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The Relationship of Maternal Age, Quickening,
and Physical Symptoms of Pregnancy on the
Development of Maternal-Fetal Attachment

By

Carclyn Wenrick Lerum

A Graduate Project

Presented to the Faculty of the Graduate College
In the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Master of Science

University of Nebraska Medical Center
College of Nursing

Under the Supervision of Geri LoBiondo-Wood, RN, PhD

Running Head: ATTACHMENT

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Abstract

A mother's attachment to her child has been noted to be an integral part of that child's development and socialization. Past research has focused on factors that impact on this relationship, notably bonding that occurs in the immediate postpartum period. Recently, the prospect of maternal-fetal attachment has been proposed. The Maternal-Fetal Attachment Scale has been developed and tested to evaluate the existence and progression of maternal feelings toward the unborn child. The present study investigated the relationship between three factors that could influence maternal-fetal attachment: (a) maternal age, (b) the experience of quickening, and (c) the physical symptoms of pregnancy. Based on this rationale, the following hypotheses were tested:

1. There will be a relationship between maternal age and maternal-fetal attachment.
2. There will be a relationship between the physical symptoms of pregnancy and maternal-fetal attachment.
3. Maternal-fetal attachment will be significantly higher for those pregnant women after experiencing quickening than for those pregnant women prior to experiencing quickening, regardless of age or physical

symptoms of pregnancy. A convenience sample of 80 pregnant women volunteered to fill out two questionnaires; the Maternal-Fetal Attachment Scale developed by Cranley (1981), and the Pregnancy Symptoms Checklist developed by Leifer (1977). Subjects ranged in age from 18-38 with a mean age of 24.9 years. Forty-seven percent were primigravidas and all but one had graduated from high school. Hypotheses were analyzed using the SAS computer program package. Hypotheses 1 and 2 were analyzed using the Pearson product moment correlation coefficient statistical test, a parametric test which reflected the interval and ratio levels of data acquired. Hypothesis 3 was analyzed using the Spearman's rho correlational statistical test reflecting the ordinal data acquired. A significance level of .05 was used. Hypotheses 1 and 2 were not supported. Hypothesis 3 was supported. Quickening did produce significant results on the development of maternal-fetal attachment (at the $p < .0001$ level). Analysis of additional data revealed significance at the $p < .0001$ level for the effects of frequency and degree of perceived fetal movement on maternal-fetal attachment. This added validity to the results found for Hypothesis 3. The effects of educational level, gravity, marital status, and marital length revealed no

significant relationships. Income level was negatively correlated at the $p < .05$ level, and the relationship of ultrasounds and a planned pregnancy were significantly correlated with maternal-fetal attachment at the $p < .01$ level.

CHAPTER I

Introduction

The Problem

In the past 25 years, increasing attention has been paid to the bond which occurs between mother and newborn infant. The process of bonding is called attachment, and fostering its development has become a central issue for modern obstetrical practices. As early as the 1950's, research was being conducted on attachment. Bowlby (1958) referred to attachment as any form of behavior that results in a person's attaining or retaining proximity to some other preferred individual who is usually considered stronger and/or wiser. Klaus and Kennell (1976) added the element of time and referred to the attachment process as that unique relationship between two people that is specific and endures over time.

It has been assumed by many of the attachment theorists that this phenomenon is a process with its roots in the immediate postpartum period. The idea has been conveyed that if attachment levels are to be obtained (thereby marking that relationship for optimum nurturing), immediate postpartum interaction must be fostered. Another view implies that if mother and child are separated immediately after birth, there is a high

risk for suboptimum bonding which could lead to poor parent-child relationships.

Bibring (1959) and Deutsch (1945) conducted research on pregnant women and the tasks they felt these women needed to accomplish to develop maternal feelings toward the growing fetus thereby maintaining psychological health. Rubin (1967) also felt there were tasks of pregnancy which she detailed in descriptive studies. With mastery of the tasks, she felt the gravida could proceed on to the security of maternal-role attainment.

Subsequent research has addressed and demonstrated that perhaps there is some bonding/attachment that takes place prior to birth between mother and fetus (Carter-Jessop, 1981; Cranley, 1981; LoBiondo-Wood, 1985). The preceding research demonstrated that although there is a qualitative change in the mother's relationship with her infant at the time of birth, it is by no means the beginning of their relationship. Since it is felt that many variables may impact on the mother-infant relationship (marital status, age, social support, etc.), it is also important to understand what factors, if any, impact on maternal-fetal attachment. LoBiondo-Wood (1985) studied the relationship of pregnancy symptoms to maternal-fetal attachment. While no

relationship was found, it was noted that methodological considerations could have had a bearing on the findings and therefore recommended replication. This study, then, has been undertaken to determine if the physical symptoms experienced by a pregnant woman and the age of the pregnant woman impact upon the maternal-fetal attachment she experiences during her pregnancy. LoBiondo-Wood (1985) found a significant increase in maternal feelings after quickening. This study will also seek to replicate those findings in light of pregnancy symptoms and maternal age.

Problem Statements

1. In pregnant women, is there a relationship between the age of the pregnant woman and maternal-fetal attachment?
2. In pregnant women, is there a relationship between the physical symptoms of pregnancy and maternal-fetal attachment?
3. In pregnant women, is there a difference in maternal-fetal attachment before and after quickening?

Definitions

Pregnancy. The condition of having a developing fetus in the uterus. The average duration is 40 weeks or 280 days. Pregnancy will be validated by a health care provider's physical examination (example:

assessment of cervical changes) or a positive pregnancy test (Pritchard, McDonald, & Gant, 1985).

Physical symptoms of pregnancy. The physical symptoms of pregnancy are the subjective signs, changes, and symptoms most often felt by a pregnant woman. These symptoms have commonly been referred to as presumptive evidence of pregnancy and include (a) fatigue, (b) nausea with or without vomiting, (c) changes in urination, and (d) breast changes (Pritchard, McDonald, & Gant, 1985) and will be measured by the Symptom Checklist (Leifer, 1977).

Physical symptoms of pregnancy. The sensation of fetal movement felt by a pregnant woman, usually between the 16th and 20th weeks of pregnancy (Pritchard, McDonald, & Gant, 1985). Quickening will be measured by self-report.

Maternal-fetal attachment. The extent to which women engage in behaviors that represent an affiliation and interaction with the unborn child (Cranley, 1981). The aspects of the interaction between mother and fetus are identified and designated as behaviors that represent affiliation and interaction with the unborn child and will be measured by the Maternal-Fetal Attachment Scale (Cranley, 1981).

Delimitations

The study will be limited to women 18 years of age and older since adolescents still have age-specific developmental tasks to work through in addition to those of pregnancy, which need to be addressed separately. Subjects must be able to speak, read, and write English and must have had uncomplicated pregnancies. Both primigravidas and multigravidas will be studied. Subjects will be of predominately middle-class socioeconomic background.

Significance/Theoretical Rationale

This study is based on the theoretical frameworks of pregnancy tasks and conflicts, maternal-infant attachment, and maternal-fetal attachment. Pioneers of pregnancy tasks and conflicts include Bibring (1959), Deutsch (1945), Rubin (1967), and Tanner (1969). Pioneers of attachment theory include Bowlby (1958, 1977), and Klaus and Kennell (1976, 1982).

In the late 1950's and early 1960's, Bibring (1959) began publishing her works on the maternal tasks of pregnancy. She, like her predecessor Deutsch (1944, 1945), saw pregnancy as a crises situation due to the profound endocrine, somatic, and psychological changes. These crises represent important biological developmental steps that confront the individual as

tasks. Rubin (1967) discussed and tested her theory of maternal role attainment and how pregnancy tasks impacted upon motherhood. She stated that there are four broad interdependent areas of pregnancy work for the gravida: (a) seeking safe passage for herself and her child through pregnancy, labor, and delivery; (b) ensuring the acceptance of the child she bears by significant persons in her family; (c) binding-in to her unknown child; and (d) learning to give of herself. Rubin (1981) felt the pregnant woman worked through these tasks in a concurrent manner, while Colman and Colman (1971) and Tanner (1969) maintained that tasks were worked on in a hierarchical fashion. Tanner (1969) viewed pregnancy not as a crisis, but as a developmental process with specific psychological tasks that must be achieved for optimal outcome of the experience and integration into the total life process. She (Tanner, 1969) saw three tasks of pregnancy: (a) incorporation and integration of the fetus as in integral part of the woman, (b) perception of the fetus as a separate object, and (c) establishing a caretaking relationship with the infant. Colman and Colman (1971) named these three tasks incorporation, differentiation, and separation.

Impasses in task accomplishment have been related to inner conflicts. Bibring (1959) stated that these

tasks seem to revive and unsettle psychological conflicts of earlier developmental periods requiring new and different solutions. Deutsch (1945) stated that each woman brings into pregnancy certain emotional factors and conflict situations which may affect both her physical and psychological condition as a whole. Rubin (1967) held that an impasse in any one task area seems to be directly related to the abandonment of the pregnancy as in abortion or prematurity, or to severe stress in maintaining the pregnancy as in toxemia. Examples of conflicts cited by authors include unresolved feelings with the pregnant woman's own mother (Arbeit, 1976; Colman & Colman, 1971; Robertson, 1946), sexual frigidity (Robertson, 1946), very young or very old maternal age (Arbeit, 1976), wanting and not wanting the pregnancy simultaneously, and poor identification with the feminine role (Colman & Colman, 1971). Some pregnancy's associated physical symptomatology (nausea, vomiting, fatigue, insomnia), while having a strong physiological etiology, have also been attributed to a psychogenic overlay involving the working through of the above mentioned conflicts (Colman & Colman, 1971; Leifer, 1977; Robertson, 1946). Leifer (1977) stated that those women who indicate having a high degree of symptomatology, especially in the later stages of

pregnancy, are associated with having more negative attitudes toward pregnancy. Leifer (1977) further stated that pregnant women who experience considerable somatic disturbance during pregnancy are less satisfied with their bodies, are more negative or ambivalent about being pregnant, and report having stress during their menstrual periods.

Closely tied with pregnancy tasks and conflict theories are those of attachment. In 1958, Bowlby presented his theory on attachment defining it as that behavior which results in one person attaining proximity to another preferred individual who is usually considered stronger and/or wiser. Bowlby's (1958, 1977) works centered on the mother-figure/infant interactions with emphasis on the resulting behaviors of the child. He argued that many forms of psychiatric disturbance could be attributed either to deviations in the development of attachment behavior, or more rarely, to failure of its development. He (Bowlby, 1958) pointed out that the mother provides certain behaviors, other than caretaking, that lead to attachment of one to the other and to a sense of security in that young individual. Bowlby (1977) attested that there was a strong causal relationship between an individual's

experiences with his parents and his/her capacity to make affectional bonds during the life cycle.

In the 1960's, Klaus and Kennell (1976) began their work on attachment/bonding behaviors. They emphasized the development of the maternal role. Their works were based on abused children who had not been with their parents immediately after birth, mourning of parents for dead fetuses, premature infants and their parents, and animal bonding behaviors. They (Klaus & Kennel, 1976) felt there was a critical time for the development of attachment and postulated that if mother and child could be left together immediately after birth to touch and interact, this would trigger maternal feelings that would enhance the mother-infant relationship.

Despite the value of this theory and the resulting humanizing of obstetrical practices, there were those who felt that the beginnings of attachment began much earlier and the relationship quality did not hinge upon a few moments or days immediately after birth (Goodman & Taylor, 1979). If one scrutinizes the literature, much of it does address the mother coming to terms with and learning to love her unborn child. The tasks of pregnancy involve the woman's learning to incorporate the fetus within herself, then to differentiate it as a

unique human being, and, finally, to learn to figuratively separate from it and care for it.

From the aforementioned theorists, the concept of maternal-fetal attachment was derived. Cranley (1981) defines the process of maternal-fetal attachment as the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child. She developed the Maternal-Fetal Attachment Scale which empirically tests the existence of maternal behaviors toward the unborn baby. In her initial study, she postulated but did not test the possibility of a developmental sequence of the emergence of the behaviors. LoBiondo-Wood (1985) agreed with this possibility, tested it, and found a significant increase in attachment behaviors at the time of quickening, thus lending reliability to the concept of maternal-fetal attachment.

From these theories came the conception for this study--investigating if maternal age and physical symptoms of pregnancy relate to the development of maternal-fetal attachment. As stated earlier, much of the research done to date on attachment behaviors centers on the newborn and his or her parents, thus negating the importance or even existence of attachment throughout pregnancy where epigenesis of maternal

feelings may indeed lie. Nursing research into the variables that impact on this attachment is needed since approximately one to two million mothers experience difficulty with the maternal role as evidenced by the number of abused or neglected children reported each year (Mercer, 1981). Early detection of mothers most at risk for poor fetal attachment may make a decided difference in supportive nursing interventions and, hopefully, in the outcomes of these pregnancies. While specific nursing interventions for those most at risk for poor maternal-fetal attachment are not the purpose of this study, its completion will help lay the groundwork for later research and possible supportive interventions.

Hypotheses

1. There will be a relationship between maternal age and maternal-fetal attachment.
2. There will be a relationship between the physical symptoms of pregnancy and maternal-fetal attachment.
3. Maternal-fetal attachment will be significantly higher for those pregnant women after experiencing quickening than for those pregnant women prior to experiencing quickening, regardless of age or physical symptoms of pregnancy.

CHAPTER II

Review of the Literature

The focus of this study is on maternal-fetal attachment and how the variables of maternal age and physical symptoms impact upon it. The areas of literature which are relevant to the study include the developmental tasks and psychological conflicts of pregnancy, physical transitions in pregnancy, attachment, and maternal-fetal attachment.

Psychological Adaptation and Transition in Pregnancy

"Pregnancy has been called the fulfillment of the deepest and most powerful wish of a woman, an expression of fulfillment and realization, and a creative act which affords many women the opportunity to explore new directions in their lives" (Nadelson, 1978, p. 10). At the same time, there are often feelings of hesitancy because pregnancy is a turning point in life. No longer can the expectant woman be only responsible for herself. From now on, she will be responsible for another completely dependent human being. Pregnancy requires adaptation which enables growth and maturation to occur but may be stressful for a woman who, for the first time, must meet the challenges of pregnancy and the subsequent experience called "mothering" (Nadelson, 1978).

For these reasons, many authors (Bibring, 1959; Colman & Colman, 1971; Nadelson, 1978) have referred to pregnancy as a crisis time in a woman's life. Bibring (1959), one of the first to term it a crisis, asserted that the time of pregnancy is a period of crisis like puberty or menopause involving profound psychological, as well as somatic changes. Colman and Colman (1971), basing their works on anecdotal studies, suggested that the psychological changes that take place after conception might best be thought of as an altered state of consciousness; the inner world of the pregnant woman changes. They (Colman & Colman) felt that all pregnant women participate in an altered emotional state brought on by extreme joy at being able to conceive on one hand, and on the other, fear and anxiety of the adaptation that will have to take place. Nadelson (1978) compared the critical period of pregnancy to one of Erikson's (cited in Nadelson, 1978) developmental crisis. In doing so, she saw that a primary aspect of coping in pregnancy was that it revives psychic conflicts of previous developmental phases often enabling new solutions to be found and psychological growth to occur.

Others believe that pregnancy is more of an expected life event (Neugarten, 1976; Tanner 1969; Zajicek, 1981) rather than a crisis. Tanner (1969)

believed pregnancy to be a developmental process in which "physiologic changes and their psychologic counterparts (which are stimulated by these changes) are integrated to enable the individual to progress from one phase of life to another (p. 49)." Neugarten (1976) stated that many of life's events do not constitute crises or traumatic events that trigger mental illness or destroy the continuity of self. But she does say that at these turning points, the individual takes on new roles in the family and thus, status in relation to other family members is altered. Zajicek (1981) saw pregnancy as an important transitional period in the female life cycle in which a high degree of wish fulfillment and need gratification is experienced in conjunction with a certain amount of conflict and stress.

Be it crisis or developmental process, pregnancy clearly represents a turning point in the life of a woman (Nadelson, 1978). She cannot be a single unit again (Bibring, 1961). She is making an irrevocable move from being an independent person to becoming a mother with a lifetime responsibility for another human being.

In adjusting to pregnancy and hence, to the maternal role, pregnancy tasks must be successfully

achieved for the individual to attain a satisfactory emotional adjustment (Tanner, 1969). Bibring (1959) viewed tasks of pregnancy in relationship to the crises they represented. These crises, she stated, represent important biological developmental steps and have in common a series of characteristic psychological phenomena. She based her assumptions on the theory that there were new and increased libidinal and adjunctive tasks that confront the individual often diametrically opposed to the central tasks and functions of the preceding phases. She went on to conceptualize two tasks of pregnancy. In the first, the woman must accept the intrusion of the sexual partner and incorporate the significant representation of him (impregnation resulting in a foreign body) into herself. With quickening, the second task of adjustment sets in; a state of growing self-cathexis where the woman perceives the fetus as another separate object thus, slowly preparing herself for the delivery and anatomic separation. If these tasks are accomplished successfully, Bibring (1959) states that the woman will realize the child, though separate, will always remain part of herself, part of the outside world, and part of her sexual mate.

Best known for the tasks of pregnancy is Rubin (1967). She (Rubin, 1967) discussed and tested her theory of maternal role attainment. Most of Rubin's works were based on longitudinal small sample studies. Despite methodological flaws, she built a foundation of maternal-role attainment based upon theoretical formulations of pregnancy. She states there are four broad interdependent areas of pregnancy work for the gravida: (a) seeking safe passage for herself and her child through pregnancy, labor, and delivery; (b) ensuring the acceptance of the child she bears by significant persons in her family; (c) binding-in to her unknown child; and 4) learning to give of herself. She goes on to say that an impasse in any one task area seems to be directly related to the abandonment of the pregnancy as in abortion or prematurity, or to severe stress in maintaining the pregnancy as in toxemia.

Numerous psychological conflicts may serve as impasses to successful task completion. Bibring and Valenstein (1976) stated that the tasks of pregnancy seem to revive and unsettle psychological conflicts of earlier developmental periods requiring new and different solutions. Deutsch (1945) stated that each woman brings into pregnancy certain emotional factors and conflict situations which may affect both her

physical and psychological condition. Deutsch (1945) and Bibring and Valenstein (1976) spoke of the psychological health that was to be gained by successful resolution of the conflicts and the working through of tasks. Tanner (1969) stated that difficulties arise in achievement of tasks; the woman who did not achieve them would not progress in resolution of the disequilibrium of pregnancy, would be unprepared for delivery and anatomic separation, and would not be ready for establishing the caretaking relationship with the infant.

Several specific conflicts have been mentioned in the literature. Zuckerman (1974) pointed out eight such conflict areas in her study on body symptomatology in pregnancy in which she studied 36 white, married primigravidas. The conflict areas are (a) body image problems associated with the acceptance of the physical changes involved accompanied by fears of body damage and vulnerability, (b) feared loss of dependency associated with the assumption of the maternal role, (c) separation fears associated with delivery and fears related to being "put out" and the loss of control this entails, (d) hostility toward the impregnating male and the wish-fear dilemma associated with possible abandonment, (e) concern with her adequacy as a mother, (f) acceptance of

fetus as a separate being, (g) role conflict with respect to changes in life-style, and (h) concerns about how others view the pregnant woman. Colman (1969) suggests that shifting id-ego relationships during the pregnancy crises are responsible for the emotional changes experienced by the gravida.

Various authors point out other variables that may lead to poor adaptation of the maternal role during pregnancy. Grossman, Eichler, and Winickoff (1980) found that anxiety, age of mother (very old or young), marital dissatisfaction, and lack of social support from another woman add to the list of influences on poor adaptation. However, their research was based on open-ended interviews of pregnant women. Probabilities, total sample size, methodology, and data analysis were not discussed thus making conclusions from their data difficult to interpret. Friedman (1980) reconfirmed that marital satisfaction was indeed a determinant for later anxiety and psychosomatic symptoms in pregnancy when she studied a sample of ten married couples expecting their first child. Fagley, Miller, and Sullivan (1982) tested 1,306 primigravidas using three psychological tests and found that stress, symptoms proneness, and level of psychological upset were variables that could effect pregnancy adaptation ($p <$

.05). Despite some methodological flaws, these authors support Nadelson's (1978) postulations that such variables as extremes in maternal age, familial diseases, past obstetrical problems, a history of maternal deprivation or loss, and previous psychiatric disturbances, as well as unmarried status as contributing to the conflicts experienced by the pregnant woman.

In 1980, Glazer reported a difference in concerns expressed by pregnant women according to trimester. She studied clinic and private obstetrical patients using the Taylor Manifest Anxiety Scale. In the first trimester, concern was centered around weight gain, normalcy of the baby, and medical care; in the second, weight gain, childbirth, and subsequent pregnancies; in the last, primarily on the effects of childbirth, finances, and other family members' reactions. Clinic patients had significantly higher anxiety levels than private patients ($p < .001$). Mercer (1981) described a theoretical framework of factors that impact on the maternal role and found maternal age to be a primary determinant. She stated that although the transition to motherhood is accepted as stressful for all ages, the twenties have been considered as the ideal physiological age, and the studies comparing women in their twenties

with younger mothers suggest they have a greater psychosocial readiness for mothering. The first-time mother in her thirties, Mercer (1981) theorized, has greater potential for greater maturity and achievement of more roles apart from mothering; however, possibly has higher morbidity rates and higher expectations for herself in the maternal role that could hamper her transition.

Physical Adaptations of Pregnancy

Grossman, Eichler, and Winickoff (1980) have postulated that certain pregnancy related symptoms may indicate the gravida is expressing and working through some of the inevitable conflicts of pregnancy. However, the literature is divided on how such pregnancy symptoms affect maternal role attainment. One side holds that the symptoms relay a feeling of ambivalence toward the pregnancy (Colman & Colman, 1971; Leifer, 1977), and some authors suggest that certain medical conditions, such as hyperemesis gravidarum and habitual abortions, have psychological, as well as physiological roots (McDonald, 1965; Zechnich & Hammer, 1982). The other side holds that most pregnancy symptoms are solely of a physiological nature and point out that most subside after the initial hormonal surge is adjusted (Heinstein, 1981; Pritchard, McDonald, & Gant, 1985). This latter

group points out the high levels of human chorionic gonadotropin, which circulate until about the 120th day of gestation, that can contribute to the nausea and vomiting in the first trimester. Too, high levels of estrogen and progesterone can lead to such symptoms as insomnia, irritability, headache, tender breasts, and weight gain especially in the first trimester (Pritchard, McDonald, & Gant, 1985).

There are, however, emotional or intrapsychic aspects in relation to the physiological changes of pregnancy. Shereshefsky and Yarrow (1974) point out that physiological changes often become the focal point around which emotional patterns and relationships become organized. Leifer (1977) found that women who experience considerable somatic disturbances during pregnancy express less satisfaction with their bodies, are more negative or ambivalent about being pregnant, and also report having had stress during their menstrual periods. Using the Pregnancy Symptoms Checklist on 19 white primigravidas, Leifer (1977) concluded that while the physiological and metabolic changes that accompany pregnancy create some degree of physical discomfort, the wide range of individual differences in intensity and duration of somatic distress must be attributed to most

psychosexual tasks and to body image, as well as to current attitudes towards pregnancy.

As early as 1946, there was speculation as to the psychogenic overlay of pregnancy related symptoms such as nausea, vomiting, fatigue, irritability, insomnia, and emotional liability. Robertson (1946) theorized that there were three factors that could lead to poor adaptation to motherhood:

1. Women who complained of nausea and vomiting had a history of previous dyspepsia.

2. The pregnant woman was still closely tied with her mother and still within the orbit of the mother's influences, injunctions, and prohibitions.

3. Most women in this category were frigid.

Robertson (1946) attributed morning sickness to a massive "disgust" factor in the subconscious and noted there is an absence of vomiting in pregnant animals. Though the physical accompaniments of pregnancy in many animals closely parallel those in women, the female animal is free from a sense of shame in the presence of the mother and does not submit to coitus from a sense of duty to the male. Zemlick and Watson (1974) studied 15 white, married, primiparous patients and found that mothers who subjectively and objectively display the greatest degree of symptomatology express their

rejection through psychosomatic avenues during pregnancy and later exhibit overindulgent, oversolicitous, and compulsive behaviors with respect to their delivered child ($p < .05$). Also implied in the literature was the possibility that pregnancy symptoms, especially nausea and vomiting, were an occurrence only in industrialized societies. McCammon (1951) studied 475 American Indian women (Navaho) who lived on reservations. He noted the ease with which these women, unexposed to many of life's comforts, carried and bore children. Investigating the Navaho language, one finds there are specific words for both labor and pain of labor, but there are no words compatible with morning sickness or dysmenorrhea. In the group he studied that did speak English, 85% had nausea and vomiting during pregnancy. Robertson (1946) cited works of earlier investigators that report low incidences of nausea and vomiting in Eskimo and native African tribes (unindustrialized societies), but high incidences in Japan, Europe, and the United States (industrialized).

Wolkind (1974) also felt that the effects of pregnancy on a woman's psyche would be determined by her prepregnancy state. He (Wolkind, 1974) studied 118 women and concluded that women with previous neurotic or psychological difficulties see themselves as being

marked for having a number of uncomfortable symptoms. He (Wolkind, 1974) felt, therefore, that women with previous neurotic difficulties would find it difficult to adjust to this new situation. In her study of 156 low-income, pregnant women, Heinstein (1981) concluded there was a significant correlation between somatic problems when not pregnant and when pregnant ($p < .001$) suggesting that the stress of pregnancy accentuates somatic difficulties already present prior to the pregnancy. She postulated that the presence of these symptoms later in pregnancy would seem to be associated with the woman who is ambivalent or does not want to be pregnant. By means of the Pregnancy Acceptance Scale, Heinstein (1981) found that the less positive the gravida's feelings were about the pregnancy and the more conflict she experienced, the more often nausea, vomiting, and an upset stomach were present.

Erickson (1967) asked a sample of 20 pregnant women to keep a pregnancy-symptoms diary. She found that symptoms were not related to trimester, but rather to month. For instance, fatigue, depression, irritability, and anxiety were reported most frequently during the first four to five months and again at the last month. Nausea, vomiting, headache, and decreased sexual desire and euphoria were reported frequently during the first

four months and only rarely mentioned thereafter. These findings seem to go hand-in-hand with earlier psychological theorists reporting on the conflicts of the first trimester. Erickson (1967) concluded that perhaps future studies on symptomatology in pregnancy should be centered on specific months, not trimesters. Lips (1985) also found that certain physical symptoms were more common at certain times in pregnancy and not at others, while emotional symptoms appeared not to form a common aspect of the experience at each state. In studying 108 gravidas and their husbands, she (Lips, 1985) did find that early and late in pregnancy, women reported a tendency for increased negative emotions.

In looking at moods and their relationship to somatic symptoms during pregnancy, Lubin, Sprague, and Roth (1975), in a quasiexperimental design study, found anxiety to vary with trimester; high in the first, lower in the second, and higher in the third. Depression was not linked with somatic symptoms, but anxiety, history of menstrual complaints, increased age, and increased education were.

Chertak, Mondzain, and Bonnaud (1963) built their study of 100 primiparas solely on the assumption that vomiting during pregnancy was a symbolic rejection or oral attempt at abortion. They found a strong degree of

ambivalence in the pregnant women they studied. It was not the mothers who openly expressed rejection that experienced these discomforts, but those who expressed a severe conflict in wanting and yet rejecting the baby. In fact, Nordmeyer (1946) reported that of 85 women who sought an abortion, not one had experienced vomiting.

Bernstein (1952) queried 20 gravid women, 10 with nausea and vomiting and 10 without, to find degrees of rejection of the condition. Findings in both groups were very similar, and he (Bernstein, 1952) concluded that both groups were rejecting to some degree. The fact that one group vomited and the other didn't was explained by different vomiting thresholds and different ways of channeling their feelings of rejection.

Erickson (1975) hypothesized that physical factors could influence the psychological status of the gravida. Using the Pregnancy Research Questionnaire on 730 private obstetrical patients, she found that primigravidas were more fearful for themselves and the baby, and multigravidas were more irritable and depressed ($p < .05$). The health factor was not a statistically significant variable on the psychological wellness of the individual for the primigravida; however, health variables were found to be related to psychological variables for the multigravida.

While the purpose of the present study is aimed at common pregnancy symptoms and their relationship to attachment, some uncommon and more severe problems of pregnancy have also been linked with psychological effects. These include hyperemesis gravidarum, toxemia, and premature and prolonged labor. Briefly, the literature cites the following examples. McDonald (1965) related maternal emotional factors and obstetrical complications using the Minnesota Multiphasic Personality Inventory (MMPI) and Taylor's Manifest Anxiety Scale. He (McDonald, 1965) found that pre-eclamptic patients showed a greater tendency to manifest concern for their bodily functioning. He also showed that those who had an excessive weight gain during their pregnancy were the most maladjusted when compared to those who experienced toxemia or premature labor ($p < .05$).

In a random sample of 101 women, Uddenberg, Fagerstrom, and Hakanson-Zaunders (1976) studied the effects of maternal anxiety on prolonged labor. They (Uddenberg et al., 1976) found that indications of conflicts in combination with a low number of symptoms during pregnancy were associated with protracted labor. In contrast, when signs of conflict were combined with a high number of symptoms during delivery, the delivery

was generally faster. The authors attribute this difference to the way a woman handles her conflicts either on a conscious or unconscious level.

The extreme nausea and vomiting of pregnancy is called hyperemesis gravidarum when it becomes serious enough to endanger life (Bernstein, 1952). It is a condition that occurs in a small percentage of pregnancies and is defined by Zechnich and Hammer (1982) as intractable vomiting leading to dehydration and electrolyte imbalance. The results can be metabolic alkalosis and hypokalemia which, if prolonged, can lead to brain stem lesions which probably are due to Vitamin B₁ deficiency (Chatwani & Schwartz, 1982). In extreme cases, termination of the pregnancy is deemed necessary. In the literature, hyperemesis gravidarum has been almost universally regarded as a psychosomatic complaint (Zechnich & Hammer, 1982).

Weil and Tupper (1960, 1962) looked at personality traits, life-style situations, and communication between mother and fetus, and how these variables affected habitual aborters. Even though this condition has certainly been shown to be influenced by a hormonal and/or collagen deficiency, Weil and Tupper (1960, 1962) wanted to see if intense psychotherapy could interrupt this cycle. Of the 18 women who underwent the therapy,

15 went on to deliver at term. A study of literature that has researched pregnancy's physical symptoms reveals an interrelationship with psychological variables.

Attachment

Very closely tied with the developments and adaptations of pregnancy are the theories of maternal attachment to the infant and the fetus. Bowlby (1958, 1977) defined attachment as any form of behavior resulting in a person's attaining or retaining proximity to some other differentiated and preferred individual who is usually considered stronger and/or wiser. He (Bowlby, 1958) theorized there is a strong causal relationship between an individual's experiences with his parents and his later capacity to make affectional bonds. The principle variables here are the extent to which a child's parents provide him with a secure base and the extent to which they encourage him to explore from it. Bowlby (1958, 1977) felt that attachment behavior characterizes human beings throughout the life cycle. His work engendered much research in the 60's and 70's (Ainsworth, 1969; Klaus & Kennell, 1976, 1982).

Foremost in the attachment literature are the works of Klaus and Kennell (1976, 1982). They define attachment as a unique relationship between two people

which is specific and endures over time. Indications of attachment are a display of the following behaviors: fondling, kissing, cuddling, and prolonged gazing. Klaus and Kennell (1976, 1982) distinguished bonding from attachment in that the former is a tie from child-to-parent while the latter is a tie from parent-to-child. However, in their later work (1982) they use the words interchangeably as do most authors. Klaus and Kennell (1976, 1982) developed the theory of maternal-infant attachment after they noticed a trend in readmissions of premature infants who were saved by technology but battered by their parents. Based on their observations, they (Klaus & Kennel, 1976, 1982) felt there was a relationship between battering and lack of contact after birth. They (Klaus & Kennel, 1976) also reported that they observed mothers mourning the loss of dead newborns regardless of whether the infant had been viable. Combining these observations with the fact that many animal mothers shun their offspring if they are withheld from them for extended periods of time after birth, they (Klaus & Kennell, 1976, 1982) postulated the maternal-infant attachment theory. The essence of this theory states that if maternal-infant bonding is to be strong and therefore nurturative, mother and infant must meet and interact as soon after

birth as possible. Klaus and Kennell (1976) did acknowledge that a substantial degree of bonding precedes tactile contact between mother and infant. Though the authors do not say so, the findings, especially those of the mourning parents, imply that attachment may occur prior to birth.

While Bowlby (1958, 1977) and Kennell, and Klaus (1976, 1982) focused their research on attachment after birth, Rubin (1967a & b, 1981) addressed the supposition that mothers may bond with their fetuses during pregnancy though maybe not on a conscious level. Her theory of maternal role attainment was primarily built on earlier works of Deutsch (1945). Rubin (1967a) stated that in the binding-in phase of maternal role attainment, the bond between a mother and her child is developed and structured during pregnancy. At birth, there is already a sense of knowing the child within the limitations of not having had perceptions through the usual sensory modalities. At birth, there is already a sense of shared experiences, shared history, and shared time on an intimate and exclusive plane (Rubin, 1981). Rubin (1981) further stated that there is little binding-in in the first trimester, but that the change is dramatic in the second trimester after quickening is felt. Quickening is a very special, private, warm

experience. She concluded that the kind of love felt with attachment is love of another, and the growing baby makes the mother feel good about herself in her world.

Subsequent research has yielded increasing information on maternal-fetal attachment. Leifer (1977) found that those women who felt intense attachment to their babies from the beginning most often viewed their relationship with their infants as being a continuation of a relationship started in pregnancy. Also, there was a high association between attachment to the fetus during pregnancy and maternal feelings toward the baby. In interviewing a very small number of pregnant women after ultrasound, Fletcher and Evans (1983) came to the conclusion that parental recognition of the fetal form is a fundamental element in the later parent-child bond. They (Fletcher & Evans, 1983) see that ultimately, ultrasound examinations may result in fewer abortions and more desired pregnancies.

Carter-Jessop (1981) proposed that maternal-fetal attachment may be enhanced and even promoted through specified prenatal intervention. She conducted an experimental study on ten women (five in an experimental group and five in a control group) and initiated nursing interventions. First, mothers were encouraged to feel for the babies' parts and to check the fetal position

daily. Second, mothers were encouraged to increase their activity and notice how they can affect their baby's activity. Lastly, they were encouraged to rub, stroke, and gently massage their abdomens over the babies. Carter-Jessop (1981) concluded from her study that those women in the experimental group had a higher level of attachment when the tactile interventions were employed ($p < .05$). Trabert (1981) agreed with this philosophy. She thought that when parents discover they can identify fetal parts, they become more attuned to the reality of the forthcoming birth of their child. This implies that attachment is thought to occur before birth.

Carson and Virden (1984) attempted to replicate Carter-Jessop's study. Using an experimental design, they taught the suggested maneuvers to 69 primiparas from low socioeconomic backgrounds. Later testing of attachment behaviors did not reveal any correlation. Problems existed with sampling, methods, and instruments. Further research is needed in this area to clarify if certain antenatal behaviors can affect postnatal behaviors and attachment.

In reviewing the works of Klaus and Kennell (1976), Nelson (1985) suggested that while the two pediatricians' work has much merit, too much emphasis

has been placed on the critical timing of bonding. Klaus and Kennell (1976, 1982) suggested that many behaviors must occur in the early postpartum period if future mothering is to be normal. Nelson (1985) believed that while this may be true in animals, it has not been tested sufficiently in humans, and she warns about applying theories from other disciplines prior to thorough investigation. She (Nelson, 1985) suggested that health care professionals often make a mother feel she is less than optimum if she has not attached immediately postpartum. A mother in this situation may benefit from studies done on earlier attachment periods (at quickening, during the feeling of fetal parts, etc.).

Cranley (1981) developed a tool to measure maternal-fetal attachment during pregnancy. She defined maternal-fetal attachment as the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child. While she (Cranley, 1981) found positive attachment indicators during pregnancy, these findings were influenced by social support (positively) and perceived stress (negatively) ($p < .05$). Physical symptoms of pregnancy and other variables (e.g., maternal age) were not studied by Cranley. LoBiondo-Wood (1985) took Cranley's

study a step further and began with the premise that attachment is progressive, heightened by the advent of quickening, and able to be influenced by the physical symptoms of pregnancy. She studied 100 primiparous women and used Cranley's Maternal-Fetal Attachment Scale (MFA) to test three hypotheses:

1. There is a negative relationship between physical symptoms and maternal-fetal attachment.
2. This negative relationship will decrease over time.
3. The increase in attachment will be the greatest after quickening.

Only her third hypothesis was supported ($p < .0001$) suggesting that maternal-fetal attachment is a progressive entity. She did feel a need for re-examination of the psychometric properties and further development of both the Physical Symptoms Checklist and the Maternal-Fetal Attachment Scale and the use of these revised tools on a different population. Kemp and Page (1987) tested Cranley's tool on 53 women experiencing normal pregnancies and 32 women experiencing high-risk pregnancies. While maternal-fetal attachment behaviors existed for all the women, no statistically significant differences were found between the two groups. This prompted the authors to conclude

that maternal affiliation with the fetus seems to be a task that is accomplished during pregnancy regardless of whether or not the pregnancy is threatened.

In summary, anticipatory guidance is the cornerstone of comprehensive and preventive psychological care (Brown, 1979). We do know that about 1.5 million children are abused or neglected each year. Mercer (1981) viewed this as a call to nursing to examine the difficulties some mothers experience in assuming the maternal role. Brown (1979) feels that routine prenatal visits provide an opportunity to maximize psychological adaptation. Bibring (1976) goes further and lays down an agenda for psychological care with psychiatrists and social workers at prenatal and postnatal stages in an effort to see those problems that might be surfacing. Sufficient tools to judge a pregnant woman's psychological status at different intervals are needed, as well as a way to investigate which maternal variables may need nursing interventions to promote attachment between mother and fetus and mother and child. Early psychological assessment of pregnant women holds promise of being predictive of the course and outcome of pregnancy (Grimm and Venet, 1966).

CHAPTER III

Method

This study was undertaken to demonstrate whether or not a relationship exists between the physical symptoms of pregnancy and the maternal-fetal attachment felt by the expectant mother. It was also undertaken to see if a relationship exists between maternal age and maternal-fetal attachment and to determine if quickening makes a difference in the amount of maternal-fetal attachment felt by the expectant mother.

Sample

The sample consisted of a convenience sample of 80 primigravidas and multigravidas from a clinic in the midwest. Those asked to participate in the study were (a) pregnant; (b) 18 years of age or older; (c) able to speak, read, and write English; and (d) were not classified as high-risk pregnancies. Neither prior pregnancies of participants nor their outcomes were a factor.

Of the 80 participants, 38 were tested prior to quickening and 42 were tested after quickening to investigate the effects of quickening upon maternal-fetal attachment. Demographic data of this sample population was requested of the participants in order to describe the sample.

Instruments

Maternal-Fetal Attachment Scale

The Maternal-Fetal Attachment Scale (see Appendix A) is a 23-item tool developed to empirically test the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child (Cranley, 1981). The scale includes five designated subscales which are intended to explore different aspects of the maternal-fetal relationship. These subscales are differentiation of self from the fetus, attributing characteristics and intentions to the fetus, interaction with the fetus, giving of self, and role-taking. A Cronbach's alpha coefficient of reliability was .85 for the total scale. The five subscales had coefficient alphas ranging from .52-.73. In a second study, Cranley (1982) attained a reliability score of .84 for the overall scale, .83 prior to 20 weeks gestation, and .87 after 20 weeks gestation. Content validity was demonstrated by maternal and child health nurses and by a group of pregnant women. Construct validity was shown by intercorrelations between subscales and the total scale (.61 - .83). Criterion validity was not established since this was the first instrument of its type. The MFA Scale has subsequently been tested (LoBiondo-Wood, 1985) and demonstrated total

scale reliabilities as follows: .85 before the 11th week of pregnancy, .85 between the 12th and 16th week, and .82 between the 21st and 26th week.

The 23 questions are presented in a 4-point response format. For the present study, the test was scored again according to the author's guidelines. The MFA is scored by assigning numerical values to the responses denoting the certainty with which each response is felt. The items were ranked on a scale ranging from definitely yes (4) to definitely no (1).

Pregnancy Symptoms Checklist

The Pregnancy Symptoms Checklist (PSC) (see Appendix B) is a 20-item listing of those symptoms most commonly expressed by pregnant women. It was developed by Leifer (1977) to see how frequently and to what degree of severity women experienced common pregnancy symptoms. Reliability of the checklist was gained by a review of obstetrical charts for common health problems during pregnancy. Three independent raters did this work, and ratings were refined until the percentage of agreement reached at least 80%. Leifer did no further testing for reliability or validity.

In 1985, LoBiondo-Wood attained the checklist for her research in relating pregnancy symptoms to maternal-fetal attachment. Prior to its use, she submitted the

checklist to a panel of experts in obstetrical nursing to assess content validity. Minor changes were made, and internal consistency reliability coefficients were calculated for each of the three trials after administration of the test and scoring were complete: before the 11th week of pregnancy = .69; between the 12th and 16th of pregnancy = .79; and, between the 21st and 26th week of pregnancy = .77. Scoring for the current study was done by assigning numerical values to the symptoms denoting severity and frequency of each. The scoring was ranked on the scales of often (3), sometimes (2), never (1); and severe (3), moderate (2), mild (1). No answer was ranked in both scales as a (0).

Procedure

Prior to initiation of the study, the investigator obtained consent from the hospital's chief nurse (see Appendix C) and the Institutional Review Board of the University of Nebraska Medical Center (see Appendix D). An inservice on maternal-fetal attachment and aims of the study were given to the nurses and technicians staffing the clinic. All subjects were personally approached by the investigator and given a copy of the introduction of the investigator, a statement as to the purpose of the study being conducted, and a request for their participation (see Appendix E). Following this,

they were given a consent form to be signed which assures participants confidentiality and the right to drop out of the study at any time (see Appendix F). Subjects were then asked to fill out the questionnaires during this clinic visit. If time did not permit, they were asked to allow an extra half-hour at their next clinic visit for questionnaire completion. In this manner, subjects did not feel rushed and were able to give careful consideration to each question.

Upon returning the consent form, women were first asked to fill out the information sheet (see Appendix G). Next, they were administered the Pregnancy Symptoms Checklist followed by the Maternal-Fetal Attachment Scale.

Data Analysis

Data were analyzed using the SAS computer package and were prepared for comparative analysis for each of the variables under investigation. Hypotheses 1 and 2 were analyzed using the Pearson product moment correlation coefficient statistical test, while Hypothesis 3 was analyzed using Spearman's rho correlation coefficient statistical test. The first of the two statistical tests is parametric in nature denoting interval and ratio levels of measurement attained by this study. The second test is

nonparametric in nature denoting the ordinal level of measurement also attained by this study. A significance level of .05 was used for this study.

CHAPTER IV

Results

The purpose of this study was to examine the relationship of the physical symptoms that commonly accompany pregnancy, maternal age, and quickening to the development of maternal-fetal attachment. The sample population studied consisted of 80 pregnant women; 38 had not experienced quickening and 42 had experienced quickening.

Two tools were used to gather information on this pregnant population; the Pregnancy Symptoms Checklist (PSC) developed by Leifer (1977) and the Maternal-Fetal Attachment Scale developed by Cranley (1981). The former gathers information about each woman's subjective signs and symptoms of pregnancy while the latter measures the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child. The study was similar in approach to the work of LoBiondo-Wood (1985) who earlier had studied the relationship between pregnancy symptoms and maternal-fetal attachment. In addition, demographic information was gathered.

The Pearson product moment correlation coefficient was used to test the relationship of the physical symptoms of pregnancy and maternal-fetal attachment

behaviors, as well as maternal age and maternal-fetal attachment. Spearman's rho was used to test the relationship between quickening and maternal-fetal attachment, as well as other selected demographic information and maternal-fetal attachment.

Descriptive statistics were also applied to the demographic data (see Tables 1 and 2). A probability level of .05 was chosen to test the hypotheses, as this is an acceptable level for investigation with human subjects.

Insert Tables 1 and 2 about here

Hypothesis 1: There will be a relationship between maternal age and maternal-fetal attachment.

The mean maternal age for the sample studied was 24.9 with a standard deviation of 4.16 and a range of 18 - 38. All but seven of the subjects fell into the 19 - 32 age group. Ages 24 and 22 had the most respondents with 10 in each year. The correlation between maternal age and MFA was not significant (see Table 3). Therefore, Hypothesis 1 was not supported.

Insert Table 3 about here

Hypothesis 2: There will be a relationship between the physical symptoms of pregnancy and maternal-fetal attachment.

The Pregnancy Symptoms Checklist was divided between two subscales; one for frequency of symptoms experienced and the other for degree of symptoms. Neither the frequency scale, the degree scale, nor the total score or multiplicative score showed significance at the $p < .05$ level. Therefore, Hypothesis 2 was not supported (see Table 3).

Hypothesis 3: Maternal-fetal attachment will be significantly higher for pregnant women after experiencing quickening than for pregnant women prior to experiencing quickening, regardless of age or physical symptoms. In other words, for those women who have felt fetal movement, behaviors displaying attachment to the fetus will be significantly higher than for those who have yet to experience quickening. As statistically shown by Spearman's rho, quickening did produce significant results on the development of maternal-fetal attachment ($.62210 p < .0001$). Therefore, Hypothesis 3 was supported (see Table 4).

Insert Table 4 about here

Additional Analysis

Table 4 displays the correlations and significance levels for the demographic data and the maternal-fetal attachment scale. The demographic variables used to describe the sample population were as follows: age, educational and income levels, marital status and length, existence of perceived fetal movement, frequency of perceived fetal movement and degree of perceived fetal movement, ultrasound versus no ultrasound done to date, gravity, and planned versus unplanned pregnancy.

The majority of those women queried had at least a high school education; one had not completed high school, one was currently a student, and three had completed graduate school. Thirty-five percent indicated that high school was the highest level of education attained, and 32.5% had attended some college. Twenty-six percent had completed college. The majority of the women were from households with a combined family income of \$11,000-\$20,000 (47.4%). Twenty-nine percent were from households making \$21,000-\$30,000. The \$51,000 bracket was represented by 8% of the respondents. Also, 90% of the women were married with a mean marital length of 38.4 months and a range of one to 192 months.

The majority of the respondents (61%) had heard fetal tones, and 45% had an ultrasound performed. Of those having had an ultrasound, the most frequent times of conducting this biophysical test was between the 18th and 20th weeks of pregnancy. For those feeling movement, the majority (83%) felt it often, as compared to sometimes or once (10%) or twice (7%), and vigorously (60%) as compared to moderate (29%), and mild (4%). This was the first pregnancy for 47.5% of the women and the second pregnancy for 22.5% of the sample population. One woman had five living children. This was her sixth pregnancy. Lastly, the data shows that the majority of these pregnancies, or 63.8%, were planned.

When educational level, gravity, marital status, and length were correlated with maternal-fetal attachment, no statistical significance was found. However, when frequency and degree of perceived fetal movement were correlated, both were significant at the $p < .0001$ level which adds validity to the significance findings of Hypothesis 3. Income level was negatively correlated to maternal-fetal attachment at the $p < .05$ level. The relationship of ultrasound and a planned pregnancy was significantly correlated with maternal-fetal attachment at the $p < .01$ level.

Summary

The study sample consisted of 80 primigravidas and multigravidas; 38 had not felt quickening and 42 had felt quickening. The relationships studied were those of the physical symptoms of pregnancy, maternal age, and the occurrence of quickening with maternal-fetal attachment. Pearson's product moment correlation was used to test the relationships between maternal-fetal attachment and the physical symptoms of pregnancy, and maternal age for this data represented at least interval data. Spearman's rho correlation coefficient was used to test the demographic information and maternal-fetal attachment due to the small sample size and the nominal and ordinal data represented. The $p < .05$ level of significance was accepted for this study on human subjects. Hypotheses 1 and 2, which studied the correlation between physical symptoms and maternal age and maternal-fetal attachment, were not supported. Hypothesis 3, which studied the correlation between quickening and maternal-fetal attachment, was supported.

CHAPTER V

Discussion of Findings and Conclusions

Despite the importance relegated to the maternal-infant bonding process in modern obstetrical practices, little research has been done to study the roots of this process which are present in pregnancy. The goal of the present study has been to empirically test the effects of selected variables on the development of maternal-fetal attachment. The study was undertaken to determine if a relationship exists between the development of maternal-fetal attachment and the physical symptoms of pregnancy, the presence or absence of quickening, and maternal age. It was grounded in theoretical frameworks of maternal-infant attachment and its offshoot, maternal-fetal attachment (Bibring, 1961; Bowlby, 1958; Cranley, 1981; Leifer, 1977; LoBiondo-Wood, 1985; Rubin, 1967a & b).

Hypothesis 1

Hypothesis 1 stated that there will be a relationship between maternal age and maternal-fetal attachment. Basis for this hypothesis was grounded in research which stressed that maternal age can influence maternal role attainment (Glazer, 1980; Grossman, et. al., 1980; Heinstejn, 1981; Lubin et al, 1975; Mercer, 1981). These authors spoke to maternal role attainment

occurring both during pregnancy and after delivery. Grossman, et. al. (1980) stated that while age can be considered a physiological variable in pregnancy research, it can also be thought of as a sociocultural factor insofar as it establishes and defines the context of a pregnancy at a given point in a woman's life. This statement implies that those women at the age extremes of childbearing years may be viewed by their culture as acting outside established norms. This, in turn, could result in a negative approach to the pregnancy or fetus by such women experiencing pregnancy at these times in their lives.

Age has been correlated with various aspects of maternal behavior. Lubin, et. al. (1975) found a significantly positive correlation between maternal age and state anxiety in the pregnant population they studied ($N = 93$). They concluded that older women have a tendency to be more anxious about their pregnancies than do younger women, and that these older women were more prone to display somatic symptoms than were their younger counterparts. Lubin's et. al. (1975) results were similar to those of Heinstein (1981) in reference to maternal age and pregnancy acceptance. Heinstein (1981) found that the younger gravidas were more desirous of being pregnant and felt more positively

maternal than were older multiparous women. Results of these two studies refute those by Glazer's (1980) research of 100 pregnant women completing the Taylor Manifest Anxiety Scale. In this study, women who were at the younger end of the age scale had higher levels of anxiety and expressed more concerns in regard to their pregnancies than did older women. While Glazer (1980) did not directly relate anxiety levels to maternal role attainment or pregnancy acceptance, she did enumerate those concerns of pregnant women which may impact on a gravid woman's emotional and physical well-being. Despite conflicting results of these studies, it was suggested in each that age does have a bearing on maternal role acceptance/pregnancy acceptance.

Mercer (1981) presented a theoretical framework for factors that impact on the maternal role, one of those factors being maternal age at the time of pregnancy. Mercer (1981) built heavily on the works of Rubin (cited in Mercer, 1981) and Thornton and Nardi (cited in Mercer, 1981). Rubin (cited in Mercer, 1981) held that maternal role attainment occurred in progressive stages over a 12-15 month period of pregnancy and the first six months postpartum. Thornton and Nardi (cited in Mercer, 1981) stated that role acquisition is a process that develops over four stages--anticipatory, formal,

informal, and personal. Anticipatory socialization begins in pregnancy as the woman begins adjustment to the role and can result in problems for both the pregnant adolescent and the older pregnant woman. Mercer (1981) contends that those first-time mothers in their thirties have higher expectations for themselves in the maternal role which could hamper their early transition to the maternal role.

Despite support from the aforementioned authors for a relationship between maternal age and maternal feelings for one's developing child, results of certain other studies do not show this to be so. LoBiondo-Wood's (1985) research showed no such relationship. Neither did Kemp and Page's (1987) research which studied both high-risk and normal gravidas. The present study also did not show a relationship between maternal age and maternal-fetal attachment. Hypothesis 1, relating the two concepts, was not supported. The mean age of those women in the present study is 24.9, with a range of 18-38 years of age. The correlation between maternal age and maternal-fetal attachment was not significant. The reason why this hypothesis was not supported may be that even though there was a wide range of ages, there was not a large population in either the lower or upper age limits of pregnancy. The subjects in

this study were reflective of the norm of those women in their childbearing years in reference to age (91% of respondents fell in the 19 - 32 year age group). However, the findings of this study may not hold true for the adolescent gravida or the elderly primigravida. It is also possible that age, in and of itself, does not have an affect on the particular concept of maternal-fetal attachment at all.

Hypothesis 2

Hypothesis 2 sought to find if there was a relationship between the physical symptoms of pregnancy and maternal-fetal attachment. This hypothesis was based on authors who have theorized that there is a distinct relationship between the symptoms manifested by the gravida in pregnancy and the degree of adaptation to this new role which has taken place in the gravida's psyche (Chertak, Mondzain, & Bonnaud, 1963; Colman & Colman, 1971; Leifer, 1977; McCammon, 1951; McDonald, 1965; Robertson, 1946; Shereshefsky & Yarrow, 1974; Zemlick & Watson, 1974). Heinstein's research (1981) found, by means of the Pregnancy Acceptance Scale, that there was a significant correlation between somatic symptoms and fewer positive feelings about pregnancy experienced by the gravida. Leifer (1977) concluded, after studying 19 primigravidas, that the wide range of

individual differences in intensity and duration of somatic distress must be attributed to more enduring personality patterns reflected in reactions to previous psychosexual tasks and to body image, as well as to current attitudes about pregnancy. Common symptoms experienced by pregnant women and listed by Leifer's Pregnancy Symptoms Checklist include nausea with and without vomiting, breast tenderness, changes in urination patterns, and fatigue.

Bibring (1959), Deutsch (1945), and Rubin (1967a) conducted research on pregnancy tasks the pregnant woman needs to accomplish in order to develop maternal feelings toward the growing fetus and therefore maintain psychological health. Impasses in task accomplishment have been related to inner conflicts (Arbeit, 1976; Colman & Colman, 1971; Deutsch, 1945; Robertson, 1946; Zuckerman, 1974), and the physical symptoms manifested have been attributed to nonresolution of such inner conflicts (Arbeit, 1976; Colman & Colman, 1971; Robertson, 1946; Zuckerman, 1974). Leifer (1977) points out that the more physical symptoms experienced by the gravida, the more negative and ambivalent feelings there are about the pregnancy.

While the present study did not look at pregnancy acceptance as a whole, it did research how a mother

accepts and attaches to her unborn child, and how this attachment relates to somatic symptoms. As with LoBiondo-Wood's (1985) research, the results showed no correlation between the physical symptoms of pregnancy and maternal-fetal attachment, regardless of the severity or frequency of these symptoms.

Unlike LoBiondo-Wood's (1985) study, the present research explored the frequency and severity of the physical symptoms of pregnancy, as well as pregnancy symptoms as a whole. Most of the women queried in the current study felt their symptoms to be moderate to severe in nature and experienced often. These findings imply that despite the discomforts experienced by the gravid woman, the common symptoms of pregnancy were not instrumental in the development or in the detriment of maternal-fetal attachment. This can be viewed in two different ways:

1. The physical symptoms, while enough to assure the woman she was pregnant, were not of a nature to assure the formation of a bond with the unborn fetus.

2. Despite the emergence of such discomforts, their presence was not enough to figuratively distance the woman from her unborn child.

In other words, the physical symptoms of pregnancy did not seem to affect the women sampled, either

positively or negatively, in regard to maternal-fetal attachment. One cannot, therefore, infer that the physical symptoms of pregnancy impact on poor attachment to the fetus and therefore, to poor maternal role attainment.

This data places in question the assumptions and principles made by earlier theorists that the gravida who displays pregnancy symptoms is not adapting well to the new maternal role (Chertak et al., 1963; Heinstein, 1981; Leifer, 1977; Lubin, et. al., 1975; Robertson, 1946). This data does not, however, negate the existence of pregnancy tasks or internal conflicts that arise because of pregnancy. One can suppose that while conflicts do occur for the pregnant woman, and while they may or may not be manifested by the display of certain symptoms, maternal-fetal attachment and ultimately, maternal role attainment, are not affected by these symptoms.

The majority of subjects were married. Of the eight who were not, seven were working at jobs where they held some type of managerial responsibility. Also, of all the respondents queried, either they or their husbands, or both, were from salaried households. All but one had at least a high school education, and 63.8% had planned their pregnancies. Because of their

background and education, the subjects may have been more knowledgeable about the expected physical symptoms, and therefore may not have viewed them as having enough of a negative impact on their pregnancy so as to impair the attachment process. LoBiondo-Wood (1985) pointed out that even if the changes and symptoms are noticed, they are attributed not to the fetus, but to the pregnancy and, therefore, do not seem to affect a woman's level of attachment with her unborn child either positively or negatively. Also, despite the fact that several women viewed their symptoms as severe, none of the women in this study had reached the extremes of symptomatology requiring medical intervention.

Hypothesis 3

The hypothesis that there is a relationship between maternal-fetal attachment and quickening was supported. Rubin (1981) states that there is little binding-in (or attachment with the fetus) in the first trimester, but that the change is dramatic in the second trimester after quickening. Based on Rubin's theorization on the binding-in phase of pregnancy, and because of LoBiondo-Wood's recommendation for replication of her own findings on quickening, this hypothesis was incorporated into the present study. Quickening was positively correlated with maternal-fetal attachment in this study

which adds validity to the research of LoBiondo-Wood (1985) and Rubin (1967). It also lends support to the theorizations of Bibring (1959), Duetsch (1945), Leifer (1977), and Shereshefsky and Yarrow (1974) who felt there was qualitative and quantitative changes in pregnancy experiences before and after quickening.

Adding validity to the finding that maternal-fetal attachment increases significantly after quickening are the findings in this study that the characteristics of the movement may impact on maternal-fetal attachment. There was a significant correlation between frequency of movement and maternal-fetal attachment ($p < .001$) and the degree of movement and maternal-fetal attachment ($p < .0001$) suggesting that quickening, as well as the character of the movement, has an effect on the extent to which a pregnant woman affiliates and interacts with her unborn child.

Discussion of Additional Analysis

Other selected variables studied in relation to maternal-fetal attachment were educational level, marital status and length, income level, ultrasound, gravity, and planned vs. unplanned pregnancy. Though hypotheses were not generated for this study on the basis of these variables, they do generate avenues for further research. Of the aforementioned variables, only

income level, ultrasound, and planning of pregnancy bore a significant statistical relationship to maternal-fetal attachment.

Educational level was not related to maternal-fetal attachment. The lack of significance may be attributed to the homogeneous nature of the sample population and the relatively small sample size. Since all but one respondent had at least a high-school education and only three had completed graduate school, one is not able to surmise if extremes in educational levels have an effect on the amount of attachment felt by the mother for the developing fetus. Also, marital status and length of marriage were not significantly related to maternal-fetal attachment. It should be noted that all but eight of the respondents were married; therefore, no conclusions can be drawn on single parenthood and maternal-fetal attachment.

Income level was negatively but significantly related to maternal-fetal attachment. Women from more modest-income households displayed higher levels of maternal-fetal attachment behaviors, while women from higher income households displayed lower levels of maternal-fetal attachment. Seventy-six percent of the respondents were from families whose combined incomes ranged from \$10,000-\$30,000. Only six (7.5%) were from

families with incomes of \$51,000+ and five of these worked outside the home. The findings may reflect feelings of career oriented women who may anticipate the changes that pregnancy and a new infant will have on their life-style and independence.

The obtaining of an ultrasound examination during the pregnancy was significantly correlated to maternal-fetal attachment. Although this was not found in other studies (Kemp & Page, 1987; LoBiondo-Wood, 1985), these findings imply that an ultrasound may enhance maternal feelings and supports the statement made by Fletcher and Evans (1983) that parental recognition of the fetal form is a fundamental element in the later parent-child bond. While these two authors do not recognize maternal-fetal bonding per se, they allude to it when they state that ultrasound examinations may result in fewer abortions and more desired pregnancies.

Lastly, planned pregnancy was positively correlated with an increased display of maternal-fetal attachment behaviors. Though one cannot surmise that mothers with an unplanned pregnancy do not want the pregnancy or go on to display poorer parenting abilities, one can infer that with the sample population studied, when a pregnant woman planned to conceive, maternal-fetal attachment behaviors were displayed significantly more often.

Further recommendations and considerations are as follows:

1. Research into maternal role attainment as it relates to maternal-fetal attachment is needed. As conceptualized in this study, role-taking in pregnancy is a subconcept of maternal-fetal attachment. The relationship of this during and after pregnancy needs to be empirically tested.

2. Though the study by LoBiondo-Wood (1985), as well as the present study, have not shown a relationship between the physical symptoms of pregnancy and maternal-fetal attachment, the sample populations were small and homogeneous and, therefore, replication on a larger scale is needed. Thus far, the results can only be generalized to middle-class pregnant women whose pregnancy symptoms have not been severe enough to warrant hospitalization. Research remains to be done on low and high socioeconomic groups, as well as high-risk patients.

3. More research with age extremes, marital status and marital length, and educational levels needs to be accomplished before one can say that married or unmarried mothers with more or less education, or very old or very young mothers, display more attachment behaviors.

4. The study also found significance with ultrasound and pregnancy planning, and maternal-fetal attachment. Further research in these areas is recommended.

5. Since the goal of this research is to lay the groundwork for the fostering of maternal-fetal attachment and later nurturative parenting, studies researching the relationship between maternal-fetal attachment behaviors and later parenting behaviors is needed in order that interventions may be initiated.

6. Since maternal-fetal attachment has been shown to exist, research into specific intervention strategies that would facilitate its growth is also recommended.

Recommendations for Clinical Practice

Nursing implications for maternal-fetal attachment abound. First of all, acknowledgement of the existence of such a concept by obstetrical nurses and physicians is the first step in helping new parents bond with their child. Facilitating such practices as talking to the fetus, feeling fetal parts, soothing the fetus, and pointing out fetal forms during an ultrasound are ways which may initiate this early form of bonding and may enhance later parenting. If later research shows a relationship between low levels of maternal-fetal attachment and parenting problems, other interventions

for fostering attachment and parenting could be developed. This knowledge would aid in early identification of high-risk parents who will need assistance in parenting once the child arrives. The development of attachment during pregnancy also has implications for parent teaching during pregnancy which is especially important when mothers are discharged early after birth.

This data has significance for those nurses working in labor and delivery suites. Support can be given to mothers who do not have interaction immediately after birth with their newborns. As this and other studies have supported, bonding has already occurred and future nurturing will not necessarily be impaired if interaction is delayed. Also, for those mothers who lose their pregnancies, the nurse with the knowledge of the maternal-fetal attachment process will be able to counsel and support both the mothers and other staff members. Nurses who work in abortion clinics will be better able to meet the needs of those mothers who are undergoing second trimester abortions because of their knowledge of the effects of quickening on attachment with the fetus.

Lastly, the information gained as a result of this study and others on maternal-fetal attachment may have

nursing implications for those nurses dealing with surrogate mothers and the feelings these controversial mothers develop for their fetuses and newborns.

The potential for the information gained from this and other similar studies can be used to understand and help new parents deal with all the new experiences which await them. Nurses can be instrumental in utilizing the information to the benefit of all pregnant women and their partners.

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Table 1

Demographic Data for Selected Variables of Total Sample
Population

<u>Variable</u>	<u>n</u>	<u>x</u>	<u>SD</u>	<u>Range</u>
Age	80	24.9	4.16	18-38
Age before movement	38	24.5	4.28	20-38
Age after movement	42	25.2	4.00	18-34
Marital length	72	41.0	36.60	1-192

Table 2

Demographic Data for Nominal Variables of Total Sample
Population

Variable	<u>n</u>	%
Marital status		
Yes	75	93.8
No	5	6.3
Ultrasound performed		
Yes	36	45.0
No	44	55.0
FHTs heard		
Yes	61	77.2
No	18	22.8
Quickening felt		
Yes	42	52.5
No	38	47.5
Frequency of movement		
None	38	47.5
Often	35	43.8
Sometimes	4	5.0
Once or twice	3	3.8

Table 2 (continued)

Degree of movement

None	38	47.5
Vigorous	24	30.0
Moderate	13	16.3
Mild	5	6.3

Planned pregnancy

Yes	51	63.8
No	29	36.8

Income level

0-\$10,000	4	5.3
\$11,000-\$20,000	36	47.4
\$21,000-\$30,000	22	28.9
\$31,000-\$40,000	6	7.9
\$41,000-\$50,000	2	2.6
>\$51,000	6	7.9

Educational level

Attended high school	1	1.3
Graduated high school	28	35.0
Attended college	26	32.5
Graduated college	21	26.3
Attended graduate school	0	0.0
Graduated graduate school	3	3.8
Student	1	1.3

Table 2 (continued)

Gravida		
1	38	47.5
2	18	22.5
3	14	17.5
4	7	8.8
5	2	2.5
6	1	1.3

Table 3

Correlation of Maternal-Fetal Attachment to PregnancySymptoms and Age (N = 80)

Pregnancy symptoms Checklist/Age	Maternal-fetal attachment		
	Correlation	p Value	Significance
Frequency	.08616	.4473	NS*
Degree	.13020	.2497	NS*
Total	.11693	.3016	NS*
Age	.11118	.3262	NS*

*NS = Nonsignificant

Table 4

Spearman's Rho Correlations Between Maternal-Fetal
Attachment and Selected Demographic Information

Variable	Maternal-fetal attachment		
	<u>N</u>	<u>r</u>	<u>p</u>
Educational level	80	.2623	NS*
Marital status	80	.06490	NS*
Marital length	72	.03494	NS*
Quickening	80	.62210	.0001
Frequency of movement	80	.53669	.0001
Degree of movement	80	.52800	.0001
Income level	76	-.25897	.0239
Ultrasound	80	.33427	.0024
Gravity	80	.21724	NS*
Planned pregnancy	80	.28509	.0104

*NS = Nonsignificant

Appendix A
Maternal-Fetal Attachment Scale

Maternal-Fetal Attachment Scale

Directions: I would like you to respond to the list of items below about yourself and baby you are carrying. Check the response that best describes how you think or feel or what is the most true of your situation. It is your first impression that counts. There are no correct answers. Please do not leave any blanks.

	Definitely Yes	Yes	No	Definitely No
1. I talk to my unborn baby.	_____	_____	_____	_____
2. I feel all the trouble or being pregnant is worth it.	_____	_____	_____	_____
3. I enjoy watching my tummy jiggle as the baby kicks inside.	_____	_____	_____	_____
4. I picture myself feeding the baby.	_____	_____	_____	_____
5. I'm really looking forward to seeing what the baby looks like.	_____	_____	_____	_____
6. I wonder if the baby feels cramped in there.	_____	_____	_____	_____
7. I refer to my baby by a nickname.	_____	_____	_____	_____
8. I can imagine myself taking care of the baby.	_____	_____	_____	_____
9. I can almost guess what my baby's personality will be from the way s/he moves around.	_____	_____	_____	_____
10. I have decided on a name for the baby.	_____	_____	_____	_____
11. I do things to try to stay healthy that I would not do if I were not pregnant.	_____	_____	_____	_____

Code Number _____

- | | | | | |
|---|---|---|---|---|
| 12. I wonder if the baby can hear inside of me. | — | — | — | — |
| 13. I wonder if the baby thinks and feels inside of me. | — | — | — | — |
| 14. I eat meat and vegetables to be sure my baby gets a good diet. | — | — | — | — |
| 15. It seems my baby kicks and moves to tell me it's eating time. | — | — | — | — |
| 16. I poke the baby to get him/her to poke back. | — | — | — | — |
| 17. I can hardly wait to hold the baby. | — | — | — | — |
| 18. I try to picture what the baby will look like. | — | — | — | — |
| 19. I stroke my tummy to quiet the baby when there is too much kicking. | — | — | — | — |
| 20. I can tell that the baby has hiccoughs. | — | — | — | — |
| 21. I feel my body is ugly. | — | — | — | — |
| 22. I give up doing certain things because I want to help my baby. | — | — | — | — |
| 23. I grasp my baby's foot through my tummy to move it around. | — | — | — | — |

Appendix B
Pregnancy Symptoms Checklist

Symptom Checklist: Pregnancy

Code Number _____

A list of health problems appears below. React to each of the items and then report whether you have that problem:

O (Often)

S (Sometimes)

N (Never)

If you have had that problem, check the degree of intensity of the symptom:

S (Severe)

Mod (Moderate)

M (Mild)

Please do not leave any blanks.

	O	S	N	S	Mod	M
Do you have any morning sickness or neausea?	___	___	___	___	___	___
Have you been troubled by vomiting?	___	___	___	___	___	___
Do you have indigestion?	___	___	___	___	___	___
Do you have trouble falling asleep or staying awake?	___	___	___	___	___	___
Do you have loss of appetite?	___	___	___	___	___	___
Are you not gaining enough weight?	___	___	___	___	___	___
Are you troubled by muscular aches?	___	___	___	___	___	___
Are you troubled by constipation?	___	___	___	___	___	___
Do you urinate frequently?	___	___	___	___	___	___
Are you troubled by diarrhea?	___	___	___	___	___	___
Do you suffer from backaches?	___	___	___	___	___	___
Do you get very hungry?	___	___	___	___	___	___
Are you troubled by clumsiness?	___	___	___	___	___	___

	O	S	N	S	Mod	M
Do you have trouble keeping your weight down?	—	—	—	—	—	—
Do you have trouble with your complexion?	—	—	—	—	—	—
Do you have swollen feet or legs?	—	—	—	—	—	—
Do you need to sleep more?	—	—	—	—	—	—
Do you have a lack of energy?	—	—	—	—	—	—
Do you have any spotting or bleeding?	—	—	—	—	—	—
Do you have breast tenderness or swelling?	—	—	—	—	—	—

Appendix C
Hospital Approval of Project



DEPARTMENT OF THE AIR FORCE
EHRLING BERGQUIST USAF REGIONAL HOSPITAL ISAC
OFFUTT AIR FORCE BASE, NEBRASKA 68113 5300

REPLY TO
ATTN OF: SGHN

1 Jun 87

SUBJECT: Permission for a Research Project by Carolyn Lerum

TO: Institutional Review Board

1. Carolyn Lerum presented her research project proposal along with the questionnaires to be used. She said subjects would be given a statement as to why the aims of the study and a request for their participation. They would also be given a consent form to sign that assures participants confidentiality and the right to drop out of the study at any time.
2. The questionnaires were reviewed and approved. They along with the consent form and the statement as to why the aims of the study being given to participants meet our standards for a research project at Ehrling Bergquist USAF Regional Hospital.
3. Therefore, Carolyn Lerum has permission for her research project to be conducted at Ehrling Bergquist USAF Regional Hospital.

Margaret L. Payne

MARGARET L. PAYNE, Colonel, USAF, NC
Chairman, Department of Nursing

UNITED STATES AIR FORCE



SEPTEMBER 18, 1947

Appendix D
Institutional Review Board Approval



The University of Nebraska
Institutional Review Board
For the Protection of
Human Subjects

Office of the Executive Secretary, IRB
5017 Conkling Hall
University of Nebraska Medical Center
42nd & Dewey Avenue
Omaha, NE 68105-1065
(402) 559-6463

EXEMPTION INFORMATION FORM

PROPOSAL TITLE: A Study of the Relationship Between the Variables of Maternal Age and Physical Symptoms of Pregnancy and Maternal-Fetal Attachment.

INVESTIGATOR(S) NAME & DEGREE: Carolyn W. Lerum, BSN; Geri LoBiondo-Wood, PhD

DEPARTMENT & SCHOOL: College of Nursing, University of Nebraska Medical Center

ADDRESS: 42nd and Dewey, Omaha, Nebraska 68105-1065

TELEPHONE NUMBER: (402) 559-4121

PURPOSE OF THE STUDY: The purpose of this study is to determine if a relationship exists between maternal age and the physical symptoms of pregnancy and the development of maternal-fetal attachment. By statistically looking at how the occurrence of specific symptoms and maternal age impact upon the development of attachment, this study will attempt to provide information that could prove useful in assessing the needs of pregnant women at risk for poor maternal-fetal attachment.

DESCRIPTION OF SUBJECT POPULATION AND METHOD(S) OF RECRUITMENT:

The sample of this study will consist of a cross section of 76 conveniently selected pregnant women from a hospital clinic in the midwest. All subjects must be 19 years of age or older, be able to speak, read, and write English, and be able to give informed consent. Women whose pregnancies are classified as high-risk will not be included in the study. Participation will be voluntary.

INFORMED CONSENT: Some technically exempt research projects ethically require informed consent (written or oral). If, in the investigator's opinion, the study requires informed consent, the method used to obtain informed consent should be described and any written consent forms submitted. If the study does not require consent, it should be so stated and justified.

A consent form will be given to each participant that assures confidentiality and the right to withdraw from the study. Prior to filling out the surveys, participants must read and sign the consent form. There is no risk to subjects if they participate.

DESCRIPTION OF PROCEDURES:

Prior to initiation of the study, the investigator will obtain consent from the consenting institution as well as from the hospital administrator and chief of obstetrics. All patients will be personally approached by the investigator and given a copy of the consent form and the two survey questionnaires (Physical Symptoms Checklist and Maternal-Fetal Attachment Scale). The patients will be approached as they wait for their routine obstetrical check-up therefore the survey questionnaires will be completed during the office visit.

EXEMPTION CATEGORY: This proposal qualifies for exemption under 45 CFR 46:101(b) paragraph(s) _____ and is justified as follows:

The research required for this study involves participant completion of survey questionnaires. Code numbers only will be used to identify subjects, thereby maintaining confidentiality. There are no right or wrong answers on the attachment behaviors form. Questions ask the women to respond to questions which involve (a) an opinion regarding their interactions with their fetus, (b) attributing characteristics to the fetus, and (c) role taking questions. Subjects respond on a Likert Scale. The pregnancy symptoms questions are a list of the usual physical symptoms of pregnancy (eg. nausea and vomiting) which a woman is asked as part of her usual prenatal visit.

Based on the input needed from the subjects there is less than minimal risk.

SIGNATURE OF INVESTIGATOR

DATE

SIGNATURE OF ADVISOR
(for student investigator)

DATE

The IRB reserves the right to request the investigator provide additional information concerning the proposal.

Appendix E
Introduction of Study

Introduction to Subjects and Written Summary

This is to introduce myself, Captain Carolyn W. Lerum, RNC, a master's candidate at the University of Nebraska Medical Center. I am currently engaged in a study of pregnant women and their feelings throughout pregnancy.

From my nursing experience with pregnant women I became interested in how women think and feel about themselves, their pregnancy, and their unborn child. I would very much like to have you assist me by participating in this study. To better serve childbearing women we need to know more about them. By conducting this study it may be possible to determine how nurses can provide continued health care to women in the childbearing period. Your physician has discussed the study with me and has given me permission to give you this letter. To my knowledge there are no foreseeable risks or discomforts by taking part in this study.

To insure confidentiality no names will be used in the study: identifying numbers will be assigned to all information received for the purpose of tabulation. You may look at the forms before you make your decision. You may also have a copy of the consent form.

Participation in the study requires agreement to the following:

- 1) approximately 20 minutes of your time.
- 2) Permission to fill out two survey questionnaires.

By agreeing to participate in the study, you are contributing to the body of knowledge necessary for health care improvement. If you agree to participate in the study, please complete the consent form. The next items in your packet are the questionnaires. Please complete them in the order in which they appear in your packet. Directions appear at the beginning of each questionnaire. Thank you for your participation. If you have any further questions or concerns regarding this study I will be happy to answer them now or in the future.

Appendix F
Subject Consent Form

NAME

Attachment

REG NO

93

LOCATION

DATE

CONSENT FORM

IRB PROTOCOL NUMBER _____

Page _____ of _____ Date _____

A Study of the Relationship Between the Variables of Maternal Age and Physical Symptoms of Pregnancy and Maternal-Fetal Attachment

INVITATION OF PARTICIPATE

You are invited to participate in a research project on maternal-fetal attachment and maternal age and the physical symptoms of pregnancy.

PURPOSE OF THE STUDY

The purpose of this study is to assess if there is a relationship between the pregnant woman's age and her physical symptoms of pregnancy and her relationship to her unborn child.

EXPLANATION OF PROCEDURES

Participation in the study requires agreement to the following:

Approximately 20 minutes of your time.

Permission to fill out two survey questionnaires. The surveys will ask you questions about yourself, your pregnancy, how you have felt physically thus far in this pregnancy, and how you feel about your developing child.

POTENTIAL RISKS AND DISCOMFORTS

There are no known risks or discomforts associated with this study.

POTENTIAL BENEFITS

There are no direct benefits to you for participating in this study. By agreeing to participate in the study, you are contributing to the body of knowledge necessary for health care improvement for pregnant women in the future.

ASSURANCE OF CONFIDENTIALITY

Any information obtained in connection with this project and which could be identified with you will be kept strictly confidential. The information obtained in this study may be published in scientific journals or presented at scientific meetings, but your identity will be kept strictly confidential.

Subject's
Initials

CONSENT FORM UNIVERSITY OF NEBRASKA MEDICAL CENTER (cont.)

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WITHDRAWAL FROM THE STUDY

Participation is voluntary. Your decision whether or not to participate will not affect your present or future medical care at Ehrling Bergquist Hospital. If you decide to participate, you are free to withdraw your consent and to discontinue participation at any time.

OFFER TO ANSWER QUESTIONS

If you have any questions, please do not hesitate to ask. If you think of questions later, please feel free to contact one of the investigators listed below.

YOU ARE VOLUNTARILY MAKING A DECISION WHETHER OR NOT TO PARTICIPATE. YOUR SIGNATURE INDICATES THAT YOU HAVE DECIDED TO PARTICIPATE HAVING READ THE INFORMATION PROVIDED ABOVE. YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP.

 Signature of Subject

 Date

 Signature of Investigator

 Date
INVESTIGATORS

Carolyn W. Lerum, R.N.C.
 Geri LoBiondo-Wood, Ph.D., R.N.

291-4349 (day)
 559 4121 (day)

291-4349 (night)
 553-6153 (night)

Appendix G
Subject Information Sheet

SUBJECT INFORMATION SHEET

95

Please answer the following questions:

Code Number _____

1. Today's date _____

Your due date _____

Age _____

2. Education:

Attended high school _____

Attended graduate school _____

Completed high school _____

Graduated graduate school _____

Attended college _____

Student _____

Graduated college _____

3. Number of years married (in months) _____

4. Have you seen a picture of the baby from an ultrasound or sonogram
test? Yes _____ No _____ If so, how many weeks were you? _____

5. Have you heard your baby's heartbeat? Yes _____ No _____

6. Have you felt the baby move inside you? Yes _____ No _____

If so, how often:

Often _____ Sometimes _____ Once or twice _____

Also, if so, is the movement:

Vigorous _____ Moderate _____ Mild _____

About how many weeks pregnant were you when you first felt the
the baby move? _____

7. How many times have you been pregnant? _____

8. How many babies have you delivered? _____

9. Was this pregnancy planned? Yes _____ No _____

10. What is your income level?

0-\$10,000 _____

\$31,000-\$40,000 _____

\$11,000-\$20,000 _____

\$41,000-\$50,000 _____

\$21,000-\$30,000 _____

\$51,000+ _____