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PRENATAL FETAL ATTACHMENT IN PRIMIPAROUS ADOLESCENT WOMEN

By

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ABSTRACT

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Research which focuses on maternal attachment in the prenatal period has primarily addressed the adult mother in her third trimester. Few investigators have studied the process of attachment to the fetus in the adolescent. Those who have, reported findings inconsistent with those found in adult groups.

The purpose of this correlational study of indicators of prenatal fetal attachment was to determine if the process of prenatal fetal attachment occurs in primiparous adolescent women, and if so, in what manner. A second purpose was to determine whether the indicators of prenatal fetal attachment are related to psychosocial factors such as levels of self-esteem and anxiety, the extent of social support and health behaviors practiced, and the degree of perceived stress and ego development. The sample consisted of 40 adolescents; data were collected at four points during the gestational period.

Results of this study supported previous investigations which suggested that the degree of prenatal fetal attachment

increases over the gestational period. Statistical analyses revealed weak to moderate correlations between the dependent and independent variables. Behaviors which provide a healthy environment for the fetus were inversely related to the level of state anxiety. The extent of affection and instrumental aid received from the father of the baby were associated with the degree of prenatal fetal attachment.

Some indicators of the degree of prenatal fetal attachment were associated with cultural orientation. The group of Caucasian adolescents, who reported a greater degree of stress, also reported imagining themselves more in roletaking behaviors. The extent of affection received from her mother was associated with a greater degree of prenatal fetal attachment for Caucasian adolescents. The extent of this support appeared to be less important for the Black and Hispanic adolescents.

DEDICATION

To Peter, Michael, and Rachel

and

my parents, Loren and Marietta Miller

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Chapter 1

Introduction

Statement of the Problem

Adolescent pregnancy is not a new phenomenon. However, over the last few years, concern for the continuing high incidence has escalated. Although the numbers of births to adolescents have declined since 1977, due to a decrease in the population of adolescents, the proportion of teens giving birth has remained almost unchanged particularly for the group 15 and under. In 1985 out of a total of 472,623 births to all females under the age of 20, 64% of them occurred out of wedlock. This compares with 30% born out of wedlock to the same age group in 1970 (Moore, 1989). Based on previous statistics it is estimated that four out of ten teens will become pregnant and two out of ten will have at least one child by the age of 18. Of the 1.1 million adolescents who become pregnant each year 600,000 will carry their infants to term and 96% will keep their babies (Human Ecology Forum, 1981).

Adolescent parenting has been shown to result in a variety of poor biopsychosocial outcomes for some infants.

These outcomes appear to be based on the interaction of multiple, complex variables which include late entrance into the health care system (Felice, Granados, Ances, Hebel, Roeder, & Heald, 1981; Mangold, 1983), low socioeconomic status (Graham, 1981; Miller & Stokes, 1985) interrupted and uncompleted education (Cohen, Belmont, Dryfoos, Stein, & Zayac, 1980),poor employment prospects (Spivak & Weitzman, 1987), poor health habits (Osofsky, 1985), and insufficient support systems (Mercer, Hackley, & Bostrom, 1984; Ventura & Hendershot, 1984).

Elster, McAnarney, and Lamb (1983) suggested that age related intrapersonal variables interact simultaneously to create a situation of crisis for the adolescent parent. Cognitive immaturity inhibits her ability to develop realistic expectations of infant behavior. This results in less adaptive parenting behaviors and a tendency toward intolerance and insensitive response to infant cues. A lack of knowledge of child development may lead the adolescent to neglect appropriate verbal interaction. The normal self-centered behavior which adolescents exhibit may cause them to place their own needs before those of their vulnerable infants.

Adolescent and adult mothers have been compared on parenting behaviors in an attempt to determine a developmental basis for their differing styles. Correlates of adolescent parenting behaviors with regard to age are conflicting. Jones, Green, and Krauss (1980) found that older mothers demonstrated significantly more responsiveness, maintenance of proximity,

and lateral trunk contact during moments of infant stress than 17 and 18 year old mothers. McAnarney, Lawrence, and Aten (1981) also reported a positive correlation between the mother's age and healthy interaction with her infant. The younger the mother, the less likely she was to demonstrate behaviors commonly associated with good parenting, such as, touching, verbal interaction and the use of high pitched voice, and synchronous movement. In addition, younger adolescents have been reported to engage in aggressive behaviors, such as, picking, poking and pinching their infants (Lawrence, Mc Anarney, Aten, Iker, Baldwin, & Baldwin, 1981). McAnarney, Lawrence, Aten, and Iker (1984), however, found no correlation between age and parenting behaviors. Gentle touch and vocalization were found to be related to being non-black suggesting a cultural rather than age difference in parenting behaviors.

The past two decades have witnessed a great deal of interest in the phenomenon of maternal-infant relationships. Observation of the interaction between mother and infant has stimulated research which has attempted to determine the point at which the pregnant woman first experiences an affiliation with her child as well as to discover the biopsychosocial mechanisms which enhance or disrupt this phenomenon. A review of the literature revealed that the complexity of these issues has been amplified by the lack of consistency in the use of two terms, attachment and bonding, among the many investigators. Klaus and Kennell (1976) used the terms

attachment and bonding interchangeably, whereas, other investigators have tended to assign them two distinct meanings. Bonding is used most often to refer to the immediate postpartum period during which the mother exhibits behaviors of fondling, skin-to-skin contact, and suckling, all of which facilitate a reciprocal response in the infant. Attachment, according to Bowlby (1969), refers to the affectional tie which develops between mother and infant within the first year of life and is viewed as a reciprocal relationship between the dyad. The issue is further complicated by those who wish to study the affiliation the woman develops for her unborn child. It is assumed by these investigators that the developing mother-child relationship has its origin in the prenatal period. Because little is known about the phenomenon of prenatal fetal attachment in pregnant women, this study of mother-child relationships focused on the prenatal fetal attachment which they develop for their unborn children rather than the more frequently investigated phenomenon of bonding or attachment in the postpartum period.

Purpose of the Study

The purpose of this correlational study of indicators of prenatal fetal attachment among primiparous adolescent women, or those carrying their first infant to term, was to determine if the process of prenatal fetal attachment occurs in

adolescent women, and if so, in what manner. A second purpose was to determine whether the indicators of prenatal fetal attachment are related to psychosocial factors such as levels of self-esteem and anxiety, the extent of social support and health behaviors practiced, and the degree of perceived stress and ego development.

Significance of the Study

Research which focuses on maternal attachment in the prenatal period has primarily addressed the adult mother in her third trimester and results of these studies have been inconsistent. Little is known about the process of attachment to the fetus in the pregnant adolescent. Theories of human development support age-stage differences between adolescent and adult cognitive and psychosocial development. It would seem reasonable to expect that the adolescent may not exhibit attachment indicators in the same manner or to the same degree as an adult. Once a better understanding of the process by which adolescents begin to form a relationship with their babies is achieved, it is possible that for those who exhibit a lesser degree of attachment, interventions designed to strengthen this relationship can be developed. With a better understanding of the process investigators may find an association between this relationship and psychosocial factors thought to affect the strength of the relationship. In addition, the strength of the relationship, which may have its

origins in the prenatal period, may be associated with the extent of health behaviors demonstrated during gestation. Those adolescents who demonstrate a high degree of attachment to their unborn babies may be shown to hold a commitment to provide a healthy prenatal environment for themselves and their fetus. With a better knowledge of prenatal fetal attachment, an association with maternal-infant attachment in the postnatal period may be found. Early recognition of weak attachment indicators in the mother could result in specific interventions to assist the development of this process.

In summary, the continued high incidence of adolescent pregnancy and parenting, and ultimately the psychosocial vulnerability of the mother-infant dyad, has stimulated interest in the maternal-infant relationships of this age group. The study of these relationships has been complicated by the inconsistency of terms which may refer to maternal-infant bonding in the early postnatal period, attachment which is often defined as a reciprocal relationship which forms between the mother and infant in the first year of life, and the affiliation the pregnant woman forms with her unborn child.

This study focused on the manner in which these young mothers began to form an attachment to their unborn babies, a process which may provide the basis for the mother-infant relationship which evolves after birth. In addition, psychosocial variables thought to have an effect on the strength of this relationship were examined. It is possible

that with a better understanding of this phenomenon, interventions which are designed to strengthen the relationship may be developed.

Chapter 2

Review of the Literature

The previous chapter presented a brief review of the literature which describes the phenomenon of adolescent pregnancy as well as parenting characteristics found to be fairly common in this age group. It was suggested that a better understanding of the phenomenon of prenatal fetal attachment could result in specific interventions designed to facilitate the development of this early mother-infant relationship.

The origins of the concept of prenatal fetal attachment will be presented in this chapter. This will be followed by a review of the literature related to prenatal fetal attachment and variables which may affect the degree of attachment which a woman develops for her unborn baby. Each of the related variables will be discussed in relation to their association with pregnancy and childbearing in general, as well as research which reports their relationship with prenatal fetal attachment. The chapter will conclude with literature specifically related to the pregnant adolescent.

Prenatal Fetal Attachment

A few studies, based in grounded theory, have been conducted in an effort to describe the beginnings of the early mother-infant relationship. Leifer (1977, 1980), Lumley (1980,1982), and Stainton (1985) identified affective changes which developed over the course of pregnancy. Women in these studies were found to develop an emotional bond with their fetus soon after conception which deepened considerably during pregnancy. For some women, the first trimester was characterized by an emotional detachment until viability was assured. Others, however, described behaviors indicative of attachment as early as 8 to 12 weeks. These early attachers were more likely to talk to the fetus, to stroke it, to feel certain of the sex of the fetus, and to describe themselves as very involved with extensive preparations for the birth and postpartum period (Lumley, 1980, 1982). Until the experience of fetal movement, which seemed to stimulate a sense of the fetus as a separate identity, women commonly viewed the fetus as part of themselves. When Liefer (1977, 1980) asked women in her sample to describe their babies, initially the fetus was viewed as diffuse. This image progressed to a textbook image and was then personified. These findings were substantiated by Stainton (1985) and by Lumley (1980, 1982) who reported that 85% of women at 18 to 22 weeks gestation had no doubts that the fetus was fully formed; by mid-pregnancy

63% believed that the fetus was a real person. At 36 weeks all the women described their fetuses realistically. Leifer (1977, 1980) found that most women engaged in activities which served to heighten the reality of the baby; choosing a name established an identity and a link to other family members. Fetal movements initiated conversations with the fetus and the partner was often drawn into the pregnancy through conversations about the future child and by stimulating the fetus so that he could observe and feel movement. Furthermore, women in Stainton's study actually attributed meaning to movement by the fetus. The authors of these studies suggested that these behaviors reflected a growing sense of a developing maternal relationship with her unborn baby.

Further theoretical support for the concept of prenatal fetal attachment was provided by investigators who studied the grief response following the loss of a fetus through spontaneous abortion, stillbirth, and neonatal death. In retrospective studies it was concluded that women in all three groups experienced similar emotions of grief and loss regardless of gestational age (Leppart & Pahlka, 1984; Peppers & Knapp, 1980). These findings, however, were in direct contradiction of observations made by Deutsch (1945).

> Observation of women who immediately after delivery have lost their joyfully expected children, or who have given birth to dead babies, show that the reactions to such loss do not have the character of real grief such as one suffers after the death of a beloved object. They correspond to the effects of

> nonfulfillment of a wish fantasy, of mobilized guilt feelings, of accusation against others etc. (p. 263)

In the belief that the maternal-infant relationship has its beginnings in the prenatal period, a few investigators have attempted to quantify the degree to which pregnant women develop an affiliation with their unborn babies (Condon, 1985; Cranley, 1979, 1981a, 1981b, 1984; Reading, Cox, Sledmere, & Campbell, 1984; Rees, 1979; Vito, 1986). Cranley (1979, 1981a, 1981b) suggested that the mother-infant relationship actually has its roots in the prenatal period and that it is the result of dynamic psychological and physiological events. She defined prenatal maternal attachment as, "The extent to which the woman engages in behaviors that represent affiliation and interaction with her unborn fetus" (1981a, p. 282). Based on this definition Cranley developed the Maternal Fetal Attachment Scale which was constructed from various facets of the nature of mothering and the tasks of pregnancy.

Utilizing the Maternal Fetal Attachment Scale, Cranley (1979) found that 78% of the women in her study engaged in behaviors or attitudes purported to be indicative of attachment at least "sometimes"; nearly one-third indicated they do "most of the time". The behaviors of the Giving of Self subscale were most frequently practiced with 93% reporting the behavior or attitude at least "sometimes". The least common behaviors were in the Interaction with Fetus subscale; only 55.5% of the women engaged in these behaviors

at least sometimes. Cranley concluded that women in their third trimester of pregnancy demonstrate attachment to their unborn babies. Support for Cranley's conclusions was provided by Davis and Akridge (1987) who utilized Cranley's scale. They reported similar results in their study of women ages 17 to 32, in their third trimester.

The majority of the studies on prenatal fetal attachment utilized Cranley's Maternal Fetal Attachment Scale and most selected one point in time in the third trimester in which to examine the attachment process (Armantrout, 1983; Carey, 1985; Davis & Akridge, 1987; Gaffney, 1986; Kemp & Page, 1987; Mercer, Ferketich, May, DeJoseph, & Sollid, 1988; Wawrzynski, 1986;). Three investigators (Condon, 1985; Reading, et al., 1984; Vito, 1986), however, examined the development of prenatal fetal attachment over the course of gestation utilizing different instruments, one of which was an adapted version of Cranley's (1979, 1981a) scale.

In an attempt to measure the development of prenatal fetal attachment over the course of the pregnancy, Vito (1986) modified Cranley's (1979, 1981a) instrument in a cross-sectional design. The investigator found that gestational age was positively associated with the subscales of Interaction with the Fetus, Attribution of Characteristics and Intentions to the Fetus, and Differentiation of Self from the Fetus by the mid-point in pregnancy. Gestational age was positively associated with the Nesting subscale, reintroduced by this investigator, by the latter part of pregnancy. The author

concluded that prenatal fetal attachment is an orderly process; from zero to eighteen weeks the woman focuses on her new role and giving of herself for a healthy pregnancy. Behaviors continue throughout pregnancy with differentiation of self, interaction with fetus, and attribution of characteristics and intentions to the fetus added at approximately 18 weeks gestation. At approximately 28 weeks, nesting and physical preparation are added to the process. Although studies by Reading, et al., (1984) and Condon (1985) utilized two entirely different instruments, they also concluded that pregnant women exhibit an increasing attachment to their unborn babies over the gestational period.

Several researchers, (Cranley, 1979, 1981a, 1981b; Reading, et al., 1984) interested in the attachment process, attempted to determine whether attachment in the prenatal period can predict attachment in the postnatal period. Cranley (1979, 1981a), administered an adapted version of the Broussard Neonatal Perception Scale to her sample early in the postnatal period. Only the adapted Average Baby subscale correlated significantly with each of the Maternal Fetal Attachment subscales and the total score. Mothers who were more attached to their fetus had significantly more positive attitudes toward output behaviors of elimination and regurgitation of the baby in the postpartum period.

The relationship of prenatal fetal attachment to mother-infant bonding in the postnatal period reported by Cranley (1979, 1981a) was not entirely confirmed by Reading, et al.

(1984). Utilizing an instrument developed for their study, psychological reactions toward the pregnancy and fetus were measured at the time of entry into the study, and again at 16 and 32 weeks, shortly after delivery, and at three months postpartum. Following delivery, those mothers who reported positive or negative reactions toward the infant showed no difference in ratings of prenatal attachment. Multiple regression analysis revealed that drugs in labor, fetal attachment scores at 16 and 32 weeks, and the Apgar score, in combination were the best predictors of attachment to the neonate. They accounted for almost 50% of the variance. At three months, attachment scores at delivery were the best predictor. However, these scores plus mood ratings accounted for only 10% of the variance.

In an effort to determine whether prenatal attachment can be enhanced through a process of prenatal intervention and whether the intervention might have an effect on mother-infant attachment in the postpartum period, Carter-Jessup (1981) utilized an experimental design. The attachment intervention methods consisted of teaching the mothers to feel for fetal parts and fetal position daily, encouraging awareness of fetal activity and maternal behaviors which affect that activity, and massaging and stroking the abdomen daily. These interventions were administered on a weekly basis two to three times in late pregnancy. Attachment behaviors were then measured at two to four days postpartum. Carter-Jessup found a significant difference in postpartum

behaviors and concluded that maternal attachment is underway in the third trimester and that differences between the two groups were likely due to the intervention. Carter-Jessup did not, however, measure the existence of prenatal attachment.

Davis and Akridge (1987) modified the Carter-Jessup (1981) study in an attempt to address the aforementioned deficit. Subjects in their third trimester completed Cranley's Maternal-Fetal Attachment Scale (1979, 1981a) and were then randomly assigned to experimental and control groups. The experimental group received the interventions described by Carter-Jessup in a slightly modified form. The two groups were assessed in the early postpartum period utilizing Avant's Maternal Attachment Scale (1981). No significant differences were found between groups on the extent of maternal attachment exhibited in the postpartum period, thus contradicting reports by Cranley (1979, 1981a) and Carter-Jessup.

The early research which provided a theoretical basis for the existence of the construct of prenatal fetal attachment has resulted in a number of studies which have attempted to find a correlation between psychosocial factors which may have an effect on the developing attachment of the mother to her unborn child. These psychosocial factors include (1) the extent of social support, (2) the degree of perceived stress, (3) the level of self-esteem, and (4) the level of anxiety. Each will be discussed in the following paragraphs and pages.

The first psychosocial factor, the extent of social support which one possesses, appears to be a resource which affects one's ability to adapt to alterations in the internal and external environment (Cobb, 1976; Coll, Vohr, Hoffman & Oh, 1986; Colletta & Greg, 1981; Crnic, Greenberg & Slough, 1986; Crockenberg, 1987; Norbeck & Sheiner, 1982; Pascoe & Earp, 1984). Early works on social support established that an association exists among social support, life stress, and biopsychosocial adaptation. House, Landis, and Umberson (1988) reviewed studies which found a correlation between social isolation and the incidence of suicide, tuberculosis, accidents, myocardial infarction, and psychiatric disorders. They suggested that until the recent emergence of a theoretical cause and effect model it has been unclear whether a lack of social relationships causes illness or whether unhealthy people are less likely to establish and maintain social relationships. The application of the causal model in the more recent studies has resulted in increasing empirical evidence that social relationships are a predictor of morbidity and mortality.

Much of the investigative work on the concept of social support has been accomplished by Cobb (1976) who delineated the component parts of the construct. Information that one is cared for and loved is transmitted through intimate relationships which involve mutual trust. To be valued and esteemed leads the individual to esteem himself and reaffirms his sense of self-worth. A network that is common and shared

provides information on the characteristics of the relationship and knowledge that goods and services are available upon demand. Based on this theoretical framework, Cobb defined social support as, "Information leading the subject to believe that he or she is cared for and loved, esteemed and valued and that he belongs to a network of communication and mutual obligation" (p. 300).

Kahn (1979) further developed the theoretical constructs associated with the phenomenon of social support. He adopted the term "convoy" to imply that each person moves through his life surrounded by others who have a particular meaning for him. Over the life course the structure of his convoy changes as his roles change. Kahn and Antonucci (1980) described the convoy structure as a set of concentric circles arranged about the focal person with those of least importance to him the furthest from him. This circle tends to be the least stable in terms of composition. The second concentric circle consists of family, friends, or co-workers forming a more stable relationship but one which may not be maintained over time if either member loses his role. The inner most circle contains those who are very close to the individual, are independent of role, and whose interpersonal relationships tend to remain stable over time. These are the relationships which provide ongoing support in the form of affective expression, affirmation of worth, and direct assistance in a variety of situations.

The mechanisms by which social support functions within relationships to protect an individual's health are of two types. Social resources may have a beneficial effect on health regardless of whether the individual is experiencing significant levels of stress. A perception of an adequate social network will provide positive interpersonal experiences. For example, supportive network members may encourage the individual to engage in healthy behaviors and to seek appropriate health care. Cohen and Wills (1985) suggested that this network also assures a sense of predictability and control as well as a feeling of self worth.

A second mechanism by which social relationships affect health is through a buffering action which protects individuals from the pathogenic effects of stressful events. Support may intervene at the junction of a stressful event and the stress reaction by altering the stress response. The individual may redefine the potential for harm or develop new coping skills when social resources are available. Support may also intervene between the experience of a stressful event and the onset of a maladaptive state by reducing or eliminating the stress reaction or by influencing the maladaptive process. Social support may provide the solution to the stressful situation or it may alter its perceived importance for the individual (Cohen & Wills, 1985). Cobb (1979) stated that those who are emotionally supported are more able to change themselves to fit into a changing environment, to have a sense of autonomy and thus more likely

individuals under stress. External stimuli will exert pressure on one or more systems, thus inducing the remaining systems to respond so that functioning ability in each of the three systems may be affected. The ability to adapt to external stressors can be enhanced by individual behavior which acts to assure the availability of the best resources possible over the longest period of time.

According to Trumbull and Appley (1986), "Stress results from a demand, real or perceived, beyond the real or perceived carrying capacity of the individual's physiological, psychological, and/or social systems" (p. 34). One's carrying capacity has some resilience depending upon the predisposition of the individual as well as characteristics of the precipitating stressor(s). Factors which appear to alleviate stress are 1) having a sense of control over the events in one's life; 2) accurate anticipation of an event; 3) accurate information about the circumstances surrounding the event, and 4) an awareness of the means for reducing the stress or escaping from it (Trumbull and Appley, 1986). It appears that the provision of social support assists the individual to acquire the necessary knowledge about the stressor and to develop mechanisms by which he can successfully cope with them.

The effects of social support and life stress during the perinatal period have been well documented over the last two decades (Colletta, 1981; Crittenden, 1985; Crnic, et al., 1986; Crockenberg, 1987; Nuckolls, Cassel, & Kaplan, 1972;

Tilden, 1983; Ventura & Hendershot, 1984; von Windeguth & Urbano, 1989; Zarling, Hirsch, & Landry, 1988). Nuckolls, Cassel, and Kaplan (1972) explored the degree to which psychosocial assets (feelings and perceptions of self and pregnancy, overall life satisfaction, and relationship with husband, extended family, and community) were protective and the degree to which multiple life changes during pregnancy were detrimental to health. Those women with high life change scores both before and during pregnancy and high psychosocial assets experienced only one-third the pregnancy complications rate of women whose psychosocial asset scores were low. In the absence of such life changes, particularly for the period before pregnancy, the level of psychosocial assets was irrelevant, there being no significant difference in the complication rate between those having high and low psychosocial asset scores.

Life stress and social support have been found to have an important effect on the pregnant woman's psychological well-being as well. Tilden (1983) hypothesized that high life stress and low social support were related to high emotional disequilibrium, defined by anxiety, depression, and self-esteem scores during pregnancy. Tilden found that life stress and social support exerted separate and significant main effects on emotional disequilibrium and that the amount of variance in emotional disequilibrium explained by life stress was extremely high. The effect of social support on emotional disequilibrium, although weaker, was also significant.

Several other factors were found to be related to a mother's health during pregnancy which suggest that the effects of the mother's social support is mediated through her to her developing fetus and infant (Colletta, 1981; Crittenden, 1985; Crockenberg, 1987; Pascoe & Earp, 1984; Ventura & Hendershot, 1984; Zarling et al. 1988; vonWindeguth & Urbano, 1989). Ventura and Hendershot examined the relationship between infant biological outcomes of adolescent and adult mothers and several psychosocial variables. They found that regardless of marital status at conception, infant outcomes were not significantly better for legitimate as opposed to legitimated births when conception was soon followed by marriage. Teenage mothers began prenatal care earlier if they were married at conception; those who were married after conception but before delivery began care earlier than those who were not married at the time of delivery. The authors suggested that a reduction of infant risk was not solely attributable to early prenatal care. Among those adolescents who sought early prenatal care, those who gave birth out of wedlock were more likely to have a baby with low birth weight or low one minute Apgar scores than those teens who were married at the time of delivery. The authors suggested that the socioemotional and financial support from the baby's father and her parents contribute directly to a healthy pregnancy through the reduction of stress. This finding was supported by Giblin, Poland, and Sachs (1987) who investigated the effects of social support on

health seeking behaviors of pregnant adolescents. They found that a positive relationship with the father of the baby was positively associated with adequate levels of prenatal care.

The mediating effects of social support on life stress have been extended into the realm of mother-infant relationships in the postnatal period (Crittenden, 1985; Crnic, et al., 1986; Crockenberg 1987; Pascoe & Earp, 1984; vonWindeguth & Urbano, 1989; Zarling, et al., 1988). Pascoe and Earp utilized a group of 69 Neonatal Intensive Care graduates (30 at risk for parenting failure and 39 not at risk). They hypothesized that mothers with many life changes who perceived high levels of social support would provide more home stimulation than isolated mothers with a similar number of life changes. Data supported this hypothesis. Mothers with high and low levels of life changes provided the same amount of stimulation to their infants, but mothers who perceived more social support provided more stimulation to their children, an effect that was unrelated to the amount of life changes they experienced. The relationship between social networks, life stress, and maternal behavior was supported by Crnic et al. (1986). In this longitudinal study, greater stress reported at one month postpartum was related to less positive maternal affect, while intimate friendship and community support were related to more positive mother-infant interaction at 8 months.

Further support for the effect of social support on parenting styles was reported by Crittenden (1985) who

identified five distinct parenting styles of women with a varying extent of social support. The pattern associated with adequate child rearing was typified by a mixture of long term and recently acquired friendships, and emotional, concrete, and dependable support from both friends and relatives. On the other hand, social support patterns associated with abusive or neglectful childrearing were infrequent contact with friends, and conversely, very frequent contact with an over dependence on relatives, friends, and professionals for help, as well as a general dissatisfaction with the dependability of the support system.

Parenting styles of adolescents also appear to be affected by the characteristics of their support system (Colletta, 1981; Crockenberg, 1987; vonWindeguth & Urbano, 1989). With high levels of support adolescent mothers were more affectionate toward their children, were more sensitive to their babies, and responded more readily when they cried. Those who believed that they should be responsive engaged in more smiling and eye contact. Furthermore, with high levels of emotional support, adolescents were less likely to nag, scold, ridicule, or threaten their children. Those who received little or no task assistance were more likely to direct their anger at their child and were less likely to be spontaneously warm and affectionate (Colletta, 1981; Crockenberg, 1987). Crockenberg found that for her sample, the addition of life stress to the variables of social support and maternal behavior altered the relationship of the two

variables. Daily support was associated with smiling, eye contact, and maternal sensitivity only when stress was low. Zarling, Hirsch, and Landry (1988) reported similar results in their study of social networks and mother-infant interactions with full term and very low birth weight infants. A larger number of ties between the mother's family of origin and her friends related to higher sensitivity in mothers of full-term but not very low birth weight infants. They proposed, that for mothers of very low birth weight infants who experienced high levels of stress, a high boundary density may increase distress through interpersonal communication which tends to reinforce her sense of helplessness and sense of failure.

A third psychosocial factor frequently studied as to its effect on the developing attachment of the mother to her unborn child is the level of self-esteem. Based on a synthesis of psychological theory, Coopersmith's (1967) conceptual model of this construct proposes that self-esteem is enhanced if an individual's personal achievement approaches the level of aspiration he has set for himself and if extensions of himself (e.g., body, spouse, and friends) prosper. During the process of development the individual internalizes attitudes expressed toward him by significant others and adopts them as his own. These attitudes and beliefs about one's self-worth are relatively constant and resistant to change and they vary across different aspects of one's life. To protect himself from loss of self-esteem which results in anxiety, he develops coping mechanisms of

repression and denial, or redefines the circumstances. Based on this research, Coopersmith defined self-esteem as, "A personal judgement of worthiness that is expressed in the enduring attitudes the individual holds for himself" (1967).

The influence of social support, on the development of adequate levels of self-esteem, particularly that provided by parents, is of primary importance. Coopersmith found that unconditional love and approval but with necessary constraints placed on behavior, an appropriate level of demands on performance, and a parenting style which allows for discussion and disagreement without fear of punishment, is most likely to result in competent, self-confident children with a belief in their own self-worth.

The association between the extent of social support, degree of perceived stress, and the level of self-esteem has been found not only in the general population but also in the population of pregnant adolescents and teenage mothers (Belle, 1982; Colletta & Gregg, 1981; Fischman, 1975; Giblin, et al., 1987; Held, 1981). Colletta and Gregg found that 41% of the variance in the degree of emotional stress was explained by levels of self-esteem, the extent of total support, and coping style in black adolescent mothers. Those girls who reported high levels of social support, received high self-esteem scores, and used direct action as a coping method, reported lower levels of emotional stress.

Several sources of support were found to have an effect on the psychosocial development of the adolescent. Of

particular importance is that support which is provided by her mother. Giblin, et al., (1987) assessed the influence of social support on maternal attitudes and behaviors in a sample of predominantly black adolescents. They found that high self-esteem scores were positively associated with receiving help from their mothers and anticipation of assistance with child care. These findings substantiated those of Held (1981) who reported that adolescents who scored within the norm on levels of self-esteem were most likely to name their mothers as their primary source of support. In addition to mother's support, Giblin, et al., also found that for their sample of adolescents, self-esteem was positively associated with having a job or being in school, experiences which provide differing types of support for the adolescent.

The extent of social support, degree of perceived stress, and level of self-esteem are related to a fourth psychosocial factor, level of anxiety, which has been frequently studied as to its effect on the developing attachment of the mother to her unborn child. Spielberger, Gorsuch, Lushene, Vagg, and Jacobs (1983) conceptualized anxiety as being comprised of two different although related constructs. The subjective feelings of tension, apprehension, nervousness, and worry at a particular point in time are referred to as state anxiety, while the persistent personality trait characterized by these feelings is referred to as trait anxiety. These subjective feelings result from the perception of stressful situations as dangerous or threatening. The stronger the anxiety trait the

more likely it is that the individual will view situations as threatening. Furthermore, those interpersonal situations in which one's self-esteem is threatened are more likely to result in increased feelings of anxiety for those who demonstrate higher levels of state and trait anxiety.

Studies by Gorsuch and Key (1974) and Avant (1981) examined the effects of high levels of anxiety during the perinatal period. Gorsuch and Key found that their adult subjects, which were divided into normal and abnormal pregnancy categories, did not differ in levels of trait anxiety before becoming pregnant. They differed significantly, however, as pregnancy progressed. Those women who consequently developed complications of pregnancy were found to have significantly higher levels of state anxiety at the third and fourth month. Additional analysis indicated that the level of state anxiety was independent of life stress. The authors concluded that anxiety is dysfunctional when it occurs early in pregnancy whereas, life stress is more dysfunctional later in pregnancy.

The effects of high levels of anxiety on the mother-infant relationship in the early postpartum period have been reported to be associated with the age of the mother. Avant (1981) found that for a group of women, ages 15 through 29, low levels of anxiety were inversely related to attachment to her newborn. Adolescents 15 to 18 had significantly higher anxiety scores and significantly lower attachment scores than

women 27 to 29 years of age. By the third postpartum day, however, anxiety scores were not significantly different.

In summary, research has demonstrated that the extent of social support, degree of perceived stress, and levels of self-esteem and anxiety affect the interaction of mothers and their infants in the postnatal period. These variables also appear to affect the extent to which she provides a healthy internal environment for her developing fetus. It would seem reasonable to expect that these psychosocial variables would also affect the behaviors, thoughts, and feelings that a woman has for her unborn child. An adequate social support system, minimal degree of perceived stress, low levels of anxiety and high levels of self-esteem during the gestational period may stimulate or enhance the initial attachment process which develops over the perinatal period. In addition, this developing attachment may result in improved health behaviors as the pregnant woman commits herself to the provision of a healthy internal environment for her fetus.

Several investigators have examined possible relationships between the process of prenatal fetal attachment and these four psychosocial variables. Cranley (1979, 1981a) found that for adult women in their third trimester of pregnancy, the presence of a social support system was positively associated with the degree of prenatal attachment, whereas, the level of perceived stress was inversely related. Those women who perceived higher stress levels reported a lesser degree of prenatal fetal attachment. In a similar

study, Wawrzynski (1986) found some support for Cranley's study. In her sample of 106 matched adult couples in their third trimester of pregnancy, for women, social support was significantly associated with prenatal fetal attachment. Mercer, Ferketich, May, DeJoseph, and Sollid (1988) found that received support was significantly and positively correlated with prenatal fetal attachment for only low risk women. Prenatal fetal attachment in high risk women and their partners was not related to the extent of their social support. This finding lends support to the supposition offered by Zarling. et al., (1988) that the degree of perceived stress experienced in a high risk pregnancy is not relieved by the social support system and may even be aggravated by it due to reinforced feelings of failure.

In addition to social support in general, specific sources of social support from the woman's spouse and her mother have also been investigated for a possible relationship with prenatal fetal attachment in pregnant women. The findings have been mixed, however. In a third study by Cranley (1984) the marital relationship of 326 couples was assessed as one aspect of social support. Cranley found a positive association between scores on the Spanier Dyadic Adjustment Scale and the Maternal Fetal Attachment Scale for both men and women. Zachariah, (1984) however, reported that although the extent of husband-wife attachment and mother-daughter attachment had a strong positive relationship with her psychological well-being during pregnancy, the

investigator found no relationship between these variables and the extent of prenatal fetal attachment. Mercer, Ferketich, May, DeJoseph, and Sollid (1988) also found no relationship between a gross measure of the quality of the early mother-daughter relationship and the degree of prenatal fetal attachment.

Studies by Cranley (1979, 1981a), Gaffney (1986) and Mercer, Ferketich, May, DeJoseph, and Sollid (1988) found mixed support for a relationship between prenatal fetal attachment and anxiety, a concept related to self-esteem and life stress. Gaffney assessed 100 adult women, in their third trimester, for prenatal fetal attachment and temporary and long term anxiety. The author found a significant inverse relationship between temporary anxiety and the Maternal-Fetal Attachment Scale. The study failed to demonstrate any relationship between long term anxiety and attachment. Mercer, Ferketich, May, DeJoseph, and Sollid (1988) on the other hand, reported a weak negative association with long term anxiety but not temporary anxiety. Cranley (1979, 1981a) found no support for the hypothesis that both temporary and long term anxiety are associated with prenatal fetal attachment.

The variables of self-esteem and self-concept have been found to be unrelated to prenatal fetal attachment in samples of pregnant adult women (Cranley, 1979, 1981a; Gaffney, 1986; Mercer, Ferketich, May, DeJoseph, and Sollid, 1988; Wawrzynski, 1986). Although Wawrzynski discovered a

significant positive relationship between self-concept and prenatal fetal attachment, when self-concept was included with social support in regression analysis, it was no longer significant. The author attributed the effect of self-concept on prenatal fetal attachment to the extent of social support.

Several variables have been investigated for the possibility of a confounding effect between the degree of prenatal fetal attachment and the four psychosocial variables under discussion and have netted contradictory results. These include several demographic variables, the degree and severity of physical symptoms, visualization with ultrasound, planned versus unplanned pregnancy, number of previous pregnancies and first fetal movement (Carey, 1985; Kemp & Page, 1987; Lerum & LoBiondo-Wood, 1989; LoBiondo-Wood, 1985; Mercer, Ferketich, May, DeJoseph, and Sollid, 1988; Reading, et al., 1984; Vito, 1986). In general, demographic variables of age, marital status, length of marriage, socioeconomic status, and physical symptoms of pregnancy (degree and severity) revealed no association with the degree of prenatal fetal attachment. Carey found a significant and positive relationship between visualization of the fetus with ultrasound and four of the subscales of the Maternal-Fetal Attachment Scale, Attributing Characteristics to the Fetus, Roletaking, Interaction with the Fetus, and Giving of Self. Visualization with ultrasound was also positively associated with the total scale. Vito and Lerum and LoBiondo-Wood contributed support to this finding only in that Giving of Self and the total Maternal Fetal

Attachment Scale were positively correlated in the two studies. Reading, et al. (1984), however, found no association between these two variables in their investigation of attitudes and feelings of the woman toward the pregnancy and the neonate.

Whether a pregnancy was planned and the number of previous pregnancies have also been assessed for their confounding effects on the degree of prenatal fetal attachment and the four psychosocial variables under discussion. Although LoBiondo-Wood (1985) and Kemp and Page (1987) found no relationship between prenatal fetal attachment and whether or not the pregnancy was planned, Lerum and LoBiondo-Wood (1989) found the relationship to be positive and significant. This was also supported by Vito (1986) who found that the combination of a planned pregnancy, older age, and previous pregnancy was associated with higher scores on the subscales of Roletaking and Giving of Self. Although Vito did not specify the effect of parity (number of previous pregnancies) Mercer, Ferketich, May, DeJoseph, and Sollid (1988) reported an inverse relationship between the number of children and scores on the Maternal-Fetal Attachment Scale. This finding supported that of Phipps and Zinn (1986) who found a low negative correlation between the Maternal Fetal Attachment Scale scores and parity.

Fetal movement has been linked with prenatal fetal attachment (Lerum & LoBiondo-Wood, 1989; Reading, et al., 1984; Vito, 1986). Vito reported that quickening or the first

experienced fetal movement, was positively related to the Nesting subscale which had been adapted from Cranley's (1979) early scale. Lerum and LoBiondo-Wood found that the frequency and degree of fetal movement was positive and significantly associated with the degree of maternal fetal attachment. In their longitudinal study, Reading, et al. (1984) suggested that women experiencing early fetal movement display more positive attitudes from the outset, rather than attitude change occurring as a function of fetal movement.

Investigation of the phenomenon of prenatal fetal attachment during pregnancy has received a great deal of attention over the last 15 years. The primary emphasis has been on descriptive studies and psychosocial factors thought to have an effect on the degree of prenatal fetal attachment developed by adult women. Research which investigates the relationship which the adolescent forms with her unborn baby is sparse. Armantrout (1983) surveyed 35 adolescents between the ages of 16 and 18 in their third trimester of pregnancy in an effort to determine whether this group demonstrated attachment behaviors in a manner similar to their older counterparts. Almost 75% indicated that they had engaged in behaviors and attitudes as represented by the total score on the Maternal Fetal Attachment Scale. The indicators of roletaking were most frequently practiced; ninety-four percent of the respondents indicated they engaged in these behaviors by responding "definitely yes" or "yes" to these items. Ninety-one percent indicated they displayed differentiation

from self, and 83% engaged in behaviors suggesting giving of self. Attributing characteristics to the fetus and interaction with the fetus were less commonly practiced. Scores on the total scale and Giving of Self subscale were comparable to those reported by Cranley (1979). Although roletaking indicators were reported more frequently in the adolescent group, Cranley found that adults more frequently demonstrated giving of self. For both groups, interaction with the fetus was less common.

Although Armantrout's data on adolescents essentially agreed with Cranley's adult sample, a study of prenatal fetal attachment by Koniak-Griffin (1988) indicated that adolescent and adult gravid women may differ in the progression of prenatal attachment behaviors. In a group of 90 adolescents with a mean age of 16.8 years and gestational age of 30.7 weeks, Koniak-Griffin discovered that the length of pregnancy was not a significant predictor of prenatal fetal attachment, thus contradicting Leifer (1977), Cranley (1984), Reading, et al. (1984), Condon (1985), and Phipps and Zinn (1986), all of whom observed a progressive attachment with the advancement of pregnancy in adult women.

Investigators may have made the assumption that prenatal fetal attachment in the adolescent occurs in a manner similar to that of adults. Theoretically, it can be argued that the adolescent's stage of cognitive and social development which results in a preoccupation with herself could be associated with the degree of prenatal fetal attachment that she develops

for her unborn child. Lapsley and Rice (1988), described their work on the General Model of Adolescent Ego Development which has evolved out of an effort to forge a synthesis between psychoanalytical and Piagetian ego models, two theoretical perspectives which have significant paradigmatic differences. They believe that social cognition, which in itself is a synthesis of several psychological positions, focuses on the process by which children gain knowledge of their social world and their reasoning processes in social matters. Central to this theory is the assumption that both children and adolescents apply cognitive abilities to interpersonal relationships and social problem solving tasks (Muuss, 1982). The psychoanalytic concept of recapitulated patterns of development, ego separation-individuation, sequences of self-understanding, and grandiosity and narcissism, are basic to this model.

According to the General Model of Adolescent Ego Development, the two constructs of recapitulation and personal fable are ideation patterns which advance adolescent ego development. They restore self-esteem in the face of mourning reactions which result from the separation-individuation process (Lapsley, Fitzgerald, & Rice, 1989). Recapitulation is defined as the repetition of a structural form or pattern for a given developmental process. It is the re-emergence of these earlier developmental patterns which results in typical adolescent behaviors such as, showing off, self-consciousness, preoccupation with shame, shyness, and embarrassment. These

behaviors seem to reflect the adolescent's tendency to construct an imaginary audience which is grounded in the belief that he or she is the object of others' attention. Because the adolescent assumes that others in his social environment are as preoccupied with himself as he is, he anticipates the reactions of others and therefore, plays to an imaginary audience. Coincident with this construct is that of the personal fable, the belief in one's uniqueness, invulnerability, and omnipotence. Because he regards himself as special and unique, he tells himself stories which are not true. This may account for the risk-taking behaviors such as alcohol and drug ingestion, and unprotected intercourse.

Research which investigates the effects of ego development on adolescent mother-infant interaction is sparse. In addition, the definition of ego development and instrumental measurement varies from one investigator to the next. Levine, Garcia-Coll, and Oh (1985) compared the pattern of mother-infant interaction between adolescent and adult mothers to examine the contribution of age, level of ego development, education, and extent of social support. For them, the concept of ego development was based on Loevinger's theory in which each stage of development represents progressively more complex ways of perceiving oneself in relation to the world. They found that higher levels of ego development, associated with older age, and greater child support were significant predictors of positive maternal affect and time spent in mutual gaze.

Wise and Grossman (1980) also investigated the relationship that certain aspects of the personality, including ego strength, have with adaptation to pregnancy and motherhood. However, for them ego strength was defined as having the ability to plan realistically and to have a positive emotional involvement with the pregnancy. These characteristics were associated with more positive feelings about babies and a more realistic view of baby behavior during pregnancy. At six weeks postpartum, the degree of ego strength was positively associated with the degree of attachment.

The effect of social support on the degree of prenatal fetal attachment among adolescent women has been examined by three investigators with uniform results. Armantrout (1983), found that only the subscales of Roletaking and Giving of Self were associated with certain aspects of social support. In this sample, adolescents who experienced loss of quality support demonstrated less roletaking behavior. In addition, those who reported receiving more aid, reported fewer behaviors indicative of giving of self. When data were subjected to regression analysis, duration of relationships, total functional support, number in the network lost, quality of loss, and fetal activity accounted for 51% of the variance in the subscale, Interaction With Fetus. Koniak-Griffin (1988) suggested that among the main factors which influenced overall maternal fetal attachment and its subscales in her sample of adolescents were the total functional support

available and the total network size. Although general social support was not measured by Lindner (1984), this investigator found a positive and significant association between the adolescent's relationship with her mother, her relationship with the father of the baby, and Maternal Fetal Attachment Scale scores.

Koniak-Griffin (1988) and Lindner (1984) assessed the effect of self-esteem and prenatal fetal attachment in their adolescent groups with inconsistent findings. In Lindner's study, those adolescents who reported a greater degree of self-esteem also reported a higher degree of prenatal fetal attachment. Koniak-Griffin, on the other hand, found no association between these variables.

In addition to the psychosocial variables of extent of social support and level of self-esteem, both Lindner (1984) and Koniak-Griffin (1988) found that the intent to keep the infant was significantly and positively associated with prenatal fetal attachment. Twenty-seven percent of the variance in attachment scores in Lindner's study was explained by group membership. Koniak-Griffin found that in addition to the extent of social support available to the adolescent, the intent to keep the infant and a planned pregnancy accounted for 32% of the variance in the dependent variable.

In summary, exploratory studies of the relationship that the pregnant woman develops for her unborn baby have elicited interest in the quantification of this phenomenon. Research has supported the contention that women begin the process of

psychological and emotional attachment to their offspring during the prenatal period. It appears that the process is orderly and that the indicators of attachment which develop continue throughout pregnancy. Theoretically, prenatal fetal attachment may be thought of as the precursor of postnatal maternal infant attachment. However, attempts to correlate the two have been generally unsuccessful. Although Cranley (1979, 1981a) reported a correlation between prenatal fetal attachment and operationalized concepts used to define postnatal maternal attachment, the association was weak.

Although research supports the belief that the maternal infant relationship has its origins in the prenatal period, psychosocial variables which may affect the degree of prenatal fetal attachment a pregnant woman forms for her unborn child were conflicting in both the adolescent and adult groups. For both groups, however, the extent and/or quality of the support network appears to have a significant impact on this relationship. The degree and frequency of fetal movement, planned pregnancy, intent to keep the infant, and the degree of prenatal fetal attachment were consistent across the age groups. The literature has been primarily directed toward an understanding of this developmental process in the pregnant adult. We know very little concerning the process of affiliation in the adolescent.

Theoretical Framework

This study of prenatal fetal attachment in primiparous adolescent women, and the psychosocial variables thought to have an effect on the strength of that attachment, is based upon an ecological model. This model assumes that an interdependent, reciprocal relationship exists between the system and the environment in which the system is embedded. In this study, the adolescent's family, which shares a common identity, resources, goals, and values, is viewed as the adolescent's environment (Bubolz, Eicher, & Sontag, 1979). The adolescent and her developing fetus are viewed as the Adolescent System which is embedded within the Family Environment and which interacts within itself and with members of her environment.

The Family Environment, within which the Adolescent System functions, is the primary source from which human energy, in the form of competent individuals (those who have the capacity to interact effectively with the environment) is generated. Paolucci (1983) stated, "The family organizes and uses a complex of resources- a mix of materials, "things", time, labor, skills, and space- to achieve its particularistic set of goals. In most families, some of these resources are invested in building the human resource of each family member, i.e., the capabilities of members so they can become productive and self-fulfilled persons." In addition to the resources described by Paolucci (1983), Amato and Ochiltree

(1986) included biologically inherited capacities, personal relationships, and information as necessary for the development of human competence. Behavior of family members can facilitate or inhibit this development. When mastery attempts are encouraged, realistic feedback is given, and the environment is characterized by relative warmth and support, the adolescent develops pyschosocial characteristics which have the potential for enhancing her functional ability as well as her responsiveness to others within her environment. In addition, the adolescent's capacity for adapting to internal and external environmental change is enhanced.

The interdependent nature of systems and their environments requires a mutual process of adaptation, a second central concept in this ecological model. Systems are not static but must continually adjust or adapt to change in one another. Melson (1980) defined adaptation as the fit between system demands and environmental supply. The process of adaptation is the system's attempt to establish and maintain a relatively stable relationship with the internal and external environment. The process of adaptation may be gradual and go unnoticed or be very apparent in the instance of a sudden change in the external environment or within the system itself. Each system has a level of adaptation, that is, a neutral state of stimulation at which the system is at its customary level of functioning. However, the system must be responsive to change so that it can function according to the dictates of a multitude of environmental settings. The

ability to adapt to varying situations suggests that the level of adaptation may be a learned response and the outcome will be dependent on the quantity and quality of system and environmental resources which are individually and collectively possessed. The repertory of adaptive responses may include coping actions which make it possible to understand and master the environment, defense mechanisms, e.g., denial which may provide time to gather necessary strength to meet a situation, mastery or the development of a skill or technique with which to actively deal with the situation, retreat, and redefinition of the situation. The response which is selected is done so for the purpose of maintaining one's sense of self-esteem (Melson, 1980).

The diagram in Figure 1 (p. 44) illustrates the application of the concepts of human competence and adaptation in this study of prenatal fetal attachment in primiparous adolescent women. This ecological model of interpersonal competence and adaptation illustrates the significance of these personality dimensions in the adolescent's developing relationship with her unborn baby. The major components of the model, the Family Environment and the Adolescent System embedded within it, are depicted with broken lines which indicate the semi-permeable nature of the component boundaries. Information, matter, and energy can be selectively admitted from the surrounding environment or selectively discharged from the system, thus giving the system a degree of autonomy and control over the flow of

energy into and out of the system. The bi-directional arrows indicate pathways by which information, matter, and energy are

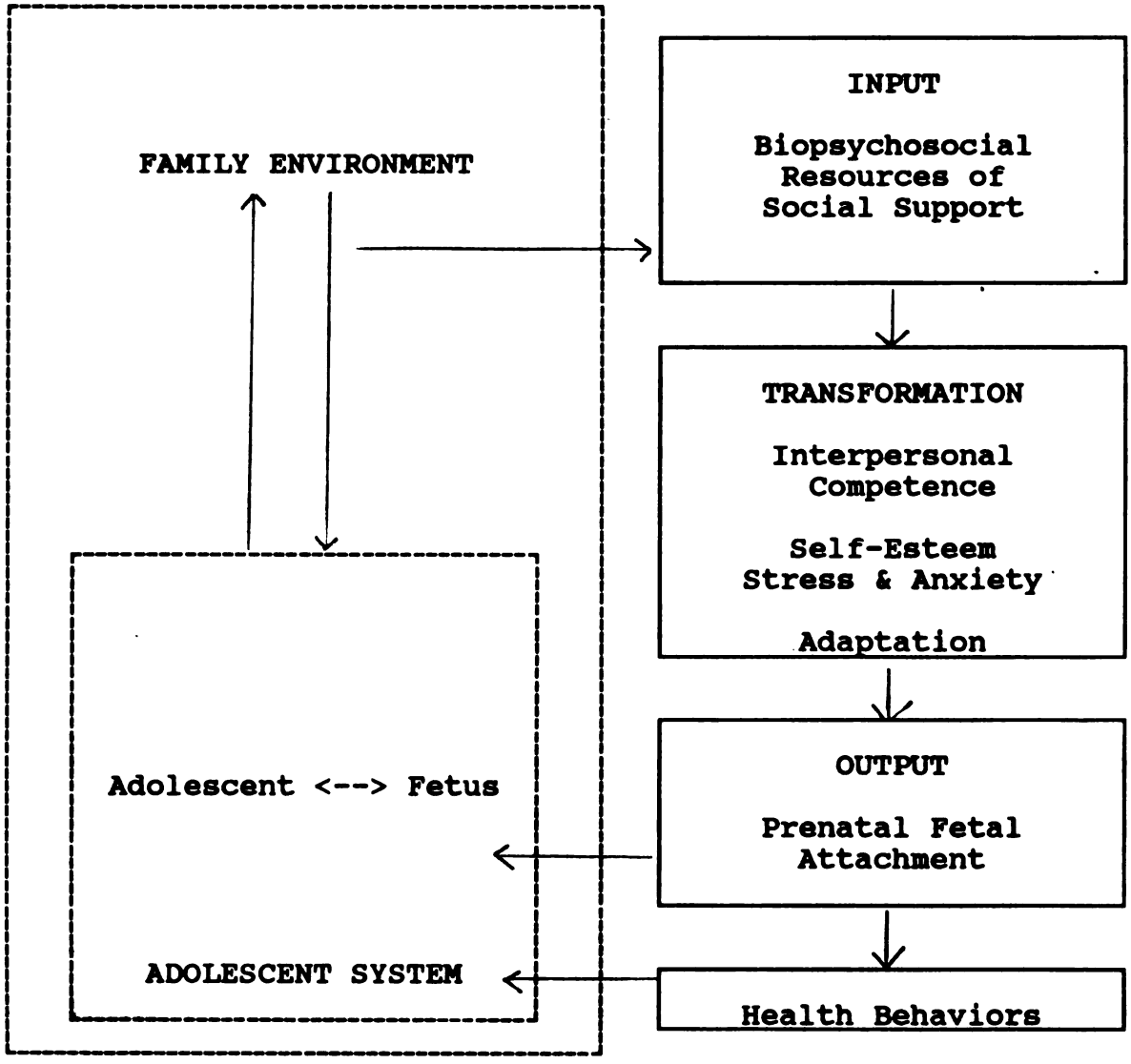

Figure 1

An Ecological Model of Competence and Adaptation in Primiparous Adolescent Women

reciprocally exchanged between the Family Environment and the Adolescent System.

Although the model indicates the reciprocal nature of the relationship between the adolescent and her family, the emphasis in this study of prenatal fetal attachment is on the effect of having developed interpersonal competency and adaptive capacities through interaction with members of her Family Environment and ultimately their effect on the adolescent's interaction with her unborn child. This aspect of the model is depicted as Input into the Adolescent System and it consists of biopsychosocial resources of social support in the form of affectionate expression, affirmation of self-worth, and direct support and assistance, supplied in quantities which meet the adolescent's perceived need. These resources are then utilized by the Adolescent System to attain a maximum level of self-esteem and minimal levels of stress and anxiety. Thus, the Adolescent System emerges with interpersonal competence and adaptive capacities with which to cope with maturational and situational crises. This is depicted in the model as the process of Transformation. The development of these psychosocial characteristics enables the adolescent to interact effectively with her fetus and to develop mothering role behaviors. This is depicted as prenatal fetal attachment or Output. As the degree of prenatal fetal attachment increases, she is more likely to provide a healthy environment for herself and her fetus through appropriate health behaviors. Finally, it is the

response by the fetus, that is, progressive growth and activity which serves to enhance and cement this relationship.

The purpose of this correlational study of factors related to prenatal fetal attachment among primiparous adolescent women was to determine 1) the degree of prenatal fetal attachment in primiparous adolescent women at various gestational stages; 2) to determine whether the indicators of attachment appear in a particular sequence in the gestational period; 3) to determine if the degree of prenatal fetal attachment is related to specific factors including:

a) psychosocial factors such as levels of self-esteem and anxiety

b) the extent of social support and health behaviors practiced during pregnancy

c) the degree of perceived stress and ego development

In summary, this study of prenatal fetal attachment in primiparous adolescent women was based upon an ecological model which assumes an interdependent relationship between the adolescent system and her family environment. Supportive relationships provided by significant others will enable the adolescent to attain and maintain a maximum level of self esteem while minimizing the degree of perceived stress and level of anxiety which are associated with her developmental stage and aggravated by the situational crisis of pregnancy. These supportive relationships result in the development of an

interpersonal competency and adaptation within the adolescent which stimulates and enhances the beginning of a life long attachment to her child.

Chapter 3

Methodology

The objectives of this study of prenatal fetal attachment in primiparous adolescent women were to determine whether this process actually occurs and in what manner it occurs. A second objective was to determine whether the strength of the attachment is related to psychosocial variables such as levels of self-esteem and anxiety, the extent of social support and health behaviors practiced, and the degree of perceived stress and ego development. In this chapter the research design is presented.

The diagram in Figure 2 (p. 49) illustrates the relationship of the independent and dependent variables in this study of prenatal fetal attachment in adolescent women. It assumes that the degree of prenatal fetal attachment (dependent variable) which women develop toward their unborn children is directly related to individual personality characteristics (independent variables) of level of self-esteem, and level of anxiety, and the degree of perceived stress. Social support is mediated through these personality characteristics thus the extent of social support directly

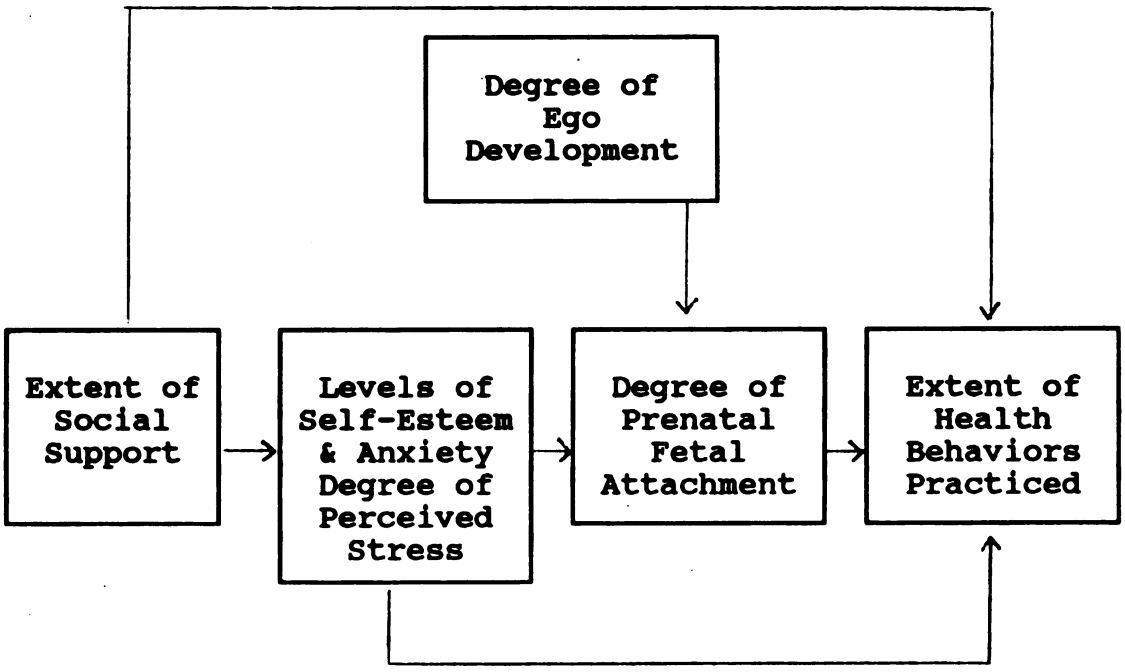

Figure 2

A Theoretical Model of the Relationship of the Degree of Prenatal Attachment and the Extent of Social Support, Levels of Self-Esteem and Anxiety, Degree of Perceived Stress and Ego Development, and Extent of Health Behaviors Practiced in a Study of Prenatal Fetal Attachment in Primiparous Adolescent Women

affects the levels of self-esteem and anxiety, and the degree of perceived stress experienced by the adolescent. These in turn, affect the degree of attachment the adolescent develops for her unborn child. The degree of ego development, a fourth independent variable, is also directly related to the degree of prenatal fetal attachment. This variable is a function of her age. Personal preoccupation with an imaginary audience and the construction of a personal fable are characteristics

which are typical of the adolescent, and are assumed to inhibit a developing relationship which requires placing concern for the fetus before concern for herself. This theoretical design also assumes that the degree of prenatal fetal attachment affects the extent of health behaviors practiced during the gestational period, that is, the greater the degree of attachment, the more likely she will be to provide an optimal prenatal environment for herself and her fetus. Thus, the degree of prenatal fetal attachment then becomes the independent variable, the extent of health behaviors practiced during pregnancy becomes the dependent variable. Finally, the levels of self-esteem and anxiety, the degree of perceived stress, and the extent of social support are directly related to the extent of health behaviors practiced during pregnancy.

Conceptual and Operational Definitions

This study of prenatal fetal attachment in adolescent women conceptually defined the major variables in the following manner:

Degree Of Prenatal Fetal Attachment This was conceptually defined as the extent to which the mother reports behaviors, attitudes and feelings that represent affiliation and interaction with her unborn fetus (Adapted from Cranley, 1981a). Operationally this concept was defined through the

use of the Maternal Fetal Attachment Scale developed by Cranley (1979, 1981a). This is a Likert type scale which originally contained 24 items, one of which was deleted on the advice of the author. The remaining 23 items were scored from one to five, with five (definitely yes) being the most positive and one (definitely no) being the least positive. A total score was obtained by summing over all items. The scores could range from a high of 115 to a low of 23.

The 23 items are distributed into five subscales which measure attitudes, beliefs, and behaviors indicative of prenatal fetal attachment. The subscales are, Roletaking, Differentiation of Self From Fetus, Interaction With the Fetus, Attributing Characteristics to the Fetus, and Giving of Self. Subscale scores were derived in the same manner as the total score and could range from a high of 30 and a low of 4 depending on the subscale.

Because adolescents tend to delay entry into the health care system until late in pregnancy, the degree of prenatal fetal attachment at Time 1 which may have occurred in the weeks previous to her first prenatal visit were assessed retrospectively by asking the mother to respond to the Maternal Fetal Attachment Scale (Cranley, 1981a) which was adapted for that purpose. Items 3, 9, 16, 17, 20, 21, and 23 were deleted as they pertain to active, observable fetal movement which does not occur until late in the second trimester. A total score was obtained by summing over all 16 items and scores could range from a high of 80 to a low of 16.

The subscales were reduced accordingly (See Appendix A, p.166 for the psychometric properties and a description of the items of which the total scale and subscales of this instrument consist. A copy of the instrument appears in Appendix D, p. 185).

Extent of Health Behaviors Practiced During Pregnancy This was conceptually defined as the extent to which a series of health behaviors were practiced by the pregnant woman. This concept was operationally defined by requesting the subject to respond to a health behaviors scale which was developed by the investigator specifically for this study of prenatal fetal attachment in adolescent women. The items for this scale were selected based upon prenatal health education which was provided by the selected health care clinic. It elicits the extent to which, over the previous six weeks, she has avoided substances which are known to be harmful to the fetus, (non-prescription drugs, alcohol, tobacco, and street drugs), the maintenance of adequate nutritional intake, adequate sleep, rest, and exercise. This is a Likert type scale which consists of five responses ranging from never to every day. A response of never received a score of one for items one through four and indicates that the health behavior was not practiced. A score of five indicates that health behavior was always practiced. Scoring for items five, six, seven, and eight were inverted. The total score ranged from a high of 40 to a low of 8, with the higher scores indicating a greater

extent of health behaviors practiced (See Appendix A, p. 166 for the psychometric properties of this instrument and a description of items of which this scale consists. A copy of the instrument appears in Appendix D, p. 185).

Degree of Ego Development This was conceptually defined through two related constructs, the imaginary audience and the personal fable. The imaginary audience was defined as, "The tendency to see the self as the object of other's attention, to anticipate the reactions of others to the self in real or imagined situations". The personal fable was defined as, "The belief in one's personal uniqueness, omnipotence, and invulnerability" (Lapsley, et al., 1989, p. 3). Uniqueness was defined as, "A difference from everyone else", omnipotence was defined as, "Having virtually unlimited authority or power," and invulnerability was defined as, "Incapability of being wounded" (Lapsley, et al., 1989, p.12-13). This variable was operationally defined through the use of the New Imaginary Audience Scale (NIAS) and the New Personal Fable Scale (NPFS), developed by Lapsley, et al. (1989). One item in the NPFS (#40) and one item in the NIAS (#12) was adapted to conform to the characteristics of those who participated in this study.

The New Imaginary Audience Scale is a 38-item Likert scale which has four response choices ranging from "Never" to "Often" with a value of one assigned to a "Never" response, and a value of four assigned to a response of "Often." A

total score was obtained by summing over all responses and scores could range from 152 to 38. Higher scores indicate an increased tendency to react to an imaginary audience.

The New Personal Fable Scale is a 46-item Likert scale with five responses ranging from "Strongly Disagree" with an assigned value of one, to "Strongly Agree" with an assigned value of five. Scoring for 15 of the items was inverted. A total score was obtained by summing over all responses. Scores could range from a high of 230 to a low of 46. The New Personal Fable Scale contains three subscales, Omnipotence, Invulnerability, and Uniqueness. The scoring for the subscales was done in the same manner as for the total score. Higher scores indicate a greater tendency to construct a personal fable (See Appendix A, p. 166 for the psychometric properties and a description of items of which the total scales and subscales consist. A copy of the instrument appears in Appendix D, p. 185).

Level of Self-Esteem This was conceptually defined as, "The evaluation which the individual makes and customarily maintains with regard to himself. It expresses an attitude of approval or disapproval, and indicates the extent to which the individual believes himself to be capable, significant, and worthy." (Coopersmith, 1967). This variable was operationally defined through the use of the Coopersmith Self-Esteem Inventory (CSEI). Two forms, the Short Form designed for students ages eight through fifteen and the Adult Form for

those sixteen and older, were utilized. These are essentially the same forms but wording is geared toward the particular age group. Each consists of 25 items and requires the respondent to indicate whether the item is "Like me" or "Unlike me". A score was obtained by scoring negative items correct if they were answered "unlike me." Positive items were scored correct if they were answered "like me. A total score was obtained by summing the number of items answered correctly and multiplying the total raw score by four. This resulted in a maximum possible score of 100 (See Appendix A, p. 166 for the psychometric properties of this instrument and a description of items which are scored positively and negatively).

Extent of Social Support This was conceptually defined as "Interpersonal transactions that include one or more of the following: The expression of positive affect of one person toward another; the affirmation or endorsement of another person's behaviors, perceptions, or expressed views; the giving of symbolic or material aid to another" (Kahn, 1979, p. 85). The functional aspects of social support, affect, affirmation, and aid, as well as the dynamic properties of the construct, were operationally defined through the use of the Norbeck Social Support Questionnaire (NSSQ).

The NSSQ requires the respondent to list those individuals in her social network who are important to her, and to indicate their relationship to her. The adolescent was then requested to respond to a series of six items which

elicit the functional aspects of social support. These items are arranged on a five point Likert scale with responses which range from "Not at all" to "A great deal". The size, stability, and availability of the network are obtained through totaling the number of individuals listed, duration of the relationship, where responses indicate that the individual has been known for less than six months to more than five years, and frequency of contact, where responses range from once a year or less to daily. Network loss and the extent of support lost can also be obtained. Because the instrument does not have the mechanism for determining whether or not one of the listed members is the father of her baby, a tenth item was included to elicit this information.

Scoring of the instrument was done in the following manner. Questions one through six, which measure total functional support, received a score of zero to four since one indicates no support and will artificially inflate the total score if it is included. For these items, a Total Functional Support score was obtained by adding the ratings for each question and summing over all items. Scores could range from a high of 24 to a low of zero. A single score for each subscale was obtained by totaling items one and two (Affection), three and four (Affirmation), and five and six (Aid). Scores for each of these subscales could range from a high of 8 to a low of zero. A Total Network Properties score was obtained by totaling the number of members listed, the duration of the relationship, and frequency of contact. These

items were scored one to five with higher scores indicating more durable relationships (See Appendix A, p. 166 for the psychometric properties of this instrument and a description of items of which the scale and subscales consist. A copy of the instrument appears in Appendix D, p. 185).

Degree of Perceived Stress The degree of perceived stress was conceptually defined as, "Any unfavorable experience or situation which is perceived by the individual as being of such magnitude that the individual is not able to cope with his or her usual pattern of behavior". This variable was operationally defined through the use of The Life Events Questionnaire (LEQ) (Norbeck, 1984).

This instrument was adapted from the Life Events Survey, developed by Sarason, Johnson, and Siegle (1978), in an effort to render it more appropriate for adult women. Although it has not been utilized in the study of the adolescent population, it was believed to be appropriate for this sample due to the similarity of circumstances of the adolescent group to adult women. The instrument consists of 82 items which are categorized into Health, Work, School, Residence, Love and Marriage, Family and Close Friends, Parenting, Personal and Social, Financial, Crime and Legal, and Other (an open-ended response to allow the respondent additional latitude). The respondent is requested to indicate whether the event, which occurred in the last year, had a good or bad effect and then to rate that effect on a four point scale with a value of zero

given for "no effect" and a value of three given for "great effect". Three scores can be obtained from the questionnaire, the sum of the negative or bad events, the sum of the positive or good events, and a total events score, the sum of both negative and positive events. Only those scores which were obtained by summing the weighted bad events were utilized in this study; higher scores indicated a greater degree of perceived stress. Rationale for the utilization of only the negative events score was provided by the literature. Early work by Holmes and Rahe (1967) was based on the assumption that any life change, positive or negative, is stressful to the individual involved. Other investigators, however, (Mueller, Edwards & Yarvis, 1977; Sarason, Johnson and Siegel, 1978; Vinokur & Selzer, 1975) based their work on the belief that undesirable life events have a greater effect on perceived stress than do desirable life events. In general, these investigators found higher correlations, of greater significance, between undesirable life changes and several personality variables indicative of maladjustment (See Appendix A, p. 166 for the psychometric properties of this instrument. A copy of the instrument appears in Appendix D, p. 185).

Level of Anxiety This variable was conceptually defined as a state which is characterized by subjective feelings of tension, apprehension, nervousness, and worry. Anxiety may be transitory (State) and can occur when evoked by appropriate

stimuli. Trait anxiety is a relatively enduring condition in which the individual has a tendency to perceive stressful situations as dangerous or threatening. The stronger the anxiety trait, the more probable that the individual will experience a greater state anxiety in threatening situations (Spielberger, et al., 1983). This concept was operationally defined through the use of the State-Trait Anxiety Inventory (Spielberger, et al., 1983).

This instrument is a two part scale which measures the level of anxiety the respondent is experiencing at the moment (State Anxiety), as well as the level of anxiety which is generally experienced (Trait Anxiety). Both scales are arranged on a Likert scale which utilizes four responses. The S-Anxiety scale responses range from "Not at all" to "Very much so", while the T-Anxiety scale ranges from "Almost never" to "Almost always". Item scores range from one to four depending on the particular item. Because 10 of the State Anxiety items and eight of the Trait Anxiety items are presented as indicating the absence of anxiety, scores for these items are reversed. Total scores for both scales can range from a high of 80 to a low of 20 where higher scores indicate a greater level of anxiety (See Appendix A, p. 166 for psychometric properties of this instrument).

Control Variables

The following variables were selected to be treated as control variables for this study of prenatal fetal attachment in adolescent women.

Age of Adolescent
Ethnicity of Adolescent
Socioeconomic Status [1]
Marital Status of Adolescent [1]
Planned/Unplanned Pregnancy [1]
Attendance at Prenatal Classes [1]
Gestational Age in Weeks
Complications in Pregnancy
Visualization of Fetus During Ultrasound [1]
Intent to Keep the Infant [1]
Date of Month Fetal Movement First Felt [2]

With the exception of socioeconomic status, the control variables are self-explanatory and were operationally defined either by requesting that information from the subject or by collecting the data from the prenatal record (See Appendix D, p. 185).

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[1] There was little or no variability in these variables, therefore they were excluded from the analysis.

[2] The adolescents generally did not know when quickening had occurred, therefore, this was excluded from the analysis.

Socioeconomic Status This was operationally defined through obtaining the amount of personal and household income as well as the educational levels obtained by the adolescent's parents.

Demographic Instrument An instrument, for the purpose of measuring demographic data, was specifically designed by the investigator. It consists of two parts. The data sheet was utilized at each period of data collection and information concerning the progress of the pregnancy was elicited either from the adolescent or her medical chart . The second part consists of personal information, for example, birth date, religious preference, living arrangements, income, and education (See Appendix D, p. 185).

Hypotheses

Six null hypotheses were developed to meet the objectives of this study of prenatal fetal attachment in primiparous adolescent women. Working hypotheses were developed for each of the variables only to illustrate the direction of the relationship suggested by the theoretical framework. Because the majority of the variables either have demonstrated conflicting results or have not been previously investigated, two-tailed tests were utilized except for the variable of the extent of social support. The working hypotheses, with the

exception of hypothesis H14, do not appear in the analysis of the data.

H01: Among pregnant adolescents, there is no relationship between the level of self-esteem and the degree of prenatal fetal attachment.

H11: Among pregnant adolescents, there is a positive relationship between the level of self-esteem and the degree of prenatal fetal attachment.

H02: Among pregnant adolescents, there is no relationship between the level of anxiety and the degree of prenatal fetal attachment.

H12: Among pregnant adolescents, there is a negative relationship between the level of anxiety and the degree of prenatal fetal attachment.

H03: Among pregnant adolescents, there is no relationship between the degree of perceived stress and the degree of prenatal fetal attachment.

H13: Among pregnant adolescents, there is a negative relationship between the degree of perceived stress and the degree of prenatal fetal attachment.

H04: Among pregnant adolescents, there is no relationship between the extent of social support and the degree of prenatal fetal attachment.

H14: Among pregnant adolescents, there is a positive relationship between the extent of social support and the degree of prenatal fetal attachment.

H05: Among pregnant adolescents, there is no relationship between the degree of ego development and the degree of prenatal fetal attachment.

H15: Among pregnant adolescents, there is a negative relationship between the degree of ego development and the degree of prenatal fetal attachment.

H06: Among pregnant adolescents, there is no relationship between the extent of health behaviors practiced and the degree of prenatal fetal attachment.

H16: Among pregnant adolescents, there is a positive relationship between the extent of health behaviors practiced and the degree of prenatal fetal attachment.

The level of significance at which the null hypothesis was rejected was set at $p < .05$; all statistical analyses were based on two-tailed tests except for the analysis of the extent of social support.

Sampling Method

The clinic which was selected for the sample is located in a medium sized city in a midwestern state. It serves only the high-risk obstetrical client, of which the adolescent is by virtue of her age. This clinic was specifically selected as the site in which to investigate the phenomenon of prenatal fetal attachment in adolescent women because of the large number of adolescents served.

The administrators of the clinic were personally contacted by the investigator. Rationale for the proposal was presented, stressing the current lack of knowledge about the process by which adolescent mothers form an attachment to their unborn children. It was suggested that appropriate interventions could be developed which may promote a high degree of attachment early in the gestational period, thus affecting the mother's commitment to provide an optimal

environment for herself and her developing fetus. The administrators reviewed the entire proposal with the knowledge that the investigator would retain all rights to the entire study, as well as the right to publish results. Agency and University approval regarding the protection of human subjects was obtained.

A sample of 40 primiparous adolescent women was drawn in a non-random manner. Any adolescent who presented herself at the clinic and who met the criteria of age (12 through 19 years), was primiparous, i.e., who was carrying her first fetus to term, and who agreed to participate was included in the study.

A total of 46 adolescents was approached as possible subjects. Of these 46, one declined to participate at the request of her mother who claimed insufficient time. One adolescent transferred to another prenatal clinic and one was lost to the study for failure to keep her prenatal appointments; she could not be located. Three adolescents spontaneously aborted. The partial data sets which had been collected for these subjects were not included in the analysis. The final sample consisted of 40 adolescents ranging from 12 to 19 years of age.

A clinic employee collaborated with the investigator in the recruitment of potential subjects. Those adolescents who were attending the clinic for their initial biopsychosocial evaluation and health teaching, and who met the criteria, i.e., primiparous and low risk, except for her young age,

received a verbal explanation of the study and a formal letter of consent (See Appendix C, p. 182). The adolescent was asked to consider participation, and if she agreed, to bring the signed consent with her to her next scheduled visit two or three days hence. The dependent adolescent who was under the age of 18, was required to include the signature of one parent or guardian. Adolescents 18 years and older or who were emancipated minors gave self-consent for participation. Upon her return visit to the physician, providing she had the signed consent, she was met by the investigator for the first period of data collection. Adolescents who wished to participate in the study and who had obtained parental signatures, but had forgotten to bring the signed consent to the clinic, were asked by the investigator if it would be permissible to telephone the consenting parent or guardian if she or he had not accompanied the adolescent. If she agreed, a signed consent was obtained from her which indicated who should be contacted and at what telephone number (See Appendix C, p. 182). None of the adolescents failed to mail the required signed consent before the next scheduled period of data collection. A self-addressed stamped envelope was provided for this purpose.

All participants were offered a summary at the conclusion of the study. In addition, in order to encourage participation in the study, and to compensate for her time, the participant was reimbursed $10.00 for each set of data for a total of $30.00 which was paid at the completion of the

fourth data set. Data were collected weekly over a period of five months until the required 40 were obtained. Longitudinal data were collected at the appropriate time intervals; the entire process occurred over seven months.

Data Collection

Each subject was met by the investigator or a research assistant at the time of her first visit to the physician and she was requested to respond to the first and second data sets which were dictated to her. Rationale for dictation as a method of data collection was based on the belief that more complete data would be obtained due to the varied reading abilities of this group, and conservation of time as these adolescents spent several hours at the clinic during each visit. The date and time for subsequent clinic visits during which data were collected was obtained by requesting her to return a stamped, self-addressed postcard which was to be mailed when she had reached the designated gestational age. Follow up telephone calls and letters confirming future appointments were initiated as necessary.

The approximate time required on the first visit was 30 minutes and 45 minutes on each of the two later visits. The following data collection schedule was developed to allow maximum utilization of time so that the already lengthy prenatal visits would not be unduly extended.

First Physician Visit-Gestational Age Variable

TIME 1: Maternal Fetal Attachment Scale-
Retrospective Assessment

TIME 2: (10-24 weeks)
Maternal Fetal Attachment Scale
Health Behaviors Scale
Coopersmith Self-Esteem Inventory
State-Trait Anxiety Inventory
Data Sheet Completed by Investigator

25-31 Weeks Gestation

Time 3: Maternal Fetal Attachment Scale
Health Behaviors Scale
New Personal Fable Scale
New Imaginary Audience Scale
Norbeck's Social Support Questionnaire
Data Sheet Completed by Investigator

32-39 Weeks Gestation

Time 4: Maternal Fetal Attachment Scale
Health Behaviors Scale
Demographic Data
Life Events Questionnaire
Data Sheet Completed by Investigator

Gestational age ranged from 10 to 39 weeks at the time of the first interview, thus at Time 2 the adolescent, according to her gestational age, might be more appropriately placed in Time 3 or Time 4. For those adolescents who were late registrants (who were 25 weeks or beyond), three or four data sets were collected at the initial visit. For example, if an adolescent made her first prenatal visit at 37 weeks, retrospective and current data for the Maternal Fetal Attachment Scale and all remaining measures were obtained.

Therefore, for this adolescent, only two attachment measures, Time 1 and Time 4, and one health measure (Time 4) were obtained. Gestational age at Time 3 and 4 was less variable. Participants ranged from 25 to 31 weeks at Time 3 (Mean 26.6 weeks). Gestational age ranged from 32 to 39 weeks at Time 4 (Mean 33.4 weeks).

Data Analysis

Analysis of the data for this study of prenatal fetal attachment in primiparous adolescent women was accomplished in two stages. Stage I consisted of descriptive statistics which were utilized to describe sample characteristics and the response to the dependent variable. In addition, the data were subjected to Repeated Measures Analysis of Variance in order to determine whether the sample demonstrated a change in thoughts, feelings, and behaviors indicative of prenatal fetal attachment, as well as the extent of health behaviors practiced over the course of the gestational period. Stage II consisted of correlational analyses to determine the existence of a relationship between the independent and dependent variables. Partial correlational analyses were then conducted to determine the extent to which the variability in the major variables could be explained by the control variables. The Statistical Package for Social Sciences X (1983) was used for the purpose of data analysis.

In summary, instruments which were utilized to measure the independent variables in this study of prenatal fetal attachment in primiparous adolescent women have, in general, been adequately subjected to measurements of reliability and validity. The Maternal Fetal Attachment Scale, although reliable, has yet to be subjected to measures of validity other than content validity. Forty adolescents participated in this study and data were collected at intervals over the gestational period.

Chapter 4

Data Analysis

The results of the data analysis are presented in this chapter. The sample description will be followed by findings which were generated by each of the research questions and the results of correlational analyses which were utilized to test the hypotheses.

Stage I Analysis

Sample Description

Tables 1 through 8 (pp. 71-79) describe the demographic data for the subjects who participated in this study of prenatal fetal attachment in primiparous adolescent women. Subjects ranged in age from 12 to 20 years of age, at Time 4, with a mean age of 16.70 and SD 1.57 years. The age group most frequently represented was 15 through 17 years which contained slightly more than three-fourths of the sample. The younger and older age groups were almost equally represented with 11% and 13% of the adolescents respectively. Five

percent of the adolescents attained their 20th birthday during the course of the study (Table 1, p.71).

Table 1

Age Distribution of Adolescents *

Age	N	%
12	1	3
13	2	5
14	1	3
15	7	18
16	10	25
17	14	35
18	2	5
19	1	3
20	2	5

* Mean = 16.70
S.D. = 1.57

Most adolescents were in dependent living arrangements, many of which were unstable, as 38% moved at least once during the course of the study. All but 8% of the adolescents were single and 70% were living with their mothers; only 20% reported living with both parents, 5% of whom were stepfathers. The remaining caretakers were other family members, primarily grandmothers and aunts. Of the 8% who were

Table 2

Frequency Distribution of Demographic Data

	N	%
Marital Status		
Married	3	8
Single	37	93
Living Arrangements		
With both parents	8	20
With mother only	20	50
With spouse	2	5
With guardian/friend	5	13
With boyfriend	3	8
Alone	2	5
Ethnicity		
Afro-American	21	53
Caucasian	12	30
Hispanic	7	18
Religious Affiliation		
Catholic	12	30
Protestant	20	50
None	8	20
Extent of Religious Practice		
None	5	13
Inactive	5	13
Infrequent (2-3 times yearly	10	25
Monthly	14	35
Weekly	5	13
Daily	1	3

married, 5% were living with their husbands and 3% were in the process of divorce. Eight percent of the adolescents were living with the father of their baby and 5% were living alone (Table 2, p. 72).

In this sample of pregnant adolescent women, three ethnic groups were represented. Just over half were Black, almost one-third were Caucasian, and almost one-fifth were Hispanic. Although 80% reported a religious affiliation, only 15% participated in religious activities on a regular basis (Table 2, p. 72).

The dependent adolescents generally did not know the extent of family income and either indicated this or attempted an estimate. Clinic records inconsistently recorded financial status by monthly income or with only the notation of public assistance. Although these data are not totally accurate, it is evident that income was generally inadequate for a reasonable lifestyle. Medicaid funds provided the sole income for 55% of parents or guardians; eight per cent of the care providers held part-time employment in addition to medicaid. Although 25% of the adolescents had their own income, except for 3% who held part-time employment, it was exclusively medicaid income and was less than $5,000 per year. Thus, fully 88% of the group received at least partial support through governmental assistance (Table 3, p. 74).

Adolescents who were cognizant of their parents' education revealed that their parents were generally poorly educated. Similarity in educational achievement between parents was

Table 3

Source of Income for Adolescents and Their Families

	N	%
Own Medicaid	10	25
Parent/Guardian Medicaid Only	22	55
Parent/Guardian Medicaid and Part Time Work	3	8
Parent/Guardian/Spouse Full Time Work	5	13

evident. While nearly one-third of their fathers had not graduated from high school, 40% of their mothers had not. Approximately 40% of both parents had either graduated from high school or had earned a GED. Fewer than one-fourth of their mothers had obtained schooling, either technical or collegiate, beyond high school while 25% of their fathers had done so (Table 4, p. 75).

Achieving their own education while experiencing a pregnancy proved to be a difficult task for these adolescents. Ninety-five percent of the group had not graduated from high school although nearly 75% were attempting to maintain their educational status either in their original educational setting or in the local alternative school. Slightly more than two-thirds were within three years of graduation, 29% were in middle school and 3% were in grade six of elementary school. Only 3% of the adolescents had graduated from high school and had accumulated some college credits (Table 5, p. 76).

Table 4

Educational Achievement of Parents of Adolescents (%)

	< HS	HS	GED	1-2 > HS	College Grad
Mother *	40	26	13	18	3
Father **	31	38	6	16	9

* n = 38
** n = 32

For most of these adolescents this pregnancy was not anticipated. While only 15% had planned the pregnancy, the entire group had determined to keep the infant rather than to seek adoption (Table 6, p. 76).

The point in pregnancy at which the participants sought prenatal care was variable. The mean gestational age was 20.45 weeks with a SD of 7.09, and a range of 10 to 39 weeks. The data exhibited a polymodal distribution with 8% of the adolescents registering at gestational ages of 13, 14, 18, 20, and 24 weeks. Sixty percent did not register until their second trimester with the majority being in the latter half of the trimester. Slightly more than one-fourth did not receive care until their third trimester and almost half of them registered at 30 weeks or later (Table 7, p. 77).

Table 5

Educational Status of Adolescents

	N	%
In School	29	73
Grade		
6	1	3
7	1	3
8	1	3
9	9	23
10	11	28
11	11	28
12	5	13
College	1	3

Table 6

Plans for Pregnancy and for the Infant After Delivery

	N	%
Pregnancy		
Planned	6	15
Unplanned	34	85
Plan to keep baby	40	100

Table 7

Gestational Age in Weeks at Time 1*

Gestational Age	N	%
10	1	3
11	2	5
12	2	5
13	3	8
14	3	8
15	1	3
16	1	3
17	2	5
18	3	8
19	2	5
20	3	8
21	1	3
22	2	5
24	3	8
25	2	5
27	1	3
28	1	3
29	2	5
30	1	3
31	1	3
32	2	5
39	1	3

* Mean = 20.45 weeks
SD = 7.09 weeks

The majority of adolescents recognized the need for continuing prenatal care. Although most of them did not enter the health care system until the second half of pregnancy, 80% of the group kept their scheduled appointments. The clinic routinely mails a second appointment to those who fail to keep their appointments. Therefore, all adolescents demonstrated an adequate prenatal care schedule. The majority of adolescents also recognized the need for parenting education. Eighty five percent had registered for prenatal classes by the fourth period of data collection. Of the 15% who did not, 8% were late entrants into the health care system and were within six weeks of delivery (Table 8, p. 79).

Slightly more than two-thirds of this group of adolescents experienced a variety of potentially serious complications related to their pregnancies. Bleeding, polyhydramnios, or incompetent cervix occurred in nine percent of the adolescents. Three percent were inadvertently exposed to radiation at five weeks gestation. Eight percent of the adolescents experienced preterm labor, 5% developed gestational diabetes, and 45% developed infections, almost half of which were sexually transmitted diseases (Table 8, p. 79).

Visualization of the fetus via ultrasound was included as a control variable in this study. Ninety-eight percent of the adolescents received ultrasound at least once during the

Table 8

Health Behaviors and Complications in Pregnancy

	N	%
Kept Scheduled Appointment	32	80
Registered for Prenatal Class	32	85
Complications in Pregnancy		
Bleeding	1	3
Polyhydramnios	1	3
Incompetent Cervix	1	3
X-ray Exposure	1	3
Pre-Term Labor	3	8
Diabetes	2	5
Infection	18	45
Venereal Disease	8	20
Urinary Tract Infection	9	23
Beta Hemolytic Strep	1	3
Utrasound	39	98

pregnancy. Eighty percent of them were given an ultrasound photograph of the baby. Data for the remaining 20% were inadvertantly omitted. However, it is believed that all of those adolescents who received ultrasound also received photographs of their babies, as this is common practice in this clinic (Table 8, p. 79).

Analysis of Prenatal Fetal Attachment Over Time

Research questions one and two were posed as follows:

1. Does prenatal fetal attachment occur during the gestational period in adolescents, and when during the gestational period do the various indicators of prenatal attachment occur?

2. Is there a sequential order among the indicators of prenatal fetal attachment in adolescents?

These questions were answered through frequency distributions of individual items and the five subscales for each of the four periods of data collection. Tables 9 through 12 (pp. 81-84) show the frequency of response to individual items. The number of adolescents answering items varied at Time 2 depending on the gestational age at the first interview. In Table 10, (p. 82) the number in parentheses following the particular items reflect the numbers of adolescents who had not yet experienced fetal movement at Time 2.

Table 9 (p. 81) shows the adapted version of the Maternal Fetal Attachment Scale which measured the degree of attachment developed in early pregnancy. Comparison of this scale with the other three scales excludes those items which address

fetal movement since this event does not occur until almost midway through the pregnancy.

Table 9

Adapted Version of The Maternal Fetal Attachment Scale
Percentage of Responses to Individual Items (N = 40)
Time 1 (10-39 weeks)

	DEF NO	NO	UNCERTAIN	YES	DEF YES
1. ... talk to my unborn baby.	10	58	8	18	8
2. ...trouble of being pregnant was worth it.	8	18	23	30	23
3. ...picturing myself feeding the baby.	5	25	13	45	13
4. ...forward to seeing what baby looked like.	---	8	---	55	38
5. ...baby felt cramped in there.	3	40	13	28	18
6. ...called baby by nickname.	15	63	---	8	15
7. ...taking care of the baby.	---	13	8	50	30
8. ...picked out girl's name ...	3	30	---	38	30
9. ...do things to stay healthy ...	---	8	10	55	28
10. ... could hear...	---	25	8	60	8
11. ...picked out a boy's name...	8	28	3	35	28
12. ...think and feel inside me.	---	30	5	50	15
13. ...good diet.	---	18	13	50	20
14. ...hold the baby.	3	10	13	40	36
15. ...picture what the baby would look like.	---	10	3	48	40
16. ...gave up doing certain things...	---	13	3	35	50

Data from Time 2 are presented in Table 10 (p. 82). Because gestational age was highly variable (range 10 to 24 weeks) for this measurement, comparison with the other three time periods must be made with some caution. Data from Times 3 and 4 appear in Tables 11 and 12 (pp. 83 and 84).

Table 10

Maternal Fetal Attachment Scale
Percentage of Responses to Individual Items*
Time 2 (10-24 weeks)

	DEF NO	NO	UNCERTAIN	YES	DEF YES
1. ...talk to my unborn baby.	10	28	3	34	25
2. ...trouble of being pregnant was worth it.	10	13	13	44	22
3. ...watching my tummy jiggle... (n=21)	10	14	5	43	29
4. ...picturing myself feeding the baby.	3	16	3	47	31
5. ...forward to seeing what baby looked like.	---	---	---	31	69
6. ...baby felt cramped in there.	3	25	9	38	25
7. ...called baby by nickname.	22	50	---	16	13
8. ...taking care of the baby.	---	6	---	47	47
9. ...personality would be like... (n=22)	9	46	18	18	9
10. ...picked out girl's name...	3	19	6	34	38
11. ...do things to stay healthy...	---	3	---	56	41
12. ...could hear...	---	13	3	63	22
13. ...picked out a boy's name...	6	22	3	31	38
14. ...think and feel inside me.	---	13	16	50	22
15. ...good diet.	---	9	13	50	28
16. ...kicks and moves... (n=24)	---	23	14	36	27
17. ...poke the baby... (n=23)	5	33	---	43	19
18. ...hold the baby.	---	---	---	47	53
19. ...picture what the baby would look like.	---	---	---	50	50
20. ...quiet the baby... (n=22)	5	41	5	46	5
21. ...baby has hiccoughs... (n=22)	5	64	14	---	18
22. ...gave up doing certain things...	---	---	---	44	56
23. ... move the baby's foot... (n=22)	14	64	18	---	5

* n = 32 except where noted

Table 11

Maternal Fetal Attachment Scale
Percentage of Responses to Individual Items*
Time 3 (25-31 weeks)

	DEF NO	NO	UNCERTAIN	YES	DEF YES
1. ...talk to my unborn baby.	---	26	3	47	24
2. ...trouble of being pregnant was worth it.	---	21	21	39	18
3. ...watching my tummy jiggle...	---	3	8	50	40
4. ...picturing myself feeding the baby.	---	26	3	47	24
5. ...forward to seeing what baby looked like.	---	---	3	32	66
6. ...baby felt cramped in there.	---	16	11	55	18
7. ...called baby by nickname.	3	66	---	21	11
8. ...taking care of the baby.	---	---	3	68	29
9. ...personality would be like...	3	40	26	18	13
10. ...picked out girl's name...	---	11	3	55	32
11. ...do things to stay healthy...	---	5	---	61	34
12. ...could hear...	---	13	3	66	18
13. ...picked out a boy's name...	---	18	5	45	32
14. ...think and feel inside me.	---	8	16	61	16
15. ...good diet.	---	---	3	63	34
16. ...kicks and moves...	---	18	11	45	26
17. ...poke the baby...	3	13	---	58	26
18. ...hold the baby.	---	---	3	42	55
19. ...picture what the baby would look like.	---	---	3	50	47
20. ...quiet the baby...	20	37	8	37	16
21. ...baby has hiccoughs...	3	68	5	18	5
22. ...gave up doing certain things...	---	8	---	58	34
23. ... move the baby's foot...	5	76	8	8	3

* n = 38

Table 12

Maternal Fetal Attachment Scale
Percentage of Responses to Individual Items*
Time 4 (32-39 weeks)

	DEF NO	NO	UNCERTAIN	YES	DEF YES
1. ...talk to my unborn baby.	5	15	8	38	35
2. ...trouble of being pregnant was worth it.	3	8	13	48	30
3. ...watching my tummy jiggle...	---	---	---	43	58
4. ...picturing myself feeding the baby.	---	5	10	50	35
5. ...forward to seeing what baby looked like.	---	---	---	33	68
6. ...baby felt cramped in there.	---	15	13	53	20
7. ...called baby by nickname.	10	50	8	20	13
8. ...taking care of the baby.	---	---	---	58	43
9. ...personality would be like...	5	30	25	28	13
10. ...picked out girl's name...	---	13	8	45	35
11. ...do things to stay healthy...	---	5	---	48	48
12. ...could hear...	---	8	5	60	28
13. ...picked out a boy's name...	---	13	3	38	48
14. ...think and feel inside me.	---	5	10	63	23
15. ...good diet.	---	3	5	53	40
16. ...kicks and moves...	---	23	8	43	28
17. ...poke the baby...	---	15	3	53	30
18. ...hold the baby.	---	---	---	33	68
19. ...picture what the baby would look like.	---	3	---	43	55
20. ...quiet the baby...	---	33	10	33	25
21. ...baby has hiccoughs...	10	48	5	28	10
22. ...gave up doing certain things...	---	---	---	53	48
23. ... move the baby's foot...	3	68	5	15	10

* $\underline{N}$ = 40

For ease of comparison with cautions noted above Table 13 (p. 86) shows only the percentage of positive responses to individual items across Times 1, 2, 3, and 4. In general, the percentage of single item attachment behaviors increased over the gestational period. At Time 4 all items showed positive increments over Time 1. One item, talking to her unborn baby, indicated the greatest change over time with the percentage of positive responses increasing by almost 50% from 26% to 73%. The adolescents expressed an increasing pleasure in the observation of fetal movement with almost 75% responding positively at Time 2 and 100% at Time 4. The availability of space for her growing fetus also captivated the interest of these adolescents. Almost half wondered whether the baby was cramped at Time 1. By Time 4 this percentage had increased to almost 75%. Other items which showed an increase of more than 20% from Time 1 to Time 4 were looking forward to holding the baby (24%), feeling that all of the trouble of pregnancy is worth it (25%), and eating well for a healthy baby (23%). From Time 2 to Time 4, items with a 20% increase or more were grasping the baby's foot to move him around (20%), and poking the baby to get him to poke back (21%).

Although other items showed positive increases over time, they were less dramatic. Fewer than 25% of the adolescents called their baby by a nickname at Time 1. By Time 4, just one-third were doing so. Approximately two-thirds had picked out both girls and boys names early in pregnancy. However, by late pregnancy, 20% had not yet chosen a girl's name and 15%

Table 13

Maternal Fetal Attachment Scale
Percentage of Positive Responses to Individual Items*
Times 1, 2, 3, and 4

	Time 1	Time 2	Time 3	Time 4
1. ...talk to my unborn baby.	26	59	71	73
2. ...trouble of being pregnant was worth it.	53	66	57	78
3. ...watching my tummy jiggle...	N/A	72	90	100
4. ...picturing myself feeding the baby.	58	78	71	85
5. ...forward to seeing what baby looked like.	93	100	98	100
6. ...baby felt cramped in there.	46	63	73	73
7. ...called baby by nickname.	23	29	32	33
8. ...taking care of the baby.	80	94	97	100
9. ...personality would be like...	N/A	27	31	41
10. ...picked out girl's name...	68	72	87	80
11. ...do things to stay healthy...	83	97	95	96
12. ...could hear...	68	85	84	88
13. ...picked out a boy's name...	63	69	77	86
14. ...think and feel inside me.	65	72	77	86
15. ...good diet.	70	78	97	93
16. ...kicks and moves...	N/A	63	71	71
17. ...poke the baby...	N/A	62	84	83
18. ...hold the baby.	76	100	97	100
19. ...picture what the baby would look like.	88	100	97	98
20. ...quiet the baby...	N/A	51	53	58
21. ...baby has hiccoughs...	N/A	18	23	38
22. ...gave up doing certain things...	85	100	92	100
23. ... move the baby's foot...	N/A	5	11	25

* See the previous four tables For the values of N.

had not yet chosen a boy's name. Moreover, almost 10% of the adolescents who had named a girl child by Time 3 responded negatively at Time 4 resulting in a decrease in positive responses to this item. Only 50% reported stroking their abdomen to quiet a kicking fetus at Time 2 and by Time 4, that percentage had increased by just 8%. Few could detect when their babies had the hiccoughs (38% at Time 4) and those who detected increased fetal activity at eating time rose by just 8% from 63% at Time 2 to 71% at Time 4 (Table 13 p. 86).

A few items other than selecting a name for a girl showed a slight decrease in positive responses from Time 2 to 3 and 3 to 4. Slightly more than 50% felt that all of the trouble of pregnancy was worth it at Time 1. This increased by another 13% to 66% by Time 2. At Time 3, only 57% believed this to be so. However, by Time 4 more than 75% of the sample did so. Other decremental responses were negligible (Table 13, p. 86).

Although the single items show, in general, a positive increment across the gestational period, when the total percentage of positive, negative, and uncertain responses are compared, Time 2 shows a decrease in positive responses from 63% to 59%. Even though the adolescents reported fewer negative responses in Time 2 from Time 1, they expressed more uncertainty of their thoughts, feelings, and behaviors. These data are summarized in Table 14 (p. 88).

Table 14

Maternal Fetal Attachment Scale
Classification of Response (%),
Mean, Standard Deviation, and Estimated Internal Consistency

	T1	T2	T3	T4 *
Definitely No/No	29	22	21	17
Uncertain	8	19	7	6
Yes/Definitely Yes	63	59	72	77
Mean Response	3.54	3.72	3.77	3.94
Standard Deviation	.53	.48	.43	.43
Cronbach alpha	.73	.98	.97	.85

* Mean Total Score 90.55
SD 9.95

Mean responses, standard deviation, and the estimated internal consistency for each of the Maternal Fetal Attachment Scales at Times 1 ,2, 3, and 4 appear in Table 14 (p. 88). Only mean response scores are reported for Times 1, 2, and 3 due to the variation in numbers of adolescents responding to the scales and the number of items which were not appropriate unless she had experienced fetal movement. Mean response scores as well as a total mean score are reported for Time 4. The reliability coefficients for the Times 2, 3, and 4 total scales in this study equal or exceed those reported by Cranley (1981a). The relatively low reliability of the Time 1 total scale, r = .73 is thought to be due to the elimination of seven items which pertain to fetal movement. The Spearman Brown formula yielded a coefficient of r =.77 indicating an

improvement in reliability if the scale were to be lengthened. The coefficient alphas of the remaining total scales were sufficiently high to claim internal consistency (Nunnally, 1978).

Mean responses, standard deviation, and the estimated internal consistency for each of the subscales at Times 1,2,3, and 4 appear in Tables 15 through 19, (pp. 90-92) Reliability coefficients, except for the subscales of Interaction with the Fetus and Attributing Characteristics to the Fetus in Time 4, exceed those reported by Cranley (1981a). Coefficients for the subscales at Time 1 range from .29 to .61. Again, the low coefficients are thought to be due to the elimination of specific items from the scales.

The percentage of positive responses by subscales of the Maternal Fetal Attachment Scale for Times 1, 2, 3, and 4 are depicted in Tables 15 through 19 (p. 90-92). All of the subscales demonstrated an increase in positive responses from early to late pregnancy. Because some of the subscales (particularly at Time 1 with its diminished number of items) did not achieve alpha coefficients sufficiently high to indicate reliability, however, interpretation must be made with some caution.

Although positive responses to the role taking indicators decreased from Time 2 to Time 3, they revealed the greatest increase in indicators from Time 1 to Time 2. Over the gestational period, these indicators showed an increase of 21%. It appears that by the time the group as a whole had

Table 15

Roletaking Subscale
Classification of Response (%),
Mean, Standard Deviation, and Estimated Internal Consistency

	T1	T2	T3	T4
Definitely No/No	16	6	7	2
Uncertain	9	1	2	2
Yes/Definitely Yes	75	93	91	96
Mean	3.86	4.31	4.23	4.44
Standard Deviation	.69	.55	.50	.47
Cronbach alpha	.61	.97	.92	.75

Table 16

Interaction with Fetus Subscale
Classification of Response (%),
Mean, Standard Deviation, and Estimated Internal Consistency

	T1	T2	T3	T4
Definitely No/No	73	54	46	40
Uncertain	3	5	4	6
Yes/Definitely Yes	24	41	50	54
Mean	2.50	2.94	4.22	4.37
Standard Deviation	1.03	.80	.52	.53
Cronbach alpha	.61	.88	.88	.61

Table 17

Giving of Self Subscale
Classification of Response (%),
Mean, Standard Deviation, and Estimated Internal Consistency

	T1	T2	T3	T4
Definitly No/No	16	9	9	4
Uncertain	11	6	5	5
Yes/Definitely Yes	73	85	86	91
Mean	3.85	4.11	4.07	4.28
Standard Deviation	.62	.57	.45	.55
Cronbach alpha	.42	.96	.87	.70

Table 18

Differentiation from Self Subscale
Classification of Response (%),
Mean, Standard Deviation, and Estimated Internal Consistency

	T1	T2	T3	T4
Definitely No/No	25	18	8	6
Uncertain	1	3	4	3
Yes/Definitely Yes	74	79	88	91
Mean	3.74	3.93	4.22	4.37
Standard Deviation	.75	.55	.52	.53
Cronbach alpha	.29	.83	.88	.61

Table 19

Attributing Characteristics to Fetus Subscale
Classification of Response (%),
Mean, Standard Deviation, and Estimated Internal Consistency

	T1	T2	T3	T4
Definitely No/No	36	30	28	24
Uncertain	10	12	12	11
Yes/Definitely Yes	54	58	60	65
Mean	3.27	3.46	3.47	3.59
Standard Deviation	.69	.58	.52	.55
Cronbach alpha	.38	.91	.85	.52

made the decision to seek health care, 75% had begun to imagine themselves in the role of caretaker of the baby (Table 15, p. 90).

Behaviors which are indicative of interaction with the fetus showed the second largest gain from Time 1 to Time 2 with an increase of 17%. In addition, these behaviors showed the greatest increase in positive responses over the course of pregnancy. At Time 1, slightly fewer than one-fourth reported these behaviors. By Time 4, slightly more than one-half were doing so, a 30% increase over time (Table 16, p. 90).

Although thoughts, feelings, and behaviors indicative of giving of herself increased over the course of the pregnancy by 18%, the greatest increase in these indicators occurred between the time she first knew she was pregnant and the time she first sought health care. The majority of these

indicators are concerned with healthy behaviors and almost 75% were practicing them in the early phase of their pregnancies (Table 17, p. 91).

Differentiation of the fetus from herself increased by 17% over the gestational period while attributing characteristics to the fetus increased less dramatically with a change of just 11% (Table 18, p. 91 and Table 19 p. 92). A summary of the percentages of positive responses to the total Maternal Fetal Attachment Scale and its five subscales is presented in Table 20 (p. 94). A summary of the means of positive responses to the Maternal Fetal Attachment Scale and each of its subscales appears in Table 21 (p. 95).

Examination of Table 21 (p. 95) reveals a progression of total scale means over time thus indicating an increase in the positive responses with advancing pregnancy. Analysis of Variance with Repeated Measures, the results of which appear in Table 22 (p. 95), was performed on the data to determine if there were significant differences in the means among Times 1, 2, 3, and 4. The analysis indicated a mean difference, significant at $F(5.0453)$ $p=.0024$. An eta^2 of 10% indicates that the variation among groups at Times 1, 2, 3, and 4 were not large. However, post hoc analysis utilizing the Scheffè procedure revealed the means at Time 1 and Time 4 to be significantly different at $p < .05$. Adolescents at Time 4 reported a greater degree of prenatal fetal attachment than at Time 1. Because the entire group is represented in data at

Time 4, these data were utilized in the remaining correlational analyses.

Table 20

Summary of Positive Responses (%) Across Time Periods

	T1	T2	T3	T4
Maternal Fetal Attachment Scale	63	59	72	77
Roletaking	75	93	91	96
Interaction with Fetus	24	41	50	54
Giving of Self	73	85	86	91
Differentiation from Self	74	79	88	91
Attributing Characteristics to Fetus	54	58	60	65

In summary, the data indicated that prenatal fetal attachment, as measured by the Maternal Fetal Attachment Scale, does occur in adolescent women and it appears that the degree of attachment increases over the gestational period. Examination of Table 14 (p. 88) reveals that in early pregnancy, 63% of the adolescents in this group reported that they engaged in thoughts, feelings, and behaviors indicative of a developing relationship with their unborn babies. Twenty-nine percent responded negatively to these indicators

Table 21

Summary of Means of Maternal Fetal Attachment Scale and Subscales Across Time Periods

	T1	T2	T3	T4
Maternal Fetal Attachment Scale	3.54	3.72	3.77	3.94
Roletaking	3.86	4.31	4.23	4.44
Interaction with Fetus	2.50	2.94	4.22	4.37
Giving of Self	3.85	4.11	4.07	4.28
Differentiation from Self	3.74	3.94	4.22	4.37
Attributing Characteristics to Fetus	3.27	3.46	3.47	3.59

Table 22

Repeated Measures Analysis of Variance of the Maternal Fetal Attachment Scale at Times 1, 2, 3, and 4

Source	D.F.	SS	MS	F	eta ^{2}
Between Groups	3	3.0139	1.0046	5.0453*	.0939
Within Groups	146	29.0716	0.1991		
Total	149	32.0855			

* $p = .0024$

and 8% were uncertain. At Time 2, however, the percentage of adolescents who responded positively had fallen to 59% and

almost 20% were uncertain of their thoughts, feelings, and behaviors. Data from Time 2 were collected at the time of the adolescents' first visit to the physician when the diagnosis of pregnancy was definitively made. The increased uncertainty which is revealed in these data may reflect the irrevocable fact of pregnancy and her attempt to come to terms with it. By Time 3, (Mean gestational age 26.6 weeks) 72% responded positively. Although 20% continued to maintain their negative orientation, more of those who had originally reported themselves to be uncertain, responded positively. At Time 4 (Mean gestational age 33.4 weeks) more than three-fourths, 77%, of the sample reported positive responses while, again, those who maintained a negative response remained fairly stable at just under 20%. A similar pattern was found for each of the subscales as well.

As for when, in the gestational period, the indicators of prenatal fetal attachment occur, and the sequence in which they occur, it appears to be a matter of degree rather than time since each of the indicators was present, at least to some extent, from early pregnancy. Examination of the subscales (Table 20, p. 94) indicates that fully three-fourths of the adolescents reported the indicators of Roletaking, Giving of Self, and Differentiation From Self, early in pregnancy. Almost one-fourth interacted in some manner with the fetus, and slightly more that one-half attributed the fetus with characteristics. By Time 4, more than 90% of the sample engaged in the indicators of Roletaking, Giving of

Self, and Differentiation From Self. More than one-half interacted with their fetus while two-thirds of the group were attributing characteristics to the fetus.

Analysis of Health Behaviors Scale Over Time

The Health Behaviors Scale was administered at Times 2, 3, and 4 to determine whether the adolescents engaged, more progressively, in healthy behaviors with their advancing pregnancies. Tables 23-30 (pp. 98-101) show the percentage of responses to individual items. Adolescents generally reported an increase in healthy behaviors over time with the exception of getting enough sleep and rest. This plagued approximately half of the group and was fairly constant over time. Fifty-six percent reported that they exercised every day or almost every day by Time 4, up from slightly more than one-third at Time 2. The health behavior of eating a balanced diet demonstrated the most dramatic increase over time. This was practiced by two-thirds of the group in late pregnancy, an increase of almost 40% over early pregnancy. Although 75% never or rarely smoked at Time 2, by Time 4 an additional 8% had either ceased or cut cigarette use to rarely. The great majority used very little over the counter medication; eighty-eight percent reported positive behaviors at Time 2, and 96% at Time 4. Surprisingly, none of the adolescents reported alcohol or drug use at Time 3 or Time 4.

Table 23

Health Behaviors Scale
Response to Adequate Sleep (%)

	T2 *	T3 **	T4 ***
Sleep			
Never	6	3	5
Rarely	50	21	20
Occasionally	13	26	32
Almost Every Day	16	47	33
Every Day	16	3	10

* n = 32
** n = 38
*** N = 40

Table 24

Health Behaviors Scale
Response to Adequate Rest (%)

	T2 *	T3 **	T4 ***
Rest			
Never	19	8	5
Rarely	13	18	15
Occasionally	19	32	35
Almost Every Day	34	29	18
Every Day	16	13	28

* n = 32
** n = 38
*** N = 40

Table 25

Health Behaviors Scale
Response to Adequate Exercise (%)

	T2 *	T3 **	T4 ***
Exercise			
Never	25	11	3
Rarely	22	21	18
Occasionally	19	32	25
Almost Every Day	25	16	33
Every Day	9	21	23

* n = 32
** n = 38
*** N = 40

Table 26

Health Behaviors Scale
Response to Adequate Diet (%)

	T2 *	T3 **	T4 ***
Diet			
Never	16	---	10
Rarely	16	13	3
Occasionally	38	32	20
Almost Every Day	25	37	53
Every Day	6	18	15

* n = 32
** n = 38
*** N = 40

Table 27

Health Behaviors Scale
Response to Smoking (%)

	T2 *	T3 **	T4 ***
Smoking			
Never	69	74	80
Rarely	6	8	3
Occasionally	---	3	---
Almost Every Day	6	5	3
Every Day	19	11	15

* n = 32
** n = 38
*** N = 40

Table 28

Health Behaviors Scale
Response to Use of Over the Counter Drugs (%)

	T2 *	T3 **	T4 ***
Over The Counter Drugs			
Never	75	79	73
Rarely	13	16	23
Occasionally	9	5	5
Almost Every Day	3	---	---
Every Day	---	---	---

* n = 32
** n = 38
*** N = 40

Table 29

Health Behaviors Scale
Response to Alcohol Ingestion (%)

	T2 *	T3 **	T4 ***
Alcohol			
Never	97	100	100
Rarely	3	---	---
Occasionally	---	---	---
Almost Every Day	---	---	---
Every Day	---	---	---

* n = 32
** n = 38
*** N = 40

Table 30

Health Behaviors Scale
Response to Use of Street Drugs (%)

	T2 *	T3 **	T4 ***
Street Drugs			
Never	100	100	100
Rarely	---	---	---
Occasionally	---	---	---
Almost Every Day	---	---	---
Every Day	---	---	---

* n = 32
** n = 38
*** N = 40

The Health Behavior Scale means, standard deviations, and estimated internal consistency scores appear in Table 31 (p. 102). Coefficient alphas for Times 2 and 3 were sufficiently high to claim internal consistency. The coefficient for Time 4 was low. This is thought to be due to the lack of variability on two of the items, alcohol and drug ingestion, as 100% of the adolescents denied use at this time.

Table 31

Mean, Standard Deviation, and Estimated Internal Consistency of Health Behavior Scale at Times 2, 3, and 4

	T2 *	T3 **	T4 ***
Mean	30.16	32.26	32.83
Standard Deviation	2.80	3.22	3.52
Cronbach alpha	.94	.90	.45

* $n = 32$
** $n = 38$
*** $N = 40$

Table 32 (p. 103) shows the results of the Health Behaviors data which were subjected to Analysis of Variance with Repeated Measures to determine if the adolescents reported improved health behaviors with advancing pregnancy. The analysis indicates a mean difference, significant at $F(6.5856)$ $p = .002$. An eta^2 of 11% indicates that the variation among groups for Health Behavior Scores at Times 2, 3, and 4 were not large. However, a post hoc analysis utilizing the Scheffè procedure revealed the mean of Time 2 to

be significantly different from Times 3 and 4 at $p < .05$. Health Score means at Times 3 and 4 did not differ significantly from each other. Data from Time 3 were utilized in the remaining analyses since Time 3 and Time 4 data were not significantly different and since Time 3 had higher reliability scores.

Table 32

Repeated Measures Analysis of Variance of Health Behaviors Scale at Times 2,3, and 4

Source	D.F.	SS	MS	F	eta ^{2}
Between Groups	2	136.3106	68.1553	6.5856*	0.1096
Within Groups	107	1107.3622	10.3492		
Total	109	1243.6727			

* $p = .002$

Stage II Analysis

The estimated internal consistency scores of the independent variables appear in Table 33 (p. 105). Coefficient alphas approached those reported in the literature or exceeded them in most instances. Except for the Uniqueness subscale, they were sufficiently high to claim internal consistency.

As the first step in testing the six correlational hypotheses, the data for each of the independent variables

(displayed in Table 34, p. 106 with their corresponding abbreviations) and the Maternal Fetal Attachment data for Time 4 were displayed on a scatter plot to determine whether assumptions for correlational analyses were met. All scatter plots revealed a non-linear relationship between the X and Y variables thus indicating that knowledge of scores obtained on the independent variables have little value for the prediction of the degree of prenatal fetal attachment in this group of primiparous adolescent women. For variables with at least a 5 point scale, Spearman Rho correlations (See Tables 35 and 36, pp. 107-108) as well as the more robust Pearson-Product Moment correlations were computed (See Tables 37 and 38, pp. 107-108). A comparison of values revealed very little difference, therefore, Pearson correlations were utilized in the following discussion and analyses. Spearman Rho correlations are reported for variables with fewer than 5 scale points and are designated with a superscript a in Tables 37 and 38 (pp. 109 and 110).

The hypotheses which were generated in an attempt to meet the objectives of this study of prenatal fetal attachment in primiparous adolescent women, and the results of the correlational analyses follow. Throughout the rest of the chapter, the Maternal Fetal Attachment total scale will be correlated with the independent variables in question. Then correlations of the subscales of the MFAS with the independent variables and any of their subscales will be presented.

Table 33

Estimated Internal Consistency of Independent Variables (N=40)

Variable	Cronbach Alpha
New Personal Fable Scale (Total Score)	.73
Omnipotence	.75
Invulnerability	.75
Uniqueness	.42
New Imaginary Audience Scale	.91
Life Events Questionnaire (Bad Events)	----
State Anxiety Inventory	.91
Trait Anxiety Inventory	.76
Coopersmith Self-esteem Inventory	.81
Total Functional Support	.99
Affection	.98
Affirmation	.98
Aid	.90
Total Network Properties	.86

Table 34

Identification of Variables Used in Study

MFAS	Maternal Fetal Attachment Scale
ROLETAK	Roletaking
DIFFSELF	Differentiation from Self
INTERACT	Interaction with Fetus
ATTRIB	Attributing Characteristics to Fetus
GIVING	Giving of Self
LEBAD	Norbeck Life Events Questionnaire (Bad Events)
HEALTH	Health Behaviors Scale (Time 3)
NIAS	New Imaginary Audience Scale
NPFS	New Personal Fable Scale
OMNIPOT	Omnipotent (subscale of NPFS)
INVULN	Invulnerability (subscale of NPFS)
UNIQUE	Uniqueness (subscale of NPFS)
TOT FUNCT	Total Functional Support (subscale of Norbeck Social Support Questionnaire, NSSQ)
TOT NET	Total Network Properties (subscale of Norbeck Social Support Questionnaire, NSSQ)
CSEI	Coopersmith Self-Esteem Self Inventory
SANX	State Anxiety (subscale of State-Trait Anxiety Inventory)
TANX	Trait Anxiety (subscale of State-Trait Anxiety Inventory)

Table 35

Spearman Rho Correlation Matrix of Independent and Dependent Variables

	MFAS	LEBAD	HEALTH	NIAS	NPFS	OMNIP	INVULN	UNIQUE	TOT FUNCT +	TOT NET +	CSEI	SANX
MFAS												
LEBAD	.14											
HEALTH	.06	.07										
NIAS	.12	.10	.48**									
NPFS	.20	-.17	.14	.17								
OMNIP	.14	-.18	.16	.02	.69***							
INVULN	.11	-.11	.10	.14	.66***	.12						
UNIQUE	-.13	-.03	.13	.21	.76***	.25	.44**					
TOT FUNCT +	.25	.06	.13	.16	.16	.26	.17	-.08				
TOT NET +	.16	.18	.04	.17	.16	.14	.22	.00	.96***			
CSEI	.04	-.24	.06	-.07	.38*	.53***	.28	.00	.17	.12		
SANX	-.22	.25	-.04	.22	-.19	-.42**	-.20	.23	-.25	-.16	-.62***	
TANX	-.18	.44**	.16	.32*	-.34*	-.52***	-.25	.05	-.29*	-.16	-.65***	.75***

+ one tailed; * $p < .05$; ** $p < .01$; *** $p < .001$ 11

Table 36

Spearman Rho Correlation Matrix of Independent and Dependent Variables for Subscales of the Maternal Fetal Attachment Scale

	ROLETAKE	DIFFSELF	INTERACT	ATTRIBUTE	GIVING
MFAS	.79***	.75***	.79***	.77***	.69***
ROLETAK	1.00	.78***	.48**	.59***	.54***
DIFFSELF	.78***	1.00	.50***	.38*	.47**
INTERACT	.48**	.50***	1.00	.53***	.37*
ATTRIB	.50***	.38*	.53***	1.00	.43**
GIVING	.54***	.47***	.37*	.43**	1.00
LEBAD	.30*	.15	.19	.07	.00
HEALTH	.13	.13	-.14	.18	.04
NIAS	.16	.08	-.07	.22	.00
NPFS	.09	.25	.11	.24	.05
OMNIP	.15	.20	.19	.29	.15
INVULN	-.05	-.02	.03	.19	.23
UNIQUE	-.11	.08	.13	-.07	-.23
TOT FUNCT +	.10	.17	.25	.17	.21
TOT NET +	.01	.08	.18	.12	.12
CSEI	.12	.01	-.13	.00	.20
SANX	-.20	-.05	-.14	-.14	-.32*
TANX	-.13	-.20	-.08	.11	-.24

* $p < .05$ ** $p < .01$ *** $p < .001$
\+ one-tailed

Table 37

Pearson Correlation Matrix of Independent and Dependent Variables[a]

	MFAS	LEBAD [a]	HEALTH	NIAS [a]	NPFS	OMNIP	INVULN	UNIQUE	TOT FUNCT [+]	TOT NET [+]	CSEI	SANX [a]
MFAS												
LEBAD [a]	.14											
HEALTH	.02	.09										
NIAS [a]	.12	.10	.48**									
NPFS	.07	-.17	.21	.17								
OMNIP	.13	-.18	.12	.02	.78***							
INVULN	.15	-.11	.12	.14	.62***	.10						
UNIQUE	-.17	-.03	.22	.21	.76***	.35*	.43**					
TOT FUNCT [+]	.18	.06	.09	.16	.08	.18	.07	-.16				
TOT NET [+]	.08	.18	.04	.17	.09	.12	.10	-.08	.96***			
CSEI	-.03	-.24	.06	-.07	.42**	.57***	.18	.02	.13	.08		
SANX [a]	-.22	.25	-.04	.22	-.19	-.42**	-.20	.23	-.25	-.16	-.62***	
TANX [a]	-.18	.44**	.16	.32*	-.34**	-.52***	-.25	.05	-.29*	-.16	-.65***	.75***

[a] Spearman Rho for ordinal level variables with less than 5 scale points
[+] one tailed; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 38

Pearson Correlation Matrix of Independent and Dependent Variables for Subscales of the Maternal Fetal Attachment Scale [a]

	ROLETAK	DIFFSELF	INTERACT	ATTRIB	GIVING
MFAS	.77***	.71***	.81***	.79***	.64***
ROLETAK	1.00	.73***	.47**	.49**	.44**
DIFFSELF	.73***	1.00	.47**	.35*	.35*
INTERACT	.47**	.47**	1.00	.54***	.33*
ATTRIB	.49**	.35*	.54***	1.00	.43**
GIVING	.44**	.35*	.33*	.43**	1.00
LEBAD [a]	.30*	.15	.19	.07	.00
HEALTH	.12	.16	-.15	.10	-.05
NIAS [a]	.16	.08	-.07	.22	.00
NPFS	.08	.16	-.03	.11	.01
OMNIP	.17	.23	.01	.11	.04
INVULN	.00	.02	.06	.20	.26
UNIQUE	-.08	.05	-.17	-.11	-.32*
TOT FUNCT [+]	-.02	.11	.19	.13	.21
TOT NET [+]	.10	-.01	.12	.09	.09
CSEI	.11	.01	-.15	-.07	.15
SANX [a]	-.20	-.05	-.14	-.14	-.32*
TANX [a]	-.13	-.20	-.08	.11	-.24

[a] Spearman Rho for ordinal level variables with less than 5 scale points

[+] One-tailed

* $p < .05$ ** $p < .01$ *** $p < .001$

Finally, correlations found to be significant were submitted to Partial Correlational analysis using the control variables in this study to ascertain their impact. These control variables include age of the adolescent, ethnicity of the adolescent, gestational age in weeks, and complications in pregnancy. The results of these partial correlational analyses are reported in Appendix B (p. 176), for the reader's examination.

Null Hypothesis 1

H01: Among pregnant adolescents, there is no relationship between the level of self-esteem and the degree of prenatal fetal attachment.

Correlational analysis (Table 37, p. 109) revealed a non-significant relationship ($r = -.03$) between the Maternal Fetal Attachment total scale (MFAS) and the level of self-esteem (CSEI). Investigation of the MFAS subscales (ROLETAK, DIFFSELF, INTERACT, ATTRIBUT, and GIVING) and their relationship with the level of self-esteem (CSEI) (Table 38, p. 110) resulted in correlations ranging from very weak to negligible and none were significant. These correlations were .11, .01, -.15, -.07, and .15 respectively. The H01 null hypothesis could not be rejected. It appears that for this group of adolescents the relationship between the degree of prenatal fetal attachment and the level of self-esteem was negligible.

Null Hypothesis 2

H02: Among pregnant adolescents, there is no relationship between the level of anxiety and the degree of prenatal fetal attachment.

Correlational analysis revealed a nonsignificant relationship between the Maternal Fetal Attachment total scale (MFAS) and State Anxiety (SANX) and Trait Anxiety (TANX). As Table 37 (p. 109) indicates, these correlations were -.22 and -.18 respectively.

The five subscales of the Maternal Fetal Attachment Scale (ROLETAK, DIFFSELF, INTERACT, ATTRIB, and GIVING) were correlated with State Anxiety (SANX) and Trait Anxiety (TANX). These correlations were -.20, -.05, -.14, and -.14 respectively for state anxiety and -.13, -.20, -.08, .11, and -.24 respectively for trait anxiety. Only the subscale, Giving of Self, (GIVING) was significantly correlated with the level of perceived state anxiety ($r = -.32$, $p = .05$, $R^2 = .10$, see Table 38, p. 110).

Partial correlations for each of the control variables were calculated to determine whether these variables contributed any variance to the relationship between the Giving of Self subscale and the level of state (SANX) anxiety (Appendix B, p. 176). The original correlation remained essentially unchanged, thus indicating that the control variables selected for this study had little effect on the relationship between the degree of giving of self and the level of state anxiety. Therefore, based on a significant

relationship between the degree of prenatal fetal attachment in the form of giving of self behaviors and the level of state anxiety, the H02 null hypothesis was rejected. Among primiparous adolescent women, there is a significant, inverse relationship between the degree of prenatal fetal attachment and the level of perceived state anxiety. As the levels of currently perceived anxiety increase, the adolescent is less likely to report giving of self behaviors which provide a healthy environment for her growing fetus.

Null Hypothesis 3

H03: Among pregnant adolescents, there is no relationship between the degree of perceived stress and the degree of prenatal fetal attachment.

Correlational analysis failed to establish a significant relationship between the Maternal Fetal Attachment Scale (MFAS) and the degree of perceived stress (LEBAD). As Table 37 (p. 109) indicates, this correlation was $r = .14$.

The five subscales of the Maternal Fetal Attachment Scale (ROLETAK, DIFFSELF, INTERACT, ATTRIB, and GIVING) were correlated with the independent variable, degree of perceived stress (LEBAD). Only the subscale of roletaking (ROLTAK) revealed a significant relationship with the degree of perceived stress ($r = .30$, $p < .05$, $R^2 = .09$). The remaining correlations were .15, .19, .07, and .00 respectively and did not reach significance (See Table 38, p. 110).

Partial correlations for each of the control variables were calculated to determine whether these variables contributed any variance to the relationship between the subscale of ROLTAK and the degree of perceived stress (LEBAD). These values remained virtually unchanged, although when the effects of being non-Caucasian were removed, the correlation was just short of significance at the $p = .05$ level (See Appendix B, p. 176). Therefore, the H03 null hypothesis can be rejected but only for Caucasian adolescents. As this group of Caucasian adolescents perceived a greater degree of stress in their lives, the more likely they were to imagine themselves in the role of mothering their infants.

Hypotheses 4

H04: Among pregnant adolescents, there is no relationship between the extent of social support and the degree of prenatal fetal attachment.

H14: Among pregnant adolescents, there is a positive relationship between the extent of social support and the degree of prenatal fetal attachment.

Correlational analyses revealed non-significant relationships between the Maternal Fetal Attachment total scale (MFAS) and the extent of social support as measured with the Total Functional Support (TOT FUNCT) and Total Network Properties (TOT NET) subscales of the Norbeck Social Support Questionnaire. Table 37 (p. 109) indicates that these correlations were .18 and .08 respectively.

The five subscales of the Maternal Fetal Attachment Scale (ROLETAK, DIFFSELF, INTERACT, ATTRIB, and GIVING) were correlated with the extent of social support (TOT FUNCT and TOT NET). Table 38 (p. 110) reveals correlations for the MFAS subscales and Total Functional Support ranging from -.02 to .21, while correlations for the MFAS subscales and Total Network Properties ranged from -.01 to .12.

The six items which make up the subscale of Total Functional Support were then separated into Affection, Affirmation, and Aid subscales for 1) all 40 adolescents, 2) adolescents reporting support from mother, and 3) adolescents reporting support from the father of the baby. Table 39 (p. 116) reports the estimated internal consistencies for these new subscales.

For all adolescents, Table 40 (p. 118) indicates that the correlations between the Maternal Fetal Attachment total scale and its subscales and these new subscales remained weak to negligible. Correlations for MFAS and Affection, Affirmation, and Aid for all adolescents were .18, .17, and .18 respectively. Correlations of each of the subscales of the MFAS with Affection, Affirmation, and Aid ranged from -.04 to .23.

When social support in the form of affection, affirmation, and aid was supplied by the adolescent's mother several significant relationships with the Maternal Fetal Attachment total scale and its subscales were found (Table 40, p. 118). For the 32 adolescents who listed their mothers as

a source of support, maternal behaviors which indicated love, respect, and admiration (Affection) for her daughter were positively correlated (r = .41, p <.01 R^2 = .17) with the Maternal Fetal Attachment Scale (MFAS). Correlations for the MFAS total scale and Affirmation and Aid were non-significant at .14 and .20 respectively.

For the 32 adolescents who listed their mothers as a source of support, the five subscales of the Maternal Fetal

Table 39

Estimated Internal Consistency of Subscales of Total Functional Support for all Adolescents, Adolescents with Mother Support, and Adolescents with Father of Baby Support

	Cronbach Alpha
All Adolescents	
Affection	.98
Affirmation	.98
Aid	.90
Support from Mother *	
Affection	.63
Affirmation	.54
Aid	.43
Support from Father of Baby **	
Affection	.92
Affirmation	.79
Aid	.59

* n = 32
** n = 25

Attachment Scale (ROLETAK, DIFFSELF, INTERACT, ATTRIBUT, and GIVING) were correlated with the new subscales of AFFECTION, AFFIRMATION, and AID. Three of the MFAS subscales were found to have a significant positive relationship with affection received from the adolescents' mothers. These were Roletaking (r = .34, p <.05, R^2 = .12), Differentiation From Self (r =.44, p <.01, R^2 = .19) and Interaction With the Fetus (r = .40, p <.01, R^2 = .16). In addition, when the adolescent perceived that her mother was giving her adequate support in the form of material aid, (AID) she reported a greater degree of giving of self behaviors (GIVING) in the form of providing a healthy environment for her growing fetus (r = .30, p <.05, R^2 = .09). Other relationships remained non-significant.

When partial correlation coefficients (See Appendix B, p. 176) were calculated to determine the effect of the control variables, two of the original relationships remained virtually unchanged (Differentiation From Self and Affection from Mom (r= .44, p < .01), and Giving of Self and Aid from Mom (r= .30, p < .05). The remaining correlations, however, appeared to be influenced by ethnicity. When the effects of being Hispanic were removed, the correlation of the Maternal Fetal Attachment total scale and affection received from her mother, decreased from .41 to .35, although it retained significance at the .05 level. Interaction with the fetus (INTERACT) and roletaking behaviors (ROLETAK) were also influenced by being non-Caucasian. Once the influence of

Table 40

Correlational Matrix of Independent and Dependent Variables with Subscales of Total Functional Support for All Adlolescents, Adolescents with Mother Support, and Adolescents with Father of Baby Support (one-tailed)

	All Adolescents (N = 40)			Support from Adolescent's Mother (n = 32)			Support from Father of the Baby (n = 25)		
	Affection	Affirmation	Aid	Affection	Affirmation	Aid	Affection	Affirmation	Aid
MFAS	.18	.17	.18	.41**	.14	.20	.29	.16	.34*
ROLTAK	-.04	-.01	-.02	.34*	.23	.12	-.06	.04	.16
DIFFSELF	.07	.11	.14	.44**	.16	.20	-.01	.16	.27
INTERACT	.23	.16	.18	.40**	.01	.11	.40*	.06	.20
ATTRIB	.14	.12	.13	.25	.14	.09	.35*	.19	.28
GIVING	.18	.22	.23	.10	.10	.30*	.17	.15	.38*
LEBAD [a]	.12	.03	-.04	-.03	.05	-.11	-.39*	-.22	-.50**
HEALTH	.08	.08	.10	.27	-.00	.12	.04	.23	.11
NIAS [a]	.20	.21	.02	.12	.20	.01	-.18	-.34*	-.24
NPFS	.10	.08	.05	.34*	.09	.17	-.05	-.07	-.11
TOT FUNCT	.98***	.99***	.98***	.48**	.39**	.18	-.03	.11	.10
TOT NET	.97***	.94***	.90***	.45**	.31*	.15	-.11	-.04	-.06
CSEI	.11	.12	.15	.35*	.31*	.57***	.02	.24	.22
SANX [a]	-.21	-.25	-.33*	-.39*	-.18	-.33*	-.28	-.36*	-.28
TANX [a]	-.23	-.31*	-.39**	-.27	-.22	-.39*	-.21	-.25	-.34*

* $p < .05$ ** $p < .01$ *** $p < .001$ [a] Spearman Rho Correlation Coefficient

being Black or Hispanic was removed, the relationship between roletaking (ROLETAK) and affection from her mother was no longer significant. When the effect of being Hispanic was removed, the relationship between interaction with the fetus (INTERACT) and Affection from Mom was no longer significant. It appears that the degree of prenatal fetal attachment the Hispanic adolescent, and to a lesser extent the Black adolescent, develops for her unborn child is not as dependent on affection from her mother as it is with the Caucasian adolescent. For these Caucasian adolescents, the degree of prenatal fetal attachment is positively associated with the extent of support, in the form of affection, she receives from her mother.

For the 25 adolescents who reported support from the father of their babies, additional significant correlations were found. The Maternal Fetal Attachment total scale (MFAS) was positively correlated with the extent of social support in the form of material aid (AID) received from the father of her baby ($r = .34$, $p < .05$, $R^2 = .12$). Correlations for MFAS and AFFECTION, and AFFIRMATION were non-significant ($r = .29$, $r = .16$, respectively).

For the 25 adoloscents who reported support from the father of the baby, the five subscales of the Maternal Fetal Attachment Scale (ROLETAK, DIFFSELF, INTERACT, ATTRIBUT, and GIVING) were correlated with AFFECTION, AFFIRMATION, and AID. The subscales of INTERACT and ATTRIBUT were significantly correlated with AFFECTION ($r = .40$, $p < .05$, $R^2 = .16$; $r =$

.35, $p < .05$, $R^2 = .12$ respectively). In addition, the subscale of GIVING was significantly correlated with material aid (AID) received from the father of her baby ($r = .38$, $p < .05$, $R^2 = .14$). The remaining correlations were non-significant. These values appear in Table 40, (p. 118).

Partial correlations (See Appendix B, p. 176) were calculated for each of the control variables to determine whether these variables contributed any variance to the relationship between the extent of social support, the total scale and the three subscales of INTERACT, ATTRIB, and GIVING. Although the original correlations decreased somewhat with respect to the adolescent's age, each of them retained statistical significance. Thus, adolescents who reported receiving affection and instrumental aid from the father of their babies developed a greater degree of prenatal fetal attachment, particularly in the form of providing a healthy environment, interacting with the fetus, and thinking about the characteristics of her unborn baby.

Although the construct of social support was more broadly defined in the theoretical framework, based upon the importance of the mother-daughter relationship, and to a lesser extent that with the father of her unborn child, the H04 null hypothesis was rejected and the alternative hypothesis accepted. Thus, as the extent of affection and aid received from her mother and to a lesser degree the father of her baby increased, the Maternal Fetal Attachment Scale scores increased, particularly for Caucasian adolescents.

Null Hypothesis 5

H05: Among pregnant adolescents, there is no relationship between the degree of ego development and the degree of prenatal fetal attachment.

Correlational analysis revealed a non-significant relationship between the Maternal Fetal Attachment total scale (MFAS), the New Imaginary Audience Scale, and the New Personal Fable Scale. These correlations were r = .12 and r = .07, respectively. The MFAS total scale was also correlated with the subscales of the New Personal Fable Scale. Again, the correlations were non-significant with Omnipotence (OMNIP) r = .13, Invulnerability (INVULN) r = .15, and Uniqueness (UNIQUE) r = - .17.

The subscales of the Maternal Fetal Attachment Scale (ROLETAK, DIFFSELF, INTERACT, ATTRIBUT, and GIVING) were correlated with the New Imaginary Audience Scale (NIAS) total score, the New Personal Fable Scale (NPFS) total score and each of its subscales, Omnipotence (OMNIP), Invulnerability (INVULN), and Uniqueness (UNIQUE). Only the subscale GIVING (behaviors that provide a healthy environment for the fetus) and UNIQUE revealed a significant and negative relationship (r = -.32, p <.05, R^2 = .10). As Table 38 (p. 110) indicates the remaining non-significant correlations range from -.17 to .26.

Partial correlations (See Appendix B, p. 176) for each of the control variables were calculated to determine whether these variables contributed any variance to the relationship of giving of self behaviors and the subscale UNIQUE. The

original correlation appeared to be affected by age, ethnicity, and length of gestation. When the effect of each was removed the correlation was no longer significant. The H05 null hypothesis could not be rejected. For this group of adolescents, there was no relationship between the degree of ego development and the degree of prenatal fetal attachment.

Null Hypothesis 6

H06: Among pregnant adolescents, there is no relationship between the extent of health behaviors practiced and the degree of prenatal fetal attachment.

Correlational analysis revealed a non-significant relationship between the Maternal Fetal Attachment total score and the Health Behaviors total score. Table 37 (p. 109) indicates this to be $r = .02$.

The subscales of the Maternal Fetal Attachment Scale (ROLETAK, DIFFSELF, INTERACT, ATTRIBUT, and GIVING) were correlated with the Health Behaviors total scale. Table 38 (p. 109) indicates that these non-significant correlations ranged from -.15, to .16. The H06 null hypothesis could not be rejected. For this group of adolescents there was no relationship between the degree of prenatal fetal attachment and the extent of health behaviors practiced.

In summary, a general increase in the degree of prenatal fetal attachment occurred in this group of adolescents over the gestational period and the degree was significantly different at Time 1 and Time 4. Thoughts, feelings, and

behaviors which indicate interaction with the fetus showed the greatest increase in positive responses, while attributing characteristics to the fetus showed the least amount of increase over time. These adolescents reported a general improvement in health behaviors with a significant difference between Times 2 and 3 and Time 4.

Statistical analyses revealed weak to moderate correlations between the degree of prenatal fetal attachment and several of the independent variables. Giving of self behaviors were inversley related to the level of anxiety the adolescents were currently experiencing. In addition, the group of Caucasian adolescents, who reported a greater degree of stress, also reported imagining themselves more in roletaking behaviors. The extent of social support in the form of affection received from her mother was positively associated with a greater degree of prenatal fetal attachment for the group of Caucasian adolescents. The extent of this support appeared to be less important for the Black and Hispanic adolescents. The extent of affection and instrumental aid received from the father of the baby were also positively associated with the degree of prenatal fetal attachment which adolescents developed for their unborn baby.

Chapter 5

Discussion, Limitations, Implications, and Recommendations

The previous chapter reported the results of the statistical analyses which were applied to each of the research questions and the six hypotheses. This chapter will present a discussion of the findings as they relate to the theoretical framework of this study of prenatal fetal attachment in adolescent women, as well as a comparison of these findings with other similar studies. Limitations of the study will be presented; these will be followed by implications and recommendations for future study.

Discussion

The first and second research questions raised by this study of prenatal fetal attachment addressed whether or not this phenomenon occurs in pregnant adolescents, when during the gestational period do the various indicators of prenatal attachment occur, and whether there is a sequential order among these indicators.

When examining a phenomenon for change over time it is essential that measurement includes several points, one of

which assesses thoughts, feelings, and behaviors from the onset. Because many pregnant women tend to postpone entry into the health care system, and early measurements are not always possible, adolescents in this study were requested to recall their thoughts, feelings, and behaviors when they first realized they were pregnant. Although recall or retrospective data must be interpreted with caution, it does give some indication that the phenomenon under scrutiny exists even in the early weeks of pregnancy. The results of this study indicate that prenatal fetal attachment, as measured by the Maternal Fetal Attachment Scale, does occur in primiparous adolescent women and it appears that the degree of attachment increases over the gestational period. These findings lend further support to this conclusion drawn by others in studies of adult women (Condon, 1985; Cranley, 1984; Leifer, 1977, 1980; Lumley, 1980, 1982; Phipps & Zinn, 1986; Reading, et al., 1984; Stainton, 1985). In her study of adolescents, however, Koniak-Griffin (1988) found that the length of pregnancy was not a significant predictor of prenatal attachment.

When the data from this study are compared with those of Armantrout's (1983), several similarities are evident. Armantrout reported a mean response score of 3.70 (SD .41) for the total scale for a group of adolescents in their third trimester of pregnancy. This compares to a mean response score, at Time 4, of 3.94 (SD .43) for the group in this study. The percentage of positive response rates for the

overall indicators and for two of the five subscales were very similar (See Appendix E, p. 223). Armantrout found positive attachment indicators for the total scale to be 74%, Roletaking 94%, and Differentiation from Self 91%. These compare with 77% and 96% for the total scale and Roletaking subscale respectively in this study. For Differentiation from Self the positive response rates were identical for the two studies at 91%. Armantrout found the percentages for the three remaining subscales, Interaction with Fetus, Attributing Characteristics to the Fetus, and Giving of Self to be 17%, 40%, and 83% respectively. These compare with 54%, 65% and 91% for this study. As in Armantrout's study, Interaction With the Fetus was the behavior practiced by the fewest adolescents. Although this was the least practiced behavior, it revealed the greatest increase over time, from 24% at Time 1 to 54% at Time 4. It is possible that the differences in positive response rates between the two groups studied reflect the differing research designs. Armantrout's study investigated a point of time in the third trimester while the present study measured four points in time during the entire period of gestation. The adolescents' interest in initiating interaction with their babies may have been piqued at the earlier interviews in this study, and as the babies became more noticeably active, more of them responded by talking to the baby or by stroking their abdomen to quiet the baby.

Individual items on the Maternal Fetal Attachment Scale which revealed comparable response rates between this study

and the Armantrout study were several (See Appendix E, p. 223). Roletaking behaviors of picturing herself feeding the baby and picturing what the baby looks like were responded to positively by 89% and 94% of Armantrout's sample. Eighty-five percent and 98% of this group responded positively to these items. Eighty percent of both groups had decided on a girl's name, while 86% of Armantrout's group and 85% of this group had decided on a boy's name. Giving of Self in the form of eating well to assure that her baby gets a good diet was practiced by 91% of Armantrout's group and 93% of this group. Only one-third of this group referred to their baby by a nickname, and even fewer (29%) of Armantrout's group did so.

Overall, the percentage of adolescents who reported behaviors, thoughts, and feelings which are indicative of a beginning relationship with their unborn babies was quite similar for this study and the Armantrout study. Although data collection in this study had been scheduled at intervals designed to decrease the possibility of contamination while measuring change over time, it is a distinct possibility that previous interviews stimulated adolescent interest in fetal behavior. This group portrayed an eagerness to learn about themselves and their babies and the clinic personnel placed an emphasis on teaching about developmental issues for both the fetus and the adolescent. It is also possible that the adolescent responded to the individual items in the present study in a manner which she interpreted as socially desirable. Even though she had been assured that the gratuity was not

contingent on her positive response, she may have felt some trepidation and therefore, responded in a manner which she thought would be desirable to the investigator.

Null Hypothesis 1

H01: Among pregnant adolescents, there is no relationship between the level of self-esteem and the degree of prenatal fetal attachment.

The theoretical framework for this study of prenatal fetal attachment in adolescents assumes that the development of an undetermined level of self-esteem is necessary before the adolescent can begin to form an interpersonal relationship with her unborn baby. This supposition evolved from the literature which reports that individuals with higher levels of self-esteem generally exhibit a greater degree of interpersonal competence. For example, levels of self-esteem have been found to be associated with the initiation of sexual activity and with the use of contraceptives. Adolescents with higher levels of self-esteem are less likely to be passive and compliant in sexual encounters. In addition, they are more likely to discuss contraceptive issues with their partners thus being more effective contraceptors (Adler, 1981; Patton, 1981).

The supposition that there is a relationship between levels of self-esteem and the degree of attachment which develops in the prenatal period was also based on reports of maternal-infant interaction which occurs in the postnatal

period, a relationship which has abundant support in the literature. Mothers who feel more positive about themselves are more likely to express warmth for their children, to be sensitive to their needs, to accept their role as mother and to carry out that role in a realistic manner. Furthermore, children of these mothers appear to be more securely attached to them (Coopersmith, 1967; Egeland & Farber, 1984; Medinnus & Curtis, 1963; Sears, Maccoby, & Levin, 1957). Despite the theoretical prediction that the level of self-esteem will be related to the degree of prenatal fetal attachment, results of this study as well as those of similar studies, indicate that the role of self-esteem in the prenatal period remains unclear.

There is some evidence that the capacity for procreation is associated with the feelings of identity some women have about themselves, a supposition which was confirmed by Leifer (1977) who found that more than half of her sample regarded motherhood as the event which marked entry into adulthood. Lederman (1990) believes that pregnancy can enhance the status of women in a society which has often devalued them. "Pregnancy can give the woman a new sense of weight and materiality, of power, solidarity, and validity; the pregnant woman can gain a new sense of self-respect" (p. 279). This would suggest that levels of self-esteem may be higher once a pregnancy has been confirmed and higher still once motherhood has been established. Leifer (1977) provided support for this position when she found that the majority of her sample

anticipated motherhood as the primary source of their self-esteem. This was reflected through a sense of feeling closer to an ideal self as a result of conception. At the time of the postpartum interview, two-thirds of Leifer's sample reported levels of self-esteem which were higher than those experienced during the pregnancy, a finding which was supported by Curry (1982).

Because measurement of the level of self-esteem in the adolescents who participated in this study was made at one point in time, it is not known how the fact of pregnancy related to levels of self-esteem, if at all. It is possible that the group possessed lower levels of self-esteem previous to conception which then increased with pregnancy and motherhood. It is also possible that levels of self-esteem were not appreciably altered with the confirmation of pregnancy nor were levels of self-esteem associated with the degree of prenatal attachment these adolescents developed for their unborn babies. The data which were gathered for this study and extrapolation from previous studies indicate support for the latter supposition.

Some indication of the levels of self-esteem prior to conception and during the prenatal period can be inferred by comparing this sample of adolescents with others described in the literature. Streetman (1987) found no significant difference (as measured by the Coopersmith Self-Esteem Inventory) in self-esteem scores between a group of unwed teenage mothers and their non-mother cohorts. Taken

collectively, Streetman found the mean score to be 63.65 (SD = 14.08). For her group of adolescents in their third trimester, Koniak-Griffin (1988) found self-esteem scores to range from 12 to 94, with a mean of 66.67, and a standard deviation of 15.03. Mean scores for adolescents in the present study were only slightly higher but showed more variation. These values were 64.20 with a standard deviation of 19.13 while the range was 20 to 96.

The studies by Streetman (1987) and Koniak-Griffin, (1988) as well as the present study suggest that levels of self-esteem in pregnant adolescents may not differ greatly from non-pregnant adolescents. In addition, levels of self-esteem in this group did not appear to increase with advancing pregnancy as there was no significant correlation between this psychosocial variable and gestational age. This finding is opposite to that which was suggested by Leifer (1977), Curry (1982), and Lederman (1990).

In attempting to interpret the role of self-esteem during the perinatal period, cultural orientation must be considered. Research indicates that most female children are self-confident and hold a positive self-image of themselves. As they emerge from adolescence, however, distinct differences are noted from one cultural group to another. Black adolescent girls exhibit higher levels of self-confidence compared to Caucasians and Hispanics; Caucasian girls lose their self-confidence more quickly than their Hispanic peers ("Girls are put down," 1991). In addition, mores regarding

childbearing differ according to cultural groups. Motherhood, within the marital bond, is held in high regard, is perceived as essential in the achievement of adult status, and as a fulfillment of a woman's function in society by both the Hispanic and Black cultures. This is true to a lesser extent in the Caucasian culture (Speraw, 1987). Although none of the three cultural groups represented in this study encourage premarital pregnancy, the manner in which the pregnancy is perceived by the adolescent differs (Held, 1981; Speraw, 1987). Speraw (1987) found that Black and Hispanic adolescents expressed few feelings of guilt and they expected a positive pregnancy and motherhood experience. White adolescents, on the other hand, accepted the pregnancy very reluctantly and they frequently reported feelings of guilt and regret.

The feelings of guilt and regret by Caucasian adolescents may reflect cultural differences in the levels of self-esteem reported by adolescents who are experiencing a pregnancy. Held (1981) reported that 60% of the Black adolescents in her study achieved self-esteem scores of 70 or greater as measured by the Coopersmith Self-Esteem Inventory, whereas less than 30% of the non-Black group did so. Findings by Speraw (1987) and Held (1981) received some support in the present study. When the group was separated according to ethnicity, it was found that the Hispanic and Black adolescents tended toward higher levels of self-esteem than the Caucasian adolescents although mean group differences did not reach the .05 level of

significance. The mean and standard deviation for the Hispanic group were 68.57 (SD = 19.79), 66.10 (SD = 17.92) for the Black group, and 58.33 (SD = 21.06) for the Caucasian group (See Appendix F, p. 225, for tables which illustrate the relationship between ethnicity and the independent and dependent variables).

The higher levels of self-esteem in the non-Caucasian adolescents may be related to the extent of support offered by the individual's social network. Although differences by cultural group in the extent of perceived support did not reach statistical significance in this study, there is some indication in other studies that the adolescents' mothers receive the pregnancy differently and therefore, the extent of support offered may differ. Held (1981) reported that mothers of Hispanic adolescents were likely to rate the pregnancy more favorably than mothers of the other two groups. In addition, the Hispanic adolescent was more likely to plan a second pregnancy within two years, a situation which may be associated with more positive feelings about herself. Giblin, et al. (1987) found that higher self-esteem scores, in a group of Black adolescents, were associated with receiving help from her mother and the expectation of receiving assistance with child care.

If an increase in levels of self-esteem occurs with conception, increases with pregnancy, and is associated with the quality of the mother-infant bond in the postpartal period, all of which are suggested in the literature, then it

should be reasonable to expect to see a positive association in the prenatal period, especially in the non-Caucasian groups which place high regard on pregnancy and motherhood. Support for a relationship between levels of self-esteem and the degree of attachment in the prenatal period for both the adult and the adolescent populations has been somewhat mixed, however. Research indicates little support as neither Cranley (1984), Koniak-Griffin (1988), nor Lee (1982) found any correlation between these variables. Lindner (1984), on the other hand, found a low positive correlation in her group of adolescents.

In light of the results of this study and of the inconsistent findings reported in the literature it is possible that the phenomenon of prenatal fetal attachment may not be dependent upon the level of self-esteem which has been achieved by the adolescent. Contrary to reports by Speraw (1987), Held (1981) found that although the Caucasian adolescents in her study rated their pregnancy more highly than either the Hispanic or Black groups, they received lower self-esteem scores, thus suggesting that levels of self-esteem were not related to pregnancy.

Null Hypothesis 2

H02: Among pregnant adolescents, there is no relationship between the level of anxiety and the degree of prenatal fetal attachment.

Only the Giving of Self subscale was associated with the

level of anxiety reported by this adolescent group. This subscale was inversely and significantly correlated ($r = -.32$, $p < .05$) with the level of state or situational anxiety the adolescent experienced at the time of her first physician visit, that is, the higher the level of state anxiety the less likely she was to report behaviors which provide a healthy environment for her growing fetus. There was no significant correlation between the degree of prenatal fetal attachment and the level of long-term or trait anxiety. On the basis of finding a significant relationship between the level of state anxiety and the degree of prenatal fetal attachment in the form of giving of self behaviors, the null hypothesis was rejected. It is evident, however, that the analysis of this finding is somewhat more complex than what was initially expected.

It might be assumed that adolescents who are experiencing a pregnancy and visiting the health care clinic for the first prenatal assessment, would exhibit high levels of anxiety. Furthermore, characteristics which contribute to heightened levels of anxiety were prevalent within this group. It has been reported that unmarried women, those in relationships of shorter duration, those with low educational achievement, income, and occupational prestige, non-Caucasian, and at each extreme of the reproductive age range are at risk for developing higher levels of anxiety (Glazer, 1980; Mercer & Ferketich, 1988; Reading, 1983). In addition, primiparous women are more likely to experience higher levels of anxiety

than women who have given birth previously (Areskog, Uddenberg, & Kjessler, 1981; Light & Fenster, 1974). Comparison of anxiety scores of this sample with the scores for high school students in general, however, reveals very similar values (Spielberger, et al., 1983).[1] The mean state anxiety score for this group was almost identical with the normed group with a mean of 40.50 (SD = 12.90), and 40.54 (SD = 12.86) respectively, thus indicating that there was very little difference in levels of situational anxiety between groups. The mean trait anxiety score for this study was 42.70 (SD 8.50), somewhat higher, and less variable, than the normed group with a mean of 40.97 and standard deviation of 10.63. It would seem that this group of adolescents experienced similar levels of state and trait anxiety as their non-pregnant peers. In addition, the group experienced lower levels of anxiety at this point in their pregnancy than they normally experience on a long term basis.

The discovery of lower levels of state anxiety over levels of trait anxiety is in direct opposition to that which is expected on the basis of theoretical support, i.e., that pregnancy is a situational crisis to which women respond with heightened anxiety related to fear that labor and delivery will be harmful to herself and her child, loss of control, and child care responsibilities (Highley & Mercer, 1978; Lederman,

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[1] Although values are derived from ordinal level of measurement, mean scores are reported here for the purpose of comparing this study with previous studies.

1984; Rubin, 1975). Furthermore, research findings suggest that heightened short term anxiety may be an adaptive response. Leifer (1977) reported that women who were emotionally invested in the fetus tended to focus their anxiety on the fetus, those who were moderately invested expressed anxiety for both the fetus and herself. Finally, those who were minimally attached tended to focus anxiety on themselves or manifested little or no anxiety at all. Lederman (1984) found some support for this supposition in her study of levels of anxiety and stress in pregnancy. She found a significant and positive relationship between state anxiety in labor and acceptance of the pregnancy. Those women who reported a planned or wanted pregnancy which was predominately happy, an acceptance of discomfort and bodily changes, and resolved ambivalence near term reported higher levels of state anxiety. Long-term anxiety, on the other hand, may reflect a personality characteristic which might ultimately interfere with the development of a healthy mother-child relationship over time. Sameroff and Chandler (1975) found that increased levels of trait anxiety were related to decreased interaction with the infant at six months of age. Mean state anxiety scores which are lower than expected and mean trait anxiety scores which are higher than expected may not bode well for this group of adolescents and their newborn infants.

Although the mean anxiety scores for adolescents in general as well as for this group of pregnant adolescents in particular, were higher than those reported for either adult

females of childbearing age (Spielberger, et al., 1983) or for pregnant adult women (Cranley, 1979; Gaffney, 1986), higher levels of anxiety were not significantly associated with the degree of prenatal fetal attachment that these adolescents developed for their unborn babies except for the subscale Giving of Self. Although this correlation was in the negative direction, the data did not strongly support that reported by other investigators (Cranley, 1979; Gaffney, 1986). Again, it is possible that the point in time at which the instrument was administered may have affected the results. The group represented gestational ages ranging from 10 weeks to 39 weeks and adaptive state anxiety may not as yet have been operative for many of the adolescents. A second explanation for higher levels of trait over state anxiety may be that these adolescents had made the decision to seek confirmation of their pregnancy and had been interviewed by the nursing and social services staff before collection of the data. The knowledge that they would receive prenatal care and that some of their more pressing social needs were to be addressed may have been the impetus to decrease the levels of anxiety they may have been experiencing prior to entering the health care system.

Null Hypothesis 3

H03: Among pregnant adolescents, there is no relationship between the degree of perceived stress and the degree of prenatal fetal attachment.

As the data indicate, the degree of perceived stress was associated with the degree of prenatal fetal attachment for only the group of Caucasian adolescents; that is, the greater the degree of stress experienced by these adolescents, the greater the degree of roletaking behaviors they imagined themselves performing. This relationship did not persist in the Black or Hispanic groups, being just short of significance.

Comparison of this study and other studies which utilized the variables of the degree of prenatal fetal attachment and the degree of perceived stress yielded conflicting results. While Cranley (1979) found an inverse relationship between the two variables when she applied an instrument specifically designed to measure the degree of perceived stress in her adult subjects, Mercer, Ferketich, May, DeJoseph, and Sollid (1988) failed to discover any relationship between negative life events in the lives of their adult subjects, and the degree of prenatal fetal attachment. In contrast to these findings, the present study found a positive relationship but only in Caucasian adolescents. Although an examination of the characteristics of this group does not reveal the basis for these differences, it is evident that there may have been some inconsistencies in measurement of the construct of perceived stress.

Examination of the data which were collected with the Norbeck Life Events Questionnaire reveals that these

adolescents received a mean total life events score of 12.6. [2] Desirable events were more frequently experienced than undesirable life events by a ratio of three to two with means of 7.65 and 4.95 respectively. Although an accurate comparison cannot be made due to differences in scales, college students in the Sarasen, et al. (1978) study received a mean total score of 16.61, a desirable events mean of 9.57 and an undesirable events mean of 7.04. These means do not reflect the weighted values which would indicate the magnitude of the events. Intuitively these values are surprising in that it would seem that adolescents who are, in general, economically disadvantaged with all of the attendant stresses, and who are experiencing an unintended pregnancy, or one which is not in synchrony with the developmental stage, would report a greater number of undesirable life events than middle class college students. There is some reason to believe that the data reported here do not reflect all of the changes in these adolescents' lives.

Evidence of a greater degree of perceived stress than was actually reported by these adolescents was provided by the assessment of the clinical social worker at the health care facility. Almost 85% of this group was felt to be exhibiting symptoms of emotional stress and illness, 25% had experienced either physical abuse, rape or incest, 5% had attempted

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[2] Although values are derived from ordinal levels of measurement, mean scores are reported here for the purpose of comparing this study with previous studies.

suicide in the past and 20% had been involved in long term counseling. In addition, one-third of the group admitted that they experienced a poor relationship with their parent(s) and 5% were homeless at the time of the intake interview. Although all 40 adolescents planned to keep their babies, for only a third of the group was there no ambivalence. For them, even though the pregnancy was unplanned, they welcomed their babies. For the remaining adolescents whose pregnancies were unplanned, 35% did not welcome their babies and almost 20% were fearful about the outcome of the pregnancy. Thirteen percent requested termination of pregnancy at a gestational age which had advanced too far for the procedure. These data were collected by agency personnel at the time of the first clinic visit. Data on the degree of perceived stress for this study were not collected until the fourth interview late in the third trimester. It is not known how much of the clinic data is reflected in the variation of life events scores nor how many of the events occurred within the intervening time period.

An explanation for the discrepancies in reported events may be several. The first may lie in the relationship of the adolescent to the health care provider who makes the decision as to whether the adolescent will receive government assistance and whether or not she will receive support which is independent of her family. Her relationship with the investigator, on the other hand, is one in which she may have felt that remuneration was dependent on giving a socially

desirable response. In addition, she had no reason to trust the investigator and may have been unwilling to share certain aspects of her life.

Secondly, during the interview process it was evident that some participants did not perceive an event in the same manner as the investigator. For instance, adolescents were asked whether they had experienced a violent act within the preceding 12 months. One adolescent replied in the negative. However, on prompting she told the investigator that she had been asleep on the couch when her brother stabbed her after mistaking her for her mother. She had not recognized this as a violent act and would not have included it in her report of negative life events.

A third explanation lies in the use of a tool which, in light of information elicited by social services, was inappropriate for this adolescent population even though many aspects of a pregnant adolescent's life may be comparable to that of an adult in similar circumstances. Although the item content covered the myriad of events these adolescents had experienced, they were obviously not worded in a manner which would prompt the adolescent to recall the events or that she would even recognize her life events as being appropriately included in a particular category.

The positive relationship between the degree of prenatal fetal attachment and the degree of perceived stress only for Caucasian adolescents is not easily interpreted. In addition to the possible explanations which were offered previously,

the perception of themselves in the mothering role may be the impetus for greater degrees of perceived stress. The greater degree of perceived stress may also reflect the Caucasian adolescent's existence in an uncertain and turbulent world. Research has indicated that an adolescent pregnancy may occur because she is searching for someone to love or for someone to love her (Bobak, Jensen, & Zalar, 1989). Her unborn baby may represent something real to hang onto and something that is entirely her own and may represent something or someone over whom she has some control. Black and Hispanic adolescents may not exhibit this same relationship due to higher levels of self-esteem and the greater acceptance of their pregnancy both by themselves and their support systems. These differences may protect them from their stressful existence and they, therefore, do not exhibit the relationship between the degree of perceived stress and the degree of prenatal fetal attachment which was found in the Caucasian group.

Hypotheses 4

H04: Among pregnant adolescents, there is no relationship between the extent of social support and the degree of prenatal fetal attachment.

H14: Among pregnant adolescents, there is a positive relationship between the extent of social support and the degree of prenatal fetal attachment.

Other investigators, utilizing a variety of social support instruments, have found some support for a relationship between the variables of extent of social support

and the degree of prenatal fetal attachment in adult women (Cranley, 1979; Mercer, Ferketich, May, DeJoseph, & Sollid, 1988; Wawrzynski, 1986). Because of differences in tools, comparison of results with this study is difficult. Two studies of adolescent pregnancy utilized the Norbeck Social Support Questionnaire; the direction of the correlations was mixed, however. Koniak-Griffin (1988) reported a positive relationship between the extent of social support and the degree of prenatal fetal attachment for her group of adolescents but only between selected subscales of each of the constructs. For her group, those who reported receiving more aid reported more thoughts, feelings, and behaviors associated with attributing characteristics to the fetus. Armantrout (1983), on the other hand, reported inverse correlations between the subscale of Roletaking and Quality of Support Lost and Giving of Self and the amount of aid received. When adolescents in the present study received support from their general network, no relationship with the measures of attachment were discovered.

The conceptual framework for this study suggests that the extent of the adolescent's social support will ultimately provide the basis for a developing relationship with her unborn baby. More specifically, the framework assumes that it is within a family environment which is warm and supportive that the adolescent develops interpersonal competence and adaptive skills which allow her to interact effectively with her growing fetus. These characteristics provide the impetus

for her desire to interact with her fetus, assist in the development of maternal role behaviors, and they result in a commitment to provide a healthy internal environment for her unborn baby.

The literature supports the assumption that optimal pyschosocial development occurs within the environment of her support network (Belsky, 1984). More specifically, it suggests that the adolescent's mother has a strong effect on her developing interpersonal competencies as well as on her developing adaptive capacities (Crowell & Feldman, 1988; Rubin, 1975; Shereshefsky & Yarrow, 1973). Support from the father of her baby, although important, has generally been found to have a lesser effect on these personality characteristics (Wise & Grossman, 1980). When these pyschosocial competencies and adaptation to the mothering role as measured by the Maternal Fetal Attachment Scale were correlated, the findings were mixed depending on whether the samples were adults or adolescents. Studies of adult women yielded no association between the degree of prenatal fetal attachment and the extent of social support (Zachariah, 1984). Lindner (1984), however, reported a positive and significant association between the adolescent's relationship with her mother, her relationship with the father of her baby and the degree of prenatal fetal attachment. Each of these studies utilized gross measures of the pregnant woman's relationship with her mother and her partner. The results of this study of adolescents, which utilized a specific social network

instrument to separate the sources and types of support provided substance to the theoretical framework upon which this study was based.

When both her mother and the father of her baby supplied the adolescent with instrumental assistance in amounts deemed necessary, she demonstrated behaviors which are adaptive to the developing maternal role. She no longer thought only of her own welfare but took positive action through changes in her lifestyle which were more likely to assure an optimal outcome for her fetus.

Affection received from the father of her baby had a positive effect on the development of greater degrees of prenatal fetal attachment. Adolescents who reported a greater extent of support from their partners interacted more readily with and attributed characteristics to their babies.

The extent to which the adolescent received affection from her mother was associated with the degree to which she was able to view the fetus as a separate being, a task which is necessary to the attainment of the mothering role (Rubin, 1984). She had decided on a name for both a girl baby and a boy baby, yet recognized that the baby's sex had already been determined. In addition, she looked forward to seeing what the baby would look like, that is, she understood that the baby may look differently from what she had imagined. She also enjoyed watching the baby move.

Other indicators of attachment, however, were associated with the adolescent's ethnicity. Only for the Caucasian

adolescent was there a relationship between the extent of affection from her mother and the degree to which she developed interaction and roletaking behaviors, that is, only when these adolescents perceived themselves as receiving adequate affection from their mothers did they develop a greater degree of prenatal fetal attachment. This group demonstrated an interpersonal competence by interacting more readily with their unborn babies. These adolescents talked to their babies more frequently, had a favorite nickname, physically exchanged touch to encourage them to poke back at their mothers, to quiet them, or to move them around. When the Caucasian adolescent's perceived her mother as providing adequate amounts of affection she also began to picture herself in the mothering role of taking physical care of her baby. It appears that affection from her mother was less important in the development of these behaviors in the Hispanic, and to a lesser extent, the Black adolescent. These adolescents appeared to develop an adaption to the mothering role regardless of the relationship they had with their mothers.

In attempting to explain the conflicting results among the various studies several demographic differences among the samples were noted. Armantrout (1983) drew her sample from rural, inner-city, and suburban settings. Slightly less than 40% were Black, 60% were Caucasian, and the remainder were of Latin-American descent. No indication of socioeconomic status was reported. Although Koniak-Griffin (1988) did not indicate

ethnicity or socioeconomic status in her sample, a primarily Caucasian extraction was inferred as the sample was drawn from adolescents who resided in a maternity home. The present sample was drawn primarily from urban and inner-city residents. Slightly more than half were Black, one-third were Caucasian, and 20% were Hispanic; the sample was primarily from the lower socioeconomic group. Based on the association of ethnicity and those psychosocial variables which were previously discussed, it is possible that these and socioeconomic differences account for the inconsistency among studies (Jones, Green, & Krauss, 1980; Roosa, Fitzgerald, & Carlson, 1982). In addition, studies by Zachariah (1984) and Mercer, Ferketich, May, DeJoseph, & Sollid (1988) utilized adult subjects, whereas, the present study and those by Armantrout, Lindner, and Koniak-Griffin focused on the adolescent. It is possible that the adult, by virtue of her age and developmental status, is no longer dependent on those who are close to her to assist her in the development of competencies and adaptive processes which form the basis for her relationship with her unborn baby.

Null Hypothesis 5

H05: Among pregnant adolescents, there is no relationship between the degree of ego development and the degree of prenatal fetal attachment.

The degree of ego development in this study was conceptualized as an independent variable which was thought to

be associated with the degree of prenatal fetal attachment in the pregnant adolescent. As defined in this study, the construct was conceptualized as part of an age-dependent developmental process and not a variable which contributes to interpersonal competency and adaptive skills which the adolescent develops within the context of her family. Although the data which were generated by this study do not lend itself to this supposition, evidence does exist that the degree of ego development may well be associated with the extent and type of support the adolescent receives from her family. However, studies in which these relationships were investigated have conceptualized the variable very differently.

The relationship between family interaction and the psychological functioning of their adolescent members was investigated by Powers, Hauser, Schwartz, Noam, and Jacobson (1983). They utilized Loevinger's definition of ego development, "The process of integrating and making sense of experience, a hierarchically ordered, invariant sequence of stages in which the individual's perception of self, others, and interpersonal relations become increasingly more differentiated and complex" (p.7). The authors found significant group differences in the degree of ego development between a group of healthy adolescents and a group of adolescents diagnosed with psychiatric impairment. Furthermore, in the total sample, the extent of mother and father support was positively and significantly correlated

with the degree of adolescent ego development and this was independent of the degree of ego development in the parents. Adolescent ego development was most advanced in families with non-competitive sharing of perspectives or challenging behavior within a context of high support or low affective conflict and cognitively inhibiting behavior.

Several studies have investigated the relationship between the degree of ego development in pregnant women and the extent of adaptation to the maternal role. Heinicke, Diskin, Ramsey-Klee, and Given (1983) found a significant positive association between the ability to adapt to changing circumstances and the degree of ego strength defined as the ability to maintain a sense of reality and stability, to share emotional experiences, and to confront life situations without fear. For their study, Shereshefsky, et al., (1973) defined ego strength as a group of personality characteristics such as dependency patterns, general anxiety, sense of humor, flexibility, acceptance of identity, and extent to which she had achieved the adult role. The degree of ego strength, measured at six months gestation, was positively and significantly correlated with acceptance of the maternal role at one, three, and six months postpartum as well as with responsiveness to her six month old infant.

Intuitively it would seem that the degree of ego development, defined here as the tendency to see the self as the object of other's attention, to anticipate the reactions of others to the self in real or imagined situations, and the

belief in one's uniqueness, omnipotence, and invulnerability (Lapsley, et al., 1989), would be associated with the degree of prenatal fetal attachment which the adolescent forms for her unborn baby. That is, the more she is preoccupied with herself, the less she can invest of herself in her fetus. Correlations between the New Personal Fable Scale and its subscales, the New Imaginary Audience Scale, and the Maternal Fetal Attachment Scale and its subscales failed to uncover any association between these variables. It is possible that the instrument utilized does not measure the construct of ego development as defined in this study. Previously gathered data, however, suggests that it does. It is also possible that the development of a relationship between the mother and her unborn baby has no association with the degree of ego development which she has attained. She may exhibit the indices of attachment even though she entertains a degree of preoccupation with herself. It is evident that the measurement of the degree of ego development poses difficulty for the investigator as well as for those who wish to evaluate and compare studies which have included this variable. It appears that definitions abound and that a suitable one can be found to meet almost any requirement. An alternate definition for this study may have resulted in the discovery of the relationship which was suggested by the theoretical framework.

Null Hypothesis 6

H06: Among pregnant adolescents, there is no relationship between the extent of health behaviors practiced and the degree of prenatal fetal attachment.

The literature suggested that the infants of adolescent mothers, who perceive themselves as having an adequate support system, experience more optimal biopsychosocial outcomes than infants of adolescent mothers who do not. (Giblin, et al., 1987; Ventura & Hendershot, 1984). The framework for this study was predicated on the assumption that an adequately supported adolescent would form a greater degree of attachment for her unborn baby and, therefore, would hold a greater commitment to provide a healthy internal environment for the growing fetus. Analysis of the data did not reveal an association between these two variables. There does appear to be somewhat of a discrepancy in the data, however, which may reinforce the likelihood that responses by this group of adolescents were inconsistent.

The Health Behaviors Scale was specifically designed for this study of prenatal fetal attachment in pregnant adolescents. Items which make up the scale were based on informational materials which are provided to pregnant women in any health care setting. These items were intended to measure the extent to which the adolescent received adequate rest, exercise, and nutrition, as well as whether or not she

refrained from exposing herself and her fetus to toxic substances. Again, there was no correlation between scores on this scale and scores on the Maternal Fetal Attachment Scale or any of its subscales. Items on the Maternal Fetal Attachment subscale, Giving of Self, measure very similar behaviors although they are not stated quite as specifically. Doing things to try to stay healthy and giving up certain things so as to help her baby imply the behaviors which were explicit in the Health Behaviors Scale. Examination of a correlation matrix, however, revealed that the Health Behaviors Scale and the Giving of Self subscale were not associated as would be expected; in fact the data showed a negative though non-significant trend. Adolescents who reported more giving of self behaviors and thus ensuring a healthy environment for her fetus tended to report fewer positive health behaviors on the Health Behaviors Scale.

Further evidence of inconsistency was found on examination of the relationship between the extent of social support, the Health Behaviors Scale, and the Giving of Self subscale. The extent of social support in the form of instrumental aid received from the adolescent's mother and the father of her baby were correlated positively and significantly with the extent to which she provided a healthy environment for herself and her fetus as measured by the subscale of Giving of Self. The extent of health behaviors practiced as measured by the Health Behaviors Scale, were not related to this social support variable, however.

Two explanations for the discrepancy in responses are offered. It is possible that the Health Behaviors Scale and the Giving of Self subscale do not measure the same construct, although this is unlikely. The second possibility, and one which has more merit is that adolescents did not interpret the implied items on the Giving of Self subscale as being health related.

In addition to the above discrepancies, it should be noted that this group of adolescents did not report the use of street drugs and only three percent reported alcohol use at Time 2. Although these self-reports can neither be supported nor refuted, clinic data indicate that eight percent reported a past history of drug abuse. However, at the time of the intake interview, urine drug screens were negative.

Limitations

Factors which were not under the control of the investigator created several limitations in this study. The usual practice of adolescents is to apply to the health care system for prenatal care in the middle or late second trimester. Data on early prenatal fetal attachment cannot be obtained easily. Subjects were requested to reply to retrospective questions to supply information on the degree of prenatal fetal attachment they may have developed before the experience of fetal movement. Data based on recall must be interpreted with some caution. Furthermore, the adolescents

presented themselves to the prenatal clinic at varying gestational ages, thus the intervening time differed from one adolescent to another. The greatest discrepancy in gestational age occurred at Time 1 with a range from 10 to 39 weeks. It is recognized that those adolescents who were in advanced stages of their pregnancies were required to recall thoughts, feelings, and behaviors which occurred in a more distant past than those who presented to the clinic early in their pregnancies. The limitations associated with the recall data could not be minimized. The variation in gestational age at Time 2 ranged from 10 to 24 weeks. This range reflects several adolescents who sought health care earlier than usual in the typical adolescent group. Again, the limitations associated with varying gestational ages could not be minimized. Gestational ages at Time 3 and Time 4, however, were much less variable. These were 25 to 31 weeks and 32 to 39 weeks respectively. The majority of the adolescents were interviewed at the lesser of the gestational ages for these two periods of data collection. Data from Times 1, 2, and 3 were utilized only for frequency distributions, whereas, data from Time 4 which included the total sample were utilized for correlational analyses.

Studies which measure change over time run the risk of test-retest bias. It was assumed that collection of data at approximately six week intervals permitted adequate measurement of the degree of prenatal fetal attachment with a minimum of bias. The time intervals were arbitrary, however,

and may not have been appropriately spaced in order to tap the dimension of prenatal fetal attachment.

Data collection utilizing a close-ended dictated technique resulted in complete data sets. However, face-to-face interviews may have resulted in a subject's socially desirable responses. The incentive for participation was considerable and it is possible that the adolescent believed that her replies might influence whether or not she would receive the incentive although she had been assured at the beginning of the study that this was not the case. In addition, the entire set of instruments was dependent on self-report of the thoughts, feelings, and behaviors associated with the dependent and independent variables. Thus, the data were not verifiable. Finally, in view of the non-random selection of subjects, the results of this study cannot be generalized beyond the sample.

In an effort to conserve time and thereby not lengthen the prenatal visit unduly, measurements were collected at various stages of the pregnancy. For instance, the State-Trait Anxiety Inventory was administered at Time 2, while data on the extent of social support and degree of perceived stress were collected at Time 3 and Time 4 respectively. The correlational analyses were based on the degree of prenatal fetal attachment which had developed by Time 4. It is recognized that the emotional status of the adolescent may have changed during the intervening period and may have been unique to the time of the interview.

Implications for Health Care Providers

This study of prenatal fetal attachment in primiparous adolescent women revealed several implications for health care providers. Most importantly, the adolescent's support system must be adequately assessed. Many adolescents, who are experiencing a pregnancy, are estranged from family members, often their mothers. Even though adolescents report having poor relationships, it should not be assumed that these relationships are not important to her. Held (1981) reported that, of her entire support system, the prospective grandmother was most disapproving of the pregnancy. Even so, adolescents depend the most on her for support. Although the pregnant adolescent can legally apply for prenatal care in this state without parental consent, where possible, the plan of care should provide for the active participation of her mother. Interventions which serve to strengthen the mother-daughter relationship, so that the adolescent perceives her mother as more affectionate towards her, may ultimately affect the relationship which develops between the adolescent and her unborn baby. The assessment of parental-adolescent estrangement requires further investigation. Family interaction and interpersonal support may be strengthened through the process of family therapy.

A second area of concern, regarding the adolescent's support system, is that of accessibility. It is frequently determined that the adolescent should be maintained in a

living arrangement which is separate from her family of origin. This decision is made in her best interest. However, given the available housing choices, the adolescent often finds herself in a location which does not give her ready access to her support network. Where it is possible and desirable, the adolescent should be housed within a reasonable distance from those on whom she depends for support.

Although the extent of support she received from the father of her baby was not as closely associated with the degree of prenatal fetal attachment the adolescent developed for her unborn baby, it was evident that this support was operative to some extent. It is imperative that health care providers capitalize on this knowledge. Barret and Robinson (1982) suggested that when it is assumed that the adolescent's partner wants to actively participate in the pregnancy, and when health care providers actively incorporate him into the plan of care, the adolescent father will demonstrate a greater degree of responsibility in decision making and will be more likely to involve himself with his offspring. This process may be initiated or enhanced through a program of family therapy which incorporates the prospective father.

The health care provider must assess the adolescent's level of anxiety. As was suggested by Leifer (1977) and Lederman (1984), lower levels of temporary anxiety may portend a lesser degree of attachment to the fetus. Sameroff and Chandler (1975) suggested that higher levels of long term anxiety are related to decreased interaction with the infant.

Interventions designed to stimulate the attachment process as well as those designed to reduce the level of long term anxiety may be appropriate.

Finally, the role of education in the repertoire of interventions must not be overlooked. Data from this study indicate that the adolescent's interest in her developing fetus increased over the length of gestation. Based on the theoretical framework, it was assumed that this was a natural evolution. It is possible that this increasing interest was related to the adolescent's participation in a research study which emphasized thoughts, feelings, and behaviors toward her unborn baby. With the knowledge that the degree of prenatal fetal attachment does increase over the pregnancy, it is essential that health care providers capitalize on this by providing information about the capabilities of her unborn baby and by talking with the adolescent about thoughts and feelings she may be having.

Recommendations

The question remains as to why the relationship between these psychosocial variables and the degree of prenatal fetal attachment continues to provide inconsistent results. Although it is possible that the phenomenon of prenatal fetal attachment does not exist, in view of the supporting literature this is not an explanation to be given merit. It is possible that it is the measurement of the degree of

prenatal fetal attachment which remains elusive. The thoughts, feelings, and behaviors which have consistently been reported by pregnant women may not easily be transposed into quantifiable data. This would suggest that the dimensions of prenatal fetal attachment may not, as yet, have been adequately operationalized.

The dimensions of prenatal fetal attachment may not only be inadequately measured but may also be inappropriate for populations of different cultures as well as for adolescents. The Maternal Fetal Attachment Scale was initially applied to adult women who were primarily Caucasian, well educated, in a marital or stable non-marital relationship, at 35 or more weeks gestation, and with low pregnancy risk (Cranley, 1979). The majority of investigators who have utilized the Maternal Fetal Attachment Scale applied it to populations with characteristics very similar to Cranley's. The literature has suggested that the characteristics of her interaction with her infant may be more culturally dependent than age dependent (McAnarney, et al., 1984; Greathouse & Miller, 1981). Therefore, it is necessary to examine the appropriateness of the Maternal Fetal Attachment Scale, not only for low risk Caucasian adults but also for adolescents and those of differing cultural and socioeconomic extraction.

The results of this study as well as results of previous studies, indicate that the instruments utilized to measure these psychosocial variables may not be adequate for the purpose. Although the State-Trait Anxiety Inventory

(Spielberger, et al., 1983) has tapped two aspects of the phenomenon, both of which appear to be pertinent indicators during the perinatal period, it appears that an instrument which can differentiate anxiety focused on the self as opposed to anxiety focused on the fetus is needed. The Norbeck Life Events Questionnaire (Norbeck, 1984), although appropriate for adult populations, may not be appropriate for the adolescent population.

It is evident that the concept of ego development, as it was defined in this study of pregnant adolescents, requires re-examination. Whether the conceptualization of the construct is at fault or the assumption that the adolescent's preoccupation with herself interferes with her ability to form a relationship with her unborn baby is erroneous remains to be discovered.

A longitudinal study provides valuable information when the variable to be examined is change over time. Unfortunately, in terms of cost and time, it can be prohibitively expensive. Where possible larger samples should be employed. This would guarantee a greater representation of earlier gestational ages so that comparison can be made with more accuracy. In addition, it would be valuable to collect the psychosocial measurements, not only at predetermined gestational ages, but at two or three points in the pregnancy. It is important to investigate changes in levels of anxiety and self-esteem and in degrees of perceived stress as the pregnancy progresses.

In view of the cultural implications which were suggested by this study, a larger sample, which is ethnically and socioeconomically diverse should be examined for its social support systems, particularly for relationships with the adolescent's mother and the father of her baby. Future investigations which explore the prospective grandmother's reception of her daughter's pregnancy may result in additional insight regarding the relationship of this reception to the extent of maternal support perceived by the adolescent and the effect of this support on the developing attachment for her unborn baby.

The theoretical framework from which this study evolved and to which the results of this study lend some support, suggests recommendations for future research design. It is apparent that the attachment process in the adolescent cannot be fully understood without an in-depth investigation of the contextual variables which may influence the relationship she forms with her unborn baby. An ethnographic research design which considers the impact of the adolescent's environment and the effect which that environment has upon her developing interpersonal competency and adaptive capacities may help to explicate these phenomena. A design which includes an assessment of interaction between and among her identified family members as viewed by each of the members, would enhance the knowledge gained in this study which utilized only the perspective of the adolescent. With this knowledge it may be found that the family environment might assume one of any

number of forms and, thus, would be more appropriately viewed as a variable rather than a constant as in this study. In addition, an in-depth assessment of peer support may reveal the extent of influence this system has upon the adlolescent's developing relationship with her unborn baby. Finally, future investigations of the relationship of several variables to the degree of prenatal fetal attachment should employ statistical methods which determine the extent to which each variable contributes to the overall variance.

Summary

The theoretical framework for this study of prenatal fetal attachment in adolescents assumed that through interaction in a warm and supportive environment, a positive feeling about one's self develops over time. It is this positive feeling which enables the adolescent to begin the attachment process through interaction with her unborn baby.

The concept of prenatal fetal attachment has captured the interest of investigators over the last decade, however, the mechanism by which to measure it has been elusive. The Maternal Fetal Attachment Scale, as developed by Cranley (1979, 1981a), has provided inconsistent results in past studies when investigated in relation to variables which have been found to be associated with the more frequently studied phenomenon of maternal-infant interaction in the postnatal period.

Results of this study of pregnant adolescents supported previous investigations which suggested that the degree of prenatal fetal attachment increases over the gestational period. This study was also found to partially support the relationship between the phenomenon of prenatal fetal attachment and selected psychosocial variables which were suggested by the conceptual framework. Adolescents with higher levels of currently perceived anxiety were less likely to report behaviors which would provide a healthy environment for the fetus. When adolescents reported a greater extent of affection from their mothers, they were more likely to view the fetus as distinct from themselves. When a greater extent of aid was provided by the mother as well as the father of the baby, they were more likely to provide a healthy environment for the fetus.

Some indicators of the degree of prenatal fetal attachment were associated with cultural orientation. For the group of Caucasian adolescents, a greater degree of perceived stress was positively associated with the adolescents' imagining themselves in the mothering role. The degree of prenatal fetal attachment in Caucasian adolescents was also positively related to the extent of affection she received from her mother as well as the extent of aid she received from both her mother and the father of her baby. Hispanic and to a lesser extent Black adolescents were less dependent on this support and developed a greater degree of prenatal fetal attachment for their unborn babies regardless of the

relationship they had with their mothers and their partners. The level of self-esteem did not reveal a significant relationship with the degree of prenatal fetal attachment as was true of the level of ego development and the extent of health behaviors practiced.

APPENDICES

APPENDIX A

Parametric Properties of Instruments

APPENDIX A

Parametric Properties of Instruments

Maternal Fetal Attachment Scale Through item analysis, 24 of the original 37 items were distributed into five subscales (a sixth subscale was eliminated due to low item-scale correlations), each purported to measure differing aspects of the construct, prenatal fetal attachment. The instrument was administered to 71 primiparous and multiparous adult women between 35 and 40 weeks gestation. They represented the full range of socioeconomic status and were both married and single. Subsequently, one item has been eliminated on the advise of the author and is currently a 23 item Likert type scale.

Cranley (1981) reported a Chronbach's alpha coefficient of reliability of .85 for the total scale and .52 to .73 for the subscales. The scale was determined to have content validity by a group of five perinatal nurse experts (Cranley, 1979). Validity, that the subscales measure the dimensions of maternal fetal attachment, was established through intercorrelations of .61 to .83 among the subscales and the total scale. Correlations among subscales ranged from .29 to

.60 thus indicating that the subscales were measuring different dimensions of the construct. Construct validity has not been established due to the exploratory nature of this phenomenon, and the lack of other instruments with which to correlate Cranley's tool. The following items are presented according to their respective subscales.

Role Taking

4. I picture myself feeding the baby
8. I imagine myself taking care of the baby
18. I can hardly wait to hold the baby
19. I try to picture what the baby will look like

Differentiation Of Self From Fetus

3. I enjoy watching my tummy jiggle as the baby kicks inside
5. I'm really looking forward to seeing what the baby looks like
10. I have decided on a name for a girl baby
13. I have decided on a name for a boy baby

Interaction With Fetus

1. I talk to my unborn baby
7. I refer to my baby by a nickname
17. I poke the baby to get him/her to poke back
20. I stroke my tummy to quiet the baby when there is too much kicking
23. I grasp my baby's foot through my tummy to move it around

Attributing Characteristics To The Fetus

6. I wonder if the baby feels cramped in there
9. I can almost guess what my baby's personality will be from the way she/he moves around
12. I wonder if the baby can hear me inside
14. I wonder if the baby thinks and feels inside of me
16. It seems my baby kicks and moves to tell me it's eating time
21. I can tell that the baby has hiccoughs

Giving Of Self

2. I feel all the trouble of being pregnant is worth it
11. I do things to try to stay healthy that I would not do if I were not pregnant
15. I eat meat and vegetables to be sure my baby gets a good diet
22. I give up doing certain things because I want to help my baby

The Maternal Fetal Attachment Scale was adapted for this study for the purpose of measuring the degree of prenatal fetal attachment in the early stages of pregnancy. Items 3, 9, 16, 17, 20, 21, and 23 were deleted as they pertain to active, observable fetal movement which does not occur until late in the second trimester.

Health Behaviors Scale The Health Behaviors Scale is a Likert scale which consists of five responses ranging from never to every day. This scale was specifically designed by the investigator for the purposes of this study and is based on information provided to women concerning healthy behaviors during pregnancy. It has face validity. No other measures of validity and reliability are available. The following items are those which were included in the scale.

1. Over the last six weeks I have slept so well that I feel rested in the morning
2. Over the last six weeks I have been able to rest for short periods during the day
3. Over the last six weeks I have gotten exercise such as, taking walks, swimming, bicycling, dancing, and aerobics
4. Over the last six weeks a typical daily diet consists of at least 4 servings of milk and cheese,

4 servings of breads and cereals, 4 servings of fruits and vegetables, and 2 servings of meat
5. Over the last six weeks I have smoked cigarettes
6. Over the last six weeks I have drunk alcoholic beverages
7. Over the last six weeks I have taken non-prescription medicines such as aspirin, tylenol antacids, and cold medicines
8. Over the last six weeks I have taken street drugs

The New Imaginary Audience Scale This scale was designed to assess the extent to which subjects engage in object relational ideation and interpersonal fantasies. This was originally a 42-item Likert scale which has been revised by the authors to contain 38 items with four responses ranging from "Never" to "Often"(Lapsley, et al., 1989).

Psychometric evidence of reliability and validity of the New Imaginary Audience Scale is currently being collected. Lapsley, FitzGerald, Rice, and Jackson, (1988), reported a coefficient alpha for the NIAS of .92. Initial attempts to establish validity have been encouraging. The New Imaginary Audience Scale was positively correlated with scales of narcissism and to object relational concerns for example, engulfment, symbiosis, enmeshment and separation anxiety. Items of which the New Imaginary Audience Scale consist are as follows (Items 12, 34, and 35 were adapted for this study):

New Imaginary Audience Scale

1. Winning a lot of money
2. Being a rock star
3. Being a movie or t.v. star
4. Winning an important game for your team
5. Being popular with friends
6. Being admired for the way you look

7. Being a good athlete
8. Being admired because of the way you dress
9. Being an important leader
10. Performing in front of your school in a play
11. Being admired because of how smart you are
12. Having a popular boyfriend or girl friend or husband
13. Performing in front of your school in a band
14. Rescuing a friend from danger
15. Saving someone's life
16. Standing up to a bully
17. Winning an important award
18. Showing others that you are strong
19. Imagining how others would feel if you were gone
20. Showing others that you are kind and friendly
21. Having a lot of friends
22. Getting your feelings hurt in public
23. Making people sorry for hurting you
24. Getting back at an enemy
25. Developing a friendship with someone who doesn't like you
26. Imagining how others would feel if you lost your mother or father
27. Imagining how others would feel if you were in the hospital
28. Giving an important speech
29. Being rejected by a boyfriend or girlfriend
30. Being admired because you are funny
31. Being admired because of the car you have or want to have
32. Being admired because of your records or stereo system
33. Imagining what others are thinking about the way you look
34. Asking a popular boy for a date
35. What it's like to be married (or single)
36. Making a good impression on your teachers
37. Imagining what everyone will think if you become famous
38. Other people seem to enjoy it when I am the center of attention

New Personal Fable Scale

The New Personal Fable Scale, in its original form, was a 46 item forced choice true/false format. It has been converted to a 46-item Likert scale with five choices ranging

from "Strongly Disagree" to "Strongly Agree". Lapsley, et al., (1988) reported a reliability (KR-20) of .65 for the total scale and .64, .63, and .14 for the omnipotence, invulnerability, and uniqueness subscales respectively. A second study, however, reported a coefficient of .37 for the uniqueness subscale as well as reliability estimates similar to those obtained by Lapsley et al. (1988) for the omnipotence and invulnerability subscales. Other studies reported NPFS reliability coefficients for the total scale to be .78. Subscale coefficients ranged from .64 (uniqueness) to .80 (omnipotence).

Evidence of scale validity is currently being collected. Lapsley, et al., (1988) reported it to be positively correlated with scales of narcissism, as well as to scales of dependency, denial and self-centeredness. It was negatively correlated to separation-anxiety and engulfment.

The following items of the New Personal Fable Scale are distributed into their appropriate subscales.

Omnipotence

1. I believe I can do anything I set my mind to.
4. I think that I am more persuasive than my friends.
5. I believe that no one can stop me if I really want to do something.
7. It often seems like everything I do turns out great.
8. I don't think anything will stand in the way of my goals
10. I believe that other people control my life.
13. I think I can be anything I want to be.
16. I believe that everything I do is important.
19. I think I'm a powerful person.

22. I think that I am better than my friends are at just about anything.
23. I tend to doubt myself a lot.
26. Other people don't influence me.
28. I often think that people don't listen to what I have to say.
30. I honestly think I can do things that no one else can.
32. Everyone knows that I am a leader.
36. People always do what I tell them to do.
37. People usually wait to hear my opinion before making a decision.
38. I usually let my friends decide what we are going to do.
44. I am always in control.

Invulnerability

2. Nothing seems to really bother me.
11. I don't believe in taking chances.
14. I'm a fragile person.
17. I believe in knowing how something will turn out before I try it.
20. I believe in taking risks.
29. There are times when I think that I am indestructible.
31. I can get away with things that other people can't.
35. It is impossible for people to hurt my feelings.
39. My feelings are easily hurt.
40. Special problems, like using drugs could never happen to me.
41. I enjoy taking risks.
42. It is easy for me to take risks because I never get hurt.
43. I don't take chances because I usually get in trouble.
45. I am not afraid to do dangerous things.

Uniqueness

3. No one has the same thoughts and feelings that I have.
6. I'm somehow different from everyone else.
9. I'm the only one that can understand me.
12. I believe that I am unique.
15. I think that deep down everybody is the same.
18. I'm just like everyone else.
21. Everybody goes through the same things that I am going through.
24. It's hard for me to tell if I am different from my friends.
25. I often feel that I am insignificant and that I don't really matter.

27. There isn't anything special about me.
33. Nobody will ever really know what I am like.
34. No one sees the world the way that I do.
46. Sometimes I think that no one really understands me.

The Coopersmith Self-Esteem Inventory Kuder-Richardson reliability estimates for the Coopersmith Self-Esteem Inventory are reported to range from .71 to .74. Construct, concurrent, and predictive validity have been well established.

Norbeck Social Support Questionnaire Test-retest reliability has been established for the functional and network property items with Pearson correlations ranging from .85 to .92. Analysis of correlations among items and subscales revealed a high level of internal consistency. Content, concurrent, construct, and predictive validity have been established. The following items are distributed into the subscales.

Total Functional Support

Affect 1. How much does this person make you feel liked or loved?
2. How much does this person make you feel respected or admired?

Affirm 3. How much can you confide in this person?
4. How much does this person agree with or support your actions or thoughts?

Aid 5. If you needed to borrow $10, a ride to the doctor, or some other immediate help, how much could this person usually help?
6. If you were confined to bed for several weeks, how much could this person help you?

Total Network Properties

Number listed in network

7. How long have you known this person?
8. How frequently do you usually have contact with this person? (Phone calls, visits, or letters)

Total Loss

9. During the last year have you lost any important relationships due to moving, a job change, divorce or separation, death, or some other reason?
9a. Please indicate the number of persons from each category who are no longer available to you.
9b. Overall, how much of your support was provided by these people who are no longer available to you?

Father of the Baby as Support

10. Is one of the persons you listed in your network the father of your baby?

Life Events Questionnaire This instrument has a reported test-retest reliability of .78 to .83 for the entire instrument. Items which make up the questionnaire were derived from a series of open-ended questions and then coded for congruence with three existing instruments. Thirty-nine unique responses were converted to an additional nine items. This procedure provided content validity. Concurrent validity was established through correlations with the State-Trait Anxiety Scale, the Profile of Mood States, and the Brief

Symptom Inventory.

State Trait Anxiety Inventory This instrument has been extensively used and has a reported reliability of an alpha coefficient of .87 to .90. Concurrent, convergent, divergent, and construct validity have been well established.

APPENDIX B

Significant Correlations and the Corresponding Partial Correlation Coefficients of the Dependent and Independent Variables

APPENDIX B

Significant Correlations and the Corresponding Partial Correlation Coefficients of the Dependent and Independent Variables

Table B1

Significant Correlations and the Corresponding Partial Correlation Coefficients of the Dependent and Independent Variables [a]

	r	Partial Correlations					
		Age	White	Black	Hispanic	Gestation	Complications
ROLETAK/LEBAD [a]	.30*	.35**	.30*	.27	.27	.30*	.32*
GIVING/UNIQUE	-.32*	-.27	-.31	-.29	-.31	-.27	-.32*
GIVING/SANX [a]	-.32*	-.31*	-.32*	-.32*	-.32*	-.32*	-.33*

[a] Spearman Rho

Table B2

Significant Spearman Rho Correlations and the Corresponding Partial Correlation Coefficients of the Independent Variables and the Subscales of Total Functional Support for 40 Adolescents

	r	Partial Correlations					
		Age	White	Black	Hispanic	Gestation	Complications
SANX/AID	-.33*	-.36*	-.31*	-.33*	-.35*	-.33*	-.30*
TANX/AID	-.39**	-.44**	-.39**	-.40**	-.44**	-.40**	-.37**
TANX/AFFIRM	-.31*	-.34*	-.31*	-.33*	-.38**	-.31*	-.30*

Table B3

Significant Pearson Correlations and the Corresponding Partial Correlation Coefficients of the Dependent Variables and the Subscales of Total Functional Support for Adolescents Reporting Support from Mother

	r	Partial Correlations					
		Age	White	Black	Hispanic	Gestation	Complications
MFAS/AFFECT	.41**	.51***	.41***	.40***	.35*	.42***	.41***
ROLETAK/AFFECT	.34*	.38***	.34*	.30	.27	.35**	.33**
DIFFSELF/AFFECT	.44**	.46***	.44***	.42***	.47***	.46***	.44***
INTERACT/AFFECT	.40**	.48***	.42***	.39***	.29	.40***	.40***
GIVING/AID	.30*	.49***	.32**	.32**	.29**	.29**	.30**

Table B4

Significant Extraneous Correlations and Corresponding Partial Correlation Coefficients [a]

	r	Partial Correlations					
		Age	White	Black	Hispanic	Gestation	Complications
NPFS/AFFECT	.34*	.34**	.34**	.26*	.33**	.37***	.33**
CSEI/AFFECT	.35*	.34**	.35**	.34**	.45***	.33**	.36***
CSEI/AFFIRM	.31*	.33**	.31**	.31**	.30**	.34**	.30**
CSEI/AID	.57***	.56***	.55***	.57***	.57***	.56***	.59***
SANX/AFFECT [a]	-.39*	-.41**	-.41**	-.48**	-.43**	-.38**	-.38**
SANX/AID [a]	-.33*	-.41**	-.38**	-.37*	-.33*	-.34*	-.32*
TANX/AID [a]	-.39*	-.43**	-.34*	-.36*	-.31*	-.36*	-.31*

[a] Spearman Rho

Table B5

Significant Pearson Correlations and the Corresponding Partial Correlation Coefficients of the Dependent Variables and the Subscales of Total Functional Support for Adolescents Reporting Support from Father of Baby

	r	Partial Correlations					
		Age	White	Black	Hispanic	Gestation	Complications
MFAS/AID	.34*	.30**	.35**	.35**	.45***	.34**	.33**
INTERACT/AFFECT	.40*	.33**	.44***	.39***	.46***	.41***	.39***
ATTRIB/AFFECT	.35*	.27*	.36***	.34**	.38***	.34**	.34**
GIVING/AID	.38*	.34**	.39***	.37***	.37***	.38***	.40***

Table B6

Significant Extraneous Correlations and Corresponding Partial Correlation Coefficients [a]

	r	Partial Correlations					
		Age	White	Black	Hispanic	Gestation	Complications
LEBAD/AFFECT	-.39*	-.35*	-.40**	-.38*	-.41**	-.40**	-.39**
LEBAD/AID	-.50**	-.48**	-.49**	-.46**	-.37*	-.50**	-.48**
NIAS/AFFIRM	-.34*	-.31*	-.32*	-.24	-.27*	-.32*	-.34*
SANX/AFFIRM	-.36*	-.34*	-.34*	-.31*	-.34*	-.36*	-.39**
TANX/AID	-.34*	-.32*	-.34*	-.31*	-.28*	-.35*	-.31*

[a] Spearman Rho

APPENDIX C

Verbal Script and Consent Forms

APPENDIX C

Verbal Script and Consent Forms

VERBAL SCRIPT

Judy Apgar is a nurse and student at Michigan State University. She is studying about pregnant women and their unborn babies. She would like to know if you would be willing to answer some questions about yourself, your unborn baby, your health, and your family and friends.

She would meet you here at the clinic during your first visit with the doctor for about 20 minutes and then again two more times at the clinic for about 45 minutes each time. She will pay you $10.00 for each meeting with her, for a total of $30.00, to be paid after the third meeting.

The answers you give to her will be strictly private. She will not share them with us at the clinic nor with anyone else. Your decision to join in this study is voluntary, and the care we give you in the clinic will not be affected whether you participate or not. If there are any questions which she asks that make you uncomfortable, you do not have to answer them and you may drop out of the study at any time.

If you would like to participate, please bring this letter when you come for your first visit with the doctor. Sign your name at the bottom; if you are under the age of 18 you must have your parent or guardian sign it too.

Type of questions and information:

1. Age, education, religion

2. When I think about my baby I feel happy (often, sometimes, rarely)

3. I confide in my best friend (a lot, a little. not at all)

4. I find myself daydreaming (never, sometimes, a lot, all of the time)

Date

Dear _____,

I am a doctoral student at Michigan State University and am doing a study to help us gain a better understanding of pregnant women and their unborn babies. I believe that this knowledge is very important in the planning of health care for pregnant women and I hope that you will agree to join my study.

If you do agree to join my study, I will meet you at the clinic for your first doctor's visit. I will ask you some questions about you and your unborn baby, about your health, and about your family and friends. I will need to spend about 20 minutes with you at this visit and about 45 minutes at two other visits to the clinic. Because you are willing to take the time to answer these questions, I will pay you $10.00 for each time you meet with me, for a total of $30.00, to be paid after the third meeting.

I assure you of complete confidentiality. No identifying information on you will be given to the health care staff, nor will it be in the report of this study. The sheet on which I write your answers to my questions will have no identifying information on it other than a code number which is for record keeping only. This will allow me to keep all of your answers to my questions together. My assistant and myself will be the only people who will have access to these code sheets. Participation in this study is voluntary and your decision to participate or not will in no way affect the health care which the clinic provides. You need not answer any question with which you are uncomfortable and you are free to drop out of the study at any time.

The results of this study will help us to gain a better understanding of pregnant women and their unborn babies, as well as to help us plan for better total health care of pregnant women. If you would like a summary of the results, I would be happy to mail it to you when the study is completed.

Please bring this letter with your signature and that of one parent or guardian, with you to the clinic when you come for your first doctor's visit. This will tell me that you would like to join my study. If you or your parents have any questions about this study, please feel free to call me at (313) 695-1559. I would be happy to talk with you. I am looking forward to meeting you at the Clinic.

Sincerely, Teen:_____

Judith L. Apgar, RN Parent/Guardian_____

Permission for Telephone Contact

I give permission for Judy Apgar to call _____, (relationship)_____ at the telephone number _____ for the purpose of confirming that I have been given permission by my parent or guardian to take part in her study of women and their unborn babies. I understand that if I do not want my parent/guardian contacted, no further effort will be made by her.

Signature _____

Date _____

APPENDIX D

INSTRUMENT

APPENDIX D

INSTRUMENT

DATA SHEET

Code #_____ Date 1st appointment_____

Name_____ Age_____

Address_____ LMP_____

Telephone #_____ EDD_____

Parent's name_____ Telephone #_____

Address_____

1. Clinic Attended

   ( ) 1. MIC
   ( ) 2. SCHI

2. Gestational age at 1st appointment_____(weeks)

3. Quickening_____(weeks)

4. Ultrasound done

   ( ) 1. Yes ⟶

   ( ) 2. No

   4a. If yes, date _____

   Weeks _____

   Visualization? ( ) 1. Yes
   ( ) 2. No

5. Ethnicity

   ( ) 1. Caucasian
   ( ) 2. Afro-American
   ( ) 3. Mexican-American
   ( ) 4. Oriental
   ( ) 5. Native American
   ( ) 6. Other:_____

6. Complications in pregnancy

( ) 1. Yes ——→

( ) 2. No

6a. ( ) 1. Bleeding_____
( ) 2. PIH_____
( ) 3. Diabetes_____
( ) 4. Infection_____
( ) 5. Hyperemisis_____
( ) 6. Drug abuse_____
( ) 7. Other _____

7. Date for data set #1 & 2_____

8. Date for data set #3_____

9. Registered for Prenatal Class

( ) 1. Yes
( ) 2. No

10. Date for data set #4_____

11. Registered for Prenatal Class

( ) 1. Yes
( ) 2. No

12. Clinic visits missed

( ) 1. Yes ——→

( ) 2. No

12a. If yes, were visits rescheduled?

( ) 1. Yes
( ) 2. No

Data Set #1 & 2 Code # _____

This booklet was specifically designed for the study of the process by which women form relationships with their unborn babies. It is divided into sections and you will be asked to answer questions about yourself, your feelings, and your attitudes.

This section of the questionnaire will ask you about yourself and your baby during the first 3 to 4 months of your pregnancy. Try to think back to some of the thoughts and feelings that you had at that time. There are no right or wrong answers. Your first impression is usually the best reflection of how you felt at that time.

I think or do the following	Definitely Yes	Yes	Uncertain	No	Definitely No
1. As soon as I knew I was pregnant, I began to talk to my unborn baby.	( )	( )	( )	( )	( )
2. Even in the early weeks of pregnancy, I felt that all the trouble of being pregnant was worth it.	( )	( )	( )	( )	( )
3. I started picturing myself feeding the baby as soon as I knew I was pregnant.	( )	( )	( )	( )	( )
4. Even early in pregnancy I looked forward to seeing what the baby looks like.	( )	( )	( )	( )	( )
5. I wondered if the baby felt cramped in there.	( )	( )	( )	( )	( )
6. When I found out I was pregnant I began to call my baby by a nickname.	( )	( )	( )	( )	( )

I think or do the following	Definitely Yes	Yes	Uncertain	No	Definitely No
7. I started to imagine myself taking care of the baby as soon as I knew I was pregnant.	( )	( )	( )	( )	( )
8. I picked out a girl's name shortly after I knew I was pregnant.	( )	( )	( )	( )	( )
9. As soon as I knew I was pregnant, I began to do things to stay healthy that I would not have done if I were not pregnant.	( )	( )	( )	( )	( )
10. I wondered if the baby could hear inside of me.	( )	( )	( )	( )	( )
11. I picked out a boy's name shortly after I knew I was pregnant.	( )	( )	( )	( )	( )
12. I wondered if the baby could think and feel inside me.	( )	( )	( )	( )	( )
13. As soon as I knew I was pregnant I made sure that I ate meats and vegetables so that my baby would get a good diet.	( )	( )	( )	( )	( )
14. As soon as I knew I was pregnant I could hardly wait until I could hold the baby.	( )	( )	( )	( )	( )
15. Since I became pregnant I have tried to picture what the baby would look like.	( )	( )	( )	( )	( )
16. As soon as I knew I was pregnant I gave up doing certain things because I wanted to help my baby.	( )	( )	( )	( )	( )

In this section we would like to know how healthy you have been over the last six weeks. Please put a checkmark in front of the number which describes your usual practice on a typical day.

1. Over the last six weeks I have slept so well that I feel rested in the morning

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

2. Over the last six weeks I have been able to rest for short periods during the day

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 3. almost every day
( ) 5. every day

3. Over the last six weeks I have gotten exercise such as, taking walks, swimming, bicycling, dancing, and aerobics

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

4. Over the last six weeks a typical daily diet consists of at least 4 servings of milk and cheese, 4 servings of breads and cereals, 4 servings of fruits and vegetables, and 2 servings of meats

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

5. Over the last six weeks I have smoked cigarettes

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

6. Over the last six weeks I have drunk alcoholic beverages

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

7. Over the last six weeks I have taken non-prescription medicines such as aspirin, tylenol, antacids, and cold medicines

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

8. Over the last six weeks I have taken street drugs

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

The next section will consist of statements about your feelings. If a statement describes how you usually feel, say "like me". If the statement does not describe how you usually feel, say "unlike me".

Coopersmith Self-Esteem Inventory (Coopersmith, S., 1987), Consulting Psychologists Press. Copyrighted Instrument.

The following section will ask you to describe how you feel right now at this moment. Your answer will indicate that you feel this way either very much so, moderately so, somewhat, or not at all.

State-Trait Anxiety Inventory (Spielberger, C., 1983), Consulting Psychologists Press. Copyrighted Instrument.

Next, I will ask you to describe how you usually feel. This time you will rate your description as either almost always, often, sometimes, or almost never.

State-Trait Anxiety Inventory (Spielberger, C., 1983), Consulting Psychologists Press. Copyrighted Instrument.

Now, try to tell us about the thoughts and feelings that you are having about your pregnancy at this time.

I think or do the following		Definitely Yes	Yes	Uncertain	No	Definitely No
1.	I talk to my unborn baby	( )	( )	( )	( )	( )
2.	I feel all the trouble of 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 imagine myself taking care of the baby	( )	( )	( )	( )	( )
9.	I can almost guess what my baby's personality will be from he way s/he moves around	( )	( )	( )	( )	( )
10.	I have decided on a name for a baby girl	( )	( )	( )	( )	( )
11.	I do things to try to stay healthy that I would not do if I were not pregnant	( )	( )	( )	( )	( )

I think or do the following	Definitely Yes	Yes	Uncertain	No	Definitely No
12. I wonder if the baby can hear me inside	( )	( )	( )	( )	( )
13. I have decided on a name for a baby boy	( )	( )	( )	( )	( )
14. I wonder if the baby thinks and feels inside of me	( )	( )	( )	( )	( )
15. I eat meat and vegetables to be sure my baby gets a good diet	( )	( )	( )	( )	( )
16. It seems my baby kicks and moves to tell me it's eating time	( )	( )	( )	( )	( )
17. I poke the baby to get him/her to poke back	( )	( )	( )	( )	( )
18. I can hardly wait to hold the baby	( )	( )	( )	( )	( )
19. I try to picture what the baby will look like	( )	( )	( )	( )	( )
20. I stroke my tummy to quiet the baby when there is too much kicking	( )	( )	( )	( )	( )
21. I can tell that the baby has hiccoughs	( )	( )	( )	( )	( )
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	( )	( )	( )	( )	( )

This completes the questionnaire for this visit. I will plan to meet with you again when you are further along in your pregnancy. That meeting will take about 45 minutes and we will schedule it for just before or just after your prenatal checkup.

Data Set #3 Code # _____

Try to tell me about the thoughts and feelings that you are having about your baby at this time.

I think or do the following		Definitely Yes	Yes	Uncertain	No	Definitely No
1.	I talk to my unborn baby	( )	( )	( )	( )	( )
2.	I feel all the trouble of 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 imagine myself taking care of the baby	( )	( )	( )	( )	( )
9.	I can almost guess what my baby's personality will be from he way s/he moves around	( )	( )	( )	( )	( )
10.	I have decided on a name for a baby girl	( )	( )	( )	( )	( )
11.	I do things to try to stay healthy that I would not do if I were not pregnant	( )	( )	( )	( )	( )

I think or do the following	Definitely Yes	Yes	Uncertain	No	Definitely No
12. I wonder if the baby can hear me inside	( )	( )	( )	( )	( )
13. I have decided on a name for a baby boy	( )	( )	( )	( )	( )
14. I wonder if the baby thinks and feels inside of me	( )	( )	( )	( )	( )
15. I eat meat and vegetables to be sure my baby gets a good diet	( )	( )	( )	( )	( )
16. It seems my baby kicks and moves to tell me it's eating time	( )	( )	( )	( )	( )
17. I poke the baby to get him/her to poke back	( )	( )	( )	( )	( )
18. I can hardly wait to hold the baby	( )	( )	( )	( )	( )
19. I try to picture what the baby will look like	( )	( )	( )	( )	( )
20. I stroke my tummy to quiet the baby when there is too much kicking	( )	( )	( )	( )	( )
21. I can tell that the baby has hiccoughs	( )	( )	( )	( )	( )
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	( )	( )	( )	( )	( )

How often do you daydream about, or imagine yourself to be in the following situations? In order to tell us how often you think about these situations, just place a mark on the appropriate line under either "Never", "Hardly Ever", "Sometimes", or "Often".

		Never	Hardly Ever	Sometimes	Often
1.	Winning a lot of money	( )	( )	( )	( )
2.	Being a rock star	( )	( )	( )	( )
3.	Being a movie or t.v. star	( )	( )	( )	( )
4.	Winning an important game for your team	( )	( )	( )	( )
5.	Being popular with friends	( )	( )	( )	( )
6.	Being admired for the way you look	( )	( )	( )	( )
7.	Being a good athlete	( )	( )	( )	( )
8.	Being admired because of the way you dress	( )	( )	( )	( )
9.	Being an important leader	( )	( )	( )	( )
10.	Performing in front of your school in a play	( )	( )	( )	( )
11.	Being admired because of how smart you are	( )	( )	( )	( )
12.	Having a popular boyfriend or girlfriend or husband	( )	( )	( )	( )
13.	Performing in front of your school in a band	( )	( )	( )	( )
14.	Rescuing a friend in danger	( )	( )	( )	( )

		Never	Hardly Ever	Sometimes	Often
15.	Saving someone's life	( )	( )	( )	( )
16.	Standing up to a bully	( )	( )	( )	( )
17.	Winning an important award	( )	( )	( )	( )
18.	Showing others that you are strong	( )	( )	( )	( )
19.	Imagining how others would feel if you were gone	( )	( )	( )	( )
20.	Showing others that you are kind and friendly	( )	( )	( )	( )
21.	Having a lot of friends	( )	( )	( )	( )
22.	Getting your feeling hurt in public	( )	( )	( )	( )
23.	Making people sorry for hurting you	( )	( )	( )	( )
24.	Getting back at an enemy	( )	( )	( )	( )
25.	Developing a friendship with someone who doesn't like you	( )	( )	( )	( )
26.	Imagining how others would feel if you lost your mother or father	( )	( )	( )	( )
27.	Imagining how others would feel if you were in the hospital	( )	( )	( )	( )
28.	Giving an important speech	( )	( )	( )	( )
29.	Being rejected by a boyfriend or girlfriend	( )	( )	( )	( )
30.	Being admired because you are funny	( )	( )	( )	( )

		Never	Hardly Ever	Sometimes	Often
31.	Being admired because of the car you have or want to have	( )	( )	( )	( )
32.	Being admired because of your records or stereo system	( )	( )	( )	( )
33.	Imagining what others are thinking about the way you look	( )	( )	( )	( )
34.	Asking a popular boy for a date	( )	( )	( )	( )
35.	What it's like to be married (or single)	( )	( )	( )	( )
36.	Making a good impression on your teachers	( )	( )	( )	( )
37.	Imagining what everyone will think if you become famous	( )	( )	( )	( )
38.	Other people seem to enjoy it when I am the center of attention	( )	( )	( )	( )

In this section we would like to know how healthy you have been over the last six weeks. Please put a checkmark in front of the number which describes your usual practice on a typical day.

1. Over the last six weeks I have slept so well that I feel rested in the morning

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

2. Over the last six weeks I have been able to rest for short periods during the day

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 3. almost every day
( ) 5. every day

3. Over the last six weeks I have gotten exercise such as, taking walks, swimming, bicycling, dancing, and aerobics

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

4. Over the last six weeks a typical daily diet consists of at least 4 servings of milk and cheese, 4 servings of breads and cereals, 4 servings of fruits and vegetables, and 2 servings of meats

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

5. Over the last six weeks I have smoked cigarettes

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

6. Over the last six weeks I have drunk alcoholic beverages

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

7. Over the last six weeks I have taken non-prescription medicines such as aspirin, tylenol, antacids, and cold medicines

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

8. Over the last six weeks I have taken street drugs

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

People believe different things about themselves. I would like you to answer the questions below and rate them according to how you feel about each of the questions.

	Statement	Strongly disagree	Kind of disagree	Don't really agree or disagree	Kind of agree	Strongly agree
1.	I believe I can do anything I set my mind to.	( )	( )	( )	( )	( )
2.	Nothing seems to really bother me.	( )	( )	( )	( )	( )
3.	No one has the same thoughts and feelings that I have.	( )	( )	( )	( )	( )
4.	I think that I am more persuasive than my friends.	( )	( )	( )	( )	( )
5.	I believe that no one can stop me if I really want to do something.	( )	( )	( )	( )	( )
6.	I'm somehow different from everyone else.	( )	( )	( )	( )	( )
7.	It often seems like everything I do turns out great.	( )	( )	( )	( )	( )
8.	I don't think anything will stand in the way of my goals.	( )	( )	( )	( )	( )
9.	I'm the only one that can understand me.	( )	( )	( )	( )	( )
10.	I believe that other people control my life.	( )	( )	( )	( )	( )
11.	I don't believe in taking chances.	( )	( )	( )	( )	( )

Statement	Strongly disagree	Kind of disagree	Don't really agree or disagree	Kind of agree	Strongly agree
12. I believe that I am unique.	( )	( )	( )	( )	( )
13. I think I can be anything I want to be.	( )	( )	( )	( )	( )
14. I'm a fragile person.	( )	( )	( )	( )	( )
15. I think that deep down everybody is the same.	( )	( )	( )	( )	( )
16. I believe that everything I do is important.	( )	( )	( )	( )	( )
17. I believe in knowing how something will turn out before I try it.	( )	( )	( )	( )	( )
18. I'm just like everyone else.	( )	( )	( )	( )	( )
19. I think I'm a powerful person.	( )	( )	( )	( )	( )
20. I believe in taking risks.	( )	( )	( )	( )	( )
21. Everybody goes through the same things that I am going through.	( )	( )	( )	( )	( )
22. I think that I am better than my friends are at just about anything.	( )	( )	( )	( )	( )
23. I tend to doubt myself a lot.	( )	( )	( )	( )	( )
24. It's hard for me to tell if I am different from my friends.	( )	( )	( )	( )	( )
25. I often feel that I am insignificant and that I don't really matter.	( )	( )	( )	( )	( )
26. Other people don't influence me.	( )	( )	( )	( )	( )

Statement	Strongly disagree	Kind of disagree	Don't really agree or disagree	Kind of agree	Strongly agree
27. There isn't anything special about me.	( )	( )	( )	( )	( )
28. I often think that people don't listen to what I have to say.	( )	( )	( )	( )	( )
29. There are times when I think that I am indestructible.	( )	( )	( )	( )	( )
30. I honestly think I can do things that no one else can.	( )	( )	( )	( )	( )
31. I can get away with things that other people can't.	( )	( )	( )	( )	( )
32. Everyone knows that I am a leader.	( )	( )	( )	( )	( )
33. Nobody will ever really know what I am like.	( )	( )	( )	( )	( )
34. No one sees the world the way that I do.	( )	( )	( )	( )	( )
35. It is impossible for people to hurt my feelings.	( )	( )	( )	( )	( )
36. People always do what I tell them to do.	( )	( )	( )	( )	( )
37. People usually wait to hear my opinion before making a decision.	( )	( )	( )	( )	( )
38. I usually let my friends decide what we are going to do.	( )	( )	( )	( )	( )
39. My feelings are easily hurt.	( )	( )	( )	( )	( )
40. Special problems, like using drugs could never happen to me.	( )	( )	( )	( )	( )

Statement		Strongly disagree	Kind of disagree	Don't really agree or disagree	Kind of agree	Strongly agree
41.	I enjoy taking risks.	( )	( )	( )	( )	( )
42.	It is easy for me to take risks because I never get hurt.	( )	( )	( )	( )	( )
43.	I don't take chances because I usually get in trouble.	( )	( )	( )	( )	( )
44.	I am always in control.	( )	( )	( )	( )	( )
45.	I am not afraid to do dangerous things.	( )	( )	( )	( )	( )
46.	Sometimes I think that no one really understands me.	( )	( )	( )	( )	( )

SOCIAL SUPPORT QUESTIONNAIRE

PLEASE READ ALL DIRECTIONS ON THIS PAGE BEFORE STARTING.

Please list each significant person in your life on the right. Consider all the persons who provide personal support for you or who are important to you.

Use only first names or initials, and then indicate the relationship, as in the following example:

Example:

	First Name or Initials	Relationship
1.	MARY T.	FRIEND
2.	BOB	BROTHER
3.	M.T.	MOTHER
4.	SAM	FRIEND
5.	MRS. R.	NEIGHBOR

etc.

Use the following list to help you think of the people important to you, and list as many people as apply in your case.

- spouse or partner
- family members or relatives
- friends
- work or school associates
- neighbors
- health care providers
- counselor or therapist
- minister/priest/rabbi
- other

You do not have to use all 24 spaces. Use as many spaces as you have important persons in your life.

WHEN YOU HAVE FINISHED YOUR LIST, PLEASE TURN TO PAGE 2.

For each person you listed, please answer the following questions by writing in the number that applies.

1 = not at all
2 = a little
3 = moderately
4 = quite a bit
5 = a great deal

	Question 1: How much does this person make you feel liked or loved?	Question 2: How much does this person make you feel respected or admired?
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		
18.		
19.		
20.		
21.		
22.		
23.		
24.		

[7-9]

GO ON TO NEXT PAGE

[10-12]

1 = not at all
2 = a little
3 = moderately
4 = quite a bit
5 = a great deal

Question 3:

How much can you confide in this person?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

[13-15]

Question 4:

How much does this person agree with or support your actions or thoughts?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

[16-18]

GO ON TO NEXT PAGE

1 = not at all
2 = a little
3 = moderately
4 = quite a bit
5 = a great deal

Question 5:

If you needed to borrow $10, a ride to the doctor, or some other immediate help, how much could this person usually help?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

[19-21]

Question 6:

If you were confined to bed for several weeks, how much could this person help you?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____

[22-24]

GO ON TO NEXT PAGE

Number _____ [1-4]
Date _____ [5-10]

Question 7:

How long have you known this person?

1 = less than 6 months
2 = 6 to 12 months
3 = 1 to 2 years
4 = 2 to 5 years
5 = more than 5 years

Question 8:

How frequently do you usually have contact with this person? (Phone calls, visits, or letters)

5 = daily
4 = weekly
3 = monthly
2 = a few times a year
1 = once a year or less

PERSONAL NETWORK

	First Name or Initials	Relationship	
1.			[12-21]
2.			[22-31]
3.			[32-41]
4.			[42-51]
5.			[52-61]
6.			[62-71]
7.			[72-81]
8.			[82-91]
9.			[92-101]
10.			[102-111]
11.			[112-121]
12.			[122-131]
13.			[132-141]
14.			[142-151]
15.			[152-161]
16.			[162-171]
17.			[172-181]
18.			[182-191]
19.			[192-201]
20.			[202-211]
21.			[212-221]
22.			[222-231]
23.			[232-241]
24.			[242-251]

1.		[252-261]
2.		[262-271]
3.		[272-281]
4.		[282-291]
5.		[292-301]
6.		[302-311]
7.		[312-321]
8.		[322-331]
9.		[332-341]
10.		[342-351]
11.		[352-361]
12.		[362-371]
13.		[372-381]
14.		[382-391]
15.		[392-401]
16.		[402-411]
17.		[412-421]
18.		[422-431]
19.		[432-441]
20.		[442-451]
21.		[452-461]
22.		[462-471]
23.		[472-481]
24.		[482-491]

PLEASE BE SURE YOU HAVE RATED EACH PERSON ON EVERY QUESTION. GO ON TO THE LAST PAGE.

[125-271] [128-301]

[57]

9. During the past year, have you lost any important relationships due to moving, a job change, divorce or separation, death, or some other reason?

_____ 0. No
_____ 1. Yes

IF YES:

9a. Please indicate the number of persons from each category who are *no longer available* to you.

_____ spouse or partner	[58]	
_____ family members or relatives	[59-60]	
_____ friends	[61-62]	
_____ work or school associates	[63-64]	
_____ neighbors	[65-66]	
_____ health care providers	[67]	
_____ counselor or therapist	[68]	
_____ minister/priest/rabbi	[69]	
_____ other (specify) _____	[70]	[71-72]

9b. Overall, how much of your support was provided by these people who are no longer available to you? [73]

_____ 0. none at all
_____ 1. a little
_____ 2. a moderate amount
_____ 3. quite a bit
_____ 4. a great deal

10. Is one of the persons you listed in your personal network the father of your baby?

( ) 1. Yes_____ If yes, please go back and mark his first name or initials with an X

( ) 2. No

Data Set # 4 Code # _____

Try to tell me about the thoughts and feelings that you are having about your baby at this time.

I think or do the following	Definitely Yes	Yes	Uncertain	No	Definitely No
1. I talk to my unborn baby	( )	( )	( )	( )	( )
2. I feel all the trouble of 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 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 a baby girl	( )	( )	( )	( )	( )
11. I do things to try to stay healthy that I would not do if I were not pregnant	( )	( )	( )	( )	( )

I think or do the following	Definitely Yes	Yes	Uncertain	No	Definitely No
12. I wonder if the baby can hear me inside	( )	( )	( )	( )	( )
13. I have decided on a name for a baby boy	( )	( )	( )	( )	( )
14. I wonder if the baby thinks and feels inside of me	( )	( )	( )	( )	( )
15. I eat meat and vegetables to be sure my baby gets a good diet	( )	( )	( )	( )	( )
16. It seems my baby kicks and moves to tell me it's eating time	( )	( )	( )	( )	( )
17. I poke the baby to get him/her to poke back	( )	( )	( )	( )	( )
18. I can hardly wait to hold the baby	( )	( )	( )	( )	( )
19. I try to picture what the baby will look like	( )	( )	( )	( )	( )
20. I stroke my tummy to quiet the baby when there is too much kicking	( )	( )	( )	( )	( )
21. I can tell that the baby has hiccoughs	( )	( )	( )	( )	( )
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	( )	( )	( )	( )	( )

In this section we would like to know how healthy you have been over the last six weeks. Please put a checkmark in front of the number which describes your usual practice on a typical day.

1. Over the last six weeks I have slept so well that I feel rested in the morning

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

2. Over the last six weeks I have been able to rest for short periods during the day

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 3. almost every day
( ) 5. every day

3. Over the last six weeks I have gotten exercise such as, taking walks, swimming, bicycling, dancing, and aerobics

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

4. Over the last six weeks a typical daily diet consists of at least 4 servings of milk and cheese, 4 servings of breads and cereals, 4 servings of fruits and vegetables, and 2 servings of meats

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

5. Over the last six weeks I have smoked cigarettes

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

6. Over the last six weeks I have drunk alcoholic beverages

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

7. Over the last six weeks I have taken non-prescription medicines such as aspirin, tylenol, antacids, and cold medicines

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

8. Over the last six weeks I have taken street drugs

( ) 1. never
( ) 2. rarely
( ) 3. occasionally
( ) 4. almost every day
( ) 5. every day

The following group of questions asks you to provide some general background information about yourself.

1. What is your birthdate?_____

Religious beliefs play an important role in the lives of many people. The following two questions ask you to provide this information.

2. What is your religious preference?

( ) 1. Catholic
( ) 2. Protestant
( ) 3. Jewish
( ) 4. Other: Please Specify_____
( ) 5. None

3. What is the extent of your participation in religious activities?

( ) 1. Inactive
( ) 2. Infrequent participation (1-2 times a year)
( ) 3. Occasional participation (about monthly)
( ) 4. Regular participation (weekly)
( ) 5. Daily

4. What is your marital status?

( ) 1. Married
( ) 2. Separated
( ) 3. Never married
( ) 4. Widowed
( ) 5. Divorced
( ) 6. Remarried

5. With whom are you currently living? (Check all that apply)

( ) 1. Mother
( ) 2. Father
( ) 3. Stepmother
( ) 4. Stepfather
( ) 5. Boyfriend
( ) 6. Husband
( ) 7. Friend
( ) 8. Guardian
( ) 9. Other: Please specify the relationship_____
( ) 10. No one. I live alone

6. What is your highest level of education? (Check all that apply)

( ) 1. Have not graduated from high school
( ) 2. Obtained G.E.D.
( ) 3. Graduated from high school
( ) 4. Completed 1-2 years of technical education beyond high school
( ) 5. Completed 1-2 years of college
( ) 6. Completed 4 years of college
( ) 7. Graduate work
( ) 8. Obtained masters degree or higher

7. Are you presently in school?

( ) 1. Yes ——→

7a. If yes, in what grade or year are you?____

( ) 2. No ——→

7b. If no, what was the highest grade completed?_____

8. What was your mother's highest level of education? (Check all that apply)

( ) 1. Did not graduate from high school
( ) 2. Obtained a G.E.D.
( ) 3. Graduated from high school
( ) 4. Completed 1-2 years of technical education beyond high school
( ) 5. Completed 1-2 years of college
( ) 6. Completed 4 years of college
( ) 7. Graduate work
( ) 8. Obtained masters degree or higher

9. What was your father's highest level of education? (Check all that apply)

( ) 1. Did not graduate from high school
( ) 2. Obtained a G.E.D.
( ) 3. Graduated from high school
( ) 4. Completed 1-2 years of technical education beyond high school
( ) 5. Completed 1-2 years of college
( ) 6. Completed 4 years of college
( ) 7. Graduate work
( ) 8. Obtained masters degree or higher

The following questions ask for information about your type of employment and yearly income.

10. What is your employment status?

( ) 1. Employed full time (35+ hours per week)
( ) 2. Employed part time (less than 35 hours per week)
( ) 3. Unemployed, looking for work
( ) 4. Unemployed, not looking for work
( ) 5. Housewife full time

Please go on to question number 11

10a. What is your main occupation?

_____

10b. What are your main responsibilities?

_____

10c. What type of product or service does your company provide?

_____

11. What was the range of your personal income in 1988 before taxes?

( ) 1. Less than $5,000
( ) 2. $5,000 - $9,999
( ) 3. $10,000 -$14,999
( ) 4. $15,000 - $24,999
( ) 5. $25,000 - $34,999
( ) 6. $35,000 - $44,999
( ) 7. $45,000 - $59,000
( ) 8. more than $60,000

12. What was the range of total household income in 1988 before taxes?

( ) 1. Less than $10,000
( ) 2. $10,000 - $14,999
( ) 3. $15,000 - $24,999
( ) 4. $25,000 - $34,999
( ) 5. $35,000 - $44,999
( ) 6. $45,000 - $59,999
( ) 7. $60,000 - $74,999
( ) 8. more than $75,000

The following two questions will ask you for some information about this pregnancy.

13. Was this a planned pregnancy?

( ) 1. Yes
( ) 2. No

14. What are your plans for this baby?

( ) 1. Keep the baby
( ) 2. Place the baby for adoption
( ) 3. Give to friend/relative to raise

15. Would you like a summary of the results of this research project when it is completed?

( ) 1. Yes
( ) 2. No

Now I will read a list of events which you may have experienced over the last year. Those events which have happened to you will be rated as good or bad and the effect of those events will be rated as having no effect, some effect, moderate effect, or great effect.

LIFE EVENTS QUESTIONNAIRE

Number _____

Date _____

Instructions

Listed below are a number of events which may bring about changes in the lives of those who experience them.

Circle the events that have occurred in your life during the past year and circle whether these were Good or Bad.

Show how much the event affected your life by circling the appropriate number which corresponds with the statement (0 = no effect, 1 = some effect, 2 = moderate effect, 3 = great effect).

If you have not experienced a particular event in the past year, leave it blank.

Please go through the entire list before you begin to get an idea of the type of event you will be asked to rate.

Event	Type of Effect		Effect of Event on Your Life			
			no effect	some effect	moderate effect	great effect
A. HEALTH						
1. major personal illness or injury	Good	Bad	0	1	2	3
2. major change in eating habits	Good	Bad	0	1	2	3
3. major change in sleeping habits	Good	Bad	0	1	2	3
4. major change in usual type and/or amount of recreation	Good	Bad	0	1	2	3
5. major dental work	Good	Bad	0	1	2	3
6. (female): pregnancy	Good	Bad	0	1	2	3
7. (female): miscarriage or abortion	Good	Bad	0	1	2	3
8. (female): started menopause	Good	Bad	0	1	2	3
9. major difficulties with birth control pills or devices	Good	Bad	0	1	2	3
B. WORK						
10. difficulty finding a job	Good	Bad	0	1	2	3
11. beginning work outside the home	Good	Bad	0	1	2	3

Event	Type of Effect		Effect of Event on Your Life			
			no effect	some effect	moderate effect	great effect
12. changing to a new type of work	Good	Bad	0	1	2	3
13. changing your work hours or conditions	Good	Bad	0	1	2	3
14. change in your responsibilities at work	Good	Bad	0	1	2	3
15. troubles at work with your employer or co-workers	Good	Bad	0	1	2	3
16. major business readjustment	Good	Bad	0	1	2	3
17. being fired or laid off from work	Good	Bad	0	1	2	3
18. retirement from work	Good	Bad	0	1	2	3
19. taking courses by mail or studying at home to help you in your work	Good	Bad	0	1	2	3
C. SCHOOL						
20. beginning or ceasing school, college, or training program	Good	Bad	0	1	2	3
21. change of school, college, or training program	Good	Bad	0	1	2	3
22. change in career goal or academic major	Good	Bad	0	1	2	3
23. problems in school, college, or training program	Good	Bad	0	1	2	3
D. RESIDENCE						
24. difficulty finding housing	Good	Bad	0	1	2	3
25. changing residence within the same town or city	Good	Bad	0	1	2	3
26. moving to a different town, city, state, or country	Good	Bad	0	1	2	3
27. major change in your living conditions (home improvements or a decline in your home or neighborhood)	Good	Bad	0	1	2	3

Event	Type of Effect		Effect of Event on Your Life			
			no effect	some effect	moderate effect	great effect
E. LOVE AND MARRIAGE						
28. began a new, close, personal relationship	Good	Bad	0	1	2	3
29. became engaged	Good	Bad	0	1	2	3
30. girlfriend or boyfriend problems	Good	Bad	0	1	2	3
31. breaking up with a girlfriend or boyfriend or breaking an engagement	Good	Bad	0	1	2	3
32. (male): wife or girlfriend's pregnancy	Good	Bad	0	1	2	3
33. (male): wife or girlfriend having a miscarriage or abortion	Good	Bad	0	1	2	3
34. getting married (or beginning to live with someone)	Good	Bad	0	1	2	3
35. a change in closeness with your partner	Good	Bad	0	1	2	3
36. infidelity	Good	Bad	0	1	2	3
37. trouble with in-laws	Good	Bad	0	1	2	3
38. separation from spouse or partner due to conflict	Good	Bad	0	1	2	3
39. separation from spouse or partner due to work, travel, etc.	Good	Bad	0	1	2	3
40. reconciliation with spouse or partner	Good	Bad	0	1	2	3
41. divorce	Good	Bad	0	1	2	3
42. change in your spouse or partner's work outside the home (beginning work, ceasing work, changing jobs, retirement, etc.)	Good	Bad	0	1	2	3

Event	Type of Effect		Effect of Event on Your Life			
			no effect	some effect	moderate effect	great effect
F. FAMILY AND CLOSE FRIENDS						
43. gain of a new family member (through birth, adoption, relative moving in, etc.)	Good	Bad	0	1	2	3
44. child or family member leaving home (due to marriage, to attend college, or for some other reason)	Good	Bad	0	1	2	3
45. major change in the health or behavior of a family member or close friend (illness, accidents, drug or disciplinary problems, etc.)	Good	Bad	0	1	2	3
46. death of spouse or partner	Good	Bad	0	1	2	3
47. death of a child	Good	Bad	0	1	2	3
48. death of family member or close friend	Good	Bad	0	1	2	3
49. birth of a grandchild	Good	Bad	0	1	2	3
50. change in marital status of your parents	Good	Bad	0	1	2	3
G. PARENTING						
51. change in child care arrangements	Good	Bad	0	1	2	3
52. conflicts with spouse or partner about parenting	Good	Bad	0	1	2	3
53. conflicts with child's grand-parents (or other important person) about parenting	Good	Bad	0	1	2	3
54. taking on full responsibility for parenting as a single parent	Good	Bad	0	1	2	3
55. custody battles with former spouse or partner	Good	Bad	0	1	2	3

Event	Type of Effect		Effect of Event on Your Life			
			no effect	some effect	moderate effect	great effect
H. PERSONAL OR SOCIAL						
56. major personal achievement	Good	Bad	0	1	2	3
57. major decision regarding your immediate future	Good	Bad	0	1	2	3
58. change in your personal habits (your dress, life-style, hobbies, etc.	Good	Bad	0	1	2	3
59. change in your religious beliefs	Good	Bad	0	1	2	3
60. change in your political beliefs	Good	Bad	0	1	2	3
61. loss or damage of personal property	Good	Bad	0	1	2	3
62. took a vacation	Good	Bad	0	1	2	3
63. took a trip other than a vacation	Good	Bad	0	1	2	3
64. change in family get-togethers	Good	Bad	0	1	2	3
65. change in your social activities (clubs, movies, visiting)	Good	Bad	0	1	2	3
66. made new friends	Good	Bad	0	1	2	3
67. broke up with a friend	Good	Bad	0	1	2	3
68. acquired or lost a pet	Good	Bad	0	1	2	3
I. FINANCIAL						
69. major change in finances (increased or decreased income)	Good	Bad	0	1	2	3
70. took on a moderate purchase, such a T.V., care, freezer, etc.	Good	Bad	0	1	2	3
71. took on a major purchase or a mortgage loan, such as a home, business, property, etc.	Good	Bad	0	1	2	3
72. experienced a foreclosure on a mortgage or loan	Good	Bad	0	1	2	3

Event	Type of Effect		Effect of Event on Your Life			
			no effect	some effect	moderate effect	great effect
73. credit rating difficulties	Good	Bad	0	1	2	3
J. CRIME AND LEGAL MATTERS						
74. being robbed	Good	Bad	0	1	2	3
75. being a victim of a violent act (rape, assault, etc.)	Good	Bad	0	1	2	3
76. involved in an accident	Good	Bad	0	1	2	3
77. involved in a law suit	Good	Bad	0	1	2	3
78. involved in a minor violation of the law (traffic tickets, disturbing the peace, etc.)	Good	Bad	0	1	2	3
79. legal troubles resulting in your being arrested or held in jail	Good	Bad	0	1	2	3
K. OTHER						
Other recent experiences which have had an impact on your life. List and rate.						
80. _____	Good	Bad	0	1	2	3
81. _____	Good	Bad	0	1	2	3
82. _____	Good	Bad	0	1	2	3

APPENDIX E

Comparison of Maternal Fetal Attachment Scale for Two Studies

APPENDIX E

Comparison of Maternal Fetal Attachment Scale for Two Studies

Table E1

Comparison of Maternal Fetal Attachment Scale and Subscales for Two Studies (%)

	Armantrout Study N = 35	Present Study (T4) N = 40
MFAS	74	77
ROLETAK	94	96
DIFFSELF	91	91
INTERACT	17	54
ATTRIB	40	65
GIVING	83	91

Table E2

Comparison of Maternal Fetal Attachment Scale Individual Items for Two Studies (%)

	Armentrout N = 35	Present Study N = 40
1. ...talk to my unborn baby.	69	73
2. ...trouble of being pregnant was worth it.	63	78
3. ...watching my tummy jiggle...	85	100
4. ...picturing myself feeding the baby.	89	85
5. ...forward to seeing what baby looked like.	91	100
6. ...baby felt cramped in there.	60	73
7. ...called baby by nickname.	29	33
8. ...taking care of the baby.	94	100
9. ...personality would be like...	20	40
10. ...picked out girl's name...	80	80
11. ...do things to stay healthy...	73	95
12. ...could hear...	63	88
13. ...picked out a boy's name...	86	85
14. ...think and feel inside me.	69	85
15. ...good diet.	91	93
16. ...kicks and moves...	42	70
17. ...poke the baby...	49	83
18. ...hold the baby.	94	100
19. ...picture what the baby would look like.	94	98
20. ...quiet the baby...	49	58
21. ...baby has hiccoughs...	17	38
22. ...gave up doing certain things...	83	100
23. ... move the baby's foot...	9	25

APPENDIX F

Correlational Matrices of Variables and Ethnicity

APPENDIX F

Correlational Matrices of Variables and Ethnicity

Table F1

Correlational Matrix of Dependent Variables and Ethnicity

	Black	Caucasian	Hispanic
MFAS	.12	.06	-.24
ROLETAK	.17	.00	-.22
DIFFSELF	.15	-.12	-.04
INTERACT	.12	.18	-.37*
ATTRIB	.13	.04	-.22
GIVING	-.12	.05	.10

* $p < .05$

n.b. Dummy coding was used to separate the ethnic groups from one another. A negative correlation indicates that the group demonstrated a lesser degree of prenatal fetal attachment than the remaining sample.

Table F2

Correlational Matrix of Independent Variables and Ethnicity

	Black	Caucasian	Hispanic
HEALTH	.31	-.20	-.17
NIAS	.41**	-.08	-.45**
NPFS	.28	-.23	-.09
OMNIPOT	.21	-.22	-.01
INVULN	.08	-.03	-.07
UNIQUE	.32*	-.23	-.15
CSEI	.11	-.20	.11
LEBAD [a]	.32*	.05	.48***
NIAS [a]	.41**	-.13	-.38**
SANX [a]	.21	-.14	-.11
TANX [a]	.18	-.11	-.21

* p < .05 ** p < .01 *** p < .001

[a] Spearman Rho

Table F3

Correlational Matrix of Social Support Variables and Ethnicity

	Black	Caucasian	Hispanic
TOT FUNCT	.06	.10	-.20
TOT NET	.13	.07	-.26*
AFFECT	.13	.09	-.27*
AFFIRM	.07	.08	-.19
AID	-.01	.12	-.12
AFFECTMOM	.36*	-.04	-.44**
AFFIRMMOM	.00	-.04	.05
AIDMOM	.17	-.29	.14
AFFECTFOB	.11	-.18	.08
AFFIRMFOB	-.30	.15	.22
AIDFOB	-.09	-.16	.32

One-Tailed * $p < .05$ ** $p < .01$

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