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**The Development of
Maternal-Fetal Attachment**

**by
Eileen R. Fowles**

**A Thesis Submitted to the Faculty of the
Graduate School of Loyola University of
Chicago in Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Nursing
November
1987**

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VITA

The author, Eileen Ruth Fowles, is the wife of Thomas Stark Fowles and mother to Sarah Lynn Fowles and Aaron Thomas Fowles. She was born August 11, 1950 in Chicago, Illinois.

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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS.....	ii
VITA.....	iii
TABLE OF CONTENTS.....	iv
LIST OF TABLES.....	v
LIST OF FIGURES.....	vi
CONTENTS OF APPENDICES.....	vii
 Chapter	
I. INTRODUCTION.....	1
Background.....	1
Theoretical Framework.....	1
Problem Statement.....	2
II. REVIEW OF LITERATURE.....	3
Psychology of Pregnancy.....	3
Attachment Theory.....	5
Conclusions.....	15
III. METHODS.....	17
Research Questions.....	17
Design.....	17
Data Collection Procedures.....	18
Methods of Measurement.....	19
Consent.....	20
Risk/Benefit.....	20
Variables.....	20
IV. RESULTS.....	22
Sample.....	22
Sample I.....	22
Sample II.....	23
Sample III.....	23
Missing Data.....	24
Reliability.....	24
Effects of Repeated Administration.....	25
Question I.....	28
Question II.....	29
Limitations.....	31
V. SUMMARY/DISCUSSION.....	32
Summary.....	32
Discussion.....	32
REFERENCES.....	36
APPENDIX A.....	38
APPENDIX B.....	40
APPENDIX C.....	42
APPENDIX D.....	44
APPENDIX E.....	47
APPENDIX F.....	49

LIST OF TABLES

Table	Page
1. Reliabilities of Total and Subscale Scores Including Items 3 and 22.....	26
2. Reliabilities of Total and Subscale Scores Excluding Items 3 and 22.....	27
3. Correlations by Trimester.....	28
4. Mean Scores and Standard Deviations for Total Scale and Subscales Across the Trimesters for Longitudinal Sample.....	30

LIST OF FIGURES

Figure	Page
1. Data Collection Design.....	18

CONTENT FOR APPENDICES

	Page
APPENDIX A Introductory Letter to Longitudinal Sample.....	38
APPENDIX B Follow-up Letter to Longitudinal Sample.....	40
APPENDIX C Introductory Letter to Cross- Sectional Samples.....	42
APPENDIX D Demographic Data Sheet Maternal-Fetal Attachment Questionnaire.....	44
APPENDIX E Criteria for Inclusion in Study.....	47
APPENDIX F Items on Revised Maternal-Fetal Attachment Scale by Subscale.....	49

CHAPTER I

INTRODUCTION

Background

The psychosocial aspects of pregnancy have been examined using various theoretical models. Freudian theorists (e.g., Deutsch, 1945) and developmental theorists (e.g., Lederman, 1984) have pointed out the advantages of their own points of view and the disadvantages of the other. Despite the different approaches, the theorists acknowledge the importance of assessing a woman's adaptation to pregnancy as a predictor of her transition to motherhood.

Few of these theorists have described the process of maternal attachment to the fetus during pregnancy in measurable behavioral terms. Rubin (1984) proposed a sequence of events that occurs across the trimesters categorized in four main tasks of pregnancy. Cranley (1981c) developed a tool that measured maternal-fetal attachment behaviors in the third trimester of pregnancy.

Theoretical Framework

The theoretical framework used for this study is derived from the work of Ainsworth, Blehar, Waters, and Wall (1978). Their work was strongly influenced by John

Bowlby (1969). They demonstrated that certain measurable behaviors are exhibited in the formation and maintenance of attachment. The focus of their work was on infant-to-mother behavior. Leifer (1980) identified behaviors expressed by the pregnant woman demonstrating attachment between mother and baby before birth.

Problem Statement

This study measured maternal-fetal attachment in the first, second, and third trimesters to determine if it followed a developmental progression during pregnancy.

CHAPTER II

Review of the Literature

The importance of the interactions of a mother with her newborn child is widely known. But does this attachment begin at birth? Or, is there a process that occurs before the birth of the baby? This literature review will discuss the psychological aspects of pregnancy and general attachment theory.

Psychology of pregnancy

The first views on the psychology of pregnancy were psychoanalytic in nature. Deutsch (1945) was a student of Freud and her writings were based on in-depth case studies of neurotic women. Deutsch (1945) identified two basic forces present during pregnancy: introversion and reality. Introversion refers to the narcissistic love that is seen in pregnancy. The gravid woman focuses all her psychic energy on her own physical changes and the developing fetus. The mother and her growing baby become one large unit, physically as well as on a psychic level. Reality refers to the mother becoming increasingly aware of the fetus as a separate individual and appreciating it as such. Until this is accomplished, a termination of

pregnancy, as with an early spontaneous abortion, is viewed as a loss of self.

Bibring and Valenstein (1976) presented four case studies of pregnant women identified as emotionally disturbed and referred for psychiatric treatment. They determined that during pregnancy, a pregnant woman must "reconsider her self-image and her role as it had been to what it was to become" (p.357). They view pregnancy as a normal life crisis involving profound psychological as well as somatic changes. The crisis is a time-limited disturbance of equilibrium precipitated by biological and psychological stress that gradually results in maturation and personal growth.

Rubin (1984) and Lederman (1984) adopt a developmental approach to the psychosocial adaptation to pregnancy. Rubin (1984) collected qualitative data on six thousand women over twenty years. Content analysis was performed on annotated interview data. From her analyses, Rubin (1984) identified four tasks of pregnancy, i.e., seeking safe passage for herself and her child through pregnancy, labor, and delivery; ensuring acceptance of the child by herself and significant others; binding in to her unborn child; and developing the ability to give of herself. The behaviors associated with these tasks are described as they develop in each trimester.

Lederman (1984) identified a different set of developmental tasks in pregnancy. Acceptance of the pregnancy is the most fundamental and essential task of the parturient. Identifying a motherhood role, reconciliation of her mother-daughter relationship, and preparation for labor are essential to ensure the delivery of a healthy baby and an appropriate transition to motherhood. Lederman's longitudinal study of 32 women found significant correlation between acceptance of the pregnancy and length of labor ($r = .58, p < .01$) by using repeated, multiple measures of psychological and physiological variables.

Attachment theory

Bowlby (1969) was the first to formulate a theory of attachment. Bowlby's (1969) theory of attachment grew out of his disenchantment with the psychoanalytic view of behavioral motivation. He sought a way to explain why and how people relate to each other, but found Freud's classical theories problematic. Attachment theory developed from Bowlby's observations of how young children behaved in defined situations. He then went on to describe personality development in the light of his studies.

Attachment is a behavioral system in which the behavior brings about a certain desired outcome. Bowlby (1969) wrote that attachment bonds are as necessary for survival as food. Bowlby (1980) summarizes his theory in thirteen points:

1. Attachment behavior is any behavior that results in a person attaining or retaining proximity to some preferred individual.

2. This type of behavior is dynamic and distinct from feeding or sexual behavior and of equal importance to life.

3. Healthy development of attachment behavior in the child influences the development of affectional bonds as an adult.

4. Attachment behavior is goal-directed and that goal is to maintain a certain degree of proximity to the preferred attachment person.

5. Various forms of attachment behavior are active, only when required to maintain the attachment bond.

6. Many intense emotions arise from the formation (falling in love), maintenance (loving someone), and the disruption (grief over loss) of attachment relationships. Anger, anxiety, and sorrow are commonly seen.

7. Attachment behavior is a characteristic of many species and contributes to survival.

8. Behavior complimentary to attachment behaviors is caregiving.

9. Attachment behavior is active throughout life.

10. Mental illness is viewed as being caused from deviant psychological development.

11. Disturbed patterns of attachment can be seen at any age and are due to the development of deviant patterns of attachment.

12. Early childhood attachment experiences influence the adult's patterns of forming an attachment tone.

13. The manner in which an individual's attachment behavior becomes incorporated into his personality affects the pattern of affectional tones he makes during his life.

Ainsworth, Blehar, Waters, and Wall (1978) were strongly influenced by Bowlby's (1969) work. They refined his theory and defined measurable behaviors. They studied the attachment behaviors of infants and children, and defined four stages of child-to-mother attachment. The first three phases occur within the first year of life. The initial pre-attachment phase lasts until the baby can visually discriminate his mother, about 8-12 weeks of age. During this time, the infant orients himself to anyone who is close to him by looking at that individual and following his movements. He uses proximity-promoting behavior, such as crying and smiling, to bring these people closer to

him. In phase two, attachment in-the-making, the baby can discriminate between familial figures and displays various proximity-promoting behaviors toward the different figures. During the third phase of clear-cut attachment, the baby more actively seeks proximity and contact with his preferred individual and explores his environment. This begins around six months and continues for the next 2 1/2 years. About age four, the child enters the phase of goal-corrected partnership in which he is increasingly able to understand his mother's motivations and is better equipped to influence her "plans" to accommodate his.

Ainsworth et al. (1978) discuss at length the components of six major behavior classifications: a)proximity and contact-seeking behaviors, b)contact-maintaining behaviors, c)resistance, d)avoidance, e)search behaviors, and f)distance interaction. Ainsworth has identified specific behaviors that are involved in the formation and maintenance of early human interactions. An example of proximity and contact-seeking behaviors would be crying.

Brody (1981) has strongly criticized the attachment models adopted by Bowlby (1969) and Ainsworth et al. (1978), using psychoanalytically-based arguments. Attachment theory ignores the forces of the ego and narcissism and dismisses the probability of unconscious

motivations as initiators of infant behavior. Brody (1981) asserts that Bowlby disregards factors other than specific behaviors that facilitate infant maturation. Brody (1981) also opposes Bowlby's belief that physical separation of the infant from his desired caregiver is the source of all psychopathology and does not account for the caregiver's fear, anxiety, or ambivalence as possible causes of mental illness.

Klaus and Kennell (1982) sought to define the beginning point of parent-to-infant attachment. They propose that in the "sensitive period", which is in the first few hours after birth, "complex interactions between mother and infant help to lock them together" (p.39). This interaction, termed bonding, is necessary to ensure a supportive atmosphere for future child development. An example of a bonding behavior would have the mother assuming an "en face" position while holding her newborn.

Opponents of the bonding concept criticize it on several major points. The inconsistent and marginally significant effects of early contact are questioned. Critics question if the measured behaviors were clearly related to the construct of attachment (Svejda, Campos, & Emde, 1980; Brody 1981). Bonding implies a one-time event and does not take into account the dynamic nature of maternal-infant interaction. The concept fails to

incorporate the influence of other factors (i.e., social support systems, parental personality, etc.) on the quality of the mother-to-baby relationship (Svejda, Pennabacker, & Emde, 1982; Svejda, Campos, & Emde, 1980; Brody 1981; Tulman 1981).

Leifer (1977, 1980) and Cranley (1981a, 1981b, 1981c) have used the maternal-child attachment theory but applied it antepartally and studied maternal-fetal interactions. Leifer (1977, 1980) conducted a longitudinal study of 19 white primigravidous women to explore the significant issues surrounding pregnancy and motherhood for women using multiple measure scales and extensive interview schedules. She sought to understand what effects the feminist movement and adult personality development had on a view of "normal" motherhood. Of interest to this review is the identification of attachment behaviors used by the mother toward her unborn child, including talking to the fetus. Other behaviors identified were offering food when the mother was eating, reprimanding the fetus for disturbing sleep, calling the fetus by a pet name, engaging the husband in conversations with the fetus, pushing on her abdomen to stimulate visible fetal movements so others could observe them, trying to imagine what the fetus looks like, dreaming about the baby, and attributing characteristics such as playfulness or calmness to the

fetus. She does point out that these behaviors change somewhat as the pregnancy advances: for example, the dreams about the baby in the first trimester are less distinct than those of a woman nearing term.

Leifer (1977) noted a developmental sequence in mother to fetus attachment. Little emotional attachment was shown toward the fetus during the early months of pregnancy because of a sense of uncertainty about whether the developing fetus even existed and because of a fear of miscarriage. Quickening evoked feelings of immense relief that the fetus was indeed alive. A new awareness of the fetus as a separate entity rather than a part of the self emerges. Others demonstrated a significant and linear increase in fetal attachment over the course of pregnancy (Reading, Cox, Sledmore, & Campbell, 1984).

Cranley (1981a, 1981b, 1981c) found that pregnant women in their last trimester demonstrated a significant level of attachment to their unborn child. Cranley (1979) defined maternal-fetal attachment as "the extent to which a woman engages in behaviors which represent an affiliation and interaction with her unborn child" (p.19). This attachment is the result of dynamic physiological and psychological processes. Once "quickening" occurs, the woman has a physical awareness of the fetus and has been intellectually aware of the forthcoming baby months

earlier. Cranley (1981a) found that the presence of a social support system was positively associated with the level of attachment ($r = .51$, $p = .002$) and perception of stress was negatively associated with level of attachment ($r = .41$, $p = .01$). Cranley (1981c) developed the Maternal-Fetal Attachment Scale (MFA) that identified and measured attachment behavior exhibited by women in their third trimester of pregnancy (Cronbach's alpha = .85). The questionnaire has also been adapted to measure Paternal-Fetal Attachment (Cranley, 1981a).

Vito (1986) cross sectionally studied 325 women in all stages of pregnancy using a modified version of Cranley's MFA Scale plus 5 questions related to nesting (eliminated by Cranley in refining her instrument due to low reliability). Vito added the subscale and reworded some of Cranley's original items upon the advice of experts. The composite tool, Maternal-Fetal Attachment Scale - Vito Version (MFAV) was then pilot tested on 25 subjects and factor analysis was completed. Reliabilities on the MFAV subscales using pilot study data ($N = 25$) ranged from .43 to .88. Vito's cross-sectional study ($N = 325$) established the reliability of the subscales on the MFAV (Spearman-Brown Prophecy Formula = .84 to .93), but not on the total scale. A majority of Vito's sample were married (89%) and had planned their current pregnancies

(62%). Primigravidas, women in their second pregnancy, and women in their third pregnancy each comprised about one-third of the sample. The majority of women never experienced a stillborn (96.9%), a miscarriage (77%), nor an abortion (82.8%). Most of the women sampled had experienced quickening (86%). Gestational age at time of data collection ranged from six to forty-two weeks (mean = 28.05 \pm 8.85). Maternal age at time of data collection ranged from 17-40 years of age (mean = 27.5 \pm 4.56).

Vito (1986) found that maternal-fetal attachment as measured by the MFAV began in early pregnancy with the Fantasy of Role and Giving of Self, followed by Differentiation of Self from Fetus, Interaction with Fetus and Attribution of Characteristics and Intentions to Fetus by midpoint of pregnancy and Nesting in the third trimester. Ultrasound examination, planned pregnancy, and increased maternal age had a more positive association with subscale scores than higher level of education or greater parity. Quickening was positively related to the subscales of Interaction with Fetus, Differentiation of Self from Fetus, and Attribution of Characteristics and Intentions to the Fetus.

LoBiondo-Woods (1985) longitudinally followed 100 women. The women were approached initially during the 4th to 11th week of pregnancy, a second time from the 12th to 16th week of pregnancy, and again during the 21st to 26th week of gestation. Mean age was 27.83 years, with a range of 19 to 39 years. Most of the women were primigravidas ($N = 97$), two women had planned abortions, and one subject had a miscarriage. The majority stated the pregnancy was planned (77%). The women were given Cranley's MFA questionnaire and the Symptoms Checklist devised by Leifer (1980) at each time period. Leifer's Symptom Checklist is a 20-item Likert-type scale with a frequency of often to never and intensity of severe to mild. Sample questions include the following:

Do you have any morning sickness or nausea?

Do you suffer from backache?

Do you have swollen feet or legs?

Do you have a lack of energy?

Reliabilities (Cronbach's alpha coefficient) on Cranley's total scale scores were reported as 0.85 at Time 1, 0.85 at Time 2, and 0.82 at Time 3. Reliabilities for the Symptom Checklist were reported as 0.69 at Time 1, 0.79 at Time 2, and 0.77 at Time 3.

LoBiondo-Woods (1985) did not find a negative relationship between maternal-fetal attachment and physical symptoms as anticipated. The hypothesis that there would be a positive relationship between maternal-fetal attachment and time [$F(2, 198) = 84.88, p < .0001$] was supported.

Conclusions

Pregnancy is a period requiring psychological adaptation by the mother. It is hoped that positive adaptation enables the mother to engage more effectively in parenthood and nurture her child more successfully. It is important to adopt a framework that can be used to identify normal and deviant patterns of maternal-fetal interaction so that appropriate nursing interventions can be developed.

Attachment theory offers a conceptual framework for this study. Ainsworth et al. (1978) identified behaviors that formed, as well as maintained, the vital mother-to-infant relationship. Leifer's (1980) study described measurable behaviors in the formation of the mother-to-fetus relationship during pregnancy. Cranley's (1981c) questionnaire offers an organized tool to evaluate that relationship in the last trimester of pregnancy.

Cranley's (1981c) research provided the method for this study because she offered a quantitative measure of maternal-fetal attachment and her questionnaire is used extensively. It was hoped that this study would support LoBiondo-Woods' (1985) findings that maternal-fetal attachment increases over time. The current study addressed the effects of the repeated administration of the MFA scale, a problem which had not been addressed previously.

Nursing would benefit from further research in this area. The professional nurse has little understanding of the prenatal attachment process. Research in this area will increase nursing's comprehension of the process and lead to the development of appropriate expectations for the gravid woman. The patient will ultimately benefit from this research as interventions are developed to promote maternal-fetal attachment.

CHAPTER III

Methods

Research Questions

The research questions under study are listed below:

1. Is there a significant relationship between first, second, and third trimester attachment?
2. Does level of attachment increase over the course of pregnancy?

Design

A panel study was conducted with women in the first, second, and third trimesters of pregnancy. One sample was followed longitudinally. A second sample was assessed during the fourth to sixth month of gestation only. A third sample was assessed only during the seventh to ninth month of pregnancy. The second and third samples served as comparison groups and made it possible to detect any sensitization to instruments that may have occurred in the longitudinal sample (see Fig. 1).

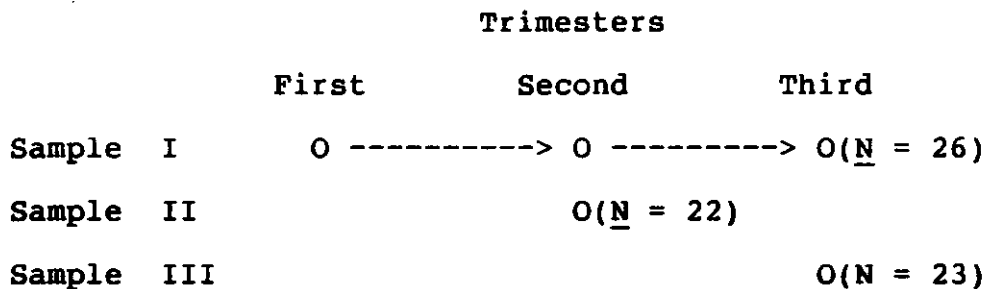


Figure 1. Data Collection Design

Data Collection Procedures

The women were approached during their routine prenatal visits to their obstetricians in the western Chicago suburbs and asked to complete the questionnaires. The women in sample I received a letter stating that they would be asked to complete the questionnaire three times during their pregnancy (see Appendix A). A follow-up letter was given at Time 2 and Time 3 (see Appendix B). Samples II and III received a letter asking them to complete the questionnaire during their present obstetrical visit (see Appendix C). The researcher reviewed charts the evening before office hours and attached the appropriate introductory letter, the demographic sheet, and Maternal-Fetal Attachment scale (see Appendix D) to the charts of women who met the eligibility criteria (See Appendix E).

A questionnaire packet was distributed by the office nurse. The completed, self-administered questionnaire was placed in a sealed envelope and left in the office for the researcher at the end of the day. If any participant failed to complete the questionnaire at that time, the researcher mailed another questionnaire to the participant for completion.

Methods of Measurement

The tool used to measure attachment was the Maternal-Fetal Attachment Scale (MFA) developed by M. Cranley (1981c). The scale has 24 Likert-type items. The items are scored on a scale of 1 to 5, with 5 being the most positive statement and 1 the weakest. The scale is broken down into five subscales, i.e., Roletaking, Differentiation of Self from Fetus, Interaction with Fetus, Attributing Characteristics to the Fetus, and Giving of Self (see Appendix F). Internal consistency was measured using Cronbach's alpha coefficient of reliability. Cranley (1981c) reported a reliability of 0.85 for the total scale and coefficient alphas ranging from 0.52 to 0.73 on the subscales.

An information sheet to elicit demographic data and the MFA Scale can be seen in Appendix D. Cover letters explained the purpose of the study and the procedure for completing the questionnaire (see Appendices A, B, & C).

Consent

This study was approved by the Institutional Review Board for the Protection of Human Rights at Loyola University of Chicago. The completed questionnaire was evidence of consent to participate in the study. Questionnaires were code-numbered to ensure confidentiality and only the researcher had a list of names and corresponding numbers. This will be destroyed at the end of one year.

Risk/Benefit

There were no risks to the participants beyond the risks of normal daily life. Likewise, there were no immediate benefits to the participants, but the increase in knowledge for nursing will provide the rationale for developing interventions for women in the future.

Variables

The variables to be measured were defined as follows:

1. Maternal-fetal attachment

Conceptual - "...the extent to which a woman engages in behaviors which represent an affiliation and interaction with her unborn child" (Cranley, 1979, p. 19).

Operational - Total scale score on Cranley's (1981c) maternal-fetal attachment instrument.

2. First Trimester of Pregnancy

Conceptual - First 13 weeks of pregnancy

Operational - primigravidous women in their 8th-12th week of an uncomplicated pregnancy

3. Second Trimester of Pregnancy

Conceptual - The 14th-26th week of pregnancy

Operational - Primigravidous women in the 20th-24th week of an uncomplicated pregnancy

4. Third Trimester of Pregnancy

Conceptual - 27th-40th week of pregnancy

Operational - Primigravidous women in the 32nd-36th week of an uncomplicated pregnancy

5. Social Position

Two-factor determination according to Hollingshead (1958)

6. Level of Education

Level of education completed

Chapter IV

Results

Sample

A total of 105 women were asked (via a letter in a questionnaire packet) to participate in this study. Seventy-one agreed. Data collection began in September, 1986, and was completed in June, 1987.

Sample I Forty-five women were approached during their eighth through thirteenth week (mean = 12) of pregnancy and asked to complete the series of three questionnaires. Twenty-six women completed the series. Of the 19 women who did not complete all three questionnaires, seven refused to fill out the first questionnaire, three suffered first trimester spontaneous abortions prior to seeing the packet, two women miscarried after completing the first set of questions, four refused to complete the second round, two women suffered second trimester spontaneous abortions, and one woman delivered prematurely after finishing two sets of questionnaires.

The longitudinal sample consisted of 26 women ranging in age from 20 to 29 years (mean = 25.6), all of whom were married. Twenty-four of the women were primigravidas and two had prior first trimester spontaneous abortions. None

suffered from hypertension, diabetes mellitus, heart disease, seizures, cancer, or other unspecified medical problems. Eight women had experienced minor surgery, such as T&As.

Sample II Twenty-two of thirty women completed the questionnaire once during the 20-24th week of pregnancy and ranged in age from 21 to 29 years (mean = 25.7); all were married. Twenty-one were primigravidas and one woman had had a prior spontaneous miscarriage. None suffered any medical problems and four had had minor surgeries.

Sample III Twenty-three of thirty women in their 32-36th week of pregnancy completed the questionnaire and ranged in age from 21-29 years (mean = 25.7); all were married and primigravidous. None reported any current medical problems and five had experienced previous minor surgeries.

There was no significant difference in age among the samples [$F(2, 68) = .01, p = N.S.$]. Social position varied significantly by group [$F(2, 68) = 7.52, p = .001$]. Sample II had significantly lower social positions but, nevertheless, all samples were middle to upper-middle class (Sample I, $\bar{x} = 43.85$; Sample II, $\bar{x} = 33.67$; Sample III, $\bar{x} = 43.72$) on the Hollingshead (1958) scale.

Missing Data

This researcher recognized the problem of missing data resulting from participants leaving answers to questions on the MFA Scale blank. It was decided to assign a value of three (titled "uncertain" on the questionnaire) to all blank items. The rationale for this action was that the final values on scale scores were not radically altered. In most cases, women who hadn't experienced quickening often left responses to questions on fetal movement blank (approximately six questions). If a woman left all responses to questions related to fetal movement blank, total scale scores would increase from 70 to 88 (range of possible scores is 24-120). In a personal telephone conversation, Dr. Cranley (July 1987) agreed to this method of handling missing data. LoBiondo-Wood (1985) and Vito (1986) did not encounter this problem. LoBiondo-Wood instructed her subjects not to leave any blank responses and Vito forced a choice of "uncertain" (valued as three in scoring the response) if the subjects were unsure of their response.

Reliability

Cranley (1981c) reported a Cronbach's alpha coefficient of .85 for the total scale and coefficient alphas of 0.52 to 0.73 on subscales. Reliabilities

determined from the current study can be found in Table 1. Item analysis was performed and subsequently, item 3 (I enjoy watching my tummy jiggle as the baby kicks inside) and 22 (I feel my body is ugly) were deleted from all cases. Scores and reliabilities were recomputed (see Table 2). Subsequently, total scores functioned reliably. The subscales of Differentiation of Self from Fetus and Interaction with Fetus were not reliable and eliminated from further analysis. Therefore, the remainder of the reported results are based on total adjusted scale scores and 3 subscales (Roletaking, Attributing Characteristics and Intentions to the Fetus, and Giving of Self).

Effects of Repeated Administration

There was no difference between the longitudinal sample at the second trimester and sample II on the total scale and three subscale scores. Therefore, it can be inferred that no instrument sensitization occurred at this point. The longitudinal sample at the third trimester did reveal a significant difference in total scale scores when compared to sample III ($t = 2.17$, $p = .04$), although subscale score comparison revealed no significant difference. The presence of carry-over effects on total scale scores at time three will affect further interpretation of the data.

Table 1

Reliabilities for Total and Subscale Scores Including
Items 3 and 22 in Longitudinal Sample

Scale	Trimesters		
	1	2	3
RLTK	.80	.93	.77
DIFF	.50	-.16	.19
INTR	.56	.53	.51
ATTC	.53	.71	.59
GIVE	.52	.59	.67
TOTAL	.80	.83	.83

Note:

RLTK=Roletaking Subscale

DIFF=Differentiation of Self from Fetus Subscale

INTR=Interaction with Fetus Subscale

ATTC=Attributing Characteristics to Fetus Subscale

GIVE=Giving of Self Subscale

TOTAL=Total Scale Score

Table 2

Reliabilities for Total and Subscale Scores Excluding
Items 3 and 22 in Longitudinal Sample

Scale	Trimesters		
	1	2	3
RLTK	.80	.93	.77
DIFF	.58	.32	.28
INTR	.56	.53	.51
ATTC	.53	.71	.60
GIVE	.71	.79	.79
TOTAL	.82	.86	.84

Note:

RLTK=Roletaking Subscale

DIFF=Differentiation of Self from Fetus Subscale

INTR=Interaction with Fetus Subscale

ATTC=Attributing Characteristics to Fetus Subscale

GIVE=Giving of Self Subscale

TOTAL=Total Scale Score

Question I

The first question was whether or not there is a significant relationship between first, second, and third trimester attachment. Pearson Correlation Analysis revealed significant, positive relationships among first, second, and third trimester attachment scores (see Table 3). The correlations became stronger over time.

Table 3

Correlations by Trimester

Trimester	<u>r</u>	<u>p</u>
First to Second	0.53	0.005
Second to Third	0.74	0.0001
First to Third	0.69	0.0001

Twenty-eight percent of the variance in the second trimester total scale scores can be explained by first trimester scores. Forty-seven percent of the variance at the third trimester can be explained by first trimester scores. Fifty-four percent of the variance in third

trimester scores can be explained by second trimester total scale scores. This information suggests that the scores may have predictive value. The mean scores and standard deviations are presented in Table 4 and all move in a positive direction.

Question II

The second question was whether or not attachment increases over the course of pregnancy. Analysis revealed that attachment does increase significantly over time [$F(1, 25) = 26.61, p < .0001$] on total scale scores and the subscales of Roletaking [$F(1, 25) = 2.03, p = N.S.$], Attributing Characteristics to the Fetus [$F(1, 25) = 22.58, p < .0001$], and Giving of Self [$F(1, 25) = 3.89, p = .03$]. Tukey's Studentized Range Test for total scores revealed that the mean at the second trimester was significantly greater than at the first trimester and the mean at the third trimester was also significantly greater than the mean at the second trimester. Tukey's post hoc tests revealed that a significant change occurred between the second and third trimester on Attributing Characteristics and Intentions to the Fetus subscale. A cumulative difference on the Giving of Self subscale scores between first and third trimesters is noted, but not between first and second, nor second and third trimester scores.

Table 4

Mean Scores and Standard Deviations for Total Scores and Subscales Across the Trimesters for Longitudinal Sample

Scale	Trimesters		
	1	2	3
RLTK			
<u>M</u>	17.54	17.92	18.27
<u>SD</u>	(+2.64)	(+2.99)	(+2.34)
ATTC			
<u>M</u>	19.42	20.42	23.50
<u>SD</u>	(+2.23)	(+3.37)	(+3.26)
GIVE			
<u>M</u>	16.92	17.80	17.96
<u>SD</u>	(+2.48)	(+2.13)	(+2.54)
TOTAL			
<u>M</u>	80.62	84.69	91.62
<u>SD</u>	(+8.67)	(+9.81)	(+9.48)

Limitations

There are several limitations of this study. The sample size is small. Convenience sampling, which was used, is open to self-selection of individuals to participate. Also, the largely middle-class suburban sample reduces the generalizability of the findings to other populations. The effects of repeated administration were noted. Missing data were noted more frequently in the first and second trimester periods. This could be due to the absence of quickening.

Chapter V

Summary/Discussion

Summary

Data analysis revealed that attachment (a) is detectable in the first 8-12 weeks of pregnancy, (b) has a significantly positive relationship across the trimesters, and (c) increases significantly over the course of pregnancy.

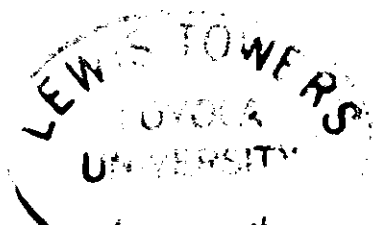
Discussion

The motivation for undertaking this study came from the frustration I experienced when I observed well-meaning colleagues caring for women who had suffered a first trimester spontaneous abortion. Phrases such as "Don't worry, you can get pregnant again," "It's all for the best," or "It's only a fetus" were used in an effort to offer emotional support. Among themselves, colleagues would say, "I cannot understand why she (the patient) is so upset about miscarrying. She's hardly pregnant at all." The need to establish a clear understanding of a woman's feelings toward her unborn fetus early in the pregnancy became evident. The findings of this present study, as well as the work by LoBiondo-Wood (1985) and Vito (1986)

demonstrate the presence of maternal-fetal attachment very early in the pregnancy. The body of nursing knowledge has been increased by these results and future theory development can be explored.

There are several implications for clinical practice for health care professionals caring for the pregnant woman, particularly the obstetrician, maternity nurse, and the social worker. The routine prenatal visit offers an ideal opportunity for the obstetrician and obstetrical nurse to assess a woman's attachment to her fetus. Identification of factors that interfere with attachment and employing appropriate interventions can promote the attachment process. Identifying the woman with impaired progression in her development of maternal-fetal attachment may require referral to a social worker during the antepartal period. Nurses caring for a woman who has experienced a miscarriage during their pregnancy should consider the woman's attachment to the fetus and its impact on the grief response when offering emotional support.

The need for further instrument development and refinement has been identified by this researcher and others (LoBiondo-Wood, 1985; Vito, 1986). Item analysis in the present study revealed problems with items 3 and 22. The subscales of Differentiation of Self from Fetus and Interaction with the Fetus performed unreliably. LoBiondo-



Wood did not analyze the subscales because the number of items in each subscale was too low to assess properly with statistics. Content validity of the MFA was also questioned. Vito did not report the reliability of the MFAV total scale. New measures of maternal-fetal attachment may need to be developed.

There are many areas for future research. The recent trend to delay childbearing and childrearing until later in life and limiting the number of children born into a family emphasizes the planning that goes into a pregnancy. It would be exciting to determine if some degree of maternal-fetal attachment can be detected prior to conception in women who carefully plan the timing of pregnancy in their lives.

The high-risk mother experiences an altered trajectory outcome which leads to the need to cope not only with the normal stress of pregnancy, but also with the additional demands and restrictions imposed on her by her condition (Snyder, 1979). Studying the development of maternal-fetal attachment in these women and developing appropriate and effective interventions to promote the process of attachment could benefit the high-risk woman and boost her coping ability.

Studies could be designed to explore the impact of specific variables on maternal-fetal attachment. Variables such as self-concept, perception of social support, anxiety levels, awareness of results of serial ultrasound, quality of the relationship between the pregnant woman and the father, or the demands of a woman's career on the development of maternal-fetal attachment could be studied. The effects of specific intervention and activities such as attendance at early prenatal classes, preconception and antepartum counseling sessions, having the client record daily fetal movement patterns, and giving the pregnant woman a copy of her ultrasound picture could be studied for their therapeutic effects.

The predictive value of administering the MFA could be explored. The therapeutic effects of repeated administration of the MFA could be evaluated.

The importance of maternal-infant attachment is well known and many tools have been designed to measure the phenomenon. The relationship between the development of maternal-fetal attachment and the development of maternal-infant attachment could be examined. This could lead to studies designed to identify mothers at risk for child abuse or neglect and formulation of early and effective interventions which could be used by all health care professionals involved in caring for the pregnant woman.

REFERENCES

- Ainsworth, M., Blehar, M., Waters, E., & Wall, S. (1978). Patterns of Attachment. New Jersey: Laurence Erlbaum Associates.
- Bibring, G. & Valenstein, A. (1976). Psychological aspects of pregnancy. Clinical Obstetrics and Gynecology, 19, 357-371.
- Bowlby, J. (1969). Attachment and loss (Vol.1) Attachment. New York: Basic Books.
- Bowlby, J. (1980). Attachment and loss (Vol.3) Loss. New York: Basic Books.
- Brody, S. (1981). The concepts of attachment and bonding. Journal of the American Psychoanalytical Association, 29(4), 815-829.
- Cranley, M. (1979). The impact of perceived stress and social support on maternal-fetal attachment in the third trimester. Unpublished doctoral dissertation, University of Wisconsin, Madison.
- Cranley, M. (1981a). Roots of attachment: The relationship of parents with their unborn. Birth Defects, 17(6), 59-83.
- Cranley, M. (1981b). Theories of maternal attachment. Advances in Nursing Science, 3(4), 7-14.
- Cranley, M. (1981c). Development of a tool for the measurement of maternal attachment during pregnancy. Nursing Research, 30, 281-284.
- Cranley, M. (1987, July). Personal communications.
- Deutsch, H. (1945). The psychology of women, Vol. 2. New York: Basic Books.
- Hollingshead, August B. (1958). Two-factor index of social position in Social class and mental illness. New York: John Wiley, 1958.
- Klaus, M. & Kennell, J. (1982). Parent-Infant bonding. St. Louis: C.V. Mosby.

- Lederman, R. (1984). Psychological adaptation in pregnancy. New Jersey: Prentice-Hall.
- Leifer, M. (1977). Psychological changes accompanying pregnancy and motherhood. Genetic Psychology Monographs, 95, 55-96.
- Leifer, M. (1980). Psychological effects of motherhood. New York: Praiger.
- LoBiondo-Woods, G. (1985). The progression of physical symptoms in pregnancy and the development of maternal-fetal attachment. Unpublished doctoral dissertation. New York University, New York.
- Reading, A., Cox, D., Sledmore, C., & Campbell, S. (1984). Psychological changes over the course of pregnancy: A study of attitudes toward the fetus/neonate. Health Psychology, 3, 211-221.
- Rubin, R. (1984). Maternal identity and the maternal experience. New York: Springer Publishing.
- Snyder, D. (1979). The high-risk mother viewed in relation to a holistic model of the childbearing experience. JOGNN, 8(3), 164-170.
- Svejda, M., Campos, J., & Emde, R. (1980). Mother-infant "bonding": Failure to generalize. Child Development, 51, 775-779.
- Svejda, M., Pennabacker, B., & Emde, R. (1982). Parent-to-Infant Attachment: A critique of the early "bonding" model. In R.N. Emde & R.J. Harman, (Eds.), The development of attachment and affliction systems. New York: Plenum Press.
- Tulman, L. (1981). Theories of maternal attachment. Advances in Nursing Science. 3(4), 7-14.
- Vito, K.O. (1986). The development of maternal-fetal attachment and the association of several variables. Unpublished doctoral dissertation, Catholic University of America, Washington, D.C.

APPENDIX A

APPENDIX A

Dear _____

I am a graduate student in nursing at Loyola University and am interested in examining the feelings a woman has during her pregnancy. It is my hope that with a clearer understanding of these feelings, nurses can help women more effectively.

I would like you to help me by completing the enclosed questionnaires. Use the pencil enclosed in the packet. Follow the directions written after each question, that is, check the appropriate line or supply short fill-in answers. When finished, fold the questionnaire and place it in the envelope marked #2. Seal the envelope and leave it with the office nurse. You may keep this letter for your own information.

You will be asked to complete the questionnaire two more times during your pregnancy, once during your 4th-6th month and again in your last two months. Every attempt will be made to contact you at the time of your regular prenatal visit. If I should miss you at these times, I will mail a questionnaire to your home to be completed and returned to me.

I will assume that by returning the completed questionnaire, you are consenting to my use of the information. All surveys are confidential. You will in no way be identified.

I appreciate your time and cooperation. After I complete the survey, the results of what I have learned will be made available if you would like that information. Should you wish more information, please feel free to call me at 312-834-5942.

Sincerely,

Eileen R. Fowles, R.N., B.S.
Graduate Student in Maternal/Child
Health Nursing at Loyola University

APPENDIX B

APPENDIX B

Dear _____

As indicated in my original letter to you, I said that I would request your cooperation three times during your pregnancy to assist me in examining a woman's feelings during pregnancy. Thank you for cooperating and returning your questionnaires. You are now in your third trimester of pregnancy and I am asking you to participate in the last phase of this project.

The enclosed questionnaire is the same one you completed before. On page 1, fill in today's date only and then answer all the questions on page 2. Your responses should indicate how you are feeling now. After completing the questionnaire, put it in the envelope I have provided, seal it, and return it to the office nurse.

This study will be completed in the summer of 1987 and the results will be available by the end of the year. If you would like a copy of the results, please indicate so on the questionnaire.

Thank you so much for your cooperation.

Sincerely,

Eileen R. Fowles

APPENDIX C

APPENDIX C

Dear _____

I am a graduate student in nursing at Loyola University and am interested in examining the feelings a woman has during her pregnancy. It is my hope that with a clearer understanding of these feelings, nurses can help women more effectively.

I would like you to help me by completing the enclosed questionnaires. Use the pencil enclosed in the packet. Follow the directions written after each question, that is, check the appropriate line or supply short fill-in answers. When finished, fold the questionnaire and place it in the envelope marked #2. Seal the envelope and leave it with the office nurse. You may keep this letter for your own information.

I will assume that by returning the completed questionnaire, you are consenting to my use of the information. All surveys are confidential. You will in no way be identified.

I appreciate your time and cooperation. After I complete the survey, the results of what I have learned will be made available if you would like that information. Should you wish more information, please feel free to call me at 312-834-5942.

Sincerely,

Eileen R. Fowles, R.N., B.S.
Graduate Student in Maternal/Child
Health Nursing at Loyola University

APPENDIX D

1. Birthdate:(Fill in) ___/___/___ 2. Today's date:(Fill in) ___/___/___
month day year month day year

3. Present Marital Status:(Check one)

___ Married ___ Divorced
___ Single ___ Separated

4. Highest level of education completed:(Check one)

___ Grade School ___ Trade School
___ High School ___ Other (Specify)
___ College

5. Highest level of education completed by my spouse:(Check one)

___ Grade School ___ Trade School
___ High School ___ Other (Specify)
___ College

6. My occupation is:(Fill in) _____

7. My spouse's occupation is:(Fill in) _____

8. My last menstrual period began:(Fill in) ___/___/___
month day year

9. My baby is due to be born on:(Fill in) ___/___/___
month day year

10. This is my first pregnancy:(Circle one) Yes No

11. I suffer from the following:(Circle appropriate response)

High Blood Pressure Yes/No
Diabetes Yes/No
Heart Disease Yes/No
Seizures Yes/No
Cancer Yes/No
Other (Please Explain) _____

12. I have had surgery:(Circle one) Yes No

If so, what kind? _____ When? ___/___/___
month day year

13. I have had the following:(Circle appropriate response)

Miscarriage/Problems conceiving/Abortion Yes No

14. Please respond to the following questions about yourself and the baby you are expecting. There are no right or wrong answers. Your first impression is usually the best reflection of your feelings.

MAKE SURE YOU MARK ONLY ONE ANSWER PER SENTENCE

I think or do the following:	Definitely yes	yes	un- certain	no	definitely no
1. I talk to my unborn baby.....	—	—	—	—	—
2. I feel all the trouble of being pregnant is worth it.....	—	—	—	—	—
3. I enjoy watching my tummy jiggle as the baby kicks inside.....	—	—	—	—	—
4. I picture myself feeding the baby..	—	—	—	—	—
5. I'm really looking forward to seeing what the baby looks like....	—	—	—	—	—
6. I wonder if the baby feels cramped in there.....	—	—	—	—	—
7. I refer to my baby by a nickname...	—	—	—	—	—
8. I imagine myself taking care of the baby.....	—	—	—	—	—
9. I can almost guess what my baby's personality will be from the way he/she moves around.....	—	—	—	—	—
10. I have decided on a name for a girl baby.....	—	—	—	—	—
11. I do things to try to stay healthy that I would not do if I were not pregnant.....	—	—	—	—	—
12. I wonder if the baby can hear inside of me.....	—	—	—	—	—
13. I have decided on a name for a baby boy.....	—	—	—	—	—
14. I wonder if the baby thinks and feels inside of me.....	—	—	—	—	—
15. I eat meat and vegetables to be sure my baby gets a good diet.....	—	—	—	—	—
16. It seems my baby kicks and moves to tell me it's eating time.....	—	—	—	—	—
17. I poke the baby to get him/her to poke back.....	—	—	—	—	—
18. I can hardly wait to hold the baby.	—	—	—	—	—
19. I try to picture what the baby will look like.....	—	—	—	—	—
20. I stroke my tummy to quiet the baby when there is too much kicking.....	—	—	—	—	—
21. I can tell that the baby has hiccoughs.....	—	—	—	—	—
22. I feel my body is ugly.....	—	—	—	—	—
23. I give up doing certain things because I want to help my baby.....	—	—	—	—	—
24. I grasp my baby's foot through my tummy to move it around.....	—	—	—	—	—

APPENDIX E

APPENDIX E

CRITERIA FOR INCLUSION IN STUDY

1. Age of pregnant woman 19-29 years.
2. Living with father of child.
3. First pregnancy.
4. No gynecological complications.
5. No medical complications prior to or during pregnancy.
6. English speaking.

APPENDIX F

APPENDIX F

Items on Revised Maternal-Petal
Attachment Scale by SubscaleSubscale ROLETAKING

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

Subscale DIFFERENTIATION OF SELF FROM FETUS

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

Subscale INTERACTION WITH FETUS

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

Subscale ATTRIBUTING CHARACTERISTICS TO THE FETUS

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

Subscale GIVING OF SELF

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

Approval Sheet

The thesis submitted by Eileen Ruth Fowles has been read and approved by the following committee:

Dr. Karen Haller, Director
Assistant Professor, Nursing, Loyola

Dr. Mary P. Ryan
Dean, Graduate School of Nursing, Loyola

Dr. Dona Snyder
Professor, Nursing, Loyola

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the Committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Science in Nursing.

11/18/87

Date



Director's Signature