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A Comparison Of Mother-Fetal Attachment In Medically Low-Risk And High-Risk Primagravidae Women

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ABSTRACT

This study was designed to investigate how maternal-fetal attachment may differ between medically low risk and high risk primigravidae women. In addition, the validity of the attachment measure used was reviewed by statistically removing the influence of four variables (anxiety, marital satisfaction, life stress and sex role identity) that are documented to have some concomitant effect on maternal-fetal attachment.

Results yielded no significant differences between groups on any of the measures, other than Marital Satisfaction, in which the high risk group indicated a greater degree of satisfaction. When the concurrent variables were covaried out from the attachment measure total and subscales, the attachment scores did not change significantly, indicating that the attachment measure was not significantly influenced by the concurrent variables.

It was concluded that though no significant differences were found in attachment between groups, the concept of maternal-fetal attachment would do well to be investigated in a longitudinal and more qualitative manner.

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CHAPTER 1

INTRODUCTION

Background of the Study

During the last few years, health care professionals have been seriously reexamining the concept of mind-body dualism. Evidence has come to light suggesting the interactive nature of psychological processes (Millon, Green, & Meagher 1982). It has been broadly reported that psychological factors such as habit, attitude and personal relationships play a critical role in a multitude of medical disorders. These disorders range in nature from failure to thrive to cancer. Similarly, medical conditions have been found to have varying psychological repercussions that range widely; i.e., post partum expressions to organic dementia (American Psychological Association, 1976; Jospe, Nieberding, & Cohen, 1980).

As a result of the growing identification of the mind-body interrelationship, the field of health psychology developed. A representative definition of health psychology depicts this field as "the aggregate of the specific educational, scientific and professional contributions of the discipline of psychology to the promotion and maintenance of health, the prevention and treatment of illness, and related dysfuntions" (Matarazzo, 1980, p. 815).

Not surprisingly, counseling psychologists have found the field of health psychology to be the most conducive to the use of their skills and in line with their ideology of prevention, treatment of dysfunction and maintenance of health (American Psychological Association, 1952; Thompson and Super, 1964). In response to this similarity of goals and applicability of skills, there has been a growing number of counseling psychologists working im medical settings. Of specific interest to the proposed study has been the setting of obstetrics and the field of pre-natal psychology. Within these areas the counseling psychologist assumes a broad role, ranging from therapeutic and/or preventative counseling with the mother and/or husband, to research of relevant issues and teaching of medical personnel. In the health care setting, the major contribution of obstetrics is its concern with the physical well-being and medical maintenance of mother and fetus. Counseling psychology contributes to this end by its understanding of psychologically related etiology, concomitants of well-being or disorders and behavioral interventions as prevention or remediation (Verny & Kelly, 1981). The "pre-natal psychologist" considers psychological problems within the context of the developmental process. Thus, a knowledge of development as well as life-span change and the

psychological effects of the social milieu are fundamental. As such, the involvement of the counseling psychologist in pre-natal psychology and obstetrics may be regarded as optimal.

The area of mother/child attachment has been widely investigated (Schaffer & Emerson, 1964; Ainsworth, 1967, 1972; Bowlby, 1969; Sears, 1972). In spite of the dramatic bonding and attachment that occurs at birth and shortly thereafter, there is evidence which suggests that birth may not be the start of the mother/child relationship (Cranley, 1981, 1983). Based upon the knowledge that the mother has physical and kinesthetic awareness of the fetus for months before birth and for a long time a cognitive and affective awareness, theoreticians dating back to 1945 (Deutsch) have postulated that the attachment process occurs throughout the pregnancy. In spite of constant theoretical propositions, comparitively little empirical investigation has been conducted on mother/fetal attachment, as opposed to the ample literature of mother/child attachment related to post-birth. Nevertheless, there appeared to be a consensus in the literature that mother/fetal attachment did begin during pregnancy and did so as a result of combined dynamic, psychological and physiological factors (Benedek, 1952; Arbeit, 1975).

Extensive work has been done in the area of the psychological aspects of pregnancy (Selby, Calhoun, Vogel, & King, 1980). The literature has suggested that pregnancy is a developmental task that requires both adjustment and resolution of conflicts from earlier developmental phases. The woman's personality was thus in disequilibrium and her task included acceptance of a feminine role and reformation of her self-perception and relationships with others (Rubin, 1975; Bibring & Valenstein, 1976.) To accomplish these psychological tasks, the pregnant woman was described as having become very introspective. Within the reformulation of self the mother also must first accept the fetus as part of herself and then achieve a separation and distinction from it (Deutsh, 1945). Major influences on the woman's ability to accomplish these tasks have been the woman's identification with her own mother and her relationship with her husband. The identification with her own mother and resolution of past conflicts have been regarded as being critically related to the capacity of motherhood and the newly emerging self-concept as mother. If resolution and the incorporation of positive feelings have not been achieved to at least some degree, rejection of the mother role and of the fetus occurs.

The role of the husband has also been seen as critical, for the pregnancy assumes the symbolism of the husband/wife

relationship. Furthermore, the husband has been regarded as the provider of sufficient emotional support to allow the woman time and energy to introspect (Deutsch, 1945; Benedek, 1952; Tanner, 1969; Bibring & Valenstein, 1976).

Throughout the literature, authors have reported that how well the woman is able to accomplish the psycho-developmental task of pregnancy has had a direct bearing on the mother-infant relationship (Rubin, 1975). Anxiety, depression, paranoid mechanisms and other emotional factors have been revealed in psychiatric interviews (Bibring, Dwyer, Hurtington, Valenstein, 1961a & 1961b) and research (Zemlick & Watson, 1953; Newton, 1955; Davids & Holder, 1970). When given minimal psychiatric support, however, most women are able to cope and adapt well (Bibring et al., 1961b).

Overall, the literature has tended to acknowledge the existence and complexity of mother/fetal attachment (Verny & Kelly, 1981). Several theoretical postulates have been proposed and some empirical work conducted (Bibring et al., 1961; Rubin, 1975; Brazelton, 1975; Cranley, 1979; Verny & Kelly, 1981). Additionally, the literature has hinted that atypical pregnancies may have influenced mother/fetal attachment. This has been clinically postulated by obstetricians working with high risk pregnancies, although

what those differences were and if they were significant has yet to be investigated (Cown, 1985; Reeves, 1985; Hinkley, 1985; Hays, 1985). The major emphasis of this study has been to examine whether mother/fetal attachment differs between low risk and high risk primigravidae women.

Purpose of the Study

That the mother becomes attached to her child before birth has been documented (Deutsch, 1945; Arbeit, 1975; Cranley, 1981) and clinically observed (Hays, 1985; Reeves, 1985; Hinkley, 1985). It has also been clinically observed, but not verified, that women who have lost previous pregnancies and are now considered high risk in the current pregnancy have tended to attach to the fetus to a lesser degree - at least for the first several months of the pregnancy. It has been the purpose of this study to examine if indeed high risk pregnant women differ in their degree of attachment from women with low risk pregnancies. This was considered to be a pertinent investigation since it would provide initial information as to whether there was indeed a difference in attachment and, if so, what its nature and scope might be.

As comparatively little work had been conducted on the validity of attachment as a measurable construct, a secondary purpose of this study was to attempt to strengthen the face validity of the objective measure of attachment.

Since there has been evidence that other constructs may well be influential on the attachment process (Cranley, 1981, 1983), four major concomitant variables to attachment were also measured. Their influence on the attachment results were then to be statistically removed. The goal was to investigate if the measured attachment construct was still statistically significant once other postulated strong concomitant variables had been removed. Doing so would then enable one to see if any significant difference between the two samples were truly a difference in attachment formation rather than, for example, a difference in anxiety. It also allowed for more in depth and stable results interpretations. The concomitant variables were: marital satisfaction, anxiety, life stressors and sex roles. Although these concomitant variables did not cover all possible confounding factors, the literature indicated that they were primary psychological influences on how the mother may attach to her child (Bibring & Valenstein, 1976; Cranley, 1981, 1983).

Recent findings have revealed that diet, drinking, drug-taking and the role that emotions play in sickness and health have had an effect on the unborn child. It would also follow, therefore, that the mother's emotional well-being would have potential effects on her unborn child as had been shown by the negative impact on fetal development

by long-term high stress on the mothers (Selby et al., 1980). Similarly, the post-natal research on attachment and bonding had implied the need for a strong and accepting pre-natal relationship. Research had also shown that the unborn child is a feeling, remembering and aware being (Verny & Kelly, 1981). One may postulate that what the fetus experiences between conception and birth may well influence that child's psychological growth and development. If one pieced together the current information and drew postulates from it, there might be reason to believe that not only may the mother's psychological well-being influence the well-being of the fetus, but that the mother and fetus would begin developing a psychological attachment during the pre-natal period.

It was believed that this proposed study would provide information for future psychotherapeutic practice, counseling research and theory development. Within the realm of counseling psychology, it might aid in initial diagnosis and problem definition. If a therapist were aware that problems in attachment could arise, then he/she would be more likely to be attuned to its occurrence. Secondly, if the field were aware of this potential problem area, both preventative and therapeutic programs and strategies could be developed. Some programs have already been developed to

foster greater attachment and bonding between parents and their children post-birth; that is, classes are now held in any hospitals where psychologists teach play, communication and nurturing skills to parents.

From a research perspective, the results of this study posed many potential follow-up questions for investigation. For example, if a significant difference were indeed found, future research could be conducted to determine if this difference was equalized immediately after birth; if the number of previous pregnancy losses made a difference; if the age of the lost pregnancies was influential; if the interim period between pregnancies was significant; if the current pregnancy reaching the anniversary date of the previous loss increases attachment; if the different developmental stages of the current pregnancy made a difference to attachment either collectively or independently. Indeed, the possibilities of future research would be extensive.

The development of psychological theory would also be necessitated. Of particular interest would be not only a comprehensive theory of the pre-natal attachment process itself, but also the explanation of how this process may differ in women with high risk pregnancies. Theoretical postulates as to the role of the fetus in the attachment relationship would also be beneficial. Finally, the

development of the theoretical underpinnings for therapeutic interventions would be required and, it is hoped, initiated.

It was thought, therefore, that the contribution of this study could be of both immediate and long-term benefit. In the immediate future, it could alert the obstetrician of possible problems and thus allow him/her to make more timely referrals to the counseling psychologist. Similarly, it could provide the psychologist greater and more specific information with which to intervene when needed. In the long run, it could stimulate growth and investigation into a most fundamental area of mental health.

Statement of the Problem

With the quality of mother/child attachment having been shown to be of critical importance to the development of the child (Bowlby, 1969) and with the acknowledgement that the attachment process starts early in pregnancy (Deutsch, 1945; Bibring & Valenstein, 1976; Curry, 1983), it should become clear that all efforts be made to enhance the mother/fetus emotional relationship. Having clinically noted that obstetrically high risk women may have attachment differences from low risk pregnant women, it was the purpose of this study to examine the differences between low and high risk primigravidae women.

Some variables concomitant to attachment were also examined since the literature on the psychology of pregnancy

suggests that the pregnant woman experiences many affective, personality and situational variables that in one way or another influence (both positively and negatively) her acceptance and attachment to the fetus and later to the child (Deutsch, 1945; Bibring, Dwyer, Hurtington, & Valenstein, 1961a & 1961b; Davids & Rosengren, 1962; Bibring & Valenstein, 1976). While not all of the influencing variables were investigated (due to measurement limitations), the four areas of anxiety, sex role identity, marital satisfaction and life stress were studied, since they were reportedly some of the more major factors (Deutsch, 1945; Bibring & Valenstein, 1976; Cranley, 1981, 1983). The purpose of examining the four concomitant variables was to try to insure that what was being objectively measured was indeed attachment rather than a mixture of other influencing factors. That was not to say that these other factors did not influence attachment, but that they were indeed influencers and not the actual outcome - namely, attachment. In addition, various demographic data were compared.

The anxiety factor was chosen since pregnancy in general, but especially first time pregnancy, is noted to be a natural period of high anxiety (Rubin, 1975; Arbeit, 1975; Bibring & Valenstein, 1976; Glazer, 1980; Avart, 1981; Gaffney, 1986). In addition, the specific anxiety measure

used attempted to differentiate between situational anxiety and "trait" anxiety and could, therefore, be more attuned to both anxiety specific to the pregnancy in general and any excessive anxiety experience by members of the high risk group.

Sex role identity was viewed as a more probably stable personality factor, though one which was directly affected by the woman's reformulation of self to include self as mother - an ultimately feminine role (Deutsch, 1945; Bibring, Dwyer, Hurtington, & Valenstein, 1961a & 1961b). It was also postulated that the high risk population varied from the low risk population since greater feminine identification may be required to allow for persistence in both conception and coping with the possibility of yet another loss.

The marital satisfaction and life stress scales were chosen as pertinent measures of the woman's current environmental situation (Deutsch, 1945; Richardson, 1983; Brown, 1986). Both of these measures had been tested in a preliminary manner by Cranley (1983). In her study, Cranley indicated that if marital satisfaction was strong, life stress did not seem to make a significant impact. Additionally, Shereshevsky, Lieberberg, and Lockman (1973) found that both the accommodation and acceptance of

motherhood were highly correlated with the quality of the woman's relationship with her husband. However, neither marital satisfaction nor life stress was known to have been examined among high risk pregnancies. Unfortunately, the one other identified influential factor, the mother's identification with her own mother, could not be measured at the time due to a lack of a developed measure. However, it would certainly be of value in future investigations.

The demographic data sheet was included for control and comparative purposes. Though not an instrument per se, it was hoped that the pragmatic and affective questions would lend some clues for future research as to the potential areas of focus.

General Hypotheses

The major hypothesis of this study was that women with low risk pregnancies were expected to have a different level of attachment to the fetus than women with high risk pregnancies. No hypotheses were formulated with regard to the demographic data. Since the interpretation of any found differences between the two groups on the attachment variable could be confounded by any significant mean differences found in any and each of the concomitant

variables, these differences were statistically removed from any difference found in the attachment variable. This was done by use of a Stepwise Analysis of Covariance.

Specific Hypothesis

There would be a specific difference in prenatal attachment between the low risk and high risk pregnant women once the influence of anxiety, sex role identity, marital satisfaction and life stress had been covaried out.

Delimitations

Due to the highly preliminary nature of this study, the investigator limited the sample in order to create as homogeneous a group as possible, thereby attempting to control for extraneous factors such as socio-economic status. This was done by drawing the sample group from only private practice obstetricians. As near as possible, there were equal numbers of male to female obstetricians, thereby attempting to equalize any sex differences in attitude and care give by the obstetricians. The sample was restricted to women who were: currently married (separation was not included); between the ages of 20 and 35 years; having their first child; and in their fifth to seventh month of pregnancy at the time of testing.

The age of the sample was set to be between 20 and 35 years of age and though these ages were to some degree

arbitrary, these parameters were set in an attempt to eliminate the high risk possibility due to age. These age groups (younger than 20 years and older than 36 years) were eliminated since it was assumed that though they were high risk they would also exhibit additional attachment dynamics (i.e., how a teenager or more mature woman emotionally deals with pregnancy) that could confound the purpose of this study.

Similarly, attempts were made to control the socio-economic status to middle class, since it was assumed that attachment could potentially be compromised by maternal needs of basic physical survival (i.e.: food, clothing and shelter).

The low risk group of pregnant women was limited to women with no known current medical ailments. The high risk group of pregnant women was limited to women who had previously lost two or more pregnancies and included those women who were diagnosed as being high risk because of some physiological condition (i.e, diabetes, hypertension, toxemia) or carried a fetus that had some known physical disorder that in some way threatened the pregnancy. Although considered medically high risk, no woman with multiple fetuses or of adolescent age was included.

The month of pregnancy was chosen to be between 5 and 7 months since most spontaneous abortions and miscarriages occur before the fifth month. It was hoped, therefore, that the high risk pregnancy would be considered to be relatively viable. The seventh month limitation was utilized since most pregnancies that delivered after the seventh month had a very high rate of survival, and thus any differences between the low and high risk groups would be greatly lessened.

Definitions and Operational Terms

Construct Definitions

Attachment - "A focused relationship of one with another that includes strong affection and a mutual regulation of one another" (Yussen & Santrock, 1978, p.443).

Maternal/Fetal Attachment - "Extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child" (Cranley, 1981, p. 282).

Life Stress - Occurrence of a life event which evokes some adaptive or coping behavior and thereby requires a significant change in the individual. The emphasis is on the change of an existing steady state and not on psychological meaning, emotion or social desirability (Holmes & Rahe, 1967).

Marital Adjustment - "Accommodation of a husband and wife to each other at a given time" (Locke & Wallace, 1959, p. 251).

State Anxiety - A "palpable reaction or process taking place at a given time and level of intensity. .(in response to) a threatening situation" (Spielberger, Gorsuch, & Luschene, 1970, p. 1).

Trait Anxiety - "Relatively stable individual differences in anxiety proneness; that is, to differences between people in the tendency to perceive stressful situations as dangerous or threatening and to respond to such situations with elevations in the intensity of their state anxiety reactions" (Spielberger, Gorsuch & Luchene, 1970, p. 1).

Sex Role Identity - "Beliefs about appropriate behaviors for the two sexes, that is, behaviors that are positively sanctioned for members of one sex and ignored or relatively sanctioned for members of the other" (Spence and Helmreich, 1978, p. 13).

Concomitant Variables - Independent variables that are seen to accompany or are collaterally connected with the maternal/fetal attachment process.

Operational Definitions

For the purpose of this study, the following terms were operationally defined as:

Low Risk Pregnancy - Where the woman has no known current medical condition that would influence the desirable course of the pregnancy.

High Risk Pregnancy - Where the woman has previously lost one or more pregnancies (not including elective abortions) or can be suffering from some current medical condition that places the pregnancy at risk (i.e., diabetes, toxemia or hypertension).

Viable Pregnancy - As of the twenty-eighth week of pregnancy, there is some chance of saving the fetus if born prematurely. A viable pregnancy is therefore considered, for the sake of the study, one that is 28 weeks or beyond.

Maternal/Fetal Attachment - The total number of reported behavioral interactions of the mother with her unborn child. The greater the total number of interactions the higher the level of attachment as measured by the Maternal/Fetal Attachment Scale.

Sex Role Identity - The reported levels of masculinity and femininity. The higher the level, the greater the masculinity and/or femininity on the PAQ. Actual identity would be the total score of femininity as compared to the

total score of masculinity. The PAQ Attribute Questionnaire was based on the dualistic concept of masculinity; that is, that each is a separate principle and may coexist to some degree in every individual and each may vary more or less independently.

Life Stress - The number of experienced life events multiplied by a weighted score which reflects the amount of adaptive or coping behavior required by an individual. The higher the total score, the higher the degree of life stress as measured by the Social Readjustment Rating Scale.

Marital Satisfaction - The degree of marital adjustment as indicated by the total score. The higher the score, the greater the adjustment/satisfaction as measured by the Locke Wallace Marital Satisfaction Scale.

State-Trait Anxiety - The higher the total scores of State anxiety and Trait anxiety the greater the degree of anxiety experienced as measured by the State-Trait Anxiety Inventory.

CHAPTER 2

REVIEW OF THE RELATED LITERATURE

Introduction

This review will focus on the literature pertaining to: the psychology of pregnancy, theories of attachment and maternal-fetal attachment, since the subject of mother/fetal attachment was initially addressed by theorists in the area of psychology of pregnancy (Deutsch, 1945) which in turn was developed from ego psychological theories (Anna Freud, 1946). In addition, current theories of human attachment have historically been generated not only from ego psychological and object relational perspectives, but have included Lorenz's work in imprinting (1937), Dollard and Miller's secondary reinforcement model (1950) and Bowlby's ethological-evolutionary theory (1969). These latter theories of attachment have all focused on post-partum attachment.

Current empirical investigations into mother/fetal attachment do not appear to be based on any one theory or to have stimulated the development of a unique theory of attachment. Rather, studies have appeared to have incorporated a number of existing theories from which to base their investigations. Therefore, in reviewing the literature, the psychology of pregnancy will be first

reviewed, followed by the theories of attachment and finally, maternal/fetal attachment. The order of presentation will, it is hoped, not only aid clarity, but also give more of a historical perspective.

Psychology of Pregnancy

Theoretical Postulates

The psychology of pregnancy was only tangentially discussed by Freud and his followers until Deutsch (1945) discussed it at length in the context of her analysis of the psychology of women. Her predominant treatise was that pregnancy was a time of "turning inward". This "turning inward" was described as a process by which the woman devoted her psychic energies to the fetus and to her fantasies about it as an object outside herself. Deutsch described several psychological states related to the acceptance of the fetus. Initially, the mother had to accept a being who existed within her body. This being often would cause some discomfort, hormonal and endocrinological changes and changes in the mother's physical appearance. Once this acceptance had been internalized, the mother would become increasingly involved with external events and surroundings and focus on fantasies about the fetus and its future. This, Deutsch stated, was the initial stage of motherly love. Quickening of the fetus

was seen to promote an identification of the mother-child relationship since she now directly experienced the living being within her. This experience allowed her to demonstrate its living presence to everyone else and engage in some sort of active relationship, i.e., reciprocity of movement.

This reciprocity of movement also precipitated the beginning of the last stage - the preparation for relinquishing the fetus to the outside world. Though not stated directly, Deutsch did not seem to regard these stages as purely sequential, but rather overlapping and concurrent. Of primary significance to the preparation of relinquishing the fetus was the identification by the pregnant woman with her own mother. Deutsch stated that identification, not only with the fetus but rather with her own mother, was critically related to her capacity for motherhood. Indeed, Deutsch went so far as to suggest that if major conflicts existed involving these identifications, the mother may become rejecting of the fetus and experience the difficulty with the pregnancy, at times contributing to spontaneous or habitual abortion. The process and quality of identification with her own mother appeared critical in that it was through the reviewing and revising of this relationship that she was able to no longer be "the child of the mother but the mother of child" (p. 145). She therefore

had to be able to include positive aspects of her mother into her newly emerging perception of herself as mother.

It was also postulated by Deutsch that the relationship the woman had with her husband and the quality of the union could be directed toward the product of the relationship and, therefore, could have long term effects upon the mother-child relationship. Though alluding to both the positive and negative effects of this wife-husband relationship, Deutsch focused on the potential harm of negative feelings. She stated that negative feelings and the lack of emotional support could influence not only the mother's feelings for the unborn child, but also compromise her ability to carry the child to term.

Given these postulates and beliefs, Deutsch stated that though many of the physiological symptoms of pregnancy (i.e., nausea, food cravings) were physiologically based, these symptoms could also be increased or reduced by influence of psychological factors.

Similar to Deutsch, Bibring and her associates (1959, 1961a, 1961b, 1976) perceived pregnancy as having profound psychological as well as somatic changes. While also speaking of developmental stages of pregnancy, they incorporated a somewhat Ericksonian view, namely, that similar to puberty and menopause, pregnancy required both

adjustment and the resolution of conflicts from earlier developmental phases. Bibring et al. specifically focused on the need to accept the ultimate feminine role and the reformulation of relationships with important others. How these tasks were accomplished was considered to directly impact the future mother-child relationship.

In a detailed study, Bibring et al. (1961b) found that a high percentage of obstetrical patients at a prenatal clinic were found to have psychiatric problems. Predominating problems were depression, anxiety and paranoid mechanisms. Following a minimal amount of psychotherapy, the women in this study responded positively to the support and none became seriously disturbed. Additionally, these women coped well with delivery and motherhood. These findings led Bibring et al. to hypothesize that the psychological conditions were symptomatic of the task of pregnancy rather than of specific pathology.

Similar to Deutsch and Bibring, Benedek (1952) perceived pregnancy to be a period of regression and reevaluation, with the resolution of past conflicts being paramount. She emphasized the importance of the woman's sense of her mother and clearly related it to her sense of her child. However, Benedek's main treatise was not simply that a woman's sense of her mother came into the fore, but

rather the sense of her mother as far as dependency was concerned. Therefore, the primary object representations were that of the woman herself, of her mother, and of her child, all set in a context of dependency. It was thus a sense of a mother-child relationship in which the woman had a sense of being gratified by her mother, rather than simply a sense of the mother as analogous to an image or a picture.

With issues of dependency being perceived as fundamental, Benedek considered the psychology of pregnancy to be an expression, in an extreme form, of the Lutein phase of the menstrual cycle. It tended to be during this hormonal phase in which the woman's passive receptive attitudes and behaviors became more prominent. Thus, to the extent that the mood of pregnancy is hormonally based, Benedek perceived the hormonal underlay as facilitating not only the biological task of pregnancy, but also the psychological one.

Empirical Studies

The salient literature on pregnancy has focused on the concepts of object relations such as the woman's sense of self, her mother and her child. Psycholanalytic writings about pregnancy dovetailed with some of the more empirical studies.

Anxiety Studies. Anxiety had been one of the psychological variables most productively studied for its role in pregnancy, possibly because is had appeared to be a major feature of the experience. There have been a number of attempts to follow the course of anxiety throughout pregnancy and childbirth but no consensus had become clear (Review by Sherman, 1971, and Osborne, 1978). However, there have been more definitive findings with psychophysiological concomitants of anxiety. Several studies have found such pregnancy symptoms as nausea, fatigue and gastrointestinal discomforts to be correlated with measures of anxiety (Brown, 1964, Grimm & Venet, 1966; Zemlick & Watson, 1953; Zuckerman et al., 1963). Brown (1964), Shereshevsky and Yarrow (1973) found such high correlations between anxiety, neuroticism and bodily symptoms that they hypothesized that these symptoms were, in fact, all manifestations of anxiety. Following such findings, research shifted to examine the relationship between anxiety and psychological defenses, with the hypotheses that if pregnancy was seen as a developmental task, the psychological process which occurred must, for adequate resolution, involve at least some degree of anxiety.

Suggestive of this hypothesis was a study by Uddenberg, Nilsson, and Almgren (1971) and later an article by

Uddenberg et al. (1976). Studying the primiparous woman, Uddenberg et al. found that women who suffered little or no nausea during pregnancy tended to experience greater adaptational difficulties post-partum than did women who suffered moderate or severe nausea. They further concluded that it was therefore possible that certain pregnancy-related symptoms in a primiparous woman may have indicated that she was expressing and working through some of the inevitable conflicts.

Leifer (1977) found that some level of anxiety in pregnancy is universal, but not homogeneous. Namely, some women were anxious about themselves, whereas others were anxious about the fetus. The former Leifer considered "regressed" whereas the latter were seen as having constructive anxiety. This perception was derived from Leifer's conclusion that anxiety about the fetus would seem to facilitate a sense of attachment to it. She reported that women who were anxious about the fetus seemed to become more easily attached to the newborn child.

Glazer (1980) studied one hundred pregnant women with regard to their anxiety levels and concerns. Though a number of concerns were identified, two predominated: (a) "if your baby will be healthy and normal," and (b) "your baby's condition at birth." The study also showed a statistically significant correlation with levels of

anxiety. Additionally, the types of concerns differed with trimester and the level of anxiety had an inverse relationship to age, education, length of marriage and income; namely, the less there was the higher the anxiety.

Marital Satisfaction and Identity Studies. Another variable that has received attention in pregnancy research is the quality of the marriage. Similar to the need to resolve existing conflicts with their mother, the decision to have a child has often been a stressful one for a couple. Although there have often been pragmatic questions to be asked and answered, these often have masked or symbolized more primitive and fundamental issues about one's ability to love, take care of, be dependent on and be attached to other persons.

Melges (1968) found that an unhappy marriage was one of several characteristics producing post-partum depression, though Wenner and Cohen (1968) found that the success of the marital relationship was more influential in producing an uncomplicated pregnancy than the woman's physical and emotional health. Similarly, Deutscher (1970) found that couples with a good marital relationship had little post-partum difficulty, while those couples who did not, did suffer a degree of post-partum difficulty. In Shereshevsky and Yarrow's (1973) study, the overall marital adjustment of

the couple was strongly related to a variety of measures of maternal adaptation.

Cohen's (1968) study indicated that the husband's role in the marriage influenced and facilitated the wife's adjustment to the pregnancy. Findings showed that the group of women who experienced little difficulty during the pregnancy either had good relations with both their mothers and husbands or only their husbands. Women who did experience problems during pregnancy tended to have difficulties with both maternal and marital relationships. Cohen concluded that if the current marital relationship was satisfactory, this somehow made up for the unsatisfactory one with the woman's mother. Although she did not examine the wife's psychological use of her husband in a systematic way, she did postulate that the husbands addressed the dependency need of their wives. She also noted that the husband seemed to experience similar psychological issues of dependency, adequacy and sexual identity. It would therefore appear that the primary relationships which influenced the pregnancy experience would be those of the woman's husband and mother. The relationship with the husband seemed to potentially tip the balance in a positive direction for a woman whose relationship with her mother was unhappy and conflicted.

Similar to Melges (1968), Cohen (1968) and Shereshevsky and Yarrow's (1973) finding, Richardson's (1983) results indicated that the husband's acceptance of the wife in her changing role was most important in her ability to turn inward and invest in the fetus. Women who felt secure with regard to their husband's affections were able to invest energy in the anticipations and preparations of motherhood. However, women who felt insecure in regard to their husband's affection focused their energy on the problematic relationship with little left for the pregnancy. If the rejecting relationship was felt to continue for an extended period of time, these women became increasingly uncertain, depressed and unable to experience pleasure in the anticipation of motherhood.

Some studies have been focused on the pregnancy experiences of the husband. Findings (Coleman & Coleman, 1971; Liebenberg, 1973) indicated that some husbands responded to their wife's pregnancy with conflicts around dependency, parental and sexual problems. Particular stress had been identified in the area of sexual identity where over-identification with the wife occurred. Often, psychological symptoms of weight gain, nausea and stomach distress appeared.

Brown (1986) investigated men's and women's experiences of partner support during pregnancy. Though no differences

were found in the mean partner support satisfaction score, there were differences in the variability of scores. Husbands tended to be satisfied with their wives' involvement and sharing of the pregnancy, though rated lower on morale boosting, dealing with fears of an abnormal child, clarifying feedback and understanding about changes in their sexual relationship. Women were satisfied with most supportive behaviors, but they did express more desire for help with infant preparation and thoughtful gestures. Both parties expressed the desire for greater support when needing to blow off steam.

Issues of sexual identity in pregnancy have been predominantly researched from an object representation perspective. Melges (1968) studied one hundred women who were suffering psychiatric problems three month post-partum. He found that conflicts over assuming the mother role were a predominant stressor. Specifically, these women reported having difficulty thinking of themselves as mothers and functioning in that role. Of the one hundred women, ninety percent reported being troubled by their thoughts and feelings about their mothers. Indeed, they were quite vocal in their rejection of their mothers as models. Many of these women not only rejected identification with their mothers, but felt that they were actually more like their

fathers. Melges (1968) noted that there were also disturbances around identification with the child - often perceiving it in a depersonalized manner (i.e., calling the child a "dummy" or "vegetable"). Melges drew the conclusion that these women appeared to experience what he called "identity diffusion" as a result of not being able to identify with their rejecting mothers and having to deal with the ambiguity of a non-communicative infant.

Focusing on a group of women who were not expected to show extremes of pathology, Klatskin (1970) hypothesized that the women who would do well post-partum were the ones who indicated a positive "feminine identity." Results indicated that this was indeed the case.

Similar results were reported by Nilsson and Almgren (1970) who focused on the woman's identification with her parents. They were specifically interested in how early childhood contact with parents and the identification with them was associated with the occurrence of somatic and psychological symptoms during pregnancy and post-partum. Findings indicated that women who identified with their mothers tended to have mild nausea and experienced this as a validation of their womanhood and of the existence of their pregnancy. Leifer (1977) found similar results. However, women who identified with their fathers tended to experience

no nausea or extreme nausea. Nilsson inferred that this response reflected these women's rejection of the pregnancy.

Supporting the marital studies and the identification studies, Meyerowitz (1970) reported that women in his study who were dissatisfied with their pregnancies were also dissatisfied with their sexual role. Additionally, women tended to accept their pregnancy or reject it, depending upon if they felt that it brought them close to their husband or alienated themselves from him.

Stress and Social Factors Studies. The relationship between stress and social support and the outcome of pregnancy has also been an area of study. Pregnancy in and of itself should be considered as a life stress (Holmes & Rahe, 1967), one which is often associated with other significant stressors, i.e., financial. Life stress has been found to relate to the psychological outcome of pregnancy (Gordon & Gordon, 1967; Shereshevsky & Yarrow, 1973).

Socio-economic status has been found to relate to a number of physical outcomes of pregnancy and birth, i.e., fetal and neonatal mortality, low birth weight (Illsley, 1967). However, there is little research data about how this variable relates to the psychological experience. Age

has usually been considered a physiological variable; however, it may also be thought of as psychological if one perceives it in a developmental context. To date, little or no research has focused on this position, other than studies relating to the effects of teenage pregnancies.

The role of social support has been examined with regard to how it might reduce the negative effects of stresses and crises during physical illness (Johnson, 1971). Norbeck and Tilden (1983) studied the effects of life stress and social support as it related to anxiety, depression and self-esteem (used as indicators of emotional equilibrium). Findings indicated that life stress and social support were significantly related to emotional disequilibrium, but tangible support was not. High life stress from the prior year was significantly related to gestational and emotional complications. Cranley (1983) also found that thought-perceived stress was not associated with fetal attachment. Rather, he found that it was associated with marital satisfaction; namely, the greater the marital satisfaction, the lower the perceived stress.

Crinic, Greenberg, Ragozin, Robinson and Basham (1983) examined the relationship of stress and social support on maternal attitudes and earlier mother-infant interactive behavior. Their results indicated that mothers with greater

stress were less positive in their attitudes and behaviors; mothers with greater support were significantly more positive, while intimate support had the most positive effects. Social support was also found to moderate the negative effects of stress by improving the mother's perception of life satisfaction and infant interactive behaviors.

Overall, it appeared that the number and kind of stressors and interpersonal supports, and the woman's perception of them, may well have influenced her experience of pregnancy and childbirth. The need for closeness and sharing with her husband has been clearly proven important. However, confirmation and supportive communication that can come only from another woman (especially one's mother) has seemed also to have high value.

Summary

Psychodynamic writing about pregnancy has appeared to dovetail with most empirical studies. The importance of the resolution of conflict and development of a stronger identification with both mother and husband has become a recurrent theme. There have been suggestions that the turmoil of pregnancy may well facilitate the developmental task of conflict resolution and making the transition to self-identification of "mother." Thus, pregnancy has

required a drawing upon the sense of self and others while coming to terms with the need to nurture a vital new person. This process has appeared to require from both partners a supportive environment in which to reorganize and deal with anxieties, stresses and intense emotions that have been stirred up.

Theories of Attachment

Attachment may be considered to be an affectional relationship between two people that binds them with strong emotional sentiments which bring about mutual regulation of one another. It is therefore discriminating and specific. Attachment is usually viewed as an ongoing process that is developmental in form. There are many theories that attempt to explain that development and mechanics of the attachment process. To date, these theories have focused on attachment during infancy and have related to the infant mother relationship. That is not to say that attachment does not occur past infancy, but rather infancy has been used as the paradigm from which to extrapolate. Indeed, theories of attachment tend to focus on infancy, with the premise that the manner in which initial attachments are made will influence and set the groundwork for all future attachments. An example of this premise is Benedek's (1952) and Erickson's (1950,1959) assertions that during the development of initial attachments there derives a person's

sense of "basic trust" from which he/she will later build all further relationships. Psychoanalytic, social learning and ethologic theories encompass most attachment theories.

Psychoanalytic Theories

Psychoanalytic theories focus on object relations and are based upon instinct theory. The object of an instinct is the form the instinctual aim is achieved. This form is a person separate from self and in the case of the infant the object is usually considered to be its mother or mother substitute. Though Freud spoke of and reviewed the significance of infant-mother attachment, his accounts tended to be somewhat incomplete and scattered (Ainsworth, 1969). Subsequent psychoanalytic theories tended to divide into two different perspectives: ego psychology and object relations theory.

The ego psychologists viewed the development of object relations as being intertwined with ego development and, as a result, being dependent on the development of cognitive structures not initially present. Major ego psychological theorists (Benedek, 1952; Escalona, 1953; Anna Freud, 1946, 1952, 1954, 1965; Greenacre, 1960; Hartmann, Kris, and Lowenstein, 1946, 1949; Hoffer, 1949, 1950; Kris, 1951, 1955; Mahler, 1952, 1963, 1965; Mahler and Gosliner, 1955; and Spitz, 1957, 1959, 1965a, 1965b) contend that the infant

at birth is undifferentiated structurally, topographically and dynamically. During the first year of life, these areas start to evolve and the infant begins to differentiate itself from his/her environment. As the initial ego functions emerge, the first attachments start to develop.

The development of object relations is seen as being in three stages. The first stage is the undifferentiated or objectless stage in which the child is perceived as being totally focused on visceral autonomic and emotional organizations rather than organizations based upon perpetual discrimination of environment. The origin of object relations is thus seen as being need gratification from the mother, with specific emphasis on feeding and feelings of being protected (A. Freud, 1954; Benedek, 1952). The transitional stage in which there is some discrimination between self and other (about 12 weeks old) still focuses on need gratification, but now the child has a sense of confidence that his/her needs will be satisfied by the identified "other." Finally, true object relations are defined as the stage of object constancy by which a positive inner image can be maintained. This image is no longer dependent upon need gratification.

Object relations theory (Klein, 1952; Balint, 1938, 1969; Winnicott, 1948, 1953, 1960; Fairbairn, 1952) is

similar to ego psychology in its theoretical postulates of attachment. The primary point of dissension is that object relations theory holds that there does not exist primitive relations from birth. These relations focus on various attributes of the mother, i.e., voice, breast, and are intertwined with gratifications. Thus, internal representations are activated and facilitate proximity from birth. Further development of object relations are seen to be in conjunction with other psychological functions.

The emphasis, therefore, of psychoanalytic theories is on the actual attachment experience. It is the perceptions, affects and wishes of the inner representations that are paramount.

Social Learning Theories

Social learning theorists have for the most part focused on dependency as opposed to attachment. The infant-mother tie has been accounted for by the laws of behavior stated in the central thesis of learning theory. Namely, they state that dependency is an acquired or secondary drive. This acquired drive is seen to originate in the fact that the infant is dependent upon the mother for gratification of basic psychological needs (primary drives). The dependency drive is formed through the characteristic behaviors of crying, etc., when he/she is in a primary drive

state. This is then reinforced by the mother's nurturing actions. Simultaneously, the stimuli provided by the mother's face and actions are signals of gratification to come. In turn the infant acquires a drive to be close to his/her mother and gain her attention. Over time, new behaviors are added to the group of dependency behaviors through which this drive is expressed. This widening group of behaviors comes to include attention, help and approval and also generalizes to others aside from mother. This perspective is eloquently elaborated in the theories of Dollard and Miller (1950) and Sears and associates (1953, 1957, 1963, 1965).

The cognitively oriented learning theories of Lewin (1936) and Piaget (1952) attempt to incorporate a view of inner structure. They propose that all learning comes about through a modification of existing structures via interaction with the environment. These modifications are not only to the original structures, but continue thereafter to the modified structures. Thus, both types of learning theories postulate that all behavior and development come through the interaction between the input sensitive structured organism and environmental cues. Attachment is therefore considered to occur in the same manner as any other learning.

Ethnological Theory

Ethnological theory is the most comprehensive and in depth analysis of attachment, both as a process and behaviorally. John Bowlby has been the most influential writer in this area (1958, 1969, 1973.) Though a psychoanalyst, his theory has converged a number of interpersonal approaches detailed throughout the last thirty years. Indeed, Bowlby perceived his efforts as updating psychoanalytical theory in the light of recent advances in biology. In that vein, he has attempted to replace Freudian instinct theory with a set of propositions that are testable via research, while still maintaining many psychoanalytic views of human experience and behavior.

In Bowlby's 1958 thesis, he described infant-mother attachment as originating through a number of species specific behavior systems. These systems are at first relatively independent of each other and emerge at different times during development. However, as they emerge they become organized toward the predominant care giver, usually the mother, and serve to bind one to the other. This binding of organized and focused behaviors he called attachment. He described five behavioral systems which contributed to the development of attachment: sucking, clinging, following, crying, and smiling.

In Bowlby's revised formulation of 1969, he still thought the five attachment behavior systems to be important. However, he introduced a "control systems" model and postulated that between nine and eighteen months the simple behavioral systems developed and integrated into far more sophisticated goal-corrected systems geared to maintaining proximity to the primary caretaker. The control systems model is analogous to a man-made device which stimulates purposive behavior (i.e., a computer). This model allows a basis for more complete goal-directed behavior which can be seen to have a built in bias in terms of species-characteristic genetic programming, but one also reactive to variation according to circumstance.

Thus, the basis of Bowlby's position is that attachment behavior has biological underpinnings which are to be understood within an evolutionary context. He does not dismiss environmental influence, but rather sees it as situationally influenced as opposed to being primary. Indeed, Bowlby perceives both attachment and parental care behavior as being the most environmentally stable behavioral system across species. Thus, the child's attachment behavior has the "predictable outcome" of bringing the child and mother into closer proximity, either through signals which attract the mother or through the child's own

activity. Stimulus in the environment, hormonal state, and central nervous system activation are predominant interacting and complex factors of attachment-activated behavior. These behaviors do not guarantee attachment but are seen to be strong and stable enough to make attachment predictable. Bowlby states that attachment behavior may be characterized as instinctive, but he is careful to state that what is instinctive is the potential to develop and adapt to variables in a given environment. Thus, it is not the behavior per se that is instinctively inherited. He also states that in addition to environmental variables, there is also a margin of flexibility provided by learning.

The control system analogy focuses not only on goal directed behavior but also appraisal of processes and goal correcting behavior. Within this framework, Bowlby (1969) has outlined four main phases in the development of attachment behavior. During the Phase One, "orientation and signals without discrimination of figure," the infant behaves in the same way to all people and these behaviors resemble fixed-action patterns (i.e., the infant responds by orienting, tracking with the eyes, smiling, reaching). Phase Two, "orientation and signals directed toward one or more discriminated figures," the infant behaves in much the same manner as Phase One, but in a more marked fashion to

the mother/caretaker than to others. Phase Three, "maintenance of proximity to a discriminated figure by means of locomotion as well as by signals," the now moving, crawling child has developed behaviors which are organized on a goal-corrected basis. Thus the child now shows differential behaviors such as approaching, following, clinging to the mother in preference to others and using her as a secure base from which to explore and as a safe place to return. The proximity seeking and exploring outward behaviors are characteristic of mother-infant interaction in this phase. Phase Four, "formation of a reciprocal relationship," at about age four the child gradually comes to infer something about the mother's set goals and how she plans to achieve them. In response the child attempts to alter the mother's goals (via the techniques of request or persuasion) towards a closer fit with the child's own goals.

The more sophisticated manifestations of attachment behavior are organized as plans, but still have the same set goals as does infantile attachment, namely maintaining proximity and/or engaging in social interchange. Thus, attachment behavior continues to develop and adjust itself throughout the life span. Early attachments usually persist, but new attachments are also formed. How well these new attachments develop are largely dependent upon how

successful and competent the individual was in achieving correct perceptions of the other's set goals and bringing them in line with his/her own as a child. Thus, although this theory focuses on the development in infantile attachment, it can also be seen to speak to lifelong attachment development.

Deviant attachment behaviors are considered to arise from the unavailability of functionally appropriate objects at a critical phase of development (i.e., the mother does not respond in an appropriate fashion to the child's efforts to bring on her set goals more in line with his/her own). Alternatively, the behavioral system may not be functionally effective because of developmental anomalies of genetic (i.e., autism) or environmental origin. The environmental deviations occur when crucial learning takes place in an environment too different from the environment to which the behavioral system was evolutionarily adapted (i.e., long-term maternal deprivation). This model is interactional throughout. Though the infant's initial behaviors are seen to be genetically programmed, how they develop is dependent upon interaction with the environment. Further, the person is always viewed in a social context, behaviors being interlocking with reciprocal behaviors of others.

Maternal-Fetal Attachment

Thus far, various aspects of the psychology of pregnancy and theories of attachment have been addressed. Considerable attention has been given to identifying the origins and dynamics of this attachment in an attempt to facilitate its development. Much of the focus has been post partum. However, there is reason to believe that maternal attachment actually starts during pregnancy. Evidence suggests that pre-partum attachment is generated by dynamic psychological and physiological events (as discussed in the psychology of pregnancy section). Some studies have specifically focused on maternal attachment during pre-partum pregnancy.

Kezur (1978) interviewed twelve mothers on their perceptions of when their attachments started, how it evolved, and what promoted or interfered with its development. His extensive descriptive results indicated that there was no clear linear progression of attachment development. Rather, an interactive systemic format was evident. Multiple and mutually reinforcing influences of biology, psychology and social forces all seemed to weave a differing and individualist pathway for each mother. What was striking was that as different as each mother's experience, all eventually reached a strong and appropriate tie to her infant.

Struck by the divergence of casually reported feelings of attachment during routine obstetrician visits, Lumley (1980) studied the mother's image of the fetus in the first trimester in an attempt to determine both images and feelings toward the infant. Of the thirty women researched, nine saw the fetus as a "real person" and related emotionally to it as such, while the remaining twenty-one "grossly underestimated the size and development of the fetus as well as its activities, attributing formless, unattractive and animal-like features to it" (p. 5). Lumley interpreted the differences between the two groups as the "fetus and a real person" group having already started the attachment process while the others had not. However, this latter group did report holding the expectations that they would feel attached later in the pregnancy. Interestingly, there were two demographic differences between groups. The more attached group came from large families, median seven, while the other group had a median of three; and that five of six nurses fell into the attached group. It was therefore suggested that nurturing experiences on the job or in the family of origin may have a predisposing effect of increased attachment feelings.

Klaus and Kennell (1982) wrote a seminal book on parent-infant bonding in which they trace the development

and influences of bonding. Much of their focus is post-partum; however, they stipulate and present cultural and case study evidence that certain "events" are important to the formation of a mother's bond. These were outlined to be: cultural expectations of the pregnancy and birth; how the pregnancy was planned and the experiences associated with it; the confirmation of the pregnancy; and fetal movement and acceptance of the fetus as an individual.

Finding that various academic work around pregnancy and maternal attachment had been published but no measure of prenatal attachment had been designed, Cranley (1981) undertook the task. She focused on behavioral criteria and formulated a twenty-four item scale, sub-divided into five sub-scales. While reporting the instrument's reliability and validity findings, she also compared scores of her attachment scale to other variables. She reported that the attachment scale was positively correlated with the amount of social support available and with the mother's perceptions of the baby three days post-partum. A negative association was found with the amount of stress perceived by the woman. In response to these findings, Cranley (1983) investigated the influences of marital satisfaction and perceived stress on attachment. Differing from her previous study, Cranley found no association between perceived stress

and maternal attachment. However, it was associated with marital satisfaction. Namely, the greater the marital satisfaction, the lower the perceived stress.

Summary

Overall, empirical studies have supported the theoretical postulate that attachment to the fetus does in actuality occur pre-partum. In addition, outside environmental factors such as marital satisfaction are indicated to have an influence on both the attachment process and the degree of attachment. Various psychological variables (i.e., acceptance of the pregnancy) were also reported to have an impact, as were the psychological events (i.e., fetal movements) and how the fetus is perceived psychologically. It is also important to note that by implication the role of the father may be seen to have an influence upon how maternal attachment develops (i.e., by providing an emotionally stable and nurturing environment).

CHAPTER 3

PROCEDURES

Description of the Sample

Twenty low risk and eighteen high risk primigravidae women participated in the study. The criteria for low risk and high risk followed the description in the definition section. The women were between the ages of 20 and 36 years. They were married and at the time of testing were in their fifth to seventh month of pregnancy. The women were under the care of private practice obstetricians. The sample was considered to be middle and upper class in socio-economic status, since a patient from the lower SES groups is usually unable to engage a private practice physician (though demographic data were collected to ensure that this assumption was correct).

All subjects were residents of a large Southern city, with the obstetricians' practices located in the city's medical center. No attempt was made to control for race and religious background. The obstetricians were aware of the study's subject matter and which of their patients were participating, but did not see the actual measures until all their patients had been tested.

Instruments

The primary instrument used in this study was the Maternal-Fetal Attachment Scale (MFAS) (Cranley, 1981), a

paper-and-pencil measure completed by each participant. It consisted of 24 questions answered on a five-point Likert type scale ranging from "definitely yes" to "definitely no." The 24 questions were broken down into five subscales, which were (1) role taking, (2) differentiation of self, (3) interaction with fetus, (4) attributing characteristics of the fetus, and (5) giving of self. The original instrument had a sixth subscale, which was demonstrated not to be reliable and was, therefore, dropped by the test developers. The internal consistency for the total scale was reported to have a Cronback alpha coefficient of reliability of .85. The redefined subscales had coefficient alphas ranging from .52 to .73 (Cranley, 1981). As one means of estimating construct validity, intercorrelations were performed among the subscales and the total scale. All subscales were positively associated with the total scale ($r = .61$ to $.83$) (Cranley, 1981). Although there was some degree of relationship between the subscales ($r = .29 - .60$) (Cranley, 1981), it appeared low enough to indicate that they were not measuring the same dimension. To obtain further evidence of construct validity, the maternal-fetal attachment scale was correlated with the Broussard Neonatal Perception Inventory. No significant relationship was found.

Although this measure had no evidence of criterion-related validity, and limited evidence for construct validity, it was as yet the strongest found instrument which measures the construct of maternal/fetal attachment. The MFAS appeared to be internally consistent and had some face validity - namely the instrument was developed from the results of previous research studies (Chojnacki, 1976; Leifer, 1977). It was, therefore, judged by the author that the MFAS was strong enough to be used, but the results should be interpreted with caution and viewed in an experimental light.

The marital satisfaction measure used was Locke Wallace Marital Satisfaction Scale (MSS) (Locke & Wallace, 1959). This measure was a paper-and-pencil instrument consisting of 24 items. The first 13 items were presented in a multiple choice format, while items 14 through 23 were presented with a six-point Likert type scale (ranging from "always agree" to "always disagree"). The reliability estimate as computed by the Spearman-Brown formula was reported to be .90. Locke & Wallace (1959) reported construct validity on the basis that the instrument accurately differentiated between well-adjusted and maladjusted marriages.

Finding some shortcomings in the initial study of the measure, Kimmel and Van de Veen (1974) conducted a factor

analysis to obtain distinct components of marital adjustment for husbands and wives. They found the measure to be internally consistent for marital adjustment and that this general construct may be divided into two separate components (i.e., sexual congeniality and sexual compatibility). All factors were found to be stable over a two-year, test-retest interval. Additional construct validity could be seen to have been indicated when the measure was correlated to the "Global Distress" section of the Marital Satisfaction Inventory. A correlation of .90 was reported. Thus some validity could be seen to have been demonstrated, although limited in nature.

The sex role measure consisted of the Personality Attributes Questionnaire (PACE) (Spence, Helmreich, & Stapp, 1974), a paper-and-pencil measure composed of 24 traits, with each trait appearing on a bipolar continuum. Subjects rated themselves on each trait on a five-point Likert type scale. Each item described a personality characteristic stereotypically believed to differentiate the sexes. Of the 24 traits, eight were believed to be stereotypically feminine, eight masculine and eight masculine-feminine. Accordingly, the Personality Attributes Questionnaire was based on the dualistic concept of masculinity and femininity; thus each construct was separate from the other

but may have coexisted to some degree in every individual. They may also have varied more or less independently.

The reliability of the measure was reportedly .85, .82 and .78 for masculinity, femininity and masculinity-femininity, respectively. Some evidence of construct validity had been indicated by low correlations with an intelligence measure (verbal and quantitative scores of the Scholastic Aptitude Test of the College Board Entrance Examination, .02 to .12) and a social desirability measure (Marlowe-Crowne Social Desirability Scale, Crowne and Marlowe, 1959, .08 to .36). Thus, social desirability and intelligence do not seem to significantly influence responses (Spence and Helmreich, 1978).

The anxiety measure was the State-Trait Anxiety Inventory (Spielberger, Gorsuch & Lushene, 1970). It consisted of two 20-item self-report scales designed to assess anxiety proneness (trait) and current level of anxiety (state). Alpha reliability coefficients were reported on the normative sample as ranging from .83 to .92 for state scores and .86 to .92 for trait scores. Test-retest reliability estimates for the trait scale for male and female college undergraduates over a six-month interval were .73 and .77, respectively. Evidence of validity for the trait scores was indicated by high

correlations with the IPAT Anxiety Scale (.75), Manifest Anxiety Scale (.80) and Affect Adjunctive Check List (.52). The construct validity of the state scores was supported via demonstrations that when subjects were requested to answer under normal conditions and then asked to answer when imagining oneself in a stressful situation, there was a significant difference in their scores. This was taken to indicate that the state scale measures changes in the subjects' phenomenological experiences of anxiety.

The life stress measure was the Social Readjusment Rating Scale (Holmes & Rahe, 1967), a 43-item paper-and-pencil instrument. For each item, one stated the number of times one had experienced the event in the last year. To obtain a total score, one would score every item by the number of allocated units prescribed on a chart, then add all units. This would indicate the total score. The 43 items made up two categories: one indicative of the lifestyle of the individual and the other indicative of the occurrences in which the individual was involved. The occurrence of each item was considered to evoke or be associated with some adaptive or coping behavior on the part of the individual involved.

A sample of 394 adult subjects comprised the normative sample. The method for assigning a magnitude to the items

was one used in psychophysics, which states that individuals have an innate psychological capacity for making quantitative judgements. Thus, each subject was asked to assign a magnitude to each item. A high degree of similarity was obtained among the population within the sample. Reliability and validity were not directly reported, although an inference was made that reliability and validity could be considered to exist as a result of the high degree of consensus among the sample on the differentiation of items and the assignment of magnitude.

Hypotheses

The major hypothesis of this study was that women with low risk pregnancies were expected to have a different level of attachment to their fetus than women with high risk pregnancies. No hypotheses were formulated with regard to the demographic data. Since the interpretation of any found mean differences between the two groups on the attachment variable could be confounded by any significant mean differences found on any one of the concomitant variables, any significant mean differences found in any and each of the concomitant variables had that difference statistically removed from any difference found in attachment. This was done by use of an Analysis of Covariance.

Data Collection

Private practice obstetricians were contacted and asked if they were willing to have their patients participate in the study. If they agreed, their nurse identified whom of their patients met the study's inclusion criteria and into which group they fell. After identification, the examiner was given the time of the patient's next scheduled appointment with the obstetrician. The examiner presented herself at that time and was introduced by the nurse and shown to a private room. At that time the patient was given a vague description of the study and explained what was involved in participation and that a feedback session would be available. If the patients agreed to participation, they signed a consent form and were given a stamped, addressed envelope containing the instruments and a form indicating if they wished a feedback session or not. The women were asked to complete the instruments alone and asked not to put their names on any of the forms. All subjects were given a subject number. This introductory process took approximately five minutes. The completed instruments were then mailed back to the examiner. If a feedback session was requested, it was noted on a log, and after the entire group was collected, the participants were called and informed of their particular scores as they related to the rest of the

group. Any specific questions regarding the study were answered at that time.

Statistical Treatment

The demographic data were considered in terms of either means and range or a percentage of the group depending upon which was appropriate for that particular piece of data. The total sample was analyzed for descriptive data and tested for skewedness and kurtosis.

To test the hypothesis, an Analysis of Variance between high and low risk women in their level of attachment (total score) to the fetus, and each of the concomitant variables (State and Trait Anxiety, Marital Satisfaction, Life Stress and Masculine and Feminine Sex Role Identity) was conducted. In spite of finding a significant difference only on the marital satisfaction scale, an Analysis of Covariance for each of the concomitant variables was still conducted in order to investigate if any significant difference would surface on the attachment measure once the effects of each of the concomitant variables was removed.

As no additional significant differences were found from these analyses, further analyses were conducted in order to investigate if any significant differences would be found after the attachment subscales were analyzed. The rationale for these additional analyses was that it was

arguably possible that significant differences existed between the two groups on specific attachment subscales, but were not evident when pooled with the other subscales. Thus, an Analysis of Variance was conducted with each of the attachment subscales (dependent variable) of the high and low risk groups (independent variable). An Analysis of Covariance was also conducted with each attachment subscale (dependent variable) of the high and low risk groups (independent variable) with each of the concomitant variables (co-variable).

Limitations

The limitations of the study centered on the difficulty of defining the complex construct of mother-fetal attachment from other potentially concomitant variables. This was further confounded by the difficulty of adequately measuring each of the constructs. Unfortunately, these problems appear to be the bain of psychological research; however, within current parameters, reliable paper-and pencil measures still seemed to catch the essence of the constructs. Nevertheless, each measure could be seen to have serious methodological problems, particularly by a lack of validity. Reliability of the measures was also open to question as were the normative samples. These problems were not to be underestimated since they left open the question of accuracy of test interpretation.

The limitations in the statistical properties in each of the measures used in this study is a clear weakness. However, it was believed that each measure could give a broad indication of the construct being examined. Thus, the results of the measures have been interpreted with cuation and reservation. Indeed the entire study should be viewed in an experimental light.

Other than the general methodological difficulties of quasi-experimental psychological research, the limitations of this particular study centered on the cross-sectional approach taken. A longitudinal study of this question would be considerably more informative since the construct of attachment is a progressive phenomena. To date, however, instrumentation developed appears to have a strong testing effect, in that it seems to raise the consciousness of the subjects being tested (Cranley, 1984). As such, the measures could have been given repeatedly over a period of time but would have had questionable interpretive value.

Also noteworthy were other factors beyond the parameters of this study. Of primary consideration was that the mental health of each subject before and during the pregnancy was an unknown. Thus, what the individual's mental health status was and how it affected the attachment process was a distinct limitation. Furthermore, the fact that both the obstetricians and subjects were self-selected

(by virtue of volunteering to participate in the study) may have influenced the generalizability of the study's results. Finally, the number and time of spontaneous abortion or miscarriage in the high risk woman was highly variable. Although it has been recognized that the number and timing will potentially make a difference to how the mother attaches to the current pregnancy, to control for both number and time within the scope of this study would have been extremely difficult.

Assumptions

The underlying propositions important to this study were based upon indicators found in the related literature or were logically but arbitrarily defined for purpose of providing a pragmatic framework from which to work.

High risk mothers were categorized as having a medically high risk pregnancy. Medically, high risk was defined as being any medical condition that in some way threatened the development of a healthy baby. Thus, the assumption made was that if the viability of the pregnancy was threatened, this would in some way affect the level of attachment. Additionally, it was assumed that there would be relative consensus among obstetricians as to what constituted High and Low risk pregnancies.

First time pregnancies were chosen over any number of previous successful pregnancies, since the assumption was that the attachment to second or more children would be somehow different than if one had no surviving children.

CHAPTER 4

RESULTS

The results chapter will be presented in the following order: The demographic information will be presented first, in order to provide the context for the other results. The hypothesis will then be restated with actual results of analysis following.

Demographic Information

Demographic information is broken down into three areas: (a) that which is relevant to medical data (Table 1); (b) that which is personal in nature (Table 2); (c) that which is relevant to socio-economic status (Table 3.). Table 1, Demographic Information on Medical Data, covers the medical data and specifically displays information on: if the pregnancy was planned; if the sex of the fetus is known by the mother; if the mother considers herself medically low risk; the number of elective abortions the mother has had, and the number of miscarriages or stillbirths the mother has had. In Table 2, Personal Demographic Information, the personal information of: the wife's age; the husband's age; the number of years married; the percentage of husbands that have existing children from previous marriages; the woman's ethnicity and her religious affiliation is displayed.

Table 3, Demographic Information Relevant to Socio-Economic Status, covers information relevant to socio-economic status, namely the percentage of wives and husbands working outside the home, the wives and husbands' annual salaries, and the wives and husbands' educational level.

The final composition of the two groups was: there were eighteen subjects in the medically high risk group and twenty subjects in the low risk group. These were women identified by their physicians as being high risk or low risk, but were not high risk due to age or purely by the number of fetuses they were carrying.

The demographic information on medical data, Table 1, for the high risk group was as follows: Seventy-three percent had planned pregnancies and seventy-three percent knew the sex of their baby. Seventeen percent of the high risk group believed their pregnancy to be low risk, in spite of their doctors identifying them as high risk to the investigator. Twenty-seven percent reported having had previous elective abortions, thirty-three percent had spontaneous abortions, and thirty-three percent had miscarriages or stillbirths. The low risk group consisted of eighty percent planned pregnancies and twenty percent knew the sex of their fetus. One hundred percent of the low

TABLE 1

Demographic Information on Medical Data

	PREGNANCY PLANNED	MOTHER KNOWS SEX OF BABY	CONSIDERS SELF LOW RISK	% THAT HAD ELECTIVE ABORTIONS	% THAT HAD SPONTANEOUS ABORTIONS	% THAT HAD MISCARRIAGES OR STILLBIRTHS
HIGH RISK	73% 92% Girls 8% Boys	73%	17%	27%	33%	33%
LOW RISK	80% All Boys	20%	100%	15%	5%	0%

risk group considered their pregnancy as low risk in accordance with the evaluation of their physician. Fifteen percent reported having had previous elective abortions, five percent had spontaneous abortions, while none had experienced any miscarriages or stillbirths.

The demographic information on personal data, Table 2, for the high risk group was as follows: The mean age of the women was twenty-nine years, with a range of twenty to thirty-six years of age. The mean age of the husbands was thirty years, with the range being twenty-two to forty years of age. The mean length of marriage was four years, with the range being nine months to nine years. Twenty-two percent of the husbands in the high risk group had existing children from previous marriages. The reported ethnicity of the women was sixty percent Caucasian, seventeen percent Mexican-American, eleven percent black, six percent Asian-Indian and six percent Arab-American. The reported religious preference was eighty-five percent Christian, five percent Jewish, five percent Muslim and five percent Hindu. The low risk group consisted of a mean age of twenty-nine years for the women, with a range of twenty-five to thirty-five years. The mean age of the husband was thirty-one, with a range of twenty-four to forty-three years of age. Mean number of years married was four, with a range

TABLE 2

Personal Demographic Information

LOW RISK	AGE OF WIFE	AGE OF HUSBAND	NO. OF YEARS MARRIED	% OF HUSBANDS W/CHILDREN	ETHNICITY	RELIGION
RANGE	25-35	24-43	4 Mo-8 Yr	15%	85% Caucasian 10% Mexican-American 5% Black	100% Christian
MEAN	29	31	4 Yrs			
HIGH RISK						
RANGE	20-36	22-40	9 Mo-4 Yr	22%	60% Caucasian 17% Mexican-American 11% Black 6% Asian-Indian 6% Arab	85% Christian 5% Jewish 5% Muslim 5% Hindu
MEAN	29	31	4 Yrs			

from four months to eight years. Fifteen percent of the husbands had existing children from previous marriages. The reported ethnicity was eighty-five percent Caucasian, ten percent Mexican-American and five percent Black. The reported religious preference was one hundred percent Christian.

Table 3, the demographic information relevant to socio-economic status, for the high risk group was as follows: Seventy-three percent of the women were working outside the home, earning a mean income of eighteen thousand one hundred fifty dollars per annum, with a range of six thousand to twenty-six thousand dollars. One woman worked part-time. The women's educational level was: six percent completed some high school; eleven percent completed high school, forty-four percent completed some college, seventeen percent completed college; and twenty-two percent achieved a graduate degree. Of their husbands, one hundred percent were employed outside the home, earning a mean salary of thirty-three thousand one hundred forty dollars per annum, with a range of ten thousand to ninety-eight thousand dollars. Their educational levels were: six percent completed some high school; eleven percent completed high school; forty percent completed some college; twenty percent completed college; and seventeen percent earned a graduate

TABLE 3

Demographic Information Relevant
to Socio Economic Status

	% OF WIVES WORKING	RANGE OF SALARY	MEAN OF SALARY	SOME HIGH SCHOOL	COMPLETED HIGH SCHOOL	SOME COLLEGE	COMPLETED COLLEGE	GRADUATE DEGREE
HIGH RISK	73%	6-26,000 [1-P/T]	18,150 Per Annum	6%	11%	44%	17%	22%
LOW RISK	90%	5-40,000 [1-P/T]	23,760 Per Annum	5%	10%	30%	50%	5%

	% OF HUSBANDS WORKING	RANGE OF SALARY	MEAN OF SALARY	SOME HIGH SCHOOL	COMPLETED HIGH SCHOOL	SOME COLLEGE	COMPLETED COLLEGE	GRADUATE DEGREE
HIGH RISK	100%	10-98,000	33,140 Per Annum	6%	11%	40%	20%	17%
LOW RISK	100%	14-200,000	53,660 Per Annum	0%	15%	15%	45%	25%

N of High Risk = 18 N of Low Risk = 20

degree. The low risk group had ninety percent of the women working outside the home, earning an average twenty-three thousand seven hundred sixty dollars per year in a range of five thousand to forty thousand dollars per annum. One woman again worked part-time. Their educational levels showed five percent completing some high school; ten percent completing high school; thirty percent having completed some college; one half of the group, or fifty percent, having college degrees; with five percent having graduate degrees. One hundred percent of their husbands worked outside the home, with a mean annual salary of fifty-three thousand six hundred sixty dollars within a range of fourteen thousand to two hundred thousand dollars annually. Their educational levels were: all of them completed high school, with fifteen percent completing high school only; fifteen percent completed some college, with forty-five percent completing college; and twenty-five percent completed graduate school.

Results of Analyses

The major hypothesis was that there will be a significant difference in prenatal attachment between the low risk pregnant woman and the high risk pregnant woman once the influence of anxiety, sex role identity, marital satisfaction and life stress have been covaried out.

Table 4, descriptive statistics of the total sample, were analyzed for all variables. This table presents the results of these descriptive analyses in terms of the means, standard deviations, skewness and kurtosis. No significant degree of skewness or kurtosis was noted. It is, therefore, assumed that the study sample was representative of the normal population.

Prior to testing the significance of the major hypothesis, individual analysis of variance (Table 5, Results of Analyses of Variance) between the two groups on the following variables were conducted: state and trait anxiety, sex role identity, marital satisfaction and life stress . Table 5 displays the results of the analyses of variance in terms of the two groups, mean, standard deviation, degrees of freedom, F statistic and probability. No significant differences between groups were found for the state and trait anxiety, male and female identity and life stress. A significant difference between groups was found in marital satisfaction, with the subjects in the high risk group (x=128.11) indicating greater marital satisfaction than subjects in the low risk group s(x=114.200).

Given the major hypothesis, the mean attachment score for subjects in the high risk group was 92.889 and for subjects in the low risk group was 92.450, the difference

TABLE 4

Descriptive Statistics of Total Sample

NAME OF MEASURE	$\bar{X}$	STANDARD DEVIATION	SKEWNESS	KURTOSIS
STATE ANXIETY	34.026	10.99	0.63	-0.57
TRAIT ANXIETY	35.815	8.63	-0.01	-0.97
MARITAL SATISFACTION	120.789	21.26	-0.18	-0.67
LIFE STRESS	349.026	213.68	1.27	1.27
MASCULINE SEX ROLE	21.315	3.77	-0.19	-1.17
FEMININE SEX ROLE	24.550	4.09	0.13	-0.86
ATTACHMENT (TOTAL)	92.657	9.78	-0.18	-0.65

*N = 38

TABLE 5

Results of the Analysis of Variance

NAME OF MEASURE	LOW RISK $\bar{X}$	HIGH RISK $\bar{X}$	HIGH RISK STANDARD DEVIATION	HIGH RISK STANDARD DEVIATION	F STATISTIC	PROBABILITY
STATE ANXIETY	31.950	36.333	10.704	11.151	1.53	.224
TRAIT ANXIETY	35.400	36.278	8.556	8.956	.10	.759
MARITAL SATISFACTION	114.200	128.110	19.253	21.491	4.43	.042
LIFE STRESS	331.250	368.778	186.614	244.289	.29	.595
MASCULINE SEX ROLE	21.350	21.278	3.787	3.878	.00	.954
FEMININE SEX ROLE	24.300	24.833	4.330	3.915	.16	.694
ATTACHMENT	92.450	9.827	92.889	10.011	.02	.892

*N - High Risk = 18
Low Risk = 20
df = 1,36

being of no significance. There was also no significant difference in attachment between the two groups when the variables of state and trait anxiety, male and female sex role identity, marital satisfaction and life stress were covaried out. Table 6, Results of Analysis of Covariance with the Attachment - Total Score being the Dependent Variable, presents the results of the analyses of covariance with the adjusted means for both groups, the degrees of freedom, the F statistic and the probability.

In addition, analysis of variance of the attachment sub-scales of role taking, differentiation of self from fetus, interaction with fetus, attributing characteristics to the fetus and giving of self was also conducted. No significant differences were found. Table 7, Results of the Analysis of Variance on the Attachment Measure Sub-scales, presents the means, standard deviations for the two groups and the degrees of freedom, F statistic and probability.

To determine if there was any influence of the other variables on the attachment sub-scales, analyses of covariance were conducted. No significant differences between group on the adjusted means were found. Tables 8 through 12 present the results with adjusted means for each group, the degrees of freedom, the F statistic and probability.

TABLE 6

Results of the Analysis of Covariance with the Attachment - Total Score being the Dependent Variable

NAME OF MEASURE	LOW RISK ADJUSTED $\bar{X}$	HIGH RISK ADJUSTED $\bar{X}$	F STATISTIC	PROBABILITY
STATE ANXIETY	92.26	93.09	.06	.801
TRAIT ANXIETY	92.37	92.97	.03	.854
MARITAL SATISFACTION	92.57	92.75	.00	.958
LIFE STRESS	92.71	92.59	.00	.970
MASCULINE SEX ROLE	92.42	92.92	.03	.873
FEMININE SEX ROLE	92.76	92.53	.01	.936

*N - High Risk = 18
Low Risk = 20
df = 1,35

TABLE 7

Results of the Analysis of Covariance
on the Attachment Measure Sub-scales

NAME OF ATTACHMENT SUB-SCALES	LOW RISK X	HIGH RISK X	HIGH RISK STANDARD DEVIATION	HIGH RISK STANDARD DEVIATION	F STATISTIC	PROBABILITY
ROLE TAKING	17.650	17.167	2.519	2.895	.30	.5855
DIFFERENTIATION OF SELF FROM FETUS	16.400	16.667	2.981	2.326	.09	.7622
INTERACTION WITH FETUS	16.550	17.389	2.781	3.165	.76	.3902
ATTRIBUTING CHARACTERISTICS TO FETUS	20.850	21.000	3.760	3.597	.02	.9010
GIVING OF SELF	21.000	20.667	2.534	2.657	.16	.6947

*N - High Risk = 18
Low Risk = 20
df = 1,35

TABLE 8
Results of the Analysis of Covariance
with the Attachment Sub-scale of
Role Taking as the Dependent Variable

NAME OF MEASURE	LOW RISK ADJUSTED $\bar{X}$	HIGH RISK ADJUSTED $\bar{X}$	F STATISTIC	PROBABILITY
STATE ANXIETY	17.608	17.203	.19	.67
TRAIT ANXIETY	17.651	17.165	.30	.59
MARITAL SATISFACTION	17.653	17.162	.27	.61
LIFE STRESS	17.699	17.112	.45	.51
MASCULINE SEX ROLE	17.647	17.169	.29	.59
FEMININE SEX ROLE	17.746	17.059	.89	.35

* N - High Risk = 18
Low Risk = 20
df = 1,35

TABLE 9

Results of the Analysis of Covariance
with the Attachment Sub-scales of Differentiation
of Self from Fetus as the Dependent Variable

NAME OF MEASURE	LOW RISK ADJUSTED $\bar{X}$	HIGH RISK ADJUSTED $\bar{X}$	F STATISTIC	PROBABILITY
STATE ANXIETY	16.385	16.705	.14	.71
TRAIT ANXIETY	16.359	16.711	.17	.68
MARITAL SATISFACTION	16.469	16.558	.02	.90
LIFE STRESS	16.448	16.612	.04	.85
MASCULINE SEX ROLE	16.393	16.674	.11	.74
FEMININE SEX ROLE	16.456	16.603	.03	.86

* N - High Risk = 18
Low Risk = 20
df = 1,35

TABLE 10

Results of the Analysis of Covariance
with the Attachment Sub scales of Interaction
with Fetus as the Dependent Variable

NAME OF MEASURE	LOW RISK ADJUSTED $\bar{X}$	HIGH RISK ADJUSTED $\bar{X}$	F STATISTIC	PROBABILITY
STATE ANXIETY	16.639	17.511	1.20	.28
TRAIT ANXIETY	16.359	17.711	.17	.68
MARITAL SATISFACTION	16.506	17.637	.81	.37
LIFE STRESS	16.593	17.340	.60	.44
MASCULINE SEX ROLE	16.564	17.395	.80	.38
FEMININE SEX ROLE	16.596	17.337	.61	.44

* - High Risk = 18
Low Risk = 20
df = 1,35

TABLE 11

Results of the Analysis of Covariance
with the Attachment Sub-scales
of Attributing Characteristics to the Fetus
as the Dependent Variable

NAME OF MEASURE	LOW RISK ADJUSTED $\bar{X}$	HIGH RISK ADJUSTED $\bar{X}$	F STATISTIC	PROBABILITY
STATE ANXIETY	20.995	20.838	.02	.90
TRAIT ANXIETY	20.848	21.001	.02	.90
MARITAL SATISFACTION	20.774	21.084	.06	.81
LIFE STRESS	20.965	20.871	.01	.93
MASCULINE SEX ROLE	20.842	21.008	.02	.89
FEMININE SEX ROLE	20.908	20.934	.00	.98

*N - High Risk = 18
Low Risk = 20
df = 1,35

TABLE 12

Results of the Analysis of Covariance
with the Attachment Sub-scale
of Giving of Self as the Dependent Variable

NAME OF MEASURE	LOW RISK ADJUSTED $\bar{X}$	HIGH RISK ADJUSTED $\bar{X}$	F STATISTIC	PROBABILITY
STATE ANXIETY	20.851	20.831	.00	.98
TRAIT ANXIETY	20.993	20.673	.14	.71
MARITAL SATISFACTION	21.167	20.481	.60	.44
LIFE STRESS	21.005	20.660	.16	.69
MASCULINE SEX ROLE	20.994	20.673	.15	.70
FEMININE SEX ROLE	21.056	20.603	.32	.57

*N - High Risk = 18
Low Risk = 20
df = 1,35

Summary

In summary, the descriptive statistics of the sample indicated that the study sample can be considered to be normally distributed. Of the analyses of variance conducted, no significant differences between groups were found other than on the variable of marital satisfaction. This significant difference indicated that the high risk group reported greater marital satisfaction than the low risk group. Analyses of Covariance were also conducted on the attachment sub-scales; however, no significant differences between groups were found, indicating no influence of the concurrent variables.

CHAPTER 5

SUMMARY, CONCLUSIONS, IMPLICATIONS

Summary

Statement of the Problem

With the quality of mother-child attachment having been shown to be of critical importance to the child's emotional development (Bowlby, 1969), and with the acknowledgement that the attachment process starts early in pregnancy (Deutsch, 1945; Bibring & Valenstein, 1976; Curry, 1983), it becomes pertinent that all efforts should be made to enhance the mother/fetus emotional relationship. Having clinically noted that obstetrically high risk women may have attachment differences from low risk pregnant women, it was the purpose of the study to examine the differences in attachment between low risk and high risk primigravidae women. Some variables concomitant to attachment were also examined, since the literature on the psychology of pregnancy suggests that the pregnant woman experiences many affective personality and situational variables that in one way or another influence (both positively and negatively) her acceptance and attachment to the fetus, and later, to the child (Deutsch, 1945; Bibring and Valenstein, 1976). While not all of the influencing variables were investigated (due to measurement limitations), the four areas of anxiety, sex

role identity, marital satisfaction and life stress were investigated, since they are reported to be some of the more major influencing factors (Deutsch, 1965; Bibring and Valenstein, 1976; Cranley, 1981, 1983). The purpose of examining the four concomitant variables was to try to ensure that what is being objectively measured is indeed attachment rather than a mixture of influencing factors. That is not to say that these other factors do not influence attachment, but rather that they are indeed influences and not an actual outcome - namely, attachment.

Statement of Procedures

An obstetrician in private practice was contacted by telephone and asked to participate in the study. If agreeing, a meeting was scheduled for the examiner to meet with the nurse to determine which patients met the criteria for inclusion in the study. At the time of the identified patient's next appointment, she was met by the examiner (having been introduced by the nurse) and asked to participate in the study. If she agreed, she was asked to take home a stamped addressed envelope containing the measures. She was also asked to complete them alone. Once they were completed, she was to return them to the examiner by mail. Each participant was offered a feedback session to explain her particular results.

Research Hypotheses Used

General Hypothesis. The major hypothesis of this study was that women with low risk pregnancies would have a different level of attachment to their fetuses than women with high risk pregnancies. No hypothesis was formulated with regard to the demographic data. Since the interpretation of any found differences between the two groups on the attachment variable could be confounded by any significant mean differences found in any and each of the concomitant variables, any difference found between groups in the concomitant variables was statistically removed from any difference found in the attachment variable. This was done by use of an Analysis of Covariance.

Specific Hypothesis. There would be a significant difference in prenatal attachment between the low risk pregnant women and high risk pregnant women once the influence of anxiety, masculine and femine sex role identity, marital satisfaction and life stress had been covaried out.

Conclusions

The major hypothesis stated that there would be a significant difference between the low risk group and the

high risk group of first-time pregnant women once the variables of anxiety, marital satisfaction, sex role identity and life stress were covaried out. Statistical analyses of the data indicated that there was no significant difference between the two groups on the Attachment Measure Total or its Sub-scales, or in the variables of anxiety, life stress and sex role identity.

There was, however, a significant difference between groups on the variable of marital satisfaction with the high risk group, indicating a greater degree of marital satisfaction.

When the remaining variables were covaried out from the Attachment Score Total, and again for the Attachment Sub-scales, no significant differences were found in either case.

Analysis of the descriptive statistics indicated that the sample could be considered to approximate a normal distribution with no skewness or kurtosis. Similarly, the demographic data indicated that the two sample groups were essentially equivalent. The demographics with relation to socio-economic status (Table 3) were very similar, with the only notable difference being that the males of both groups earned significantly higher salaries, in spite of having similar educational levels to the females. However, since

this difference was found in both groups, its relevance may be reflective of society as opposed to a factor of this particular study.

The personal demographic information (Table 2) was also comparatively equivalent with only a slightly wider range of ethnicity and religious preference in the high risk group. In addition, the high risk group had slightly more husbands with children from previous marriages.

The demographic information that related to medical data (Table 1) showed the greatest disparity between groups. Slightly more of the pregnancies were planned in the low risk group. However, there was a comparatively larger difference in the percentage of high risk women who knew the sex of their baby than for women in the low risk group. This is not surprising, since the majority of high risk women are required to have an ultrasound procedure (which determines the sex of the baby) as a routine matter of care. This procedure is not routine for low risk pregnancies. It was interesting to note that of the women who knew the sex of the fetus, all the low risk women were carrying males, while the predominance of high risk women were carrying females.

All of the low risk group of women correctly considered their pregnancies to be low risk. However, seventeen

percent of the high risk group also considered theirs to be a low risk pregnancy. All of these women were considered high risk by their obstetricians, since they were suffering from gestational diabetes. But, in all of the cases, the diabetes had been controlled by diet modification. One of the obstetrician nurses related that they do not usually fully dramatize the possible effects of gestational diabetes unless they are trying to strongly impress upon the patient to strictly keep to the prescribed diet. It is therefore altogether possible that although these women were medically high risk, they were not personally aware of any unusually high risk implications.

Of the medical history relating to previous pregnancies, the high risk group had slightly more elective abortions, moderately more spontaneous abortions and significantly more miscarriages or stillbirths over the low risk group. Though these differences are substantial, they are also to be expected, for it is precisely this medical history that places the woman in the high risk category. It is therefore a demographic difference that is desirable and expected for this study.

In reviewing the demographic information, it appears that other than medical criteria, the two groups may be regarded as being quite homogenous on all other measured data.

Implications

Interpretation of Results. Of all analyses undertaken, there was only one significant result and this was not on the primary measure of attachment. Non-significant results may furnish valuable information for future research. However, they may also simply indicate that there were, and are, no differences between groups on the measures tested. Given that this was the finding, it is possible that though theoretical postulation suggested that medically high risk women would attach less than low risk women, in general, this is not the case and that medically high risk women psychologically adapt and find ways to attach to their fetus in spite of the higher risk of loss. Additionally, the high risk women did not exhibit significantly different amounts of state or trait anxiety than the low risk group or the normative sample of the instrument. Life stress, and levels of male or female sexual identity, were also not significantly different between groups. This is somewhat surprising since one might expect a threatened loss to, at the very least, raise state anxiety levels. That this was not the case may suggest pregnancy is a period of high stress and anxiety anyway and that fears of loss may exist normally even if the threat of loss is not medically confirmed. Alternatively,

high risk mothers may emotionally find ways to normalize and/or stabilize their affective states to enable healthy attachment to develop. This postulate may tentatively be supported in that there were a few high risk women who believed themselves to fall into the medically low risk category.

Within the analyses there was one significant result, namely, that marital satisfaction was measured to be higher in the high risk group of marriages (as reported by the wives) than in the low risk group marriages. It is postulated that this may be the case, since marriages in the high risk group have had to endure a previous history of loss and/or a current high level of stress. In a sense, the high risk group was self-selecting for this study, for if the marriage was unable to take the stress of the previous history of loss or trauma, the couple would presumably either not be together or not attempting another pregnancy. Since an inclusion criteria for participation in the study was that the woman was to be married or living with a significant other, if the spouse had left as a result of the stress of the marriage, that woman would most likely not have been included in the study. Therefore, what we may be seeing in the high risk group are couples that have solidified their marriages in the face of adversity.

One of the goals of this study was to ensure that the construct of maternal/fetal attachment, as measured by the Maternal Attachment Scale, was a strong construct unto itself and not merely a compilation of other concomitant variables (namely, anxiety, sex role identity, marital satisfaction and life stress). It appears that this goal may have been met and that maternal/fetal attachment, as measured by the Maternal Attachment Scale, may well be a valid construct. This conclusion may be drawn since there was a comparatively large range of scores in both groups on all instruments, but no between group differences were found. It thus appears that the instruments measure individual differences successfully, but when the concomitant variables were covaried out from the attachment measure results, still no differences were found. Presumably, if the attachment measure was made up of the other variables, once they were covaried out, a significant difference would have occurred.

The practical implications of this study are that diagnosis and problem identification of potential attachment difficulties in women with medically high risk pregnancies may be made a little clearer. The results of this study indicate that diagnosis of attachment difficulties may not be desirable in a group categorization format (i.e. that

women who fall within a discernible group are prone to certain difficulties). Rather, diagnosis via use of psychological measures can be useful on an individual basis (i.e. that a women be tested to confirm or reject possible difficulties). Once again, this conclusion was drawn since there was no between group differences but there were large ranges of scores within groups. It was also interesting to note that in providing courtesy feedback sessions for participation in the study, all women spontaneously confirmed the individual findings. As no organized data were collected from these feedback sessions, no direct interpretations may be made. However, it was a striking trend in confirmation of individual findings. Thus, individual testing may provide an obstetrician or health provider with a quick and accurate screening tool to determine if further psychological intervention may be desirable.

Additionally, counseling psychologists and other mental health professionals may also develop preventative and therapeutic programs for women who are screened and identified as being comparatively low in maternal/fetal attachment and thus potentially at risk.

Suggested Further Research and Theoretical Postulation

Though a lack of significant results may be interpreted as not having found any useful information, the contrary is

often actually true. For the lack of significant results states that one may well need to investigate the question in a different manner. In the case of this study and given the information provided in the literature review, it is felt that one would do well to investigate the question of prenatal attachment via more subjective and longitudinal means, rather than the objective and cross-sectional tact taken by this study. It is postulated that a more subjective and longitudinal study would yield potentially greater information since, first, women may attach to their fetuses at individually differing points. Second, attachment may well be strongly influenced by both past loss anniversary dates in high risk women and developmental dates in all women. Third, women as a group may attach at an earlier point in the pregnancy than the groups researched in this study. Fourth, the use of more subjective measures such as a Rorschach Inkblot Test and/or a structured clinical interview (perhaps in addition to the subjective measures) would gain access to potentially significant qualitative differences. These qualitative data may be essential since the subjective experience of each woman's attachment may be different as a result of differing amounts of investment in the pregnancy and the type and proportion of defenses used to defend against potential loss or personal inpingement.

Last, there may well be a difference in the dynamics of attachment between women who have a low risk pregnancy, one of minimal risk, moderate risk or high risk. Thus the extremity and severity of the risk involved may influence attachment if the predominant danger is to the woman (i.e., hypertension) or to the child (i.e., placenta separation).

It is also suggested that future empirical studies attempt longitudinal studies as well as include more qualitative measures. Comparatively, a longitudinal study would not potentially be too prohibitive since gestation is forty weeks. One presumably would first want to focus on the actual period of pregnancy before looking at postnatal outcome. Of especial relevance may be the effects of developmental milestones on attachment, as may be the anniversary dates of previous losses.

It is also suggested that further research be conducted to develop the actual maternal attachment measure. It would be especially practical and useful to develop normative data determining at what scores the general population distributed itself. From these data, one would be much more able to use the instrument for screening purposes.

Additionally, once normative data has been established, it would be desirable to follow a number of pre-natal rather than postnatal mothers and children for several years to

determine if indeed prenatal high risk attachment predicted difficulties in postnatal attachment, adaptation to the maternal role and the child's emotional and physical development.

Theoretically, it would seem that the development of a comprehensive theory of the prenatal attachment process would be most useful. Currently, there is no such theory, only bits and pieces of postulates in different areas of psychology. It would seem that, given the import of maternal-child attachment and the recognition of the existence of maternal/fetal attachment, the time has come for a workable theoretical position. Furthermore, a theoretical position on how the prenatal process may differ between medically low risk and high risk pregnancies may be very useful.

Postulates as to the fetal role in the development of the attachment relationship are warranted (in that medical science is currently limited in its ability to discern fetal behavior). There is indication that the fetus interacts with the mother, but current technology restricts our empirical knowledge. However, it may be timely to consider a theoretical position on what that interaction might be.

Last, the development of theoretical underpinnings for therapeutic interventions would be most needed. Again,

acknowledgement of the existence of prenatal attachment would require the development of interventions for when that does not occur, or occurs in a dysfunctional fashion.

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APPENDIX A

Participant Letter and Consent Form

Dear Parent,

In conjunction with your obstetrician, I am conducting a research study on how women feel during pregnancy. Having recently become a new mother myself, I was intrigued with all the new experiences I underwent during my own pregnancy. I was surprised, however, to learn how little research had been done in this area. Other than furthering general scientific knowledge, it is hoped that the results of this study will enable obstetricians and other health care professionals to enhance both actual care and the experience of pregnancy. I am, therefore, requesting your assistance in this study. Your participation is completely voluntary and you may withdraw from the study or discontinue completing the questionnaires at any time. Should you decide to withdraw at any point, your decision will not affect in any manner the services that you receive from your doctor or other medical staff. Upon completion of your participation, I will be glad to give you full personal feedback.

If you agree to participate, it would involve your completing a set of six questionnaires which will take approximately an hour of your time. This is all the participation involved. Several of the questions are of a personal and possibly of a sensitive nature, but please be assured that anonymity and confidentiality will be stringently maintained. Indeed, once agreeing to participate, you will be allocated a number and your name will not appear on any of the questionnaires. No one at your obstetrician's office, including your obstetrician, will have access to the completed questionnaires or the specific results (unless you so request).

This study is being conducted as part of Doctoral Dissertation requirements at Indiana State University and has been reviewed by the Committee for the Protection of Human Subjects. If you have any questions, please feel free to contact Gila Arnoni, M.Ed., at 664-8509 (home).

I, _____, consent to participate in the above stated study.

Participant's signature:_____

Witness signature:_____

☐ I wish to receive personal feedback upon completion of my participation.
Telephone # where I can be reached to set an appointment time.

☐ I do not wish to receive feedback.

APPENDIX B

Gila Arnoni, M.Ed.
4044 Vivian Street
Bellaire, Texas 77401
664-8509

Instructions to Participant

Thank you for agreeing to participate in this study. Enclosed you will find a set of 6 questionnaires. They will take approximately one hour of your time to complete. Please do not place your name on any of the questionnaires and please complete alone. Should you have any questions, please do not hesitate to call me at 664-8509.

Thanking you once again.

Yours sincerely,

Gila Arnoni, M.Ed.

GA:mlb

Enclosures

APPENDIX C

Subject's Number_____

Demographic Data Sheet

Instructions

Thank you so much for agreeing to participate in this study. Some of the following questions are of a personal and sensitive nature. Please be assured that all information is totally confidential and quite anonymous. The one and only exception would be if you request a feedback session following completion of all the materials. Even in this case, only one person will be privy to this information and she will be a qualified psychotherapist.

If you have any questions or comments, please feel free to add them at the end of this questionnaire. Any questions you may have will be answered in the next materials package given to you at your next obstetrics appointment.

Thank you for your cooperation.

1. How many weeks is your pregnancy? _____

2. You age_____ Husband's age_____

3. Number of years married?_____

4. Does your husband have any children by a previous marriage? Yes_____ No_____; if yes, how many?_____

5. Are you employed? Yes_____ No_____; if yes, what is your occupation?_____
   What is your annual income (to the nearest thousand)
   $_____

6. If your husband employed? Yes_____ No_____; if yes, what is his occupation?_____
   What is his annual income (to the nearest thousand)
   $_____

7. Please mark the highest level of your completed education.
   (a) some high school _____
   (b) high school graduate _____
   (c) some college _____
   (d) college graduate _____
   (e) education beyond bachelor's degree (please specify) _____