at Time 1 tended to have infants who were more responsive and alert at Time 2. Although not significant, this finding lends some support to the original hypothesis that a mother's feelings about her maternal competence affects her infant's behavior and development. In a similar manner, an interesting relationship existed between Brazelton Exam scores and Family Support Measures. Although infant behavior, as measured by the Brazelton Exam at Time 2, was not significantly related to the amount of Family Support at Time 2, there was a relationship in

the expected direction. Mothers who received more support at Time 2 tended to have infants who performed better on the Brazelton Exam at Time 2. Of particular interest however was the finding that there was a significant correlation between Brazelton Exam scores at Time 2 and Family Support at Time 1. Infants whose mothers received more support initially after delivery, had better Brazelton Scores at Time 2, than did infants whose mothers received less family support. The high correlations between the Brazelton Change scores and the Family Support measures further confirms this finding.

A transactional interaction appears to exist between Family Support and performance on the Brazelton Exam. The more Family Support a mother receives, the more apt is her baby to become more responsive and alert, and this in turn elicits more family support. As was alluded to earlier, in a future study it would be of interest to see how the relationship between these two variables changes over time in regard to their effect upon maternal feelings of competence. Herzog (1979) has suggested that the first month after delivery may be the most crucial in regard to the amount of support that a mother needs. It is hypothesized by the present author that over a period of time of interacting with one's baby, as the infant's behaviors become more intentional and salient to the mother (i.e., smiling, reaching, babbling) and as the mother grows to know and understand her baby's cues and behaviors, a mother's feeling of competence and maternal self-esteem will depend more upon the behavior of her infant and interactions with her baby, than upon sources of support from the family. This is consistent with what

Winnicott (1971) has observed in the development of the mother-child relationship.

"The mother is able to fulfill her role if she feels secure; if she feels loved in her relationship to the infant's father and to her family; and also accepted in the widening circles around the family which constitutes society. Her capacity does not rest on knowledge but comes from a feeling attitude which she acquires as pregnancy advances, and which she gradually loses as the infant grows up out of her."

Variables Predicting Change in Maternal Self-Esteem

The third major hypothesis of the present study, that the five specified variables would predict to changes in Maternal Self-Esteem from Time 1 to Time 2, was not confirmed. One of the reasons that this hypothesis failed to be confirmed involved a serious problem with the small number of subjects and method of analysis necessary to evaluate changes over time when using the same measure. The problem was that MSI scores at Time 1 and Time 2 were so highly correlated and stable over the first four weeks, that the remaining variance was very small, and in order to identify the independent variables which might have been predictive of changes from Time 1 to Time 2, a much larger number of subjects would have been needed. With a larger number of subjects, there would have been more variance, and more of a potential for identifying those variables which would predict to changes in Maternal Self-Esteem.

The problem of the reduction of variability when analyzing changes in Maternal Self-Esteem precluded the ability to analyze the effect of

changes in Maternal Self-Esteem on changes in Infant Behavior. In the same manner, the failure of changes in Infant Health status and changes in Family Support to predict to changes in Maternal Self-Esteem was largely due to the small number of subjects and lack of variability in this relatively healthy population of mothers and babies. In both of these cases, the probability of finding a significant predictor to changes in Maternal Self-Esteem was extremely small. This was due to too little variance remaining after Maternal Self-Esteem at Time 1 had been partialled out, a lack of power, and too small a subject population. There was also the additional problem of having to partial out the independent variable from Time 1 (either Family Support at Time 1 or Infant Health at Time 1). In the case of the Family Support measure, the probability of finding a significant contribution to explaining the variance of MSI Change scores was not possible because Family Support at Time 1 and Family Support at Time 2 were very highly correlated. A much larger number of subjects would be needed in order to increase the variance of the Family Support Change scores.

In the case of the infant Health Status Change score, the lack of variability in the Infant Health Status measure at Time 2 precluded the possibility of finding an effect of changes in Infant Health Status on changes in Maternal Self-Esteem. Again, a larger number of subjects would be needed in order to investigate this relationship given the apparently stable nature of Maternal Self-Esteem over the first four weeks after delivery.

Although a more heterogeneous group of subjects would have increased the variability of maternal self-esteem scores, it must be re-emphasized that maternal self-esteem was very stable over the first month among this group of subjects. While this finding suggests that maternal self-esteem is a more central and stable characteristic than had been originally proposed, the subject population in this study was so homogeneous that it was very difficult to find changes in maternal self-esteem. Because this was the first study investigating maternal self-esteem during the newborn period, it was important to first assess Maternal Self-Esteem within the context of "normal" mothers and infants. Therefore, the narrow range of subject characteristics and life circumstances provided a very conservative measure of the various influences on maternal self-esteem. However, it is suggested that under more stressful circumstances, one would find more variability in Maternal Self-Esteem and less stability. For example, it is suggested that with a greater range of infant health complications or family support networks, one would find more dramatic changes in maternal self-esteem depending upon changes in these variables.

One illustrative example from the study of one of the most stressful mother-infant pairs supports this hypothesis. In this case, the infant was born with a minor cleft pallet but no facial abnormalities, after a normal, full term pregnancy. Her mother suffered from migraine headaches following delivery and was very depressed and tired. During her hospital stay she encountered many feeding problems with her infant and expressed much anxiety about her ability to properly feed her baby.

The nursing staff was very impatient with the mother's fears and anxieties which the mother said made her feel guilty about these feedings. Additionally, following delivery, the mother's husband retreated from helping with caretaking chores and began working an extra shift. At the same time, her other two young children began requiring more attention from their mother. After being home for one month, the infant had not gained weight, had encountered more feeding problems, had developed a rash and required two doctor's visits. Although this mother's maternal self-esteem was relatively low following delivery, by Time 2, her maternal self-esteem had significantly decreased. By Time 2, this mother was requesting psychological services as she felt no longer competent to care for her two children or the baby. In another case, a mother of a small-for-gestational age infant, who was initially difficult to care for, had very low maternal self-esteem when measured in the hospital. However, her husband enlisted the aid of the other siblings and provided the mother with both caretaking help and much emotional support. By Time 2, this mother's self-esteem had significantly increased and the baby both appeared healthier and was more responsive and easy to care for. Future research which examines changes in Maternal Self-Esteem with a more stressful and high risk population is necessary to verify these findings.

However, while changes in independent variables could not statistically be demonstrated to predict to changes in Maternal Self-Esteem, it was demonstrated that changes in Family Support and Infant Health were both related to Maternal Self-Esteem scores at Time 2. While changes in

the infant's behavioral responsiveness did not correlate with changes in the mother's feelings of competence, the other two variables which were predicted to correlate with changes in MSI scores, did correlate with MSI scores at Time 2. In fact, changes in the amount of Family Support the mother received was significantly related to maternal feeling of competence at one month.

These results clearly indicate that a mother's feeling of competence are affected by the family situation in which the mother lives. More specifically, these results indicate that maternal feelings of competence are affected by the amount of emotional and caretaking support provided for the mother by the family. Additionally, the results of the study support the transactional model proposed. High amounts of Family support are related to higher levels of Maternal Self-Esteem, which are in turn related to further increases in Family Support and further increases in Maternal Self-Esteem. From this model it can be seen that it is not only the amount of Family Support at one point in time which will predict to Maternal feelings of competence, but changes over time in the amount of Family Support will also predict to maternal feelings of self-esteem. This finding has implications for early intervention. In cases where either no family support is available (i.e., single mothers living alone with no available Family Support) or where the baby's father and/or the mother's family provides negative feedback and negative messages, intervention which focuses on supporting mothers could break the negative cycle and help mothers to feel more confident.

However, before beginning to delineate the clinical implications for these findings or how and when to intervene, it is first necessary to have a clearer understanding of how infant health complications impact on maternal self-esteem among a more heterogeneous group of mothers and infants. Because of the homogeneous nature of the sample for the first study, the variability of many of the independent variables was significantly constricted. Yet, even among this relatively healthy sample of mothers and infants, significant differences were found in maternal self-esteem which were related to the infant's health status and amount of family support the mother reported receiving.

It is hypothesized, that with a more heterogeneous and high-risk group of mothers and infants, there will be more variability in maternal self-esteem as well as more variability in other newborn and maternal factors such as infant behavior and maternal health. Thus with a more heterogeneous sample of mothers and infants it will be possible to further examine the effects of these factors on maternal self-esteem. Additionally, with a more high-risk and heterogeneous sample of mothers and infants it will also be possible to examine the effects of early separation of the mother and infant, prematurity and how changes in infant health status impact on maternal self-esteem.

CHAPTER V

INTRODUCTION: STUDY 2

While the purpose of the first study was to identify those variables which predict maternal self-esteem among a group of "normal" and relatively healthy infants and mothers, the purpose of the second study is to replicate the first study, but to include infants who were born prematurely and who had encountered more severe health complications and been separated for prolonged periods of time from their mothers. This allows for the examination of prematurity, severe health complications and separation as independent predictors to Maternal Self-Esteem, as well as the examination of how changes in infant health and behavior predict to changes in Maternal Self-Esteem.

Based on the review of the literature presented in Chapter I as well as the findings from the first study, a number of factors were identified a priori to predict Maternal Self-Esteem among this group of mothers whose infants had encountered more health problems and been separated from each other during the newborn period.

The one additional factor which was expected to predict Maternal Self-Esteem in this study, but not in Study 1, is the separation of the mother and infant. In this study it is hypothesized that the separation of mother and baby will be a major independent factor in predicting to Maternal Self-Esteem as it is expected that mothers who are separated from their infants will have lower self-esteem than mothers who are not

separated. It is hypothesized that this factor will predict Maternal Self-Esteem both at 2 to 3 days after delivery as well as one month after the baby had been discharged home with the mother.

Because of the hypothesized importance of this factor as an independent predictor of Maternal Self-Esteem, the separator factor replaced type of delivery as an independent factor in the a priori determined regression equation at Time 1, and replaced the mother's perception of the baby as an independent fact in the a priori determined regression equation at Time 2.

In summary, in this second study, three a priori determined hypotheses are proposed concerning those variables which are expected to predict Maternal Self-Esteem among this more high risk group of mothers and infants. During the first few days following delivery, it is hypothesized that the following five factors will predict Maternal Self-Esteem in the following order of importance: (1) infant health; (2) family support; (3) newborn behavior, (4) separation of the mother and infant; and (5) parity. The determination of the order of these variables is based on the results of Study 1, the results of the Seashore et al. study (1973), as well as the hypothesized importance of each of these variables for predicting Maternal Self-Esteem.

By one month after the baby had been discharged home, it is hypothesized that the following five variables will predict to Maternal Self-Esteem, in the following order of importance: (1) infant health; (2) family support; (3) separation of mother and infant; (4) mother-infant interaction; and (5) infant behavioral responsiveness.

The third a priori hypotheses of this second study is that Maternal Self-Esteem will have changed one month after the baby was discharged home as a function of the following: (1) changes in the infant's health status; (2) changes in the infant's behavior and social competence; and (3) changes in the amount of family support that the mother feels she receives.

C H A P T E R VI

METHOD, STUDY 2

Subjects

Thirty-four infants and their mothers were recruited from the newborn nurseries at the Baystate Medical Center in Springfield, Massachusetts. A research assistant recruited the infants and mothers and did not communicate any of the demographic or health variables to the principle investigator. A stratified random sampling procedure was used in order to assure a wide range of infant gestational ages. This procedure involves complete random sampling within each of a number of strata, such that all strata are represented equally in the sample, whether or not they are represented equally in the population. The only variable which was used as a selector variable in this study was gestational age. Again, this variable was used as a selection variable as previous research (Field, 1980) has indicated a wide range of behavioral and medical complications associated with infants of various gestational ages. In this study, stratifying the variable gestational age was done in order to ensure that the sample population includes a wide range of premature as well as full-term infants. As opposed to the first study, this study specifically chose to include premature and sick infants who were not discharged home from the hospital with their mother. This

allowed for the examination of separation and severe health complications as predictors of Maternal Self-Esteem. Infants ranging from 28 to 42 weeks gestational age were included in the study.

The sample population included 11 infants of gestational age between 28 and 31 weeks, 13 infants between 32 and 36 weeks, and 10 infants between 38 and 42 weeks gestational age. Gestational age in most cases was determined by the mother's report of the date of her last menstrual period. However, when the mother was uncertain of her due date or when there was a discrepancy greater than one week between the physician's assessment of gestational age using the Dubowitz Infant Maturity Exam (Dubowitz, Dubowitz and Goldberg, 1970) and the mother's assessment, the physician's assessment of gestational age was used. The sample consisted of 15 males and 19 females, equally distributed along gestational age. Thirteen of the 34 infants were separated from their mothers during the first day following delivery and 11 of the 34 infants were separated from their mothers as their mothers were discharged home prior to the baby's discharge. The mean length of time which mothers and infants were separated was 23.7 days, with a range from 0 to 88 days.

As was previously mentioned, no selection strategies were used concerning demographic variables, obstetric variables, or any other variables related to maternal status.

Assessment methods and procedures

The same scales and procedures as used in Study 1 were again used in Study 2. However, an alternative method for analyzing the Brazelton

Exam was employed which allowed for a finer discrimination of differences in infant behavioral responses. This method, first described by Sostek et al. (1978) is based on the same a priori cluster method devised by Als (1975) and used in the first study, but rather than scoring each of the four dimensions on a 1 to 3 scale, the four dimensions are scored on a 1 to 5 rating scale. Again, each dimension is scored such that high scores reflect poor performance and low scores reflect optimal performance. The scores from the four dimensions were again totaled to produce a summary score with the most optimal score being a 4 and the most worrisome score a 20.

The only difference in procedure was that the following additional information was also recorded: the number of days during which the mother and infant were separated from each other.

It should also be noted that because of prematurity and illness, many of the infants in this study required prolonged hospital stays. However, while there was more variability in the duration of time between the first administration and the second administration of the scale, as in the first study, all mothers were administered the Maternal Self-Report Inventory one month after being at home caring for their infant.

C H A P T E R V I I

RESULTS, STUDY 2

Demographic Information

Maternal data

The demographic information for the 34 mothers participating in the study is presented in Table 24. These mothers represented a wide range of ages, occupations and incomes. The sample, although still limited, was less limited than Study 1 regarding race and religion. However, the majority of mothers again were white and identified themselves as Catholics. Although the majority of the mothers had completed 12 years of school or less, a large percentage had attended at least one year of college. A large majority of the mothers in this study were married and living with the father of their baby.

Paternal data

The demographic information for the fathers of the infants in this study is presented in Table 25. As can be seen from this table, the fathers represented a wide range of ages and occupations. However, the majority of fathers had 12 years or less of education and were white. Information concerning paternal religious affiliation was not obtained.

TABLE 24

MATERNAL DEMOGRAPHIC INFORMATION, STUDY 2

	<u>Maternal Age</u>	
<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
25.6	5.3	17-35 years
	N	%
<u>Religious Affiliation</u>		
Catholic	20	58.8
Protestant	9	26.5
Jewish	1	2.9
Other	4	11.8
<u>Race</u>		
White	27	79.4
Black	4	11.8
Puerto Rican	4	8.8
<u>Occupation</u>		
Professional	4	11.8
Managerial, Sales	2	5.9
Clerical	3	8.8
Skilled Worker	6	17.6
Semi-Skilled	1	2.9
Unskilled	10	29.4
Housewife, Student	8	23.5
<u>Education</u>		
12 years or less	23	67.6
1 year of college or more	11	32.4
<u>Marital Status</u>		
Married	22	64.7
Single - living with baby's father	1	2.9
Single, not living with baby's father	4	11.8
Divorced or separated	4	11.8
Single, living alone with baby	3	8.8
<u>Family Income</u>		
0 - \$ 5,000	5	14.7
5 - \$10,000	6	17.6
10 - \$15,000	5	14.7
15 - \$20,000	3	8.8
20 - \$25,000	8	23.5
25 - \$30,000	3	8.8
30 - \$35,000	1	2.9
35 - \$40,000	1	2.9
\$40,000 & up	2	5.9

TABLE 25
PATERNAL DEMOGRAPHIC INFORMATION, STUDY 2

	<u>Paternal Age</u>		
	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
	28.1	5.8	17-39 years
	<u>N</u>		<u>%</u>
<u>Race</u>			
White	28		82.4
Black	4		11.8
Puerto Rican	2		5.9
<u>Occupation</u>			
Professional	3		9.4
Managerial, Sales	5		15.6
Clerical, non-civilian	3		9.4
Skilled worker	6		18.8
Semi-skilled worker	7		21.9
Unemployed, student	8		25.0
<u>Education</u>			
12 years or less	22		71.0
1 year of college or more	12		29.0

Maternal obstetrical history

The obstetrical information for the mothers in this study is presented in Table 26. Mother's prenatal and obstetrical complications were assessed using the Obstetrical Complications Scale (OCS) designed by Lipman and Parmelee (1978). As opposed to the first study, the majority of the mothers in this study delivered via Caesarean Section. Also, as opposed to the sample of mothers from the first study, the

TABLE 26
MATERNAL OBSTETRICAL HISTORY, STUDY 2

	N	%
<u>Parity</u>		
Primiparous	17	50.0
Multiparous	17	50.0
<u>Type of Delivery</u>		
Vaginal	14	41.2
Repeat Caesarean Section	6	17.6
Emergency Caesarean Section	14	41.2

Obstetrical Complications

<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
9.6	4.5	3-20

Gestational Age	N	%
28-32 weeks	11	32.4
32-36 weeks	13	38.2
36-42 weeks	10	29.4

sample of mothers in this study encountered significantly more prenatal and obstetrical complications. Complications included bleeding during pregnancy, toxemia, diabetes, fetal distress during labor, prolonged rupture of membranes and placenta previa. An equal number of primiparous and multiparous mothers were represented in the sample.

Infant health data

Infant health complications at both Time 1 and Time 2 are reported in Table 27. As can be seen from this table, at Time 1, the health

TABLE 27
INFANT HEALTH DATA, STUDY 2

	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Infant Health Complications at Time 1	3.5	3.1	0-10
Infant Health Complications at Time 2	1.5	1.7	0-7

	<u>N</u>	<u>%</u>
<u>Feeding Problems</u>		
No feeding problems	11	32.4
Feeding problem resolved in the hospital	13	38.2
Feeding problem resolved in one month	4	11.8
Unresolved feeding problem, not requiring a change	2	5.9
Feeding problem which required a change	3	8.8
Change in feeding method for other reasons (school, work)	1	2.9
<u>Separation in Hospital</u>		
Mother and baby together within 12 hours	13	38.2
Mother and baby not together within 12 hours	21	61.8
<u>Separation after Mother Discharged Home</u>		
Mother and baby discharged home together	11	32.4
Mother and baby not discharged home together	23	67.6

	<u>Mean</u>	<u>S.D.</u>	<u>Range</u>
Length of Separation of Mother and Baby	23.65	4.95	0-88 days

status of the infants in this study ranged from no medical complications, to numerous severe medical complications. Infant health complications included respiratory distress syndrome, infection, seizure disorders, apnea, metabolic disturbances and congenital anomalies. Less severe health complications included feeding problems, elevated bilirubin levels and transitory respiratory distress. The majority of infants in the study required intensive care treatment and were not able to be held or fed by their mothers for the first day after delivery. Also, the majority of the infants were not healthy enough or did not weigh enough to be able to be discharged home with their mother.

Concerning feeding methods, only 5 of the infants in the study were breast fed, 19 were bottle fed, and 10 were both breast and bottle fed. Feeding methods were determined at the time of the home visit.

At Time 2, as can be seen from the table, infants were reported to have fewer health complications than they did at Time 1. However, the number of reported health complications at Time 2 in this study was significantly greater than the number of infant health complications at Time 2 for the first study. In this study, at Time 2, infant health complications ranged from no problems to up to seven severe problems. Health problems included minor colds, respiratory problems, surgery, weight loss, neurological abnormalities and auditory or visual deficits.

Maternal Self-Report Inventory

Descriptive data

Summary scores from the Maternal Self-Report Inventory (MSI) at Time 1 and Time 2 are presented in Tables 28 and 29 respectively. Raw scores were computed for each subscale and distributions for the seven subscales, as well as the total scores, were obtained. As can be seen

TABLE 28
SUMMARY DATA FROM MSI AT TIME 1, STUDY 2

MSI - Time 1	Raw Score Means	Standard Deviations	Number of Items
Caretaking Ability	104.50	11.16	26
General Ability as a Mother	108.94	10.36	25
Acceptance of Baby	39.02	5.57	10
Relationship with Baby	38.27	4.50	9
Body Image and Health after Delivery	34.68	4.55	9
Parental Influence	24.44	1.93	6
Pregnancy, Labor and Delivery	53.60	8.59	15
Total MSI Score	403.5	37.08	100

TABLE 29
SUMMARY DATA FROM MSI AT TIME 2, STUDY 2

MSI - Time 2	Raw Score Means	Standard Deviations	Number of Items
Caretaking Ability	107.32	12.17	26
General Ability as a Mother	108.03	10.86	25
Acceptance of Baby	40.74	5.88	10
Relationship with Baby	37.29	4.46	9
Body Image and Health after Delivery	35.52	4.55	9
Parental Influence	23.92	2.38	6
Pregnancy, Labor and Delivery	54.31	9.10	15
Total MSI Score	407.11	39.29	100

from a comparison of Tables 28 and 29 with Tables 5 and 6, the MSI summary scores in this study were significantly lower than the summary scores from the first study. The mean MSI scores at Time 1 and 2 in the first study were 427.2 and 434.7 respectively, as compared to 403.5 and 407.1 in the second study.

Correlation Between the MSI and Independent Variables

Table 30 presents the correlations between the demographic variables and the MSI as well as the SRI at Time 1. As can be seen from

TABLE 30

PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN DEMOGRAPHIC VARIABLES
AND THE MSI AND SRI AT TIME 1, STUDY 2

Demographic Variables	MSI	SRI
Mother's Age	.30**	.13
Mother's Religion	-.10	-.17
Mother's Race	-.14	-.02
Mother's Occupation	.10	-.09
Mother's Education	.13	.27
Family Income	.08	.12
Marital Status	-.06	-.08
Father's Age	.09	.03
Father's Race	-.20	-.09
Father's Occupation	-.16	-.14
Father's Education	.03	.14

** $p < .05$

*** $p < .01$

the table, the only significant correlation between any of the demographic variables was between maternal age and the MSI. The direction of the correlation indicated that younger mothers tended to have lower self-esteem. While this correlation was not significant in the first study, this second study included a greater number of teenage mothers. Again, it should be noted that a number of the demographic variables, including mother's religion, race and marital status had very restricted ranges with subsequently reduced covariances and smaller correlations.

Table 31 presents the correlations between these demographic variables and the MSI and SRI at Time 2. Again maternal age significantly correlated with the MSI, as did the father's age. As was the case with maternal age, in this study as opposed to the first study, there were a greater number of teenage fathers represented in this sample.

A number of independent variables were hypothesized a priori to correlate specifically with maternal self-esteem. Table 32 presents the Pearson Product Moment correlation coefficients between those independent variables which were a priori hypothesized to correlate with the MSI at Time 2.

As had been expected, there was a significant negative correlation between the infant's health status and MSI scores, $r = -.27$. Although this correlation was not as high as the correlation between infant health and MSI in the first study, it did indicate that mothers of

TABLE 31

PEARSON PRODUCT-MOMENT CORRELATIONS BETWEEN DEMOGRAPHIC VARIABLES
AND THE MSI AND SRI AT TIME 2, STUDY 2

Demographic Variables	MSI	SRI
Mother's Age	.29**	.11
Mother's Religion	-.18	-.13
Mother's Race	-.18	-.09
Mother's Occupation	.004	-.09
Mother's Education	.20	.30**
Family Income	.18	.18
Marital Status	-.20	-.08
Father's Age	.30**	.08
Father's Race	-.22	-.16
Father's Occupation	-.23	1.17
Father's Education	.12	.18

* $p < .10$

** $p < .05$

*** $p < .01$

TABLE 32

PEARSON PRODUCT-MOMENT CORRELATIONS, STUDENT'S t , AND
PROBABILITY LEVELS BETWEEN A PRIORI DEFINED INDEPENDENT VARIABLES
AND THE MSI AND SRI AT TIME 1, STUDY 2

Independent Variables	MSI - 1	SRI
Infant Health Status	-.27*	-.04
Family Support	.61***	.52***
Brazelton Total Score	-.13	-.06
Brazelton Dimension I-- Interactive Processes	.02	.15
Brazelton Dimension II-- Motoric Processes	-.09	.03
Brazelton Dimension III-- State Control	.04	-.22
Brazelton Dimension IV-- Response to Stress	-.21	.12
Separation	-.22*	-.10
Parity	.48***	.35**
Caesarean Section	-.16	.03
Mother's Health	-.20	-.09
Infant Sex	.01	.01
Gestational Age	.25	.05

* $p < .10$

** $p < .05$

*** $p < .01$

healthy infants had higher maternal self-esteem, while mothers of unhealthy infants had lower self-esteem.

There was also a negative relationship between maternal health status at Time 1 and MSI scores suggesting that mothers who encountered more prenatal and obstetrical problems tended to have lower self-esteem than did mothers who had fewer problems. However, this correlation was not significant. Additionally, type of delivery, as measured by whether or not the mother had a vaginal delivery, repeat Caesarean section or emergency Caesarean section did not significantly correlate with MSI scores, although the negative correlation coefficient of $-.16$ suggests a relationship in the direction expected. Mothers who delivered via Caesarean section had somewhat lower self-esteem scores than did mothers who delivered vaginally.

There was a very significant correlation between parity and MSI scores. Multiparous mothers had significantly higher Maternal Self-Esteem than did primiparous mothers. Additionally, as was expected, there was a highly significant correlation between the amount of family support the mother reported receiving and her Maternal Self-Esteem.

Another variable which was expected to correlate with Maternal Self-Esteem at Time 1 was separation of the mother and infant while in the hospital. Although the correlation was not as significant as had been expected, the correlation suggests that mothers who were separated from their infant had lower MSI scores than mothers who were not separated.

At Time 1, the behavioral responsiveness and competence of the infant, as measured by the Brazelton Neonatal Behavioral Scale, did not demonstrate a significant correlation, although the correlation ($r = -.13$) was in the direction expected. The dimension which demonstrated the highest correlation was the Response to Stress Dimension which measures how irritable and responsive to stress the infant is.

Unlike the results of the first study, in this study there was virtually no correlation between infant sex and Maternal Self-Esteem.

At Time 2, a number of independent variables were also hypothesized a priori to correlate with Maternal Self-Esteem. Table 33 presents the Pearson Product Moment correlation coefficient between those independent variables which were hypothesized to correlate with the MSI at Time 2.

As had been expected, there was a significant correlation between infant health status at Time 2 and MSI scores. While this correlation was more significant than the correlation found in the first study, it should be noted that there was more variability in infant health in the present study than there was in the first study. Again, the most significant correlation between the above variables and MSI scores was the correlation between Family Support and the MSI, $r = .67$ ($p < .001$).

Maternal health complications had an unexpectedly high correlation with the MSI at Time 2, indicating that mothers who reported encountering health problems following delivery had significantly lower maternal self-esteem than mothers who reported feeling healthier ($r = -.54$, $p < .001$).

TABLE 33

PEARSON PRODUCT-MOMENT CORRELATIONS AND PROBABILITY LEVELS FOR
A PRIORI DEFINED INDEPENDENT VARIABLES
AND THE MSI AND SRI AT TIME 2, STUDY 2

Independent Variables	MSI - 2	SRI - 2
Infant Health Status - Time 1	-.17	-.03
Infant Health Status - Time 2	-.33**	-.20
Family Support - Time 2	.67***	.57***
Brazelton Total Score - Time 2	-.46***	-.15
Brazelton Dimension I-- Interactive Processes	-.19	-.04
Brazelton Dimension II-- Motoric Processes	-.33**	-.06
Brazelton Dimension III-- State Control	-.36**	-.04
Brazelton Dimension IV-- Response to Stress	.47***	.45***
Maternal Perception-- Discrepancy Score	-.39**	-.14
Maternal Perception-- Bothersome Score	-.52**	-.10
Feeding Problems	-.29**	-.22
Maternal/Infant Separation	-.19	-.09
Length of Separation	-.20	-.07
Mother's Health - Time 2	-.54***	-.58***
Maternal Disbrow Score	.19	.005
Maternal Sensitivity	.22	.03
Parity	.26	.16

* $p < .10$

** $p < .05$

*** $p < .01$

Contrary to the results of the first study, the Brazelton Exam Total Score was significantly correlated with MSI scores, $r = -.46$ ($p < .001$). This finding indicated that among this group of both premature and full-term infants mothers whose infants were more responsive and behaviorally well organized, had significantly higher self-esteem than mothers whose infants were less alert, more irritable and behaviorally less well organized.

Highly significant correlations were found between MSI scores and both Maternal Perception of the Infant variables at one month. The Discrepancy Score had a correlation coefficient of .39 with MSI scores indicating that women who had higher self-esteem, perceived their infants more positively than did mothers with lower scores. Even more significant was the correlation between the Bothersome Score and MSI scores. The high negative correlation indicated that mothers who had lower self-esteem, perceived their infants as being more bothersome than mothers who had higher self-esteem.

As was expected, there was a significant correlation between Feeding Problems encountered by the infant and MSI scores. It should be noted that assessment of feeding problems was based on maternal report and rated by the investigator on a 1 to 6 scale. The results indicated that mothers whose infants had feeding problems during the first postpartum month had significantly lower self-esteem than did mothers whose infants did not have feeding problems.

Although there was a correlation between the Separation factor indicating that mothers who were discharged home without their infant

tended to have lower maternal self-esteem, this correlation was not as significant as had been expected. Similarly, the duration of this period of separation correlated in the expected direction with MSI scores, but was also not as significant as had been expected.

Finally, as was expected, there was a positive correlation between the Maternal Disbrow Score and MSI scores, indicating that mothers with high maternal self-esteem tended to interact more positively and more competently with their infants during the teaching task. Additionally, a significant positive correlation was found between Maternal Sensitivity to the infant's behavior and cues, and the MSI. Mothers who had higher self-esteem, tended to be more sensitive to their infants than were mothers with lower maternal self-esteem.

Test-Retest Reliability

Again as in the first study, in this study the MSI demonstrated high stability over time as indicated by the Test-Retest Pearson Product Moment Reliability Coefficient of .79. (See Table 34) Examination of mean scores from Time 1 to Time 2 indicated that on the average, MSI scores increased by approximately $3\frac{1}{2}$ points from Time 1 to Time 2. Further analysis of the correlation between MSI scores at Time 1 and Time 2 via a scatter diagram reveals a normal distribution of scores around the regression line.

TABLE 34

TEST-RETEST RELIABILITY COEFFICIENTS OF THE MSI AND SRI, STUDY 2

Scale	Reliability Coefficient
MSI	.79***
SRI	.835***

*** $p < .001$ Multiple Regression AnalysesMaternal self-esteem Time 1

Statistical analyses were performed to explore the relationship among, and joint effects of, the variables which were a priori hypothesized to predict to maternal self-esteem. These analyses were performed by stepwise multiple linear regression techniques.

The first dependent variable which was analyzed was maternal self-esteem at Time 1. The maternal self-esteem scores consisted only of those items on the questionnaire which comprised the MSI questionnaire and not those questions which were included in the total inventory from the Epstein-O'Brien Self-Report Inventory.

The five variables which were hypothesized to predict to maternal self-esteem during the neonatal period were in the following order: 1) infant health; 2) family support; 3) newborn behavior; 4) separation of the mother and infant while in the hospital; and 5) parity. Infant

health was entered as the number of infant health risk scores as measured by the Postnatal Complications Scale (Littman & Parmelee, 1978). The Brazelton score entered was the total score on the four a priori scoring dimensions as referred to in Chapter VI. The family support score entered was the total score from the Family Support Questionnaire, referred to in Chapter II. The separation score was entered as a binomial variable, one if mother and infant were not separated during the mother's hospital stay, and two if mother and infant were separated. Parity was also entered into the regression equation as a binomial variable, one if primiparous, two if multiparous.

As was noted earlier, in a stepwise multiple linear regression analysis, the increment attributable to any variable may change depending on where it appears in the hierarchy. Variables are typically ordered according to their temporally or logically determined causal priority, and any variable which antedates another variable must be considered the causally prior variable. As pertains to the first stepwise multiple regression analysis conducted, the first three variables entered into the equation were ordered both according to their temporal position as well as according to the logically determined causal priority. These three variables were to be of primary importance in predicting to maternal self-esteem at this point in time with this population of mothers and infants, and so they were entered into the equation first and in the specified order. The remaining two variables, Hospital Separation and Parity, were of interest secondarily and so despite their temporal relationship. they were entered into the equation after the primary

variables of interest. This allowed for greater clarity in interpreting the power of the primary variables of interest to predict MSI scores since the Separation and Parity variables are not partialled from the first three variables. Additionally, this approach to the ordering of variables in the equation maximizes the statistical power of the test of the primary hypotheses.

Coefficients of the first-order intercorrelations among all the independent variables (both from Time 1 and Time 2) are shown in Table 35. As can be seen from Table 35, of the five predictor variables, the only variables which appeared to be significantly inter-correlated were Infant Health and the Separation variable ($r = .72$) and Infant Health and the Brazelton Exam Score ($r = .43$). Thus, the less healthy the infant, the more apt is he to be separated from his mother in the hospital and also less healthy infants performed less well on the Brazelton Exam. While both of these correlations are logical and would be expected, the significance of this finding for the stepwise regression analysis is that both independent variables may be laying claim to largely the same portion of the variance of the MSI and consequently, neither may be able to indicate a unique contribution to explaining the variance (Cohen & Cohen, 1975).

In order to assess the unique contribution to explaining the variance, a further analysis was conducted in which Brazelton Exam Scores and the Separation variable were entered into the regression analysis after first partialling out the effects of Infant Health. By partialling out the effects of Infant Health, the independent effects of

TABLE 35: INTERCORRELATIONS BETWEEN 20 INDEPENDENT VARIABLES

	Infant Health 1	Infant Health 2	C-Sect.	Parity	Mother's Health 1	Mother's Health 2	Separation Hospital	Separation Discharge	Family Support 1	Family Support 2	Braz 1	Braz 2	Mat. Percept. Discharge	Mat. Percept. Bother	Infant Sex	Feeding Problem	Disbrow Score	Maternal Gens.	Length of Separ.	SES
Infant Health 1	--																			
Infant Health 2	.59*	--																		
C-Sect.	.45*	-.26	--																	
Parity	-.13	-.05	-.19	--																
Mother's Health 1	.68*	.39*	.53*	-.15	--															
Mother's Health 2	.32	.59*	.25	-.10	.21	--														
Separation in Hospital	.72*	.24	.20	-.22	.58*	-.08	--													
Separation after Disch.	.70*	.25	.07	-.09	.63*	.15	.87*	--												
Family Support 1	-.08	-.37*	.14	.17	-.16	-.27	-.27	-.34*	--											
Family Support 2	-.02	-.23	.09	.17	-.18	-.34*	-.17	-.22	.78*	--										
Braz 1	.43*	.47*	.13	.10	.37*	.22	.08	.15	-.10	-.11	--									
Braz 2	.44*	.43*	.14	-.02	.43*	.14	.30*	.46*	-.22	-.21	.29*									
Mat. Percept. Disch. Score	-.54*	-.39*	-.22	.12	-.56*	-.08	-.55*	-.52*	.24	.30*	-.11	-.72*	--							
Mat. Percept. Bother	.31*	.39*	.18	-.26	.39*	.22	.17	.32*	-.31*	-.22	.19	.65*	-.46*	--						
Infant Sex	.04	-.20	0	-.22	.08	.01	.07	.05	.15	.16	-.19	-.32*	.17	.07	--					
Feeding Problem	.18	.24	-.17	-.31*	.08	.12	.29*	.37*	-.22	-.18	.03	.24	-.15	.13	.11	--				
Mother-Infant Inter-Disch. Sc	-.32*	-.33*	-.32*	-.12	-.45*	-.18	-.19	-.21	.16	.19	-.41*	-.38*	.26	-.19	.20	.09	--			
Mat. Sensitiv. Score	-.38*	-.27	.32*	.08	-.45*	-.28*	-.27	-.25	.08	.15	-.31*	-.29*	.21	-.39*	.17	.12	.81*	--		
Length of Separation	.85*	.59*	.49*	-.26	.61*	.42*	.63*	.57*	-.08	-.11	.41*	.33*	-.45*	.34*	-.06	.11	-.34*	-.38*	--	
SES			.17	-.28	-.33*	-.15	-.12	.26	.33*	.40*	-.22	-.07	.20	.09	.23	.06	.34*	.18	.21	--

* = p .05

the Brazelton Exam and Separation variables could be examined. Once Infant Health was partialled out, the Separation variable had a partial correlation with maternal self-esteem of $-.24$, which was only slightly greater than the direct correlation between the Separation variable and Maternal Self-Esteem of $-.22$. However, the fact that the Separation variable had a higher correlation with Maternal Self-Esteem once Infant Health had been partialled out, does indicate that both the Separation variable and Infant Health Status may have been laying claim to the same portion of the variance of MSI and as a result, neither may have been able to indicate a unique contribution to explaining the variance of MSI scores.

On the other hand, once the Infant Health variable had been partialled out, the Brazelton Exam variable had a partial correlation with maternal self-esteem of only $-.10$ which was even less than the direct correlation between the Brazelton Exam and Maternal Self-Esteem. This indicates that rather than sharing the same portion of the variance, Infant Health may have mediated the effects of Brazelton Exam performance on Maternal Self-Esteem. In other words, healthier infants tend to do better on the Brazelton Exam and their mothers tend to have higher maternal self-esteem than mothers whose infants are less healthy and do less well on the Brazelton Exam.

The results of the first a priori determined stepwise multiple linear regression analysis is shown in Table 36. The variables are listed in the order in which they were entered in the analysis, along

TABLE 36
STEPWISE MULTIPLE LINEAR REGRESSION ANALYSIS
OF MATERNAL SELF-ESTEEM AT TIME 1

Order of Entry	Variable	F Ratio	Beta Weight	Significance
1	Infant Health ₁	3.20	-.32	.08
2	Family Support ₁	15.90	.59	.000
3	Brazelton Exam ₁	.24	-.09	.63
4	Separation in Hospital	.16	-.08	.69
5	Parity	7.35	.46	.01

Summary Table
of Variables Which Entered and Remained in the Equation

Step	Variable	F Ratio	Significance	Simple R	R ²	R ² Change
1	Family Support ₁	15.91	.001	.60	.35	.35
2	Infant Health ₁	3.20	.08	-.30	.42	.07
3	Parity	6.82	.015	.52	.54	.12
4	Separation ₁	3.65	.067	-.22	.59	.06

N = 34

with their final beta weights and associated F ratios. Of these variables in the stepwise multiple regression analysis, the Brazelton Exam was the only variable which failed to enter the equation with a significant incremental effect. Family Support, the first variable which entered the equation, itself accounted for approximately 35% of

the variance of MSI scores, which was significant at $p < .001$. Infant Health accounted for an additional 7% of the variance when the effect of Family Support had been partialled out, which was significant at $p = .08$. Parity accounted for an additional 12% of the variance when the effects of Family Support and Infant Health had been partialled out, which was significant at $p = .01$. Separation accounted for an additional 6% of the variance when the effects of Family Support, Infant Health and Parity had been partialled out, which was significant at $p = .07$. Together these four variables accounted for 59% of the variance of the MSI at Time 1 which was significant at $p < .001$.

The fact that the Brazelton Exam did not enter the equation suggests that with this group of mothers and infants, the newborn's behavior at this point in time does not have an independent significant effect on predicting maternal self-esteem. However, the findings indicate that as expected Family Support, Infant Health, Parity and Separation of the Mother and baby in the hospital all significantly predict to MSI scores at Time 1. It appears that the more support that a mother receives from the baby's father and her family, and the healthier the baby, the higher the mother's self-esteem. The data also indicated that in this high risk group, if a mother has had other children, she will tend to have higher self-esteem than if this is her first child. Additionally, if mothers were separated from their infants they tended to have lower maternal self-esteem.

As was described in the first study, the findings from the multiple regression analysis are based on the assumption that the effects of the

independent variables are additive and that the relationship between the dependent variables and any of the independent variables is the same across all values of the remaining independent variables. Thus, in order to examine the effect of any interactions between the 5 independent variables, another regression analysis was conducted in which multiplicative terms (the product of 2 independent variables) were included in the regression equation. These multiplicative terms were entered into the regression equation as new predictor variables. The results of the multiple regression equation used to assess the effect of interaction variables are presented in Table 37. As can be seen from this table, only one interaction variable entered the equation and

TABLE 37

STEPWISE MULTIPLE REGRESSION ANALYSIS OF MATERNAL
SELF-ESTEEM AT TIME 1, INCLUDING INTERACTION VARIABLES

SUMMARY TABLE						
Step	Variable	F Ratio	Significance	Simple R	R ² Change	
1	Family Support	17.41	.000	.61	.37	.37
2	Parity	8.15	.008	.50	.51	.14
3	Infant Health	2.9	.09	-.28	.55	.05
4	Separation	3.5	.07	.24	.60	.05
5	Brazelton	.48	.49	-.10	.61	.01
6	Brazelton/Parity	10.08	.004	.34	.72	.11

contributed significantly to explaining the variance of MSI scores. This variable was the interaction of Parity and the Brazelton Exam which contributed an additional 11% to explaining the variance over and beyond the contribution of the 5 a priori hypothesized predictor variables. The tolerance level for this variable was somewhat low at .29, indicating that this interaction variable was correlated with both Parity and Brazelton Exam Scores. This increases the error of estimate for the Beta Coefficient and the results can only be considered exploratory. However, the results do suggest that poor performance on the Brazelton Exam had more of a significant negative impact on the maternal self-esteem of primiparous mothers than it did on multiparous mothers. The significance of this finding for early intervention will be discussed in the next chapter.

Maternal self-esteem Time 2

The second dependent variable which was analyzed was maternal self-esteem at Time 2, one month after delivery. The five variables which were hypothesized to predict to maternal self-esteem scores at Time 2 were, in the following order: 1) Infant Health at Time 2; 2) Family Support at Time 2; 3) Separation of the Mother and Infant after the mother's discharge from the hospital; 4) Mother-Infant interaction and; 5) Brazelton Exam Scores at Time 2.

Infant Health was entered as the number of infant health risk scores reported by the mother and measured by the Postnatal Complications Scale (Littman & Parmelee, 1978). The Family Support score

entered was the total score from the Family Support Questionnaire at Time 2. Separation of the mother and infant after the mother's discharge from the hospital was entered as a binomial variable, one if the mother and infant were not separated, that is if mother and infant were discharged home together, and two if the mother and infant were not discharged home together. The Brazelton score entered was the total score on the four a priori scoring dimensions as referred to in the Methods section. The Mother-Infant Interaction score was entered as the Disbrow Score from Task 2 (the hard task), also referred to in Chapter II. In this stepwise multiple regression equation, the determination of the order of variables to be entered into the equation was based on their temporally determined causal priority as well as the logically determined causal priority.

Coefficients of the first-order intercorrelations among the 5 independent predictor variables can be seen in Table 35. As can be seen from Table 35, the following independent predictor variables were significantly correlated; Infant Health and performance on the Brazelton Exam at Time 2 ($r = .43$); Infant Health and Mother-Infant Interaction ($r = -.33$); the Brazelton Exam and Separation of the Mother and Infant ($r = .46$); and the Brazelton Exam and Mother-Infant Interaction ($r = -.38$). Thus, one month after the baby's discharge from the hospital, less healthy infants tended to do less well on the Brazelton Exam and their mothers tended to be less positive and sensitive in interacting with them. Additionally, infants who did less well on the

Brazelton Exam tended to have been separated from their mothers and tended to have mothers who were less positive and sensitive when interacting with their mothers.

The significance of these findings for the stepwise regression analysis is that these independent variables may be laying claim to largely the same portion of the variance of MSI and so these independent variables may not be able to indicate a unique contribution to explaining the variance. In order to assess the unique contribution of each independent variable in explaining the variance, further analyses were conducted.

In the first case an analysis was conducted in which the Brazelton Exam scores at Time 2 and the Mother-Infant Interaction variable were entered into the regression analysis after first partialling out the effects of Infant Health. Once Infant Health was partialled out, the Brazelton Exam had a partial correlation with maternal self-esteem of $-.37$, indicating that even after partialling out the effects of Infant Health, Brazelton Exam Performance was still significantly correlated with Maternal Self-Esteem and thus independently predicted to maternal self-esteem. However, once Infant Health was partialled out, the Mother-Infant Interaction variable had a partial correlation coefficient of only $.17$ which was lower than before Infant Health was partialled out ($.19$) and not significant. This indicates that the Mother-Infant Interaction variable was not predicting to maternal self-esteem and that the effects of the Mother-Infant Interaction on maternal self-esteem were partially being mediated by the Infant's Health Status.

In the second analysis of the interaction variables, the Mother-Infant Interaction variable and the Separation variable were entered into the regression analysis after first partialling out the effects of the Brazelton Exam. Once the Brazelton Exam was partialled out, Mother-Infant Interaction had a partial correlation with the MSI of .24, which was greater than the direct correlation between Mother-Infant Interaction and Maternal Self-Esteem of .19. This finding indicates that both performance on the Brazelton Exam and the Mother-Infant Interaction variable may have been laying claim to the same portion of the variance of MSI at Time 2, and as a result, Mother-Infant Interaction may not have been able to indicate a unique contribution to explaining the variance of MSI scores since the Brazelton Exam had such a powerful effect.

On the other hand, once the Brazelton Exam had been partialled out, the Separation variable had a partial correlation with maternal self-esteem of only -.04 which was significantly less than the direct correlation between Separation and Maternal Self-Esteem ($r = -.19$). This indicates that rather than sharing the same portion of the variance, the Brazelton Exam appears to mediate the effects of Separation on Maternal Self-Esteem. In other words, mothers who were separated from their infants but whose infants were more responsive and behaviorally competent had higher maternal self-esteem than mothers who were separated from their infants but whose infants were less alert and responsive.

The results of the stepwise multiple linear regression analysis are shown in Table 38. The variables are listed in the order in which they

were entered into the analysis, along with the summary table which indicates those variables which remained in the equation. Of the variables in the stepwise multiple regression analysis, Infant Health at Time 2, Family Support at Time 2 and the Brazelton Exam at Time 2 all entered and remained in the analysis with a significant incremental effect. Infant Health, the first variable which entered the equation,

TABLE 38
STEPWISE MULTIPLE REGRESSION ANALYSIS OF MATERNAL
SELF-ESTEEM AT TIME 2

Order of Entry	Variable	F Ratio	Beta Weight	Significance
1	Infant Health ₂	4.02	-.35	.05
2	Family Support ₂	16.11	.60	.000
3	Separation ₂	.35	-.11	.56
4	Mother-Infant Interaction	.65	.15	.43
5	Brazelton Exam ₂	7.65	-.46	.01

Summary Table
of Variables Which Entered and Remained in the Equation

Step	Variable	F Ratio	Significance	Simple R	R ² Change	R ² Change
1	Infant Health ₂	4.02	.05	-.35	.12	.12
2	Family Support ₂	16.11	.001	.64	.44	.32
3	Brazelton Exam	8.90	.006	-.54	.58	.14

itself accounted for approximately 12% of the variance, which was significant at $p < .05$. Family Support, the next variable which entered and remained in the equation, accounted for an additional 32% of the variance when the effect of Infant Health had been partialled out. This increment was significant at $p .001$. The Brazelton Exam accounted for an additional 14% of the variance when the effects of Infant Health and Family Support had been partialled out, which was significant at $p < .01$. Together these three variables accounted for 58% of the variance of the MSI at Time 2 which was significant at $p < .001$.

Neither the Separation factor nor the Mother-Infant Interaction variable entered the regression equation with a significant incremental effect.

These findings indicate that as expected Infant Health, Family Support and the Brazelton Exam all significantly predicted to MSI scores at Time 2. Mothers whose infants were still having health problems one month after discharge from the hospital had significantly lower maternal self-esteem than mothers whose infants were healthier. The results also confirm the hypothesis that the more family support a mother receives, the more confident she is in her mothering ability. Additionally, one month after the baby's discharge from the hospital, mothers whose infants were more responsive and behaviorally more organized had higher maternal self-esteem than mothers whose infants were less alert and responsive.

Again, in order to examine the effect of any interactions between the 5 independent variables, a multiple regression analysis was conducted in which multiplicative terms were included in the regression equation. The results of the multiple regression equation used to assess the effect of the interaction variables is presented in Table 39.

TABLE 39
STEPWISE MULTIPLE REGRESSION ANALYSIS OF MATERNAL
SELF-ESTEEM AT TIME 2,
INCLUDING INTERACTION VARIABLES

SUMMARY TABLE

Step	Variable	F Ratio	Significance	Simple R	R ² Change	R ² Change
1	Family Support ₂	25.06	.000	.67	.46	.46
2	Brazelton Exam ₂	12.08	.002	-.53	.62	.16
3	Separation after Discharge	1.67	.20	-.21	.64	.02
4	Infant Health ₂	.10	.76	-.35	.64	.001
5	Mother-Infant Interaction	.11	.74	.06	.64	.001
6	Family Support/ Separation	3.41	.08	.12	.68	.04
7	Brazelton/Inter- action	6.20	.02	-.43	.75	.07
8	Interaction/ Separation	13.39	.001	-.20	.84	.09

N = 34

As can be seen from this table, three interaction variables entered the equation and contributed significantly to explaining the variance of MSI scores.

The first interactive variable to enter the equation was the interaction of Family Support and Separation, which contributed an additional 4% to explaining the variance over and beyond the contribution of the 5 a priori hypothesized predictor variables. While not significant ($p = .08$) this finding indicates that mothers who were separated from their infants and also received less family support tended to have lower self-esteem than mothers who were separated from their infants but received high levels of family support.

The second interactive variable to enter the equation was the interaction of the Brazelton Exam and Mother-Infant Interaction, which contributed an additional .07 to explaining the variance which was significant at $p = .02$. What these results indicate is that in this heterogeneous sample mothers who were more positive and sensitive when interacting with their infants and whose infants were more responsive on the Brazelton Exam had higher maternal self-esteem than mothers whose infants did well on the Brazelton Exam but who were less positive and sensitive themselves when interacting with their infant.

The third interactive variable to enter the equation was the interaction of Mother-Infant Interaction and Separation of the mother and infant, which contributed an additional 9% to explaining the variance ($p < .001$). These results indicate that mothers who had been separated from their infant but were sensitive and more positive during

the mother-infant interaction, had higher maternal self-esteem than mothers who had been separated from their infant but were less responsive to their infant's cues during the mother-infant interaction.

Post hoc analyses

A number of additional regression analyses were conducted in order to assess what other variables might be significantly contributing to the variance of MSI scores at Time 1 or Time 2. These post hoc regression equations were based on the significant correlations found between other independent variables and MSI scores as well as post hoc theoretical considerations, and therefore the results should be considered exploratory as the results may be capitalizing on chance.

MSI - Time 1. Because of the significant correlation found between gestational age and maternal self-esteem during the first few days after delivery, a post hoc regression analysis was conducted in which gestational age was entered into the regression equation. Infant Health Status at Time 1 was the first variable entered into the equation, followed by gestational age. This was done in order to assess the increment attributable to gestational age once the effect of Infant Health had been partialled out. However, once Infant Health entered the equation, gestational age did not meet the criteria necessary to enter the equation, indicating that once the effect of infant health had been accounted for and partialled out of the equation, gestational age did not contribute significantly to explaining the variance of MSI scores at Time 1.

MSI - Time 2. A post hoc regression analysis was conducted in which those five variables which were most significantly correlated with the MSI were entered into the equation in the following order according to the significance of the correlation with the MSI at Time 2; 1) Family Support at Time 2; 2) Maternal Health at Time 2; 3) Maternal Perception of her Infant as measured by Bothersome Score of the Neonatal Perception Inventory, 4) the Brazelton Exam and 5) Infant Health Status at Time 2. The results of this stepwise regression analysis are presented in Table 40. As can be seen from the table, all five variables

TABLE 40

FIRST POST HOC STEPWISE MULTIPLE REGRESSION ANALYSIS OF
MATERNAL SELF-ESTEEM AT TIME 2

Step	Variable	F Ratio	Significance	Simple R	R ² Change	R ² Change
1	Family Support ₂	19.77	.000	.63	.38	.38
2	Maternal Health ₂	7.31	.01	-.55	.52	.12
3	Bothersome Score	11.38	.002	-.59	.66	.14
4	Brazelton Exam ₂	3.13	.08	-.53	.69	.04
5	Infant Health ₂	2.53	.12	-.35	.72	.03

N = 34

remained in the equation and significantly predicted to maternal self-esteem at Time 2. Together these 5 variables accounted for 72% of the variance of MSI scores at Time 2.

Examination of Table 35, which shows the intercorrelations among all the independent variables, indicated that the Maternal Health factor was significantly correlated with Infant Health Status ($r = .59$) and with Family Support ($r = -.34$). Thus, one month after the baby was discharged from the hospital, mothers whose babies had more health complications also reported having more health complications themselves. Additionally, mothers who reported having more health complications at Time 2 also perceived less family support at this time.

The Bothersome score was significantly correlated with Infant Health Status at Time 2 ($r = .39$) and with the Brazelton Exam at Time 2 ($r = .65$). Thus, infants whose mothers perceived them as being more bothersome also were less healthy and performed less well on the Brazelton Exam.

Again, the significance of these intercorrelations is that these independent variables may be laying claim to largely the same portion of the variance of MSI scores and so neither may be able to indicate a unique contribution to explaining the variance. In the first case, as Maternal Health entered the equation before Infant Health Status, the effects of Infant Health Status on Maternal Self-Esteem could be examined after the effect of Maternal Health had been partialled out. Once Maternal Health had been partialled out, Infant Health only had a correlation of .01 with Maternal Self-Esteem which was significantly lower than before Maternal Health had been partialled out ($r = -.33$). This suggests that the impact of Infant Health on Maternal Self-Esteem was largely mediated by the Maternal Health Status. However, despite the

correlation between Maternal Health Status and Family Support at Time 2, both Family Support and Maternal Health independently accounted for significant portions of the variance of Maternal Self-Esteem. Once Family Support had been partialled out, Maternal Health had a correlation of $-.45$ with Maternal Self-Esteem which was lower than the correlation with Maternal Self-Esteem before Family Support had been partialled out ($r = .54$). This indicates that in part, the effects of Maternal Health Complications on Maternal Self-Esteem were being mediated by low family support. However, Maternal Health still accounted for a significant portion of the variance (12%) even after Family Support had been partialled out.

Concerning the intercorrelation between the Botherome score and the Brazelton Exam at Time 2, the Botherome Score entered the equation before the Brazelton Exam and so the effects of the Brazelton Exam on Maternal Self-Esteem were examined after the effects of the Botherome Score had been partialled out. Once the Botherome Score had been partialled out, the Brazelton Exam had a partial correlation of $-.32$ with Maternal Self-Esteem which was lower than the correlation with Maternal Self-Esteem before the Botherome Score had been partialled out ($r = -.46$). This indicates that in part, the effects of the Brazelton Exam on Maternal Self-Esteem were being mediated by the mother's perception of how bothersome her infant seemed. In other words, the degree of the baby's bothersome behavior seemed to be more salient than the baby's behavior as measured by the Brazelton Exam. However, although these two

variables appeared to have shared a common part of the variance of MSI scores, each independently predicted to Maternal Self-Esteem.

The effect of Infant Health Status was examined after first partialling out the effect of both Maternal Health and the Bothersome Score. After these two variables had been partialled out, the partial correlation of Infant Health Status and Maternal Self-Esteem was significantly lowered, thus again suggesting among this more high risk group of mothers and infants the effects of Infant Health Status on Maternal Self-Esteem were in part being mediated by the Mother's Health and the mother's perception of how bothersome her infant was.

This post hoc analysis suggested that the three variables which most strongly predicted to Maternal Self-Esteem were the amount of support the mother perceived she received from her family and the baby's father, how healthy the mother felt once the baby had been home for a month and how bothersome the mother perceived her baby to be.

A second post hoc regression analysis was conducted in which the same five variables as above plus Parity were entered into the equation in the following order: 1) Family Support at Time 2, 2) Parity, 3) Maternal Health at Time 2, 4) Bothersome Score, 5) Brazelton Exam and 6) Infant Health Status at Time 2. The results of this stepwise regression analysis are presented in Table 41. As can be seen from the table, all six variables remained in the equation and contributed to explaining the variance of Maternal Self-Esteem at Time 2. Together these 6 variables accounted for approximately 76% of the variance of the MSI.

Examination of the intercorrelations between Parity and the other 5 variables indicated that Parity did not significantly correlate with any of the other 5 independent predictor variables. The only correlation which approached significance was the correlation between Parity and the

TABLE 41

SECOND POST HOC STEPWISE MULTIPLE REGRESSION ANALYSIS
OF MATERNAL SELF-ESTEEM AT TIME 2

SUMMARY TABLE						
Step	Variable	F Ratio	Significance	Simple R	R ² Change	
1	Family Support ₂	19.77	.000	.63	.40	.40
2	Parity	3.65	.066	.35	.46	.07
3	Maternal Health ₂	7.04	.13	-.55	.57	.11
4	Bothersome Score	9.33	.005	-.59	.68	.11
5	Brazelton Exam ₂	4.93	.035	-.53	.73	.05
6	Infant Health ₂	2.39	.135	-.35	.76	.02

N = 34

Bothersome Score which was -.26. This suggests that primiparous mothers tended to perceive their infants as being more bothersome than multiparous mothers. While Parity and the Bothersome variable appear to have shared some common portion of the variance as indicated by the slightly lowered percent of the variance accounted by the Bothersome variable

when Parity entered the equation (11% as opposed to 14% when Parity was not in the equation). However, this post hoc analysis clearly suggested that one month after the baby had been at home, Parity was still predicting to Maternal Self-Esteem and contributed an additional 7% to explaining the variance. In other words, primiparous mothers were still feeling less secure about their mothering ability than were multiparous mothers.

Changes in maternal self-esteem

In order to analyze those variables which predicted to changes in maternal self-esteem from Time 1 to Time 2, a multiple regression analysis was conducted in which the postscore (MSI at Time 2) was used as the dependent variable, and the prescore (MSI at Time 1) was entered as the first independent variable in the multiple regression hierarchy. As was referred to earlier, using this model, when the subsequent independent variables are entered into the equation, their partial correlations will be indicative of the relationship with postscores from which prescore influences have been removed or partialled out.

The stepwise multiple regression analysis examined the effect of the following 3 variables on changes in maternal self-esteem: 1) Changes in Infant Health from Time 1 to Time 2, 2) changes in Brazelton Exam scores from Time 1 to Time 2, and 3) Changes in Family Support from Time 1 to Time 2. In order to assess the change in MSI scores, MSI scores at Time 1 were entered into the equation first, followed by the above 3 variables, in the above mentioned order. The results of this

analysis are presented in Table 42. As can be seen in the summary table, the only variable which did not remain in the equation and predict to changes in maternal self-esteem was the change in the infant's

TABLE 42

STEPWISE MULTIPLE REGRESSION ANALYSIS OF CHANGES
IN MATERNAL SELF-ESTEEM FROM TIME 1 TO TIME 2

(Dependent Variable = MSI_{TIME 2})

Order of Entry	Variable	F Ratio	Beta Weight	Significance
1	Maternal Self-Esteem at Time 1	52.31	.79	.000
2	Change in Infant Health from Time 1 to Time 2	.71	.05	.79
3	Change in Brazelton from Time 1 to Time 2	2.88	.30	.10
4	Change in Family Support from Time 1 to Time 2	10.06	-.51	.004

SUMMARY TABLE

Step	Variable	F Ratio	Significance	Simple R	R ² Change
1	Maternal Self-Esteem Time 1	52.30	.000	.79	.64
2	Change in Brazelton from Time 1 to Time 2	2.80	.10	.29	.03
3	Change in Family Support from Time 1 to Time 2	11.24	.002	-.20	.10

health status. Once the effect of maternal self-esteem at Time 1 had been partialled out, the change in Brazelton Exam scores and changes in Family Support accounted for 13% of the variance unaccounted for by MSI at Time 1. In other words, mothers whose infants improved on the Brazelton Exam from Time 1 to Time 2, also tended to have increased maternal self-esteem from Time 1 to Time 2. Additionally, mothers whose family support increased over the first month after the baby's discharge had significantly increased maternal self-esteem from Time 1 to Time 2. This finding was particularly significant given the very high reliability in family support from Time 1 to Time 2 and this very small degree of variability in the Family Support Change Score.

The correlation between Brazelton Exam Scores at Time 1 and Time 2 was only .29 and thus there was much variability in the Brazelton Change Score. However, the correlation between Infant Health Status at Time 1 and Time 2 was very significant at .59 and thus there was a very small degree of variability in the Infant Health Change Score.

CHAPTER VIII

DISCUSSION: STUDY 2

The primary purpose of this second study was to identify those variables which best predicted Maternal Self-Esteem among a more heterogeneous group of infants and mothers, including infants born prematurely, infants who encountered more severe health problems and infants who had been separated for prolonged periods of time from their mothers. This allowed for a comparison of those variables predicting to Maternal Self-Esteem among a relatively healthy group of infants and mothers and a less healthy and more high risk group of mothers and infants.

As in the first study, a number of independent predictor variables were hypothesized to predict Maternal Self-Esteem during the newborn period and one month after the infant's discharge home from the hospital. Additionally, a number of variables were hypothesized to predict to changes in Maternal Self-Esteem from Time 1 to Time 2.

Predictor Variables at Time 1

Of the variables which were hypothesized to predict Maternal Self-Esteem during the newborn period, all but the Brazelton Exam significantly predicted Maternal Self-Esteem. Among this group of less

healthy mothers and infants, family support, infant health status, parity and separation together accounted for 59% of the variance of Maternal Self-Esteem scores. By knowing how much support a mother feels she is receiving from the baby's father and her family, how sick the baby is, whether this is the mother's first baby or not, and whether the mother and baby have been separated in the hospital, one can predict with a very high probability of success how confident a mother feels about her ability to care for her infant.

That family support so directly and strongly related to Maternal Self-Esteem had been expected. As was true in the first study, positive attitudes towards mothering, and the quality of the mother-infant interaction, were largely influenced by a positive family support system. Given the insignificant relationships between demographic variables and Maternal Self-Esteem, in particular marital status per se, it appears that the basis of self-esteem is more influenced by proximal personal relationship than by more psychologically distant demographic factors. Of interest is the finding that among this more high risk population, family support accounted for more of the variance of MSI scores than it did with the healthier population of the first study. It appears that mothers whose infants are born prematurely or with more severe health complications rely more on family support and may need more support to bolster their confidence and help them adapt to motherhood. It should be noted, however, that there was no direct relationship during the newborn period between infant health status and family support. As was found in the first study, in some cases following the

birth of a baby with health complications, the family rallies to help and support the mother. While in other cases the family may communicate a feeling of disappointment and not give the mother the support she may need at this vulnerable period of time. In this latter case it is hypothesized that these mothers and infants are at risk for future developmental problems.

Although infant health status was significantly correlated with Maternal Self-Esteem and did account for 7% of the variance of MSI scores at Time 1, it was not as significant a predictor variable as had been expected or as significant a predictor as it was in the first study. One interpretation of this finding concerns the degree to which the infant's health status was correlated with the other independent predictor variables. Of particular importance was the correlation between infant health status and mother-infant separation. As both of these independent variables may have been laying claim to largely the same portion of the variance of MSI scores, neither were able to indicate a unique contribution to explaining the variance.

In general, infant health status in this study appeared to have a more pervasive and salient relationship with both maternal and neonatal variables than it had in the first study. For example, infant health status was significantly correlated with maternal health status as well as with the Brazelton Exam scores. The results of this study suggest that when an infant is born prematurely or develops severe health complications, there are often many other complications and disruptions in life styles which are associated with the birth and which also affect

maternal adaptation more directly. It may be that the complications associated with the birth of a high-risk infant (such as maternal illness) have a more direct impact on Maternal Self-Esteem than the number of infant health complications.

Additionally, another possible interpretation of why infant health status was not as significant a predictor variable as had been expected may lie in the way in which health status was measured in this study. The Postnatal Complications Scale (Littman and Parmelee, 1978) assesses the infant's postnatal course as measured by how many of ten possible risk factors the infant encounters. The total number of medical complications was used as the index of infant health, with high scores reflecting increased risk to the infant's health. While this scale has been demonstrated to predict to later infant health and development, it may not accurately reflect a mothers perception of how sick her baby is. It is possible that maternal perception of infant health status may depend more on such things as the infant's appearance, the type and quantity of medical interventions required (i.e. respirators, monitors, I.V.'s) and the prognosis associated with each risk condition. In this study, the majority of the infants had 3 or more health complications which in all of these cases required neonatal intensive care. It may be that whether an infant has 3 or 7 risk conditions is not as important as the focus of concern for the parent who is separated from their newborn, as much as the reality that her baby is very sick, will have to be separated from her and may not survive.

In other words, once an infant is sick enough to require intensive care treatment and intensive medical intervention, the quality and degree of risk conditions may become less relevant an issue and less a focus of attention than the mere fact that the baby is in critical condition. Perhaps for the purposes of this study, a more sensitive measure of infant health status would have been the mother's perception of the baby's health. Still, it is clear from a comparison of mean MSI scores from Study 1 and Study 2 that mothers of this more high risk group of in-fants had significantly lower Maternal Self-Esteem than mothers of more healthy infants.

The significant predictive effect of Parity had been expected. However, of interest was the finding that parity was a significant predictor variable among this high-risk group of mothers and infants at both points in time but not with the healthier groups of mothers and infants in the first study. This finding suggests that for primiparous mothers, the birth of a premature infant or the development of infant health complications following delivery which requires intensive care treatment and subsequent separation of the mother and baby, has a more detrimental effect on Maternal Self-Esteem than it does for multiparous mothers. In fact, parity was still predicting to Maternal Self-Esteem after being at home with the baby for one month.

The birth of a premature or sick infant appears to have less of a negative impact on the Maternal Self-Esteem for these mothers who had previously cared for an infant of her own and thus were more secure in their mothering ability. Multiparous mothers may be able to use their

past experience to bolster their self-confidence. These findings are consistent with the findings from the Seashore et al. study (1973). The finding that primiparous mothers of premature or sick infants are more at risk for problems of maternal adaptation than are multiparous mother or primiparous mothers of full-term healthy infants, has significant implications for clinical interventions during the newborn period. The results of this study support Seashore et al's suggestion that in particular primiparous mothers of premature infants are in need of increased social support and caretaking experiences during the newborn period in order to attenuate feelings of low Maternal Self-Esteem and prevent the development of negative feedback cycles.

As had been expected, the separation of the mother and infant for a period of 12 or more hours following delivery, did significantly predict to Maternal Self-Esteem during the newborn period. In most of these cases this separation occurred because the infants were in the neonatal intensive care unit and the mothers were not able to feed or room their infants. As was mentioned previously, this separation factor was highly confounded by both infant health and maternal health complications, and this confound may have lessened the direct impact which each variable had on maternal self-esteem. This confound was also present in the Seashore et al. study (1973). In the future, with a larger number of subjects, it would be interesting to examine the effect of infant health problems, with and without separation, on Maternal Self-Esteem and mother-infant interaction. Then one could partial out the effect of

infant health complications without the confound of separation for even a short time between mother and infant.

Additionally, of interest was the negative relationship between family support and separation during the newborn period. Although not quite statistically significant, there was a tendency for mothers who were separated from their infants during the first day after delivery to report feeling that they received less family support. The withdrawal of family support during this very vulnerable period of time when a mother is separated from her baby appears to have a very negative impact on maternal adaptation. Although it was not examined in this study, one possible explanation for the perceived lack of family support may be that fathers and other relatives focus their attention and time on the baby, rather than the mother. A more in depth evaluation of the fathers and other relatives' interactions with the mother when the baby is in the intensive care unit or otherwise separated from the mother, could provide significant information for a better understanding of the synergistic effects of separation and family support on maternal adaptation. It may be that fathers are also in need of additional support if they are to be able to provide the physical and emotional support needed by the baby's mother. Whether pediatricians and hospital staff can provide that support and fulfill that need remains an empirical question.

The one variable which had been expected to be related to Maternal Self-Esteem, but was not, was the behavior and responsiveness of the

infant as measured by the Brazelton exam. Although there was a correlation in the expected direction in that mothers whose babies performed better on the Brazelton Exam during the newborn period tended to have higher self-esteem, the Brazelton exam did not predict to Maternal Self-Esteem during the newborn period. While in the first study with healthier infants, subject variability was very limited, in this study, there was a wide range of scores on the Brazelton exam, with about an equal number of infants performing in the optimal and worrisome categories. So the lack of a significant relationship cannot be explained by limited variability.

However, as suggested in the first study, one possible explanation for the lack of a significant and direct relationship between newborn responsiveness and Maternal Self-Esteem may be that during the initial newborn period mothers are not as attentive to the behavioral characteristics of their infant as they are to more obvious and salient characteristics such as the baby's health and appearance. Support for this interpretation can be found from the previously mentioned significant correlation between Maternal Self-Esteem and infant health as well as the correlation of .21 between Maternal Self-Esteem and the fourth dimension of the Brazelton Exam, "Physiological Response to Stress." This dimension assesses such characteristics as frequency of startles, tremulousness and color changes in response to stress. As opposed to more subtle measures of the Brazelton Exam such as habituation, state ability and motor tone, the characteristics measured in the fourth dimension are very visually obvious and may be more apparent to mothers

during the initial newborn period. Of particular relevance also is the fact that at this point in time, mothers have had very little time to interact with their infant. This was true both for mothers of healthy infants and for mothers whose infants were premature and often spent the majority of their hospital stay in temperature controlled and oxygen regulated incubators. As suggested in the first study, it would appear that a longer period of time of interacting with the baby is needed before mothers become aware of the more subtle behavioral characteristics of their infant.

Of interest was the finding that primiparous mothers whose babies scored less well on the Brazelton Exam had lower Maternal Self-Esteem than multiparous mothers whose babies also scored less well on the Brazelton Exam. It may be that primiparous mothers, who have had less experience with babies and know less what to expect about infant development, are more frightened by any apparent abnormalities in their babies' behavior and are more in need of reassurance and help in understanding what behavior is typical for a premature baby and helping them to know what to expect and how they can best support their babies' development. For example, premature babies often have poor sucking reflexes when born, and feeding is often problematic. However, informing mothers that this problem is very common and temporary and helping mothers to adapt to the babies' pace and special needs may help mothers to overcome initial fears and anxieties of caring for their infant before the mother goes home with the baby.

As was demonstrated in the post hoc multiple regression analysis using those variables which most highly correlated with MSI scores at Time 1, gestational age of the infant did not significantly predict to Maternal Self-Esteem or account for any additional variance of MSI scores. Thus although mothers of premature babies tended to have lower Maternal Self-Esteem, prematurity, per se, did not predict to Maternal Self-Esteem. It appears, as expected, that other factors related to the birth of a premature infant such as the baby's health, the amount of family support and separation are more predictive factors of how well a mother will adapt to the birth of a premature infant. This finding is consistent with one of the major hypothesis of this study in that it appears that it is the characteristics and responsiveness of the infant which impact upon a mother's feeling of competence rather than only the length of the gestation.

As is often the case, some of the premature infants in this study, while born early and weighing less than the average full-term baby, were healthy and responsive to their mothers. Examination of such individual cases revealed that in most cases the mothers of the healthy infants did not have significantly lower Maternal Self-Esteem. In one such case, the baby, a female, was born at 35 weeks gestation and weighed less than five pounds. However, this baby was extremely alert and responsive, had excellent body tone and was easy to console. Additionally, this mother had a four-year old son who had also been born prematurely and was doing very well, and this mother was hoping to have a baby girl. This mother's previous experience with her son and her baby's responsiveness

and competence appear to have counteracted the negative effects of the unexpected premature delivery and subsequent period of separation of the mother and baby.

Predictor Variables at Time 2

Of the variables which were hypothesized to predict to Maternal Self-Esteem one month after the baby's discharge from the hospital, infant health, family support and the Brazelton Exam all significantly predicted to Maternal Self-Esteem. These three variables together accounted for 58% of the variance of the MSI at Time 2.

The finding that infant health at Time 2 significantly predicted to Maternal Self-Esteem and accounted for 12% of the variance of MSI scores had been expected but was of particular interest as it had not predicted to Maternal Self-Esteem in the first study. The most obvious explanation for this difference between the first and the second study is that in the first study there were very few infants with even minor health complications one month after discharge from the hospital and in the second study. There was much more variability in infant health status with many more infants encountering severe health complications during the first month after discharge from the hospital. In fact, as opposed to the first study in which there was very little correlation between infant health status at Time 1 and Time 2, in this second study there was a very significant correlation between infant health status at Time 1 and Time 2. In other words, many infants who were having health

problems during the neonatal period were still sick or had encountered other health problems at the time of the home visit. Additionally, many of the infants in this study had required hospitalization or visits to the physician prior to the home visit. Unlike in the first study in which most mothers reported being able to handle minor problems their infants developed. In this study, mothers whose infants developed problems post-discharge from the hospital, tended to feel less competent in handling their problems and had significantly lower Maternal Self-Esteem. Additionally, mothers whose infants had more health complications after they were discharged home also reported having more health problems themselves.

Again, as was found in the first study, the mothers perception of the amount of support she received from her family and the baby's father was the most powerful and direct predictor of Maternal Self-Esteem after being at home with the infant for one month. This significant finding has important clinical implications which will be discussed in the next section.

Of particular interest was the finding that among this heterogeneous group of sick and healthy infants, the infant's responsiveness and behavior as measured by the Brazelton Exam significantly predicted to Maternal Self-Esteem. As was the case during the newborn period, at the time of the home visit there was much more variability in Brazelton Exam scores than there had been in the first study. In fact, at Time 2 approximately an equal number of infants were performing in the optimal and worrisome categories. The significant increase in the correlation

between Brazelton Exam scores and Maternal Self-Esteem from Time 1 to Time 2 supports the interpretation suggested earlier that it is not until mothers have had the opportunity to spend time with their infants at home that they become aware of and responsive to the individual behavioral characteristics of their infant. As was originally hypothesized, it appears that infants who are more responsive and behaviorally competent provide more positive feedback and reinforcement to the mother-infant interaction and in turn their mothers report feelings of high Maternal Self-Esteem. On the other hand, infants who were more behaviorally disorganized appear to have provided less feedback and were more difficult to engage in the mother-infant interaction task.

Although both the mother-infant interaction and separation variables correlated with Maternal Self-Esteem in the expected direction, neither significantly predicted to Maternal Self-Esteem. The significant correlations between mother-infant interaction and both the Brazelton Exam and infant health status measures indicate that these three independent variables may have been laying claim to largely the same portion of the variance of MSI scores and thus the mother-infant interaction variable was not able to indicate a unique contribution to explaining the variance. What these intercorrelations suggest is that mothers who were more positive when interacting with their infant, had infants who were healthier and more responsive and thus had higher Maternal Self-Esteem.

Analysis of the effect of separation on Maternal Self-Esteem indicated that the separation of the mother and infant appeared of less

significance in predicting Maternal Self-Esteem than the mother's perception of the baby, the responsiveness and behavioral competence of the baby and the mothers health after the birth of her baby.

This last variable, the mother's health after the birth of her baby, had an unexpected high correlation with Maternal Self-Esteem. Mothers who encountered health complications after delivery had significantly lower Maternal Self-Esteem. Because of this significant correlation, two post hoc analyses were conducted in order to further investigate this relationship.

The first post hoc analysis was determined by those variables which were most highly correlated with MSI scores at Time 2. These variables included Family Support, Maternal Health, Maternal Perception of her infant as measured by the Botherome Score of the Neonatal Perception Inventory, the Brazelton Exam and Infant Health Status. Together these five variables accounted for 72% of the variance of Maternal Self-Esteem and significantly predicted to Maternal Self-Esteem at Time 2. Of particular interest is that with this more high risk group of mothers and infants, the first three variables which entered and remained in the equation and accounted for the largest portion of the variance of MSI scores, were all variables which assess maternal perceptions of either herself or her baby. Although this finding can only be considered speculative at this time, it suggests that again maternal feeling and perceptions of herself and her baby, have more of an impact on maternal adaptation than measures which do not take into account maternal perceptions. This is in agreement with

Bibring's and Brazelton's characterization of maternal psychological disorganization and upheaval following the birth of a premature infant. They suggest that if the mother perceives that her own needs are not being met she can not meet the additional demands of her infant.

In this more high risk sample of mothers and infants, many of the mothers reported having health problems and feeling exhausted after one month of being at home with the baby. These mothers complained of headaches, problems associated with recovering from a Caesarian section, post-partum hemorrhaging, colds and flu, anemia and feeling "run-down." Yet, in almost all cases, these mothers had not yet been to see their obstetrician for a check-up and seemed to feel guilty about focusing on their own problems. In all cases these mothers had assumed primary responsibility for caring for their infant, and in almost all cases with minimal help in caretaking activities. Yet the very high correlation between infant health complications and maternal health complications suggests that while these mothers were having health problems of their own, they were also responsible for caring for a baby with health complications. Previous research has repeatedly documented that premature infants require more caretaking time and more effort to engage in interactions. (Goldberg, 1979) It is hypothesized that before a mother can focus her attention and energy on providing the special care and attention her baby needs, she must first be able to have her own needs satisfied. Yet, ironically, as was demonstrated in the first study, mothers in this study who encountered health problems felt they did not receive enough family support. It is difficult to discern if there was

actually a withdrawal of family support or if these mothers required more support to help them through this initial period of adjustment. However, it is certainly of clinical interest and some poignancy that despite problems of her own, a mother is expected to shift her attention to her infant if she is to receive more family support.

The finding that the mother's perception of how bothersome her baby was directly predicted to Maternal Self-Esteem and seemed to mediate the effects of infant health status and in part mediated the effects of infant behavior, suggests that what is most important to a mother's feelings of confidence and ability to adapt is her perception of her baby as opposed to an outside observer's assessment. This finding, although just exploratory at this time, supports Broussard's earlier work (1971) which found that maternal perception of her newborn predicted to later mother-child interactions and the child's social/emotional development. The clinical implications of these post-hoc findings will be discussed in the next section.

Change in Maternal Self-Esteem

The third major hypothesis of this study was that Maternal Self-Esteem would have changed as a function of (1) changes in infant health status, (2) changes in the infant's behavior and social competence and (3) changes in family support. Unlike in the first study in which change scores were unable to predict to changes in Maternal Self-Esteem, changes in family support and the infant's behavior did

significantly predict to changes in Maternal Self-Esteem in this second study with more high-risk mothers and infants.

One of the reasons that change scores were not significant in the first study appeared to be due to the very high correlation between Maternal Self-Esteem at Time 1 and Time 2. However, there was more variability in MSI scores from Time 1 to Time 2 in this second study, although this difference was not significant.

In the previous study, it had been suggested that with a more high risk and stressed population of mothers and infants, one would find more variability in Maternal Self-Esteem and less stability. It has also been hypothesized that with a more high risk population of mothers and infants, one would be able to predict changes in Maternal Self-Esteem depending on changes in the independent variables. While the Maternal Self-Esteem in this second study was still more stable than had been originally predicted, changes in family support and the babies' responsiveness were able to predict to changes in Maternal Self-Esteem, thus confirming the original hypothesis. Mothers who received less family support at Time 2 than they had at Time 1, and mothers whose babies were more irritable, less responsive and scored worse on the Brazelton Exam by Time 2, tended to have lower Maternal Self-Esteem by Time 2.

Concerning the inability of changes in Infant Health Status to predict to changes in Maternal Self-Esteem, it appears that the lack of variability in infant health from Time 1 to Time 2 precluded the possibility of finding an effect of changes in Infant Health Status on changes in Maternal Self-Esteem.

As was noted earlier, many of the infants in this study who encountered health complications during the newborn period, were still having health complications one month after discharge from the hospital.

The finding that increases in family support and increases in the baby's responsiveness predicted to increases in a mother's feelings of confidence has significant implications for early intervention, as it appears that maternal self-esteem is not so stable as to be impervious to change even during this relatively short period time.

CHAPTER IX

SUMMARY AND CLINICAL IMPLICATIONS

In the first study conducted, with a relatively healthy and normal group of mothers and infants, minor and often transitory health problems occurring during the newborn period and a lack of family support were found to predict Maternal Self-Esteem. In the second study, with a more heterogeneous and high-risk group of mothers and infants, those variables which appeared to be most predictive of maternal self-esteem were family support, parity, infant behavior and responsiveness and infant health. Additionally, maternal health and maternal perception of her baby were found in post hoc analyses to significantly predict maternal self-esteem.

While both studies clearly demonstrate the significance of infant health and family support in predicting maternal self-esteem, a comparison of the results of the two studies indicates that among the more high-risk and less healthy infants and mothers, there are a number of additional factors (parity, infant behavior, maternal health and maternal perception of her baby) which significantly impact on how good a mother feels about her ability to care for her baby.

In both populations, these variables appear to act synergistically in impacting on maternal self-esteem as for example, mothers who encounter health problems, also report receiving less family support. Mothers whose maternal self-esteem was lowered by any of this host of

biological and social factors appeared to be less available emotionally to their infants and less effective with them, disturbing not only their initial adaptation and relationships, but it is hypothesized their subsequent adaptation as well.

This configuration of factors could appear confusing to the practitioner as all factors seem to interact and effect each other. However, when maternal self-esteem is viewed as the psychological final common pathway mediating the effects of these factors, the overall picture becomes less confusing and the central question becomes what factors affect maternal self-esteem and what can be done to mitigate their effects in order to bolster maternal self-esteem and adaptation. Given this premise, many direct and indirect interventions are possible.

However, before delineating what early intervention support services should entail, a closer examination of those aspects of support which are most important and relevant must first be conducted. For example, is actual help in caretaking responsibilities a critical factor or is the family's attitude toward the mother and infant of more importance? Herzog (1979) has suggested that fathers who competed with the mother for the care and nurturing of the newborn interfered with maternal attachment as much as did fathers who withdrew and did not participate in caretaking responsibilities. Aug and Bright (1970) found that the person or persons in the family who provided support were not of critical importance to maternal attitudes as long as the support was clearly communicated to the mother. The key aspects of support that

were identified by Fiering and Taylor (1978) were resourcefulness, cooperativeness, respect, acceptance, and praising attitudes.

Also of interest was the finding in the first study of more healthy infants that Maternal Health, Family Income, Feeding Problems, and the Separation Factor were all highly correlated with the amount of Family Support a mother received. So for example, mothers of lower social-economic status tended to receive less family support. Of particular interest was the finding that mothers who encountered health problems either after delivery or during the first month, tended to receive less Family Support. It may be that when a mother encounters health problems of her own, she is unable to adapt positively to her role as mother. Sameroff (1975) suggests that "Even if all other factors are positive, none can operate if the mother is too involved with her own concerns to be able to focus on the child." When the mother is unable to focus on the child, she tends to receive less support, emotionally and physically, from the family. The findings from the post hoc analysis at Time 2 which found that mothers who had had Caesarean sections tended to have lower Maternal Self-Esteem one month after the baby's discharge lends further support to the hypothesis that the mother will not be able to focus her attention on the baby when she herself is feeling ill or stressed. It is of interest that despite the fact that a mother may have health problems of her own, she is expected to shift her attention to her infant if she is to be supported by the family. This conditional type of support has been reported in the literature (Blake, 1954). It was also observed anecdotally, that the hospital staff tended to

withdraw support when mothers complained of aches and pains or headaches. The general feeling was that there was little sympathy for a mother who did not feel able to care for her infant, unless the mother was extremely ill. Ironically, the more involved the mother was in caretaking, the more support she received both from her family and the hospital staff. In the same way, mothers who were separated from their infants for health reasons, and mothers who encountered feeding problems, received less family support. These findings are very important for being able to identify which mothers are in need of extra supportive services.

It would appear that the goal of early supportive intervention would be to assure a mother that she is or can be a competent caretaker of her infant. This would include preparing a mother for the tasks of caring for a child; being supportive and sympathetic to her problems and efforts, and reinforcing and praising her successes. The exact nature of such services which would be most effective is still an empirical question which should be explored in light of the finding that even in the context of normal, full-term infants, the factor which most successfully predicts of maternal feelings of competence during the first month after delivery is Family Support.

The other significant finding in the first study that Infant Health after delivery also predicts to maternal feelings of competence, also has important implications for early intervention. This finding suggests that even in cases of minor or transitory illnesses occurring during or shortly after delivery, a major goal of health practitioners

should be to help mothers to perceive their infant's health problems as temporary and as part of the normal continuum of developmental maturity. In many cases a child will outgrow such problems associated with prematurity, weight loss, feeding problems, and transitory respiratory problems. Mothers of infants with physical anomalies such as cleft palate or hip displacements can be helped to understand that these problems can be corrected. Additionally, health practitioners can help mothers to recognize and appreciate their infants strengths, both physically and behaviorally. In regard to maternal fears of their infant being "different", Sameroff (1976) has stated that "The impulse to treat these fears lightly or even to ignore them may not be helpful to a mother whose future attitudes toward the child may be strongly colored by her initial impressions." Such questions as to when to intervene and where to intervene have yet to be answered empirically. This study, however, suggests that intervention should occur during the first few days after delivery in those situations where an infant suffers even a minor health problem or when a family support system appears to be absent or negative in nature. The nature of this intervention should be to provide support and understanding and help mothers overcome their initial fears and anxieties concerning their ability to care for their infant. The effectiveness of such support services will have to be carefully evaluated in order to assure that the process of intervention itself does not create further problems by communicating to the mother that she is not doing an adequate job. However, it is doubtful that this would occur if intervention is directed towards providing support

rather than showing or telling a mother what she should be doing or feeling.

The transactional relationship between family support and the behavioral responsiveness of the infant further supports this model of intervention. Providing mothers with support soon after delivery and helping them to recognize and enjoy their infant's individual strengths and characteristics, should lead to increased interactions between mother and infant and increased sensitivity to the infants cues and behaviors. This sets up a positive reciprocal cycle whereby mothers who are more sensitive to their infant's behavior tend to elicit more responsive behaviors from their infants which reinforces their feelings of competence in their mothering ability and sets the state for a healthy mother-infant attachment. In fact, in a recent study, Ricks (1981) found that mothers of securely attached infants rated themselves significantly higher on self-esteem than did mothers of anxiously attached infants.

In the case of an infant who is less capable of signaling his/her needs and responding to his/her mother's caretaking efforts, continued follow-up care and support should help to prevent the development of a negative feedback cycle. As in the case of infants who have minor health complications, mothers of infants who are behaviorally less responsive can be assured that their infants behavior will change over time and they should be encouraged and supported in continuing to provide the attention and care needed by the infant.

The results of the second study confirm the hypothesis that mothers of high-risk, sick or premature infants have significantly lower maternal self-esteem than mothers of healthy infants. Again, the clinical implications for health practitioners suggests that when an infant is born with or develops any health complication, a major goal should be to address parental fears and guilt about their infant's health problems and to provide reassurance, understanding and support to parents during this very stressful and tumultuous time. Parents need to know and be reassured that they are not responsible for the premature birth of their infant or their infant's health problems.

A second major finding from the study was that the amount of emotional and physical support that the mother feels she received from the baby's father and her family strongly impacts on the mother's self-esteem and adaptation. Again, the clinical implications of this finding suggest that interventions can also be indirect by supporting family members as they support the mother.

The finding that mothers who are separated from their infant and mothers who have more health complications of their own feel that they receive less family support suggests that these mothers are particularly at risk and may be in need of extra support services. Whether support from health practitioners or parental support groups can effectively help to increase maternal adaptation still remains an empirical question which should be researched. Additionally, the finding that family support was still so significantly impacting on Maternal Self-Esteem one month after the baby's discharge from the hospital suggests that

particularly in the event of a baby with health complications, pediatricians and obstetricians should be alert to mothers' needs for continued follow-up support during this very vulnerable period of time.

A third major finding was that among this more high-risk group of mothers and infants, primiparous mothers had significantly lower Maternal Self-Esteem and appeared to require more family support. The clinical implications of this finding suggest that primiparous mothers are in need of more support in adjusting to the role of motherhood, particularly following the birth of a premature or sick baby. For primiparous mothers, the separation from their baby can be particularly stressful as these mothers, who already lack feelings of competence, have very limited opportunities to learn to read, predict and recognize their baby's salient behaviors and develop the interactive skills necessary to develop feelings of maternal competence.

However, the results of this study do not conclusively support the suggestions of previous research (Seashore et al. 1973; Klaus and Kennell, 1976) that these mothers should necessarily be provided with increased expectations and opportunities to immediately interact more with their infants in order to foster the infant's growth and development and the mother-infant relationship. The finding that mothers of sick and premature babies reported having significantly more health problems themselves and that maternal health complications significantly predicted to lower Maternal Self-Esteem, suggests that these mothers need first to recuperate from their own physical as well as emotional

trauma before being able to focus on their infant and devote themselves entirely to their infants.

Additionally, many of the mothers who had increased health problems also had had Caesarean section deliveries and yet hospital procedures placed demands on them to care for their infants which seemed not to fully take into consideration that they had undergone a major surgical procedure.

The apparent lack of support for unwell mothers may have to do with changes in views about mothering and new expectations that mothers should spend as much time after birth as possible with their infants (Klaus and Kennell, 1976). Hospital staffs across the country have tried to adapt to these new views about mother-infant bonding by encouraging extra contact between mothers and newborns but the results of this study suggest that by viewing Maternal Self-Esteem as the mediator of disturbances in maternal adaptation an alternative approach should be considered. Additionally, by viewing maternal adaptation from the perspective of Maternal Self-Esteem as opposed to from the "bonding" perspective presented by Klaus and Kennell (1976), many of the previous unexplained findings from the bonding literature become more clearly understood. For example, previous research (Klaus and Kennell, 1976) has found that the "bonding" of multiparous mothers is often greater than the bonding of primiparous mothers, even of those primiparous mothers given extra contact with their infants. From the perspective of Maternal Self-Esteem, multiparous mothers come to the delivery experience with a more stable sense of maternal self-confidence. Furthermore,

the encouragement of contact and caretaking by mothers and fathers of their ill newborns can be seen as providing them with a way of increasing their sense of effectiveness rather than bonding them to their infant.

However, the Maternal Self-Esteem view also suggests that if such initial contact with their ill infant exceeds their emotional or physical capacities or caretaking abilities, that a mothers' self-esteem will be lowered and her adaptation compromised. In other words, not all contact may be useful or effective. By thinking about the process of maternal adaptation in terms of Maternal Self-Esteem, this allows for the consideration of a broad range of variables which often occur long after birth as affecting maternal adaptation rather than considering only a limited range of events, such as early contact over a very limited period of time.

Two additional variables which were found to have a significant impact on Maternal Self-Esteem one month after the baby's discharge from the hospital were the baby's responsiveness and behavioral organization and the mother's perception of how bothersome her baby is compared to "normal" babies. This has implications for health practitioners who can help the mother and her family to understand the baby's behavior and course of development and to recognize their important role in facilitating the baby's development. Information concerning the normal development of premature babies could help parents know what to expect and to be able to anticipate what are "normal" delays and set-backs in the premature infant's development, as well as understanding how they can

best enhance their baby's development. The significant predictiveness of the Broussard Neonatal Perception Inventory and the Brazelton Exam suggest that these two measures may be useful screening measures in identifying those mothers and infants at risk for developmental problems.

Lastly, while mothers who were separated from their infants did tend to have lower Maternal Self-Esteem, separation, in and of itself, did not appear to be as significant a predictor of maternal adaptation as had been suggested by previous research. Other variables including parity, family support and infant behavior and responsiveness appear to have mediated the impact of separation. Most of the studies which have examined the effects of separation on the mother and infant have focused largely on the behavioral characteristics of the infants during mother-infant interactions and very little attention has been paid to the attitudes and feelings of mothers. Indeed, the role of fathers has been almost completely ignored.

The results of the present study provide a model whereby Maternal Self-Esteem can be viewed as the psychological final common pathway mediating the effects of many biological and social factors that affect a woman's adaptation to motherhood. The results of this study clearly suggest that events occurring during the newborn period and during the period when mothers are making the transition to parenthood impact on maternal feelings of competence and a mother's ability to care for her baby. It is suggested that the early disruption of the mother-infant relationship and maternal attitudes toward motherhood will have long

lasting effects on parental attitudes and behaviors toward their child as well as long lasting effects on a child's development. It therefore seems imperative that future research be conducted to further understand the attitudes and feelings of both mothers and fathers during the first postpartum months, how these feeling change and develop over the course of pregnancy, delivery and the child's development, what factors impact positively as well as negatively on these feelings and what are the effects of various early intervention strategies on the development of maternal and paternal self-esteem and parental adaptation.

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APPENDIX A
MATERNAL SELF-REPORT INVENTORY

MATERNAL SELF-REPORT INVENTORY

Please note how accurately the following statements describe how you feel. Read each item carefully and when you are sure you understand it, indicate your answer by drawing a circle around the answer which best expressed the degree to which the statement is true for you.

Rate each statement as follows:

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True

For example, circle CF if you feel that statement is completely false, circle MF if the statement is mainly false, circle MT if the statement is mainly true, and circle CT if the statement is completely true. If you are uncertain or feel that the statement is neither true nor false, then circle Un.

Please answer each item as honestly as you can, and work rapidly as first impressions are as good as any. Try to answer every question, and if in doubt, circle the answer which comes closest to expressing your feelings. Although some of the statements seem to be similar, they are not identical, and should be rated separately. All of your answers will be treated with complete confidentiality. There are no right or wrong answers, so please answer according to your own feelings. If you have any questions or comments to make, please feel free to note them at the end of the questionnaire. Your comments are very much appreciated.

Thank you very much.

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
1. I feel that being a mother will be a very rewarding experience.			CF MF Un MT CT	
2. Feeding my baby is fun.			CF MF Un MT CT	
3. I am quick to learn new things.			CF MF Un MT CT	
4. My baby is very fragile and I worry that I might be too rough with him/her.			CF MF Un MT CT	
5. I am dissappointed with the sex of my baby.			CF MF Un MT CT	
6. All in all, I'm quite satisfied with who I am.			CF MF Un MT CT	
7. I feel confident about my being able to satisfy my baby's physical needs.			CF MF Un MT CT	
8. I am very sensitive to disapproval.			CF MF Un MT CT	
9. I found the experience of labor and delivery to be one of the most unpleasant experiences I've ever had.			CF MF Un MT CT	
10. I have never felt that I was punished without cause.			CF MF Un MT CT	
11. I succeed at most things that I attempt.			CF MF Un MT CT	
12. I feel confident about being able to know what my baby wants.			CF MF Un MT CT	
13. I expect I will be at least as good a mother as my mother was.			CF MF Un MT CT	
14. I feel unable to give my baby the love and care he/she needs.			CF MF Un MT CT	
15. I do not mind having to sacrifice my own present activities in order to stay at home with my baby.			CF MF Un MT CT	
16. I think that I will be a good mother.			CF MF Un MT CT	

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
17. I'm an easy person to like.			CF MF Un MT CT	
18. I felt emotionally "empty" after delivering my baby.			CF MF Un MT CT	
19. I am confident that I will have a close and warm relationship with my baby.			CF MF Un MT CT	
20. I regard myself as a highly ethical person.			CF MF Un MT CT	
21. This is a very happy time in my life.			CF MF Un MT CT	
22. I don't have much confidence in my ability to help my baby learn new things.			CF MF Un MT CT	
23. I frequently do things that I later feel guilty about.			CF MF Un MT CT	
24. If it is true that breast feeding is important it is because it brings the mother and baby closer together.			CF MF Un MT CT	
25. I sometimes feel very angry when a baby won't stop crying.			CF MF Un MT CT	
26. I like the way I look.			CF MF Un MT CT	
27. I am not very good at getting people to do as I wish.			CF MF Un MT CT	
28. I was overjoyed when I first saw my baby.			CF MF Un MT CT	
29. Looking forward to having a baby gave me more pleasure than actually having one.			CF MF Un MT CT	
30. I am concerned about "losing my figure" after having had a baby.			CF MF Un MT CT	
31. I felt slightly depressed and "blue" after delivery.			CF MF Un MT CT	

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
32. I can handle almost any important problem I am faced with.			CF	MF Un MT CT
33. I have real doubts about whether my baby will develop normally.			CF	MF Un MT CT
34. I sometimes say things that are not completely true.			CF	MF Un MT CT
35. Self-control is no problem for me.			CF	MF Un MT CT
36. I think my baby is very beautiful.			CF	MF Un MT CT
37. I feel reasonably competent in taking care of my new baby.			CF	MF Un MT CT
38. I am an independent person.			CF	MF Un MT CT
39. I worry that feeding my baby will be a burden for me.			CF	MF Un MT CT
40. I tend to assume that people will not like me.			CF	MF Un MT CT
41. I was extremely pleased when I found out I was pregnant.			CF	MF Un MT CT
42. At elections I have sometimes voted for people about whom I know very little.			CF	MF Un MT CT
43. I have been endowed with a strong and healthy body.			CF	MF Un MT CT
44. Having to bathe my baby makes me very nervous since they are so hard to handle.			CF	MF Un MT CT
45. In general, I don't worry about my own health interfering with my ability to care for my baby.			CF	MF Un MT CT
46. My mother was rarely affectionate to me and I worry that I will not be able to be affectionate with my baby.			CF	MF Un MT CT

<u>CF</u> Completely False	<u>MF</u> Mainly False	<u>Un</u> Uncertain or Neither True or False	<u>MT</u> Mainly True	<u>CT</u> Completely True
47. I lack firm guiding principles.			CF MF Un MT CT	
48. I like myself.			CF MF Un MT CT	
49. I am worried that I will have difficulty changing my baby's diapers.			CF MF Un MT CT	
50. I am lacking in will power.			CF MF Un MT CT	
51. I look forward to taking my baby home.			CF MF Un MT CT	
52. I tend to be good at physical activities, such as dancing and sports.			CF MF Un MT CT	
53. I think I am at least as good looking now as I was before I got pregnant.			CF MF Un MT CT	
54. I would rather win than lose in a game.			CF MF Un MT CT	
55. I doubt that I will be able to satisfy my baby's emotional needs.			CF MF Un MT CT	
56. I found the delivery experience to be very frightening and unpleasant.			CF MF Un MT CT	
57. The thought of holding and cuddling my baby is very appealing to me.			CF MF Un MT CT	
58. I worry whether I am healthy enough to take care of new baby properly.			CF MF Un MT CT	
59. I have little respect for myself.			CF MF Un MT CT	
60. When I found out I was pregnant, I had mixed feelings about having a baby.			CF MF Un MT CT	
61. I often worry that I may be forgetful and cause something bad to happen to my baby.			CF MF Un MT CT	
62. I feel like I am (or will be) a very good mother.			CF MF Un MT CT	

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
63. I have at least as much self-control as most people.			CF MF Un MT CT	
64. I have no anxieties about all the things mother's have to do.			CF MF Un MT CT	
65. I become ill quite easily.			CF MF Un MT CT	
66. I feel emotionally prepared to take good care of my baby.			CF MF Un MT CT	
67. I have never felt like saying something that would hurt someone's feelings.			CF MF Un MT CT	
68. When I first saw my baby I was disappointed.			CF MF Un MT CT	
69. I feel that something I did during my pregnancy may have caused (or will cause) problems for my baby.			CF MF Un MT CT	
70. I have some unique contributions which I alone can make to my baby's life.			CF MF Un MT CT	
71. I am confident that I will be able to work out any normal problems I might have with my baby.			CF MF Un MT CT	
72. I am ashamed of my physical appearance.			CF MF Un MT CT	
73. I will not mind getting up in the middle of the night to feed my baby.			CF MF Un MT CT	
74. I am concerned that I will have trouble figuring out what my baby needs.			CF MF Un MT CT	
75. I missed the feeling of being pregnant after delivering my baby.			CF MF Un MT CT	
76. I feel I don't relate well to little babies.			CF MF Un MT CT	

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
77. I feel as though I have plenty of energy to take care of my baby.			CF MF Un MT CT	
78. I have a firm sense of what is right and wrong, and act accordingly.			CF MF Un MT CT	
79. When I was pregnant, I eagerly awaited the birth of my baby.			CF MF Un MT CT	
80. I worry about whether my baby will like me.			CF MF Un MT CT	
81. I feel guilty about bringing a baby into this troubled world.			CF MF Un MT CT	
82. I have an inferiority complex.			CF MF Un MT CT	
83. I feel competent at being able to feed my baby.			CF MF Un MT CT	
84. My mother was a very caring and loving person and I expect that I will also be a very loving mother.			CF MF Un MT CT	
85. I expect that I won't mind staying at home to care for my baby.			CF MF Un MT CT	
86. I do not like the way I look after having had my baby.			CF MF Un MT CT	
87. I sometimes doubt that anyone who really mattered to me could love me the way I am.			CF MF Un MT CT	
88. I found the delivery experience to be very exciting.			CF MF Un MT CT	
89. Others often follow my lead.			CF MF Un MT CT	
90. I feel like I am (or will be) a failure as a mother.			CF MF Un MT CT	
91. I need more time to adjust to my baby.			CF MF Un MT CT	

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
92. I am concerned about whether my baby will develop normally.			CF	MF Un MT CT
93. Most people like me.			CF	MF Un MT CT
94. I am not very good at calming my baby.			CF	MF Un MT CT
95. I took good care of myself during my pregnancy.			CF	MF Un MT CT
96. I never feel like spanking a crying baby.			CF	MF Un MT CT
97. I'm not good at influencing people.			CF	MF Un MT CT
98. I doubt that my baby could love me the way I am.			CF	MF Un MT CT
99. It really makes me feel depressed to think about all there is to do as a mother.			CF	MF Un MT CT
100. My father made me feel very loved, and I think I too can show my baby love and affection.			CF	MF Un MT CT
101. I often worry about my physical health.			CF	MF Un MT CT
102. I am enthusiastic about taking respon- sibility for caring for my baby.			CF	MF Un MT CT
103. I worry that I will not know what to do if my baby gets sick.			CF	MF Un MT CT
104. I have always been courteous, even to people who have disagreeable to me.			CF	MF Un MT CT
105. It is difficult for me to know what my baby wants.			CF	MF Un MT CT
106. I feel that I am too good a mother to ever lose my temper with my baby.			CF	MF Un MT CT

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
107. I found the whole experience of labor and delivery to be one of the best experiences of my life.			CF MF Un MT CT	
108. I tend to be awkward in most physical activities.			CF MF Un MT CT	
109. I think I will enjoy my baby more when he/she is older and has a personality of his/her own.			CF MF Un MT CT	
110. I am afraid I will be awkward and clumsy when handling my baby.			CF MF Un MT CT	
111. I am not a nice person.			CF MF Un MT CT	
112. I looked forward to breast feeding my baby.			CF MF Un MT CT	
113. I feel that I am a physically attractive person.			CF MF Un MT CT	
114. I feel that I have lots of love to give to my baby.			CF MF Un MT CT	
115. I feel confident about being able to teach my baby new things.			CF MF Un MT CT	
116. I feel that my parents did a very bad job raising me and I am sure that I will not make the same mistakes with my baby.			CF MF Un MT CT	
117. I have a low opinion of myself.			CF MF Un MT CT	
118. I am confident that my baby will be strong and healthy.			CF MF Un MT CT	
119. I am frightened about all the day-to-day responsibilities of having to care for my baby.			CF MF Un MT CT	

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
120. I found labor to be very frightening.			CF	MF Un MT CT
121. I am concerned about whether my baby will develop normally.			CF	MF Un MT CT
122. I am bothered by my lack of self-control.			CF	MF Un MT CT
123. I am not easily dominated by others.			CF	MF Un MT CT
124. It will take me a long time to get back my energy so that I can properly care for my baby.			CF	MF Un MT CT
125. I have great expectations for what my baby will be like.			CF	MF Un MT CT
126. I am worried about being able to feed my baby properly.			CF	MF Un MT CT
127. There are very few things that I can honestly say I am good at.			CF	MF Un MT CT
128. When I was pregnant, I had frightening fantasies that I would deliver an abnormal baby.			CF	MF Un MT CT
129. I am well coordinated physically.			CF	MF Un MT CT
130. I felt emotionally prepared for my baby's birth.			CF	MF Un MT CT
131. I doubt that my figure will ever look as good after having had a baby.			CF	MF Un MT CT
132. I have sometimes been irritated by people asking favors of me.			CF	MF Un MT CT
133. I am afraid that someday I will hurt my baby.			CF	MF Un MT CT
134. I do not find being a mother to be as fulfilling an experience as I thought it would be.			CF	MF Un MT CT

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
135. No matter who I'm talking to, I'm always a good listener.			CF MF Un MT CT	
136. As long as I love my baby, it doesn't matter if I breast feed or bottle feed.			CF MF Un MT CT	
137. I feel that I am a person of worth.			CF MF Un MT CT	
138. I did not like my mother and I worry that my baby will not like me.			CF MF Un MT CT	
139. I feel somewhat anxious about all the things a mother must do.			CF MF Un MT CT	
140. I always practice what I preach.			CF MF Un MT CT	
141. I feel that I will do a good job taking care of my baby.			CF MF Un MT CT	
142. I do not feel emotionally secure enough to care for my baby by myself.			CF MF Un MT CT	
143. I know enough to be able to teach my baby many things which he/she will have to learn.			CF MF Un MT CT	
144. I have sometimes felt resentful about not getting my way.			CF MF Un MT CT	
145. I felt I looked very good during my pregnancy.			CF MF Un MT CT	
146. I worry about being able to fulfill my baby's emotional needs.			CF MF Un MT CT	
147. My inability to resist temptation is a source of concern for me.			CF MF Un MT CT	
148. I am confident that my baby will love me very much.			CF MF Un MT CT	
149. I have mixed feelings about being a mother.			CF MF Un MT CT	

150. Presently, my greatest concern is:

Comments:

APPENDIX B

THE FAMILY SUPPORT QUESTIONNAIRE

APPENDIX B

FAMILY SUPPORT SCALE

Please note how accurately the following statements describe how you feel. Read each item carefully and when you are sure you understand it, indicate your answer by drawing a circle around the answer which best expressed the degree to which the statement is true for you.

Rate each statement as follows:

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True

For example, circle CF if you feel that statement is completely false, circle MF if the statement is mainly false, circle MT if the statement is mainly true, and circle CT if the statement is completely true. If you are uncertain or feel that the statement is neither true nor false, then circle Un.

Please answer each item as honestly as you can, and work rapidly as first impressions are as good as any. Try to answer every question, and if in doubt, circle the answer which comes closest to expressing your feelings. Although some of the statements seem to be similar, they are not identical, and should be rated separately. All of your answers will be treated with complete confidentiality. There are no right or wrong answers, so please answer according to your own feelings. If you have any questions or comments to make, please feel free to note them at the end of the questionnaire. Your comments are very much appreciated.

Thank you very much.

THE FAMILY SUPPORT SCALE

<u>CF</u>	<u>MF</u>	<u>Un</u>	<u>MT</u>	<u>CT</u>
Completely False	Mainly False	Uncertain or Neither True or False	Mainly True	Completely True
1. My baby's father was very happy with the sex of our baby.			CF MF Un MT CT	
2. I expect my relatives will be proud of me and my new baby.			CF MF Un MT CT	
3. I am sure that my baby's father really wants this baby.			CF MF Un MT CT	
4. I have someone close to me with whom I can share my concerns.			CF MF Un MT CT	
5. When I bring my baby home I will have enough help in caretaking and housework responsibilities.			CF MF Un MT CT	
6. I have not been able to share my concerns about my baby with anyone close to me.			CF MF Un MT CT	
7. I worry about whether my house is large enough for my baby.			CF MF Un MT CT	
8. I am very satisfied with my relationship with my baby's father.			CF MF Un MT CT	
9. I am not worried about having enough money to care for my baby.			CF MF Un MT CT	
10. This is a very stressful time in my life.			CF MF Un MT CT	
11. I am worried that I will be criticized for not taking proper care of my baby.			CF MF Un MT CT	
12. I am concerned that my baby's father will pay more attention to the baby than to me.			CF MF Un MT CT	
13. I expect I will have plenty of emotional support while taking care of my baby.			CF MF Un MT CT	
14. I am concerned that my relatives will be disappointed with my baby.			CF MF Un MT CT	

15. My baby's father needs more time to adjust to the baby.

CF MF Un MT CT

16. I think most fathers are more excited and helpful in taking care of their new baby than my baby's father.

CF MF Un MT CT

APPENDIX 3

HOME INTERVIEW QUESTIONNAIRE

HQMS INTERVIEW

INTERVIEWER _____

DATE _____

TIME STARTED _____

CODE _____

TIME ENDED _____

C.M.C. YES _____ NO _____

FREQUENCY OF
Mr., Ms., E., B.,

QUESTIONS

1. Since we last talked with you in the hospital, have there been any changes in your:
 - a.) Name _____
 - b.) Address _____
 - c.) Phone _____
 - d.) Marital Status _____
2. Is this your first baby? _____
3. Were you working before the baby was born? _____
4. How much have you worked since then? _____
5. How did (do) you feel about stopping? _____
6. How many hours a week did (do) you work? _____
7. What did (do) you do? _____
8. How many years of schooling have you completed? _____
(If married or living with baby's father)
9. Is your husband/baby's father presently employed? _____

FREQUENCY OF
M+, M-, B+, B-

QUESTIONS

10. How many years of schooling has he completed ? _____
11. What is your total family income ? _____
12. We are interested in all people living in the baby's home. Since you left the hospital has anyone moved in or out of your home ?
YES _____ NO _____
 MOVED IN _____ MOVED OUT _____
13. If yes what is the relationship of that (those) person(s) to your child? _____
Age _____
14. Presently, how many people are living in your household ? (DO NOT include the baby and yourself) _____
15. What are the relationships of these people to your new infant ? (Ages)

16. Does having other people in the house make your job as a mother easier?

17. Now that you've had a chance to spend a few weeks with your new baby, how do you feel ? _____

18. What, if any, are your major concerns ? _____

FREQUENCY OF
M+, M-, B+, B-

QUESTIONS

19. Could you describe what a typical day is like for you? (Prompt with- did baby wake you up ?) _____

20. Would it be possible for you to roughly break down into hours/minutes how you spend your day:

Cleaning _____

Shopping _____

Personal grooming _____

Sleep _____

Cooking _____

General caretaking of baby (Bathing, Feeding, Diapering) _____

Playing with baby _____

Total time with other children _____

Time with Friends, Relatives, Neighbors not living in house _____

Time with Friends, Relatives living in house _____

Other (Specify) _____

21. What do you enjoy most about being a mother ? _____

22. What is the hardest part about being a mother ? _____

We're also interested in everyone who takes care of the baby.

23. Who takes care of him/her most of the time (60% or better) _____

Frequency of
M-, M=, B+, B-

QUESTIONS

24. Aside from #23 who takes care of the baby the most ? _____

Relationship _____

25. Which of the following does "X" do in connection with taking care of the baby ? (Record more than 1 if applicable)

Changing Diapers _____

Feeding _____

Bathing _____

Playing _____

Other _____ (Describe) _____

26. Who makes the routine decisions concerning the baby ? (ex. decisions about feeding, sleeping routines) _____

27. What decisions like calling a doctor or a babysitter ? _____

28. How about decisions not concerning the baby ? _____

29. Have you and/or "X" been able to leave the house and spend time away from the baby yet ? _____

30. Did you have trouble finding a baby-sitter ? _____

31. Does the baby sleep in your room, or does he/she have their own room ? _____

32. What kinds of toys (if any) does the baby have yet ? _____

33. Health-wise, how have you been since you left the hospital ?

Colds _____

FREQUENCY OF
M+, M-, B+, B-

QUESTIONS

Headaches _____

Specific Illness _____

Other _____

34. Have you been to the Doctor at all, for any reason ? _____

35. How about the baby's health ? _____

36. Has the baby had to see the Doctor for any reason ? _____

Now I'd like to ask you some specific questions about the baby's sleeping and eating habits.

37. What is the usual amount of time the baby spends sleeping per 24 hour day ? _____

38. How is the sleep time distributed over the 24 hour period ? _____

39. Is the baby a light or a deep sleeper (as a general rule) ? _____

40. Does the baby, generally, fall asleep by him(her)self? Or do you have to rock, talk, sing, etc. the baby to sleep ? _____

41. How does the baby behave when he(she) first wakes up ? _____

42. Do you breast feed or bottle feed the baby ? _____

43. How is the baby's appetite ? _____

44. Does the baby have any known allergies ? _____

45. Is the baby on any particular feeding schedule ? _____

FREQUENCY OF
M+, M-, B+, B-

QUESTIONS

46. Is the baby easily distracted during feeding ? _____

47. How do you determine when the baby's hungry ? _____

48. How do you determine when the baby's full ? _____

While it is not possible for you to know the exact age (I.E. Month, day and year) that your baby will begin to walk, talk, etc. We'd like to know approximately, you expect the baby to :

50. Begin to smile in response to specific things, like when they see you or you show them a stuffed animal. _____

51. When do you think the baby will begin walking without any support or help ? _____

52. How about when the baby will start to coo or babble (any sounds other than crying) ? _____

53. When do you think the baby will be able to see clearly and be aware of her/his surroundings ? _____

54. When do you think the baby will be able to sit up, without being held or supported (for 2-5 minutes) ? _____

55. At what age do you think that you'll begin to toilet train the baby ? _____

56. At what age do you think the baby will start to vocalize one syllable ? _____

FOR INTERVIEWER:

1. What was your general impression of the interview ? _____

2. What did you think the mother stressed throughout the interview ?
Herself _____
Baby _____
Other (Specify) _____

3. Were there any unusual/interesting events during the home visit ?

4. Overall, how would you rate the mother's self-confidence :

HIGH _____ MEDIUM _____ LOW _____

What did you base your rating on ? (Be specific) _____

