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A STUDY OF PSYCHOLOGICAL FACTORS DURING PREGNANCY  
AND THE RELATIONSHIP TO LABOR, DELIVERY, AND  
INFANT STATUS AT BIRTH

A Thesis

by

KATHRYN SMITH RIDLEY

Submitted to the Graduate School  
Appalachian State University  
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ABSTRACT

A STUDY OF PSYCHOLOGICAL FACTORS DURING PREGNANCY  
AND THE RELATIONSHIP TO LABOR, DELIVERY, AND  
INFANT STATUS AT BIRTH. (November 1984)

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The purpose of this study was to explore psychological factors during pregnancy and their relationship to labor, delivery, and infant status at birth. Fifty-one women in their seventh month of pregnancy were given a self-administered screening instrument consisting of general census items, a measure of family attitudes and relationships, three scales from the Minnesota Multiphasis Personality Inventory, and the Draw-A-Person Test. Postdelivery data were obtained through a Physician Checklist. Using a cluster analysis, results suggest that at least one predelivery variable, the Draw-A-Person Test, may have some predictive value. Women who drew men or figures of undetermined sex tended to experience a higher rate of complications with labor, delivery,

and/or infant status at birth. Findings are suggestive at best but do provide direction for additional research.

## ACKNOWLEDGEMENTS

The cooperation and support of many people were required for the completion of this research. I would like to acknowledge the special assistance of Cheryl Freeman in helping me develop the questionnaire and the procedure by which it was administered. I would also like to acknowledge with grateful appreciation the assistance I received from Doctors Marchese, Trathen, and Norman of the Watauga Ob-Gyn Group and Doctors Freeman and Wompler, who have private practices in Boone, North Carolina, and Mountain City, Tennessee, respectively. Without their help, this project would not have been possible. A special thanks goes to the receptionists for these doctors who tolerated the extra work involved in distributing and collecting questionnaires. A special thanks also goes to Mary Reichle and Becky Brown, who distributed and collected questionnaires through the Watauga County Health Department. The promotion of my research by Chris Atkinson, Nancy Moretz, and Kay Philipp through their birthing classes is also greatly appreciated. The efforts of all these people were required in order to collect the information for

this project. They were very generous with their time and very kind to me on all occasions.

As to the second half of this research, the compilation, analysis, and interpretation of data, I am extremely grateful to Deanna Bowman, Ph.D., for her guidance, patience, and understanding. She gave me hope and encouragement at times when I thought there was none. I would also like to thank my committee members, Susan D. Moss, Ph.D., Polly Trnavsky, Ph.D., Richard H. Levin, Ph.D., for their assistance in the final stages.

Lastly, I would like to express my appreciation to the women who volunteered for this study. They gave of their time and confided some very personal information with no direct return. They provided the core of this project and allowed me to explore an area of psychological relationships which has seldom been touched upon in research.

## DEDICATION

At times I have not always been rational or easy to live with during the completion of this project. Therefore, it is with much love and appreciation that I dedicate this paper to my husband, Gary, who has endured my worst moments and still remained supportive throughout them all.



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## INTRODUCTION

Psychological factors have long been considered a major aspect of prenatal development. Folklore is rich in advice for expectant mothers, the belief in maternal "impressions" being a part of every known society (Ferreira, 1965). Beliefs such as fear of the evil eye and fetuses being marked by the mothers' behaviors have formed the basis for cultural rituals and taboos observed throughout the centuries. Although these beliefs are usually regarded as superstitious wives' tales today, there is a growing amount of evidence suggesting that maternal emotions and other psychological factors are indeed important to the well-being of both the mother and the developing child. Increasing concern for this period of human growth is recognized in Public Law 88-156, which defines the disabilities associated with high-risk infants as having their "origin in the prenatal...period" and being "...the result of unfavorable hereditary or environmental influences acting separately or in combination" (Wallace, Gold, & Lis, 1973).

An area of nonhuman vertebrate study that documents the physical and emotional changes produced in offspring

by stress inflicted upon the mother is research using rats. Thompson (1957) found that female rats exposed to anxiety-provoking situations three times daily throughout the period of pregnancy gave birth to significantly less active young. Similar findings were documented by Ader and Belfer (1962), who exposed pregnant rats to a single presentation of a conditioned stimulus (light and buzzer) twice daily. The authors concluded that the offspring of these mothers were also significantly less active than those of the controls, an indication that prenatal experiences are directly capable of influencing later development.

Similar to lower vertebrates, physiological relationships between the human mother and fetus allow for certain kinds of interaction. Although the blood systems are separate, it would be incorrect to assume there is no relationship between the two (Annis, 1978; Drillien & Wilkinson, 1964; Dunbar, 1944; McDonald, Gynther, & Christakos, 1963; Stembera, Znamenacek, & Polacek, 1976; Stott, 1973). Intense emotions such as fear, rage, or anxiety generate the release of chemicals into the maternal bloodstream. These chemicals, along with hormones secreted by the endocrine glands, change the metabolism of body cells. As a consequence of this change, new substances are transmitted across the placental barrier into the circulatory system of the

developing fetus and create an abnormal hormonal balance. Thus, it is not the maternal experiences and impressions per se that affect the fetus, but rather the gross chemical changes generated by those experiences.

The relevance of psychological factors is clearly evident in regard to the most basic aspect of human development, conception (Ferreira, 1965). Infertility of unknown etiology has often been successfully treated through psychotherapy. Even without treatment, however, it is not uncommon for adoption and placement workers to see previously "sterile" couples experience unexpected pregnancies after acquiring a child. At the other extreme, pseudocyesis, or false pregnancy, also demonstrates the extent to which psychological factors can dominate and control physical reactions.

As with conception, psychological factors have often been associated with spontaneous abortions or miscarriages, especially those of a habitual nature. McDonald (1968), in a review of related literature, defined habitual aborters as women who have miscarried three or more fetuses. He reported five studies which concluded that the majority of these women are overly dependent and immature. Poor relationships with absent or ineffectual fathers were common as well as inadequate emotional support from husbands. Ambivalence

towards the husband appeared to be the issue of greatest significance. Gender confusion combined with ambivalence towards the pregnancy itself was also frequently found.

Similar findings were discussed by Macfarlane (1977), who reported that habitual aborters were confused over sexual identification and lacked support from their immediate environment. Two studies were cited in which future abortions were prevented through psychotherapy. Success rate of psychotherapy in these studies was approximately 80% as compared to 26% of those women who received no treatment at all.

The vast majority of spontaneous abortions occur accidentally and recur on the basis of chance alone, according to Howells (1972). However, among those women who are considered habitual aborters, two subgroups emerged from his study. A battery of psychological tests (Wechsler-Bellevue, Rorschach, TAT, H-T-P, Sentence Completion) revealed that one group, primary aborters, women without prior term pregnancies, tended to be either (a) immature and dependent, or (b) exhibited "hysterical" acting-out behaviors. A second group, secondary aborters, included women who aborted after previous parity. These women tended to be obsessive and vaguely dissatisfied with their marital partners. Common themes among the three groups

appeared to be under- or over-identification with matriarchal domination and paternal absence or inadequacy.

Grimm (1962), in a study of 61 nonpregnant habitual aborters, drew a similar conclusion. Using the Wechsler-Bellevue, Rorschach, and TAT, she found 10 test indicators that discriminated between aborters and controls. Indicators included poorer emotional controls and stronger dependency needs than normal. There was a greater emphasis on conformity and compliance with the conventional. Aborters were anxious regarding hostile affect and exhibited a greater propensity toward guilt feelings. Eighteen habitual aborters (30%) in Grimm's study had term pregnancies after psychotherapy. Retesting showed a significant change in total test scores. Changes were in those characteristics that originally discriminated between the aborters and the controls.

Anxiety and ambivalence towards pregnancy, along with other psychological factors, have also been associated with the length of time spent in labor (Macfarlane, 1977; McDonald, 1968; McDonald et al., 1963). Davids, DeVault, and Talmadge (1961) administered a battery of tests to 48 women in the seventh month of pregnancy and again six weeks after delivery. Women with scores indicating a high amount of anxiety and uncertainty regarding pregnancy averaged two and



one-half hours longer in labor than those whose scores fell within normal ranges. The anxious group also showed a greater frequency of infant abnormalities. The results of this study, however, were not statistically significant.

A later study by Davids and DeVault (1962) of 50 women in the third trimester did find a significant difference between groups. Controlled for gravidity and parity, women in the abnormal group (delivery and birth abnormalities) scored significantly higher on several ratings of anxiety during pregnancy. These women tended to experience either very short or very long labors when compared to others. Very short, or precipitous labor, like prolonged labor, should not be overlooked as a source of trauma to the offspring. According to the authors, organic deficits in the newborn can result just as easily from a too rapid transition as from an abnormally slow one.

Psychological factors such as anxiety have also been associated with length of gestation. Gunter (1963), using the TAT, interviews, and the Cornell Medical Index, found that mothers of premature infants scored higher on anxiety and feelings of inadequacy. They described themselves as dependent and somewhat helpless. They had more bodily concerns and feelings

of feminine inadequacy. Less support was received from their husbands than from those of the control group.

Blau, Slaff, Easton, Welkowitz, and Springarn (1963) found that many women giving birth to premature infants were emotionally immature and narcissistic with unconscious feelings of hostility and rejection toward the pregnancy. Using the Wechsler-Bellevue, Rorschach, TAT, and Bender, they discovered that attitudes were more negative toward pregnancy and often related to having become pregnant unwillingly.

Several birth abnormalities have been linked to psychological factors during pregnancy. In a retrospective study of 227 children with IQs under 60, Drillien and Wilkinson (1964) concluded that the risk of giving birth to a child with Down's syndrome increases about three-fold, regardless of the mother's age, when history indicates severe prolonged emotional stress in early pregnancy or before conception. Mothers of the Down's group had a higher rate of reported marital discord, family deaths, and other distressing experiences. In most cases, however, the stress was preconceptual in origin and suggests that the endocrine disturbance resulting from emotional stress may be causatively associated with the chromosomal abnormalities found in Down's syndrome. No difference in the incidence of stress was found between

the non-Down's syndrome retarded group and the normal controls.

In a later study reported by Drillien, Ingram, and Wilkinson (1966), a significant relationship between threatened abortion, hyperemesis, and infants with cleft lip/palate was discovered. The relationship was not necessarily causative, but the results indicated that pregnancies involving clefts and other multiple abnormalities showed an excess of severe emotional disturbance during early pregnancy. Stressors were similar to the above, i.e., separation, divorce, death of a relative, and a need for medical or psychiatric treatment during prolonged anxiety.

Annis (1978) found a similar association between cleft lip/palate and stress, stating that the effects of the chemical changes generated through excessive emotions depends on the period of pregnancy in which the stress occurs. Early pregnancy is more likely to result in physical abnormalities, while later pregnancy tends to produce behavioral changes. Annis cites a study by Strean and Peer suggesting that excessive maternal stress during the 7th-10th week of development results in the release of glandular secretions that interrupt the formation of the fetal palate and upper bones of the jaws forming during this period. They suggest that

both stress and genetic factors operate together to produce this deformity.

Using a sample of 102 retarded children and 450 controls, Stott (1957) suggested a similar relationship among maternal stress, heredity, and infant status. Maternal illness and/or stress was reported in 66% of the retarded sample. The control group reported 30%. Congenital malformations occurred in 15% of the retarded group compared with 1.5% of the controls. In the retarded group, 24 women reported illness during pregnancy, including 12 cases of toxemia, a medical condition often associated with emotional factors (Howells, 1972; Macfarlane, 1977; McDonald, 1968). There were no known instances of rubella. Thirty-eight women cited instances of harassment and/or distress such as severe marital problems, death in the family, eviction threats, and aggravated anxiety states. Nine women experienced shock and accidents, including exposure to bombing. Thirteen women experienced agitated anxiety states. Stott suggests that psychosomatic influences may dominate the pregnancy. Given a genetic predisposition, adverse environmental conditions may be the crucial factor. This would explain the confusing genetic picture with abnormalities such as cleft lip/palate tending to run in families, but appearing sporadically.

A more recent study by Stott (1973) yielded further information on maternal stress during pregnancy and infant well-being. In a retrospective survey of 153 randomly selected infants, developmental problems and maternal anxiety were closely related. Children of mothers with stressful pregnancies experienced twice as much eczema and middle-ear disease as controls, more bronchitis and other severe respiratory problems, were often over- or underweight, and often choked when eating or drinking. Twice the incidence of late or poor walking and a greater number of speech defects were noted. Whether or not these results stem from anxiety during pregnancy or from maternal adjustment problems subsequent to delivery, however, was not determined.

Annis (1978) states that stress during late pregnancy may be associated with behavior changes in the fetus and later result in developmental problems to those reported by Stott. She cites studies by Sontag showing that fetuses carried by emotionally disturbed mothers increase their body movements by several hundred percent. Prenatal overactivity often results in low birth weight due to increased exercise without increased nutritional consumption. Research by Sontag at the Fels Institute indicates that active fetuses remain active as infants. Overactivity may result in feeding problems as the baby is likely to be more irritable and

demanding of food on a more frequent basis. Irritability affects control of the gastrointestinal tract and may cause the infant to empty his/her bowels at unusually frequent intervals or spit up half feedings. Annis comments, in summarizing Sontag's findings, that the infant is, to all intents and purposes, neurotic at birth, the result of an unsatisfactory fetal environment.

In summary, the above studies suggest that a woman's emotional experiences during pregnancy and/or the existence of specific personality factors may affect the yet-to-be-born child in many ways. Health care providers monitor physical changes very closely during the prenatal period, but perhaps certain psychological factors should be observed as well. As the literature shows, stressful environmental factors may create high levels of anxiety which could affect fetal development, even to the point of termination (miscarriage). Specific personality factors such as gender confusion, excessive dependency needs, and emotional immaturity may also influence developing fetuses. How do women who are not able to effectively manage their own lives prior to children cope with the added pressure of ambivalent pregnancies? Can these women be identified as being at risk prior to delivery? Are their deliveries more likely to be troubled? Research to

date has not adequately answered this question. Studies are few in number and often retrospective in design. Additional research is needed to determine just how influential specific emotional factors in mothers are to their developing children, and if these factors are important, how can we best intervene to reduce and/or prevent associated problems. The task is a difficult one and well beyond the scope of this thesis. What is proposed, however, is a beginning.

## METHOD

### Subjects

General description. Women in their seventh month of pregnancy were solicited as subjects for this study. Only those women in their seventh month of pregnancy were solicited in order to control for emotional variations associated with specific trimesters (Grimm, 1961; Lubin, Gardener, & Roth, 1975).

### Instrument

A 10-page questionnaire consisting of five sections was developed as the research instrument for this study (see Appendix A).

Section I. Section I was designed as a general census form. Information pertaining to age, race, education, employment, income, and marital status was requested as well as a brief history of pregnancies and substance usage (cigarettes, alcohol, drugs) prior to and during the current pregnancy. One question relating to psychological counseling was included as a measure of attitude regarding therapeutic intervention among those women who had previously sought treatment.

Section II. Section II was developed to assess labor, delivery, and infant status at birth. This form



was completed by the attending physician or head obstetrical nurse subsequent to delivery. Five questions pertained to labor, five to delivery, and four to infant status. Two other questions pertained to illness prior to and during pregnancy. These two questions were included to screen for those women who were already identified as high risk due to known physical conditions. Several lines were provided for additional comments. Selection of questions was based on consultation with participating doctors, two obstetrical nurses, and a review of related literature (Davids & DeVault, 1962; Gorsuch & Key, 1974; Grimm, 1961; Howells, 1972; Jones, 1978; McDonald et al., 1963; Nuckolls, Cassel, & Kaplan, 1972; Stembura et al., 1976). Format was a simple "Yes" "No" checklist. A release of information statement permitting physicians to complete this checklist was included at the top of the form.

Section III. Section III was designed to survey family relationships and attitudes towards the pregnancy. Research has suggested that negative feelings towards the father of the baby may affect the ability to carry a child to term (Selby, Calhoun, Vogel, & King, 1980). Support from parents and in-laws in addition to that of the father has also been found to be very important during the prenatal period, especially

as delivery approaches (Ferreira, 1965; Howells, 1972; Nuckolls et al., 1972; Selby et al., 1980). Based on this information, subjects were requested to rate on a scale of 1-4 their opinions regarding the father's attitude toward the pregnancy, the quality of the marital relationship prior to and during the pregnancy, and if married, the degree of satisfaction with the husbands' current economic support. Subjects were also requested to rate their relationships with parents prior to and during pregnancy and the attitudes of both parents and in-laws towards the pregnancy.

Section IV. Section IV consisted of three scales from the MMPI, Scale I (Hypochondriasis), Scale 0 (Social Introversion), and the L Scale (Lie). Several studies (Hook, 1962; Osborne, 1977, 1978) have shown that pregnant women, in general, do not respond significantly different to MMPI questions than do control groups or regular gynecological patients. These findings support the idea that pregnancy is, for most women, a period of good psychological adjustment. McDonald (1965), however, found a different response pattern among pregnant women themselves. Pregnant women with obstetrical complications scored significantly higher on Scales I and 0 than those without complications. Therefore, it seemed plausible that Scales I and 0 could be useful in identifying women at higher risk for

complications of labor and delivery. In addition to Scales I and O, the L Scale was included in Section IV as a measure of honesty in responding to questionnaire material. MMPI responses were not intended for comparison with established norms, but rather were included to determine whether or not the scales had any strength in identifying specific subgroups within the sample.

Shipley Institute of Living Scale. The Shipley vocabulary test was inserted between Sections IV and V as a means of measuring reading skills. The vocabulary test includes 40 words with four choices per word. Subjects with scores below 23 (14 years), the standardized cut off score, were omitted from the MMPI sample due to validity concerns associated with questionable abilities to read and interpret MMPI material.

Section V. Section V consisted of a blank piece of paper with instructions to draw a person in the space provided below. Ogdon (1977) cites many sources implying that opposite sex drawings are associated with ambivalence regarding sexual identification, although this is not as remarkable among females as males. Davids and DeVault (1960), in a study of 53 pregnant women, found that 84% of women in their normal delivery group drew a female, whereas only 57% of the abnormal delivery group drew a female. Significant beyond the

.03 level, the authors concluded that there is a noticeably greater tendency for women who draw a male figure during pregnancy to later experience some form of difficulty or complication in childbirth.

Grimm (1961), however, in a study of 235 pregnant women, found that DAP scores did not significantly relate to length of labor, complications during labor and delivery, or physical status of the child. She did find, however, that women who drew men first tended to have a high tension score, although the tension index was found to not be significantly related to the outcome of birth.

The Draw-A-Person Test was included in the questionnaire as a measure of gender identification and its relationship to labor, delivery, and infant status at birth.

#### Procedure

Survey packets consisting of prenumbered questionnaires and pencils enclosed in Manila envelopes were placed in three doctors' offices and two public health departments. Subjects were solicited by use of a small poster requesting that women in their seventh month of pregnancy see the receptionist. Receptionists gave each woman a form letter briefly explaining the study and requesting their participation. Women interested

in participating were then given a survey packet from behind the receptionist's window.

Instructions for completing the questionnaire were self-explanatory. Subjects were requested to seal their responses in the Manila envelope upon completion and return it to the receptionist. Physician checklists, which were loosely placed in the questionnaire, were removed by the subject and returned separately. Names were requested on the physician checklists in order for office personnel to file the forms in the patients' charts. Checklists were later transferred to the prenatal charts and sent to the hospital along with other patient information. After delivery, checklists were completed by the attending physician or head obstetrical nurse. Completed forms were placed in a file basket and collected by the experimenter at regular intervals. Patient names were removed from the checklists by hospital personnel prior to collection.

Questionnaires were collected from July through November, 1982. Physician checklists were collected from September, 1982, through February, 1983. Prior to the expected date of the first delivery, letters were sent to participating physicians as a reminder of their previous commitment to the project.

### Analysis

Due to the large number of predictive variables measured by the questionnaire, a cluster analysis was used to determine if there were groupings of individuals identified by the way they responded to subsets of those variables. Grouping reduced the number of predictive variables to a more manageable size which could then be compared to the outcome variables associated with labor, delivery, and infant status at birth. The analysis did not allow for assumptions regarding the nature of discovered variable relationships. It did, however, eliminate unnecessary manipulation of data while still exposing those variables most likely to produce significant results in subsequent studies.

## RESULTS

### Subject Data

General description. Fifty-one women volunteered as subjects for this study. Of the total number of subjects, 45% volunteered through the Watauga County Health Department, while the remaining 55% volunteered through private physicians in Boone, North Carolina and Mountain City, Tennessee.

Table 1 shows the sample broken down by age, race, and education. Ranging from 15-35 years, the mean age for mothers was 25. Fathers ranged in age from 17-37 years with a mean age of 27. As expected, fathers were slightly older than mothers.

Racial composition of the mothers was predominantly Caucasian, an accurate reflection of regional statistics (Caucasian, 98.1%; Black, 1.3%) (1980 Census of Population). Racial information was not obtained for fathers due to an oversight when developing the questionnaire. Interracial marriages would most likely generate an increase in social stressors. However, the frequency of mixed marriages in the particular sample would not be expected to be large enough to justify including this variable in the cluster analysis.

Table 1

Comparison of Mothers and Fathers by Age, Race, and Education

Category	Percentage <sup>a</sup>	
	Mother	Father
Age		
15 - 19	19.61 (10) <sup>b</sup>	5.88 ( 3)
20 - 29	58.82 (30)	68.63 (35)
30 - 37	21.57 (11)	25.49 (13)
Race <sup>c</sup>		
White	98.04 (50)	-
Non-white	1.96 ( 1)	-
Education		
Less than high school	1.96 ( 1)	2.04 ( 1)
Attended high school	25.49 (13)	32.65 (16)
High school graduate or equivalent	37.26 (19)	32.65 (16)
Some college	13.73 ( 7)	8.16 ( 4)
College graduate	15.69 ( 8)	16.33 ( 8)
Post-graduate study	5.88 ( 3)	8.16 ( 4)

Note.  $n = 51$ .

<sup>a</sup>Percentages were adjusted for missing cases.

<sup>b</sup>Numbers in parentheses indicate the number of subjects within each group.

<sup>c</sup>Racial statistics were not obtained for fathers.



Therefore, although racial statistics are not available for fathers, their omission is not considered to be significant to the outcome of this study.

Mean educational level for mothers and fathers was 12.69 and 12.45 years of schooling, respectively. Levels of education ranged from seventh grade to post-graduate study. Data indicates an adequate distribution of educational levels around the mean with no one extreme outweighing the other.

Table 2 describes the marital status of subjects. Slightly over 90% of the group were married. The number of years married ranged from less than 1 to 16. The largest single group was women married 2 to 5 years. The second largest group was women married 1 year or less. For these women, pregnancy was combined with the initial adjustment to marriage. For some, pregnancy was most likely the motivator for marriage, a stressful event in and of itself. Two other groups speculated to be somewhat more stressed were the single group and the separated group. However, of the two women who were separated, both reported that the decision to do so was their own. In these particular cases, therefore, one might conjecture that separation was less stressful than their current marriage. No women in this sample reported being divorced. Two women stated that they had been divorced once before but were now remarried.

Table 2  
Marital Status of Subjects

Group	Percentage <sup>a</sup>
Single	5.88 ( 3)
Married	
1 year or less	23.53 (12)
2-5 years	39.22 (20)
6-9 years	17.65 ( 9)
10 years or more	9.80 ( 5)
Total Married	90.20 (46)
Separated <sup>b</sup>	3.92 ( 2)
Divorced	-

Note.  $n = 51$ .

<sup>a</sup>Numbers in parentheses indicate the number of subjects within each group.

<sup>b</sup>Decision to separate was the wives' rather than the husbands'.

Estimated income is presented in Table 3. Mean sample income falls in the \$5,000-\$9,000 group. This group falls significantly below a regional average of \$17,598 (1980 Census of Population). Mean sample income was expected to be somewhat lower than average, however, since almost half (45%) of the subjects were obtained through the county health departments, an agency serving predominantly low income families. Also to be considered is the fact that subjects in this sample are, for the most part, young in their career fields and less likely to have the same income as those in older groups.

A slight majority of women (58.33%) reported no employment outside of the home during pregnancy. Of those subjects who were employed, ratings of job satisfaction are shown in Table 4. Table 4 also shows a job satisfaction among employed spouses according to their wives' opinions. A larger percentage of women tended to perceive themselves as being somewhat dissatisfied with their work as compared to that of their husbands', although no one admitted extreme dissatisfaction for either her husband or herself. Because no one admitted to extreme job dissatisfaction, stress associated with undesirable working conditions was not considered relevant to this sample and, therefore, was not included as an item in the final analysis.

Table 3

Estimated Annual Family Income

---

Income	Percentage of Subjects
\$ 4,999 or below	26.67
\$ 5,000 - \$ 9,999	28.89
\$10,000 - \$14,999	22.23
\$15,000 - \$24,999	6.67
\$25,000 and above	15.56

---

Note. n = 45.

Table 4

Ratings of Job Satisfaction Among Employed Subjects and Spouses

	Rating			
	1 Very Satisfied	2	3	4 Very Dissatisfied
Mother <sup>a</sup>	40.00 ( 8)	40.00 ( 8)	20.00 (4)	-
Father <sup>b</sup>	48.65 (18)	40.54 (15)	10.81 (4)	-

<sup>a</sup>n = 20.

<sup>b</sup>n = 37. Fathers' satisfaction was rated according to mothers' opinions.

Of the total sample, 8% had participated in psychological counseling. Of the four women who had received treatment, all agreed that therapy had been helpful.

Two women in the sample reported major accidents or illnesses within the last two years. One subject was in a serious car accident. Eight months pregnant, her baby was delivered and died 28 hours later. Another woman reported a severe case of gastritis. Since neither of these illnesses was chronic nor had occurred during the current pregnancy, the subjects were not excluded from the sample on the basis of pre-existing medical problems.

Histories of pregnancies. Histories of pregnancies were obtained for all but two subjects. One of the two omitted number of times pregnant as well as history information. While it is certain that she was pregnant during the study, assumptions could not be made regarding the total number of pregnancies previously experienced. Likewise, a second subject, who had been pregnant twice, failed to give the status of her previous parity (i.e., aborted, miscarried, etc). Frequencies of cases were adjusted accordingly and are presented in Table 5.

As shown in Table 5, 42% of the sample were primiparae. Mean age for the primiparae was 22 years with

Table 5

## History of Pregnancies

Category	Number					
	0	1	2	3	4	5
Times Pregnant						
Including this time	-	42.00% (21) <sup>a</sup>	32.00% (16)	12.00% (6)	12.00% (6)	2.00% (1)
Previous Normal Births	59.18% <sup>b</sup> (29)	26.53% (13)	12.25% (6)	2.04% (1)	-	-
Previous Abortions						
Miscarriages	77.55% (38)	14.28% (7)	4.08% (2)	4.08% (2)	-	-
Previous Stillbirths	97.96% (48)	2.04% (1)	-	-	-	-
Previous Premature						
Births	95.92% (47)	4.08% (2)	-	-	-	-
Previous Children Born						
with Physical/Mental						
Abnormalities	97.96% (48)	2.04% (1)	-	-	-	-

Note.  $n = 50$ .

<sup>a</sup>Numbers in parentheses indicate the number of subjects within each group.

<sup>b</sup>Percentages were adjusted for missing cases.

a range of 15-34 years. Multiparae, on the average, were 5 years older ( $\bar{x} = 27$ ), ranging in age from 17 to 35 years. Of those women having more than one pregnancy, 22.44% reported previous abortions, miscarriages, 2.04% reported previous stillbirths, 4.08% reported previous premature births (including one set of twins), and 2.04% reported previous children born with abnormalities. Frequency of previous problems by subject indicated that 39.29% of the multiparae had one problem pregnancy (including abortions), 7.14% had two, and 7.14% had three problems prior to participating in this study. In summary, slightly over one-half of the multiparae in this sample had problems with a previous pregnancy, including abortions.

Length of time since last pregnancy is shown in Table 6. Average length of time between pregnancies was 3.7 years. Less than half (41.2%) of the sample had planned their current pregnancy. Although less than half had planned their pregnancy, at least some of those who did not suggested a positive outlook by indicating that they wanted to participate in childbirth classes. Of the total sample, 55% planned to attend classes with Bradley being the preferred method (Bradley, 33.3%; LaMaze, 21.6%). The questionnaire did not screen for women who had already been instructed during previous pregnancies.



Table 6

Length of Time Since Last Pregnancy

Years	Percentage of Subjects <sup>a</sup>
0 <sup>b</sup>	43.75 (21)
1	6.25 ( 3)
2	14.58 ( 7)
3	8.33 ( 4)
4	8.33 ( 4)
5	6.25 ( 3)
6	4.17 ( 2)
7	4.17 ( 2)
8	2.08 ( 1)
11	2.08 ( 1)

Note. n = 48.

<sup>a</sup>Numbers in parentheses indicate the number of subjects within each group.

<sup>b</sup>Primigravidas.

Of the sample, 8-1/2% previously had difficulty getting pregnant for two-four years. Of that group, 75% were women with other children.

Substance usage. Table 7 shows a comparison of substance usage prior to and during pregnancy. Statistics show an overall decrease in alcohol and tobacco usage. The downward trend is most notable among alcohol users, who indicated a 25.05% decrease in drinking. Among those subjects who continued to drink, no one reported doing so more often than once a month.

Cigarette users reported a 10.75% drop in smoking. Although over one-fourth of the sample continued to smoke rather heavily during pregnancy, a downward trend is evident in that the percentage of subjects smoking one or more packs daily dropped from 28% to 7.84%.

Figures for drug usage show that less than 4% of the sample engaged in recreational/illegal drug use during pregnancy. Information regarding specific types of drugs (barbituates, amphetamines, etc.) was not solicited nor was history of drug use prior to pregnancy. Drug use is not considered heavy among those women who reported doing so, although the type of drug being used could have considerable influence. For example, occasional marijuana use would not be considered as significant as occasional cocaine or LSD usage.

Table 7

Substance Usage Prior To and During Pregnancy

Group	Percentage <sup>a</sup>	
	Prior to Pregnancy	During Pregnancy
Cigarette Usage		
None	52.00 (26) <sup>b</sup>	62.75 (32)
Less than one pack per week	4.00 ( 2)	5.88 ( 3)
At least one pack per week	6.00 ( 3)	1.96 ( 1)
Several packs per week	10.00 ( 5)	21.57 (11)
One or more packs daily	28.00 (14)	7.84 ( 4)
Alcohol Usage		
None	61.23 (30)	86.28 (44)
Less than once a week	12.25 ( 6)	9.80 ( 5)
At least once a month	8.16 ( 4)	3.92 ( 2)
Several times a month	12.25 ( 6)	-
Several times a week	6.13 ( 3)	-
Almost daily	-	-
Drug Usage - Over the Counter <sup>c</sup>		
None		35.29 (18)
Less than once a month		35.29 (18)
At least once a month		15.69 ( 8)
Several times a month		9.80 ( 5)

Table 7 continued

Category	Percentage <sup>a</sup>	
	Prior to Pregnancy	During Pregnancy
Several times a week		3.92 ( 2) <sup>b</sup>
Almost daily		-
Drug Usage - Recreational (Illegal) <sup>c</sup>		
None		96.08 (49)
Less than once a month		1.96 ( 1)
At least once a month		-
Several times a month		1.96 ( 1)
Several times a week		-
Almost daily		-

Note.  $n = 51$ .

<sup>a</sup>Percentages were adjusted for missing cases.

<sup>b</sup>Numbers in parentheses indicate the number of subjects within group.

<sup>c</sup>Information was not obtained for drug usage prior to pregnancy.

Only 13.72% of the sample reported using over-the-counter drugs more than once a month. Almost 4% of that group, however, reported usage several times a week, which seems rather high. Information regarding prescription drugs was not obtained due to an omission in the questionnaire. Given the controversy surrounding drugs prescribed during pregnancy, especially those prescribed to control nausea, the omission of this variable is considered important.

Attitude and family relationships. Subjects' ratings of attitudes and family relationships are illustrated in Table 8. Mothers generally tended to perceive themselves as slightly more satisfied overall with their pregnancies than either the fathers, the fathers' parents, or their own parents. Ratings of happiness among couples prior to and during pregnancy suggest that pregnancy did not significantly alter this perception. There was a slight change in intensity, however, with an increase in the percentage of subjects rating themselves as either very satisfied or very dissatisfied with the degree of happiness. Despite the degree of happiness, there is a slight downward trend in satisfaction with the father's emotional support during pregnancy. This change in attitude may reflect an increased need for emotional support of which the

Table 8

Subjects' Ratings of Attitudes and Family Relationships

Statement	Rating <sup>a</sup>			
	1	2	3	4
	Very Satisfied			Very Dissatisfied
1. Your feelings toward this pregnancy:	74.51% (38) <sup>b</sup>	25.49% (13)	-	-
2. The baby's father's feelings toward this pregnancy:	78.00% (39)	12.00% (6)	4.00% (2)	6.00% (3)
3. Degree of happiness between you and the baby's father since pregnancy:	69.39% (34)	22.45% (11)	2.04% (1)	6.12% (3)
4. Degree of happiness between you and the baby's father before this pregnancy:	66.67% (34)	23.53% (12)	7.84% (4)	1.96% (1)
6. Satisfaction with emotional support from the baby's father before this pregnancy:	70.00% (35)	22.00% (11)	8.00% (4)	-
7. Satisfaction with emotional support from the baby's father since this pregnancy:	60.78% (31)	29.41% (15)	1.96% (1)	7.84% (4)

Table 8 continued

Statement	Rating <sup>a</sup>			
	1	2	3	4
	Very Satisfied			Very Dissatisfied
8. Satisfaction with your husband's current economic support: (answer only if married)	51.11% (23)	44.44% (15)	13.33% (6)	2.22% (1)
9. Your relationship with your parents before this pregnancy:	72.00% (36)	22.00% (11)	6.00% (3)	-
10. Your relationship with your parents since this pregnancy:	78.00% (39)	16.00% (8)	6.00% (3)	-
11. Your parents' attitude toward the pregnancy:	78.00% (39)	10.00% (5)	6.00% (3)	6.00% (3)
12. The father's parents' attitude toward this pregnancy:	78.26% (36)	15.22% (7)	4.35% (2)	2.17% (1)

Table 8 continued

Statement	Rating <sup>a</sup>			
	1	2	3	4
	Less Than Once a Week	At Least Once a Week	Several Times a Week	Almost Daily
5. Frequency of quarrels between you and the baby's father:	80.44% (37)	15.22% (7)	2.17% (1)	2.17% (1)

Note.  $n = 51$ .

<sup>a</sup>Percentages were adjusted for missing cases.

<sup>b</sup>Numbers in parentheses indicate the number of subjects within each group.



father was not aware or to which he may not have been responding adequately.

The majority of women (80.44%) reported that they argued less than once a week with their partners. A majority (84.44%) also reported satisfaction with their husbands' current economic support (asked of married couples only). Given the results of this survey, marital stress does not appear to be a significant factor for most of the women in this sample. Only 10% or less of the subjects admitted to dissatisfaction for any sampled factor within the marital relationship other than income, and only 15.55% reported dissatisfaction with that.

Relationships with parents showed a slight improvement since the pregnancies. Ratings showed a slight upward trend in satisfaction with parental relationships regardless of parents' dissatisfaction with the pregnancy. Parents of the fathers tended to be somewhat more pleased with the pregnancies than parents of the mothers, at least in the mothers' opinions. No subjects in this sample admitted to having parental conflicts severe enough to be very dissatisfied with parent-child relationships.

Postdelivery data. A total of 29 physician checklists were returned to the experimenter. Return rate was 56.86%, leaving slightly less than half of the

total sample without data for comparison. Three additional checklists were returned, but ID numbers had been removed along with the patient names, so data could not be traced back to predelivery information.

Table 9 shows percentages of occurrence for post-delivery variables. Variables are grouped according to labor, delivery, and infant status at birth. The number of cases reported for individual items varies according to their relevance. For example, labor and delivery information was generally not rated for women who had a Caesarean. Some data, however, were omitted for no apparent reason.

Labor data indicates that the majority of subjects (64%) experienced relatively easy labors. Two women had precipitous labors. Two other women required induced labor. Five women (19.23%) experienced labor difficult enough to be rated as such by their doctors. Three women had prolonged second stages of labor, although these women were not necessarily those rated by their doctors as having difficult labors overall.

Delivery data shows that 80.77% of the subjects had normal deliveries. Six deliveries (23.08%) required the use of forceps. Half were low-forceps, and half were mid-forceps. No delivery required the use of high-forceps. Two Caesarean sections were performed due to cephalo-pelvic disproportion. One of these was

Table 9

Postdelivery Data

Item	Percentage <sup>a</sup>	
	Yes	No
<b>Labor</b>		
Easy labor	64.00 (16) <sup>b</sup>	36.00 ( 9)
Difficult labor	19.23 ( 5)	80.77 (21)
Precipitous labor	7.69 ( 2)	92.31 (24)
Prolonged second state of labor	11.54 ( 3)	88.46 (23)
Induced labor	7.69 ( 2)	92.31 (24)
<b>Delivery</b>		
Normal delivery	80.77 (21)	19.23 ( 5)
Forceps delivery	23.08 ( 6)	76.92 (20)
Low (50%)		
Mid (50%)		
High (0)		
Breech delivery	3.57 ( 1)	96.43 (27)
Caesarian section with		
cephalopelvic disproportion	7.14 ( 2)	92.86 (26)
Caesarian section without		
cephalopelvic disproportion	6.90 ( 2)	93.10 (27)
<b>Infant Status at Birth</b>		
Premature infant	6.90 ( 2)	93.10 (27)
Normal infant	93.10 (27)	6.90 ( 2)

Table 9 continued

Item	Percentage <sup>a</sup>	
	Yes	No
Other problems	20.69 ( 6)	79.31 (23)

Note.  $n = 29$ .

<sup>a</sup>Percentages are adjusted for missing cases.

<sup>b</sup>Numbers in parentheses indicate the number of subjects within each group.

a repeat operation. Two other C-sections were performed without cephalo-pelvic disproportion. One of these was due to a breech presentation. The other was not specified. One other breech presentation occurred, but the infant was delivered vaginally.

Infant data shows that two babies were born prematurely, one at 36-1/2 weeks gestation age, the other at 38 weeks. Forty weeks gestation age is considered normal (Davis, 1977). In spite of their young ages, birth weights for these two neonates were not low enough to consider weight a risk factor. Weights for the total sample ranged from 89-130 ounces. None was low enough to consider an infant as being at risk. Two babies in the sample were rated as not normal. One was the 38-week-old infant mentioned above, who was possibly blind due to cataracts. The second was a postmature, macrosomic infant.

Listed at the bottom of the table, "Other problems," includes conditions serious enough for doctors to mention but not considered serious enough for them to rate as being abnormal. These complications were three babies born with umbilical cords around the neck, one with a dislocated shoulder due to birth trauma, one instance of hydramnios, and one occurrence of heavy bleeding.

Five-minute Apgar scores are shown in Table 10. Apgar scores are routinely given at one- and five-minute intervals after birth as a quick measure of the baby's physical condition. Scores of seven or below suggest less than optimal conditions (Apgar, 1953). Two babies fell in this lower range. One had a score of two, which indicates severe asphyxiation and a need for oxygen support. The physician checklist did not indicate, however, what measures were taken for this particular infant.

No women in this sample were rated by their doctors as having a significant preexisting illness which was present during pregnancy. Likewise, no women had significant illnesses that arose during pregnancy, with the exception of one who had a premature rupture of the membranes.

### Analyses

Because of the large number of predictive variables in this study in proportion to the small sample size, predelivery data was divided into three components for analysis. Components included (a) general census data, (b) census data combined with substance usage data, and (c) personality data.

First analysis. Census data used in the first analysis included ages, educational levels, marital status, number of years married, history of pregnancies,

Table 10  
Five Minute Apgar Scores

Score	Percentage
2	3.70 ( 1) <sup>a</sup>
7	3.70 ( 1)
8	33.33 ( 9)
9	48.15 (13)
10	11.11 ( 3)

Note.  $n = 27$ .

<sup>a</sup>Numbers in parentheses indicate the number of subjects within each group.

participation in childbirth classes, and employment and income information. The remaining census variables in Section I were omitted due to a low response rate or to a lack of variability.

Twenty-one of the 51 subjects (43%) showed clustering patterns in this analysis. As shown in Table 11, clustering centered around six major variables. The most discriminating variable was whether or not the pregnancy was planned. Cluster A contained no planned pregnancies while all but one subject (85.71%) in Cluster B had planned pregnancies. Those couples who planned their pregnancies tended to be older, better educated, and financially more secure than those who did not plan their pregnancies.

An interesting result of this first analysis is that all subjects who clustered were multiparae. Primiparae fell into the nonclustering portion of the sample along with other multiparae who showed no particular group of characteristics in common. A closer look at the data revealed that primiparae were excluded from the analysis due to the smaller number of applicable variables, i.e., primiparae had no data for history of pregnancies. Because clustering is based on frequency of variable responses, primipara data did not have the clustering power of multipara data.



Table 11  
Clustering of Subjects by Census Variables

Category	Cluster A <sup>a</sup>	Cluster B <sup>b</sup>
Percentage of planned pregnancies	-	85.71%
Mean Age		
Mothers	24.77 years	29.86 years
Fathers	25.85 years	32.14 years
Mean Educational Level		
Mothers	11.69 years	15.14 years
Fathers	12.23 years	14.57 years
Percentage of Subjects With Incomes of \$15,000 and Above	15.38% <sup>c</sup>	71.43%

<sup>a</sup> $\underline{n} = 13.$

<sup>b</sup> $\underline{n} = 7.$

<sup>c</sup>Percentage was adjusted for one missing case.

Predictive (census) variables used in this first analysis were combined with outcome variables for each subject within the two major clusters. Comparison of data was not made, however, due to the poor return rate of checklists for subjects in Cluster B (29%) (see Discussion).

Second analysis. Census variables shown to have the strongest clustering power in the first analysis were combined with substance usage variables for a second analysis. Twenty-one of the 51 subjects (41%) showed clustering patterns. As shown in Table 12, clustering centered around five major variables. As in the first analysis, the most discriminating variable was whether or not the pregnancy was planned. Cigarette smoking both prior to and during pregnancy was also a powerful discriminator.

Cluster A shows the highest percentage of planned pregnancies and planned participation in childbirth classes. Only one person in this group smoked either prior to or during pregnancy.

Clusters B and C include predominantly unplanned pregnancies. Subjects within Cluster B, however, tended to be concerned over prenatal care in spite of no initial planning. A slight majority planned to participate in childbirth classes, and all smokers discontinued their habit while pregnant. Cluster B tended

Table 12

Clustering of Subjects by Census and Substance Usage Variables

Variable	Percentage		
	Cluster A <sup>a</sup>	Cluster B <sup>b</sup>	Cluster C <sup>c</sup>
Planned pregnancy	100.00 (6) <sup>d</sup>	9.09 (1)	-
Cigarette smoking prior to pregnancy	16.67 (1)	18.18 (2)	100.00 (4)
Cigarette smoking during pregnancy	16.67 (1)	-	100.00 (4)
Planned participation in childbirth classes	83.33 (5)	54.55 (6)	25.00 (1)
Alcohol usage prior to pregnancy	16.67 (1)	36.36 (4)	50.00 (2)
Alcohol usage during pregnancy	-	-	-

<sup>a</sup> $\underline{n} = 6$ .

<sup>b</sup> $\underline{n} = 11$ .

<sup>c</sup> $\underline{n} = 4$ .

<sup>d</sup>Numbers in parentheses indicate the number of subjects within each group.

to have fewer drinkers than Cluster C, although no clusters had any subjects who continued to drink during pregnancy.

Only one-fourth of the subjects in Cluster C indicated an interest in childbirth classes. Cluster C smokers all smoked several or more packs of cigarettes per week both prior to and during pregnancy.

Combining pre- and postdelivery data for comparison among clusters revealed a tendency for subjects within Clusters B and C to have a higher rate of complications with labor, delivery, and/or infant status at birth.

Third analysis. The third component of the pre-delivery information, personality data, consisted of three MMPI scales (Hs, L, Si) and the Draw-A-Person Test. A separate analysis was performed on this data for two reasons: (a) logistically, the number of personality variables combined with the number of census and substance usage variables generated a sum too large for the sample size, and (b) trends suggested by personality data alone would support the need for trained personnel in scoring and interpreting data not readily available to physicians.

Analysis of personality data yielded four major clusters plus one additional group, a null set composed of subjects with missing data. Mean scores and

percentages for variables within each cluster are presented in Table 13. The most discriminating variable was the DAP category. Clusters A and C have similar MMPI results with DAP category being the differentiating factor. Likewise, Clusters B and D are similar except for the DAP.

As in the other analyses, predictive and outcome variables were combined for each subject within the four main clusters. Although confounding of post-delivery data precludes making any valid assumptions, an interesting phenomenon is noted. All but one of the subjects with postdelivery data who drew either a male or a person of undetermined sex experienced complications of labor, delivery, and/or infant status at birth. Complications included: difficult labors (2); use of mid-forceps (2); Casesarian section due to breech delivery (1); prematurity and suspected blindness, although blindness was possibly genetic (1); dislocated shoulder (1); postmaturity (1); hydramnios (1); and nuchal cord x 1 (1), a relatively harmless condition but still one of concern. Of the five infants in the total sample considered to have the most serious conditions at or shortly after birth, four fell into the above group. The remaining high-risk infant, who received a five-minute Apgar score of two, was delivered to a mother who omitted the DAP section of her questions.

Table 13

Personality Data by Cluster

Test Item	Cluster A <sup>a</sup>	Cluster B <sup>b</sup>	Cluster C <sup>c</sup>	Cluster D <sup>d</sup>
MMPI Mean Scores				
Hs	9.17	4.50	9.00	3.50
L	4.08	7.75	4.50	7.00
S	34.92	28.85	37.13	31.75

Table 13 continued

Test Item	Cluster A <sup>a</sup>	Cluster B <sup>b</sup>	Cluster C <sup>c</sup>	Cluster D <sup>d</sup>
	DAP Percentages			
Female	91.67	100.00	-	-
Male	.08	-	-	25.00
Undetermined	-	-	100.00	-
Omitted	-	-	-	75.00

<sup>a</sup><sub>n</sub> = 12.

<sup>b</sup><sub>n</sub> = 8.

<sup>c</sup><sub>n</sub> = 8.

<sup>d</sup><sub>n</sub> = 4.

## DISCUSSION

The purpose of this study was to explore psychological factors during pregnancy and their relationship to labor, delivery, and infant status at birth. Cluster analyses were used as a data reduction technique in order to reduce the number of variables for comparison. Although predelivery data showed several strong clustering patterns, problems with postdelivery data precluded any formal comparison of the two. Post-delivery data was charted for each subject within clusters, but the disproportionate return rate among clusters combined with the somewhat subjective nature of the Physician Checklist made comparisons as to the predictive value of any variable or set of variables tenuous at best. Tendencies among clusters were noted, but exact percentages were omitted as they were not considered to be an accurate reflection of the facts.

For example, subjects in Cluster A may appear to have more problems than subjects in Cluster B. However, because at least one physician thought that no labor was easy, how can patients of this doctor be compared to those of other doctors who thought that, given



the degree of overall intensity, their patients' labors were fairly mild? Cluster A may be negatively skewed by the physician who labeled all labor as difficult while Cluster B may show a lower problem rate because only 2 of the 10 subjects had postdelivery data, a poor representation of the total cluster sample. Confounding variables such as these greatly weakened the results of this research.

Some tendencies among data in this study, however, do appear strong enough to warrant further discussion. The Draw-A-Person Test appeared to have some predictive value irrespective of cluster assignment. Women who drew men or figures of undetermined sex tended to experience a higher rate of complications with labor, delivery, and/or infant status at birth than those women who drew female figures. These results, although only suggestive, support similar findings in the literature (Davids & DeVault, 1960).

Despite problems with objectivity of postdelivery data, patterns in the Draw-A-Person data were pronounced enough to stand out among all personality clusters, even when labor variables (the most subjective) were omitted from the comparisons. The importance of this finding should not be overlooked. Ogden (1979) states that opposite sex figures drawn first have been associated with sexual ambivalence or conflict

regarding one's sexual identification. If the women with nonfemale drawings in this study were experiencing sexual ambivalence/conflict, how did they cope with pregnancy, the ultimate expression of being female? Did these uncertainties generate increased anxiety or was the problem repressed, perhaps creating more negative results (birthing difficulties? abnormalities)? Did women with gender identification problems really want to be mothers, to be responsible for children? Were they even unconsciously trying to eliminate the problem by terminating their children prior to delivery (prematurity, severe birth defects)? Of interest is the fact that four of the five infants who had the most serious conditions at or shortly after birth had mothers with nonfemale drawings. A drawing was not available for comparison with the remaining infant. Questions raised by these findings are intriguing. A more in-depth study of DAP relationships is needed to further explore these issues.

MMPI scores, an additional means of assessing personality factors, appeared to have no predictive value as used in this study. As mentioned earlier, MMPI items were not included in the questionnaire as a means of comparing subjects with standardized norms, but rather to determine whether or not the scales had any predictive value based on clustering patterns. Given

this sample, clustering of MMPI data showed no pattern relating to the outcome of labor, delivery, and/or infant status at birth.

The scales, however, do provide an interesting clue regarding characteristics of the sample. Of the total sample, 49% achieved raw scores of five or above on the L scale, possibly an indication that perhaps as many as half of the subjects were trying to present themselves in a positive way. Elevated L scale scores would tend to depress the other two clinical scales used in this study. In support of this statement, it is interesting to note that Clusters A and C, the two groups with lower L scale mean scores, have higher Hs and Si mean scores.

Other variables of interest included those in the second analysis pertaining to cigarette smoking. The discriminating factor among clusters was not whether a woman smoked during pregnancy, but whether she smoked prior to pregnancy and had an unplanned conception. Women in this category (Clusters B and C) tended to have more problems with the birthing process. However, problems appeared to be more related to whether or not a pregnancy was planned than to whether or not a woman smoked, or if so, how heavily.

Planned pregnancy was also the most discriminating variable in the analysis of census data. However, due

to the low return rate of postdelivery data for this particular component no comparison was made between pre- and postdelivery information.

The pitfalls of this research were many. Perhaps the most significant problem was the poorly defined items on the Physician Checklist. Although the checklist was developed through consultation with doctors and nurses and revised several times in an attempt to increase objectivity, postdelivery data was still confounded by subjectivity. As mentioned earlier, one doctor wrote on a form, "There is no such thing as easy labor." Consequently, he did not rate that particular item, whereas other doctors did. Rating labor as easy or difficult without specific criteria for doing so provided no consistent basis for comparison among subjects. Defining items precisely enough to achieve a high ratio of interrater reliability, however, may prove to be very difficult.

Problems pertaining to wording were found throughout the questionnaire and often precluded using specific questions or even portions in the final analyses. For example, ratings of attitude and family relationships, Section III of the questionnaire, did not show enough variability to justify analyzing the data. (See Table 8 for response percentages.) Ratings for statements in this section were all loaded in the same

direction. Many subjects appeared to mark their answers quickly with similar responses regardless of the item content. Reversing a portion of the items may have slowed readers down enough to perhaps have gotten a more accurate measurement of their perceptions.

Section I also had several items that were poorly defined. The question, "Have you ever experienced difficulty in getting pregnant?" could have been more precisely stated as, "Have you ever tried to conceive for six months or longer without becoming pregnant?" (Infertility: Causes and Treatments, 1978). The questions, "Have you ever received psychological counseling?" and "If yes, was the counseling helpful to you?" may have yielded more pertinent information if worded as follows: "Has your doctor or any other professional person ever suggested professional counseling for you? If so, did you actively participate in treatment? Was the treatment helpful to you?" Responses to the above questions would more accurately reflect the need for intervention versus the actual percentage of follow-up on that need. The summation of such information could be useful to doctors in knowing how much encouragement and support to provide for their patients whom they feel may benefit from therapeutic intervention.

A number of subjects misread the item, "Rate your health for each previous full-term pregnancy." Instead of previous full-term pregnancies only- they rated their current pregnancies as well as aborted pregnancies. Because of the inconsistency in responses, this item was deleted altogether for the purposes of this study.

For use in a cluster analysis, data pertaining to childbirth classes would have been more relevant if presented in a simple "Yes," "No" format rather than being divided into "Bradley," "LaMaze," and "No." Although breaking the affirmative responses down yielded interesting categorical information, the discriminating power of the variable in differentiating among clusters was reduced.

Aside from problems with the questionnaire, the most limiting factor for this study was the geographical region in which it was conducted. The time investment required in order to obtain a sufficient number of subjects was prohibitive due to the largely rural nature of the population. Because of this problem, the number of subjects obtained was not nearly enough to adequately measure the variables being studied. Access through physicians and hospitals in a large metropolitan area is needed in order to collect the amount of data required. Even in a metropolitan area, however,

the time factor would still be significant due to the nature of the study.

## GLOSSARY



## GLOSSARY

Eclampsia. A major toxemia of pregnancy accompanied by high blood pressure, albuminuria, oliguria, tonic and clonic convulsions, and coma.

Gravidity. Pregnancy.

Hydramnios. An excess of liquor amnii which leads to overdistention of the uterus and the possibility of malpresentation. Liquor amnii is secreted by the fetus, and abnormal amounts are probably due to some abnormality of the fetus.

Hyperemesis. Excessive vomiting. Nausea and vomiting during pregnancy of such severity and duration that systemic effects such as weight loss and acidosis occur.

Macrosomia. Abnormally large body.

Multipara. A woman who has borne more than one offspring, whether or not the offspring were alive at birth.

Parity. The condition of a woman with respect to the number of children she has borne.

Primipara. A woman who has had or who is giving birth to her first child.

Pseudocyesis. A condition in which a patient has nearly all of the usual signs and symptoms of pregnancy such as enlargement of abdomen, weight gain, cessation of menses, and morning sickness, but is not pregnant. Usually seen in women who either are very desirous of having children or wish to avoid pregnancy. When the patient is under anesthesia or hypnosis or is asleep, the abdominal enlargement disappears.

Toxemia. Distribution throughout the body of poisonous products of bacteria growing in a focal or local site, thus producing generalized symptoms.

See: eclampsia.

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## REFERENCES

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APPENDIX A

Self-Administered Screening Instrument

ID # 025

PARTICIPATION IN THIS RESEARCH PROJECT IS VOLUNTARY. ALL INFORMATION DISCLOSED WILL BE HIGHLY CONFIDENTIAL. PARTICIPANTS ARE GIVEN ID NUMBERS TO AVOID ANY ASSOCIATION BETWEEN NAMES AND DATA.

## SECTION I

Date: \_\_\_\_\_ Age: \_\_\_\_\_ Race: \_\_\_\_\_ Age of baby's father: \_\_\_\_\_

Circle highest grade completed in school:

Wife (Mother): 1 2 3 4 5 6 7 8 9 10 11 12 GED 13 14 15 16 17 (and above)

Husband (Father): 1 2 3 4 5 6 7 8 9 10 11 12 GED 13 14 15 16 17 (and above)

Marital Status (check one): Single: \_\_\_\_\_ Married: \_\_\_\_\_ Separated: \_\_\_\_\_  
 Divorced: \_\_\_\_\_; if currently separated or divorced, was the decision: Mutual: \_\_\_\_\_  
 Wife's: \_\_\_\_\_ Husband's: \_\_\_\_\_

If married, how many years have you been married to your present husband (round off to closest year)? \_\_\_\_\_

If you have been married before, what number is your current marriage? \_\_\_\_\_

Is this a planned pregnancy? Yes \_\_\_\_\_ No \_\_\_\_\_  
 How many times have you been pregnant, including this time? \_\_\_\_\_

Previous number of normal births: \_\_\_\_\_

Previous number of abortions/miscarriages: \_\_\_\_\_

Previous number of stillbirths: \_\_\_\_\_

Previous number of premature births: \_\_\_\_\_

Number of children born with physical/mental abnormalities: \_\_\_\_\_

Length of time since last pregnancy: \_\_\_\_\_

Have you ever experienced difficulty in getting pregnant? Yes \_\_\_\_\_ No \_\_\_\_\_; if so, for approximately how long (closest number in years)? \_\_\_\_\_

Did you have other children at the time? Yes \_\_\_\_\_ No \_\_\_\_\_

Rate your health for each previous full term pregnancy: (circle appropriate number)

First: 1 2 3 4  
 Excellent Poor

Second: 1 2 3 4  
 Excellent Poor

Third: 1 2 3 4  
 Excellent Poor

Fourth: 1 2 3 4  
 Excellent Poor

Have you experienced any major illness within the last 2 years? Yes \_\_\_\_\_ No \_\_\_\_\_  
 If yes, briefly describe: \_\_\_\_\_



Have you ever received psychological counseling? Yes \_\_\_\_\_ No \_\_\_\_\_  
 If yes, was the counseling helpful to you? Yes \_\_\_\_\_ No \_\_\_\_\_

Do you plan to participate in natural childbirth classes? Bradley \_\_\_\_\_  
 LaMaze \_\_\_\_\_ No \_\_\_\_\_

Have you been employed during this pregnancy? Yes \_\_\_\_\_ No \_\_\_\_\_  
 If yes, please rate your job satisfaction (circle one):  
 1 2 3 4  
 Very Very  
 Satisfied Dissatisfied

If married, is your husband currently employed? Yes \_\_\_\_\_ No \_\_\_\_\_  
 If yes, please rate your husband's job satisfaction in  
 your opinion (circle one):  
 1 2 3 4  
 Very Very  
 Satisfied Dissatisfied

Estimate your annual family income (including sources such as child support,  
 federal assistance, etc.).

\_\_\_\_\_ \$4,999 or below \_\_\_\_\_ \$15,000 - \$24,999  
 \_\_\_\_\_ \$5,000 - \$9,999 \_\_\_\_\_ \$25,000 and above  
 \_\_\_\_\_ \$10,000 - \$14,999

Please rate the following (circle the appropriate answer).

Use of cigarettes during pregnancy:

	0	1	2	3	4
None	Less	At	Several	One	
	than	least	packs	or	
	one	one	per	more	
	pack	pack	week	packs	
	per	per		daily	
	week	week			

Use of cigarettes prior to pregnancy:

	0	1	2	3	4
None	Less	At	Several	One	
	than	least	packs	or	
	one	one	per	more	
	pack	pack	week	packs	
	per	per		daily	
	week	week			

Use of alcohol during pregnancy:

	0	1	2	3	4	5
None	Less	At	Several	Several	Several	Almost
	than	least	times	times	times	daily
	once	once	a	a	a	
	a	a	month	week	week	
	month	month				

Use of alcohol prior to pregnancy:

	0	1	2	3	4	5
None	Less	At	Several	Several	Several	Almost
	than	least	times	times	times	daily
	once	once	a	a	a	
	a	a	month	week	week	
	month	month				

	0	1	2	3	4	5
Use of over the counter drugs during pregnancy (aspirin, tylenol, etc.):	None	Less than once a month	At least once a month	Several times a month	Several times a week	Almost daily

	0	1	2	3	4	5
Use of recreational drugs during pregnancy (marijuana, cocaine, etc.)	None	Less than once a month	At least once a month	Several times a month	Several times a week	Almost daily

Copies of this research will be available upon completion. For further  
information contact: Kathryn Smith Ridley  
P.O. Box 614  
Boone, N.C. 28607

NAME: \_\_\_\_\_  
 (For id by your doctor only. This  
 portion will be removed.)

(cut along line)

SECTION II

PLEASE REMOVE THIS PAGE AND GIVE IT TO OFFICE PERSONNEL. OTHER  
INFORMATION PROVIDED WILL NOT BE SEEN BY YOUR DOCTOR.

Yes No I understand that the information below is needed for this research  
 (circle one) project and give my permission for its release to K.S. Ridley.

ID Number: 005

PHYSICIAN CHECKLIST  
 (to be completed by doctor post delivery)

Please provide the following information as it pertains to this patient and child.

- Yes No 1. Easy labor
- Yes No 2. Difficult labor
- Yes No 3. Precipitous labor
- Yes No 4. Prolonged second stage of labor
- Yes No 5. Induced labor
- Yes No 6. Normal delivery
- Yes No 7. Forceps delivery: high mid low (circle if appropriate)
- Yes No 8. Breech delivery
- Yes No 9. Caesarean section with cephalo-pelvic disproportion
- Yes No 10. Caesarean section without cephalo-pelvic disproportion
- \_\_\_\_\_ 11. Apgar score (5 minute)
- \_\_\_\_\_ 12. Birth weight
- Yes No 13. Premature infant; if so, how early? \_\_\_\_\_
- Yes No 14. Normal infant; if no, explain: \_\_\_\_\_
- Yes No 15. Significant illness during pregnancy; if yes, please specify: \_\_\_\_\_
- Yes No 16. Significant pre-existing illness present during pregnancy; if yes,  
 please specify: \_\_\_\_\_
17. Other comments: \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

## SECTION III

Please rate your opinion of the following (circle the appropriate number):

1. Your feelings toward this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
2. The baby's father's feelings toward this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
3. Degree of happiness between you and the baby's father since pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
4. Degree of happiness between you and the baby's father before this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
5. Frequency of quarrels between you and the baby's father:
 

1	2	3	4
Less than once a week	At least once a week	Several times a week	Almost daily
  
6. Satisfaction with emotional support from the baby's father before this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
7. Satisfaction with emotional support from the baby's father since this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
8. Satisfaction with your husband's current economic support (answer only if married):
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
9. Your relationship with your parents before this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
10. Your relationship with your parents since this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
11. Your parents' attitude toward this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied
  
12. Parents of the baby's father attitude toward this pregnancy:
 

1	2	3	4
Very Satisfied			Very Dissatisfied

## SECTION IV

Circle T for true or F for false. Please answer all questions.

- T F 1. I have a good appetite.
- T F 2. I wake up fresh and rested most mornings.
- T F 3. My hands and feet are usually warm enough.
- T F 4. I am about as able to work as I ever was.
- T F 5. I am very seldom troubled by constipation.
- T F 6. I am troubled by attacks of nausea and vomiting.
- T F 7. Once in a while I think of things too bad to talk about.
- T F 8. I would like to be a singer.
- T F 9. I am bothered by acid stomach several times a week.
- T F 10. At times I feel like swearing.
- T F 11. I find it hard to keep my mind on a task or job.
- T F 12. I have had very peculiar and strange experiences.
- T F 13. My sleep is fitful and disturbed.
- T F 14. I do not always tell the truth.
- T F 15. I am in just as good physical health as most of my friends.
- T F 16. I am almost never bothered by pains over the heart or in my chest.
- T F 17. I am a good mixer.
- T F 18. I do not read every editorial in the newspaper every day.
- T F 19. Parts of my body often have feelings like burning, tingling, crawling, or like "going to sleep."
- T F 20. I have had no difficulty in starting or holding my bowel movement.
- T F 21. I wish I could be as happy as others seem to be.
- T F 22. I hardly ever feel pain in the back of the neck.
- T F 23. I am troubled by discomfort in the pit of my stomach every few days or oftener.
- T F 24. I get angry sometimes.
- T F 25. I am easily downed in an argument.

Questions taken from the Minnesota Multiphasic Personality Inventory. Copyright 1943, renewed 1970.

- T F 26. Once in a while I put off until tomorrow what I ought to do today.
- T F 27. I do not mind being made fun of.
- T F 28. I like to go to parties and other affairs where there is lots of loud fun.
- T F 29. I have little or no trouble with my muscles twitching or jumping.
- T F 30. Sometimes when I am not feeling well I am cross.
- T F 31. There seems to be a fullness in my head or nose most of the time.
- T F 32. I have never done anything dangerous for the thrill of it.
- T F 33. Often I feel as if there were a tight band about my head.
- T F 34. Most people are honest chiefly through fear of being caught.
- T F 35. My speech is the same as always (not faster or slower, or slurring; no hoarseness).
- T F 36. My table manners are not quite as good at home as when I am out in company.
- T F 37. Most people will use somewhat unfair means to gain profit or an advantage rather than to lose it.
- T F 38. I have a great deal of stomach trouble.
- T F 39. I like dramatics.
- T F 40. I have never vomited blood or coughed up blood.
- T F 41. If I could get into a movie without paying and be sure I was not seen I would probably do it.
- T F 42. Criticism or scolding hurts me terribly.
- T F 43. When I was a child, I belonged to a crowd or gang that tried to stick together through thick and thin.
- T F 44. I have often lost out on things because I couldn't make up my mind soon enough.
- T F 45. I would rather win than lose in a game.
- T F 46. During the past few years I have been well most of the time.
- T F 47. I am neither gaining nor losing weight.
- T F 48. The top of my head sometimes feels tender.

- T F 49. I do not tire quickly.
- T F 50. I like to know some important people because it makes me feel important.
- T F 51. It makes me uncomfortable to put on a stunt at a party even when others are doing the same sort of things.
- T F 52. I frequently have to fight against showing that I am bashful.
- T F 53. I seldom or never have dizzy spells.
- T F 54. I find it hard to make talk when I meet new people.
- T F 55. I can read a long while without tiring my eyes.
- T F 56. I feel weak all over much of the time.
- T F 57. I have very few headaches.
- T F 58. I have had no difficulty in keeping my balance in walking.
- T F 59. I do not have spells of hay fever or asthma.
- T F 60. I do not like everyone I know.
- T F 61. I wish I were not so shy.
- T F 62. I like to flirt.
- T F 63. I gossip a little at times.
- T F 64. I should like to belong to several clubs or lodges.
- T F 65. I hardly ever notice my heart pounding and I am seldom short of breath.
- T F 66. I like to talk about sex.
- T F 67. I brood a great deal.
- T F 68. I have few or no pains.
- T F 69. I like to be with a crowd who play jokes on one another.
- T F 70. Sometimes at elections I vote for men about whom I know very little.
- T F 71. It does not bother me that I am not better looking.
- T F 72. When in a group of people I have trouble thinking of the right things to talk about.
- T F 73. I have numbness in one or more regions of my skin.
- T F 74. My eyesight is as good as it has been for years.

- T F 75. I have often felt that strangers were looking at me critically.
- T F 76. I do not often notice my ears ringing or buzzing.
- T F 77. Once in a while I laugh at a dirty joke.
- T F 78. I am likely not to speak to people until they speak to me.
- T F 79. I have periods in which I feel unusually cheerful without any special reason.
- T F 80. In school I found it very hard to talk before the class.
- T F 81. I seem to make friends about as quickly as others do.
- T F 82. I think nearly anyone would tell a lie to keep out of trouble.
- T F 83. I am easily embarrassed.
- T F 84. Sometimes my voice leaves me or changes even though I have no cold.
- T F 85. I easily become impatient with people.
- T F 86. I forget right away what people say to me.
- T F 87. I have no dread of going into a room by myself where other people have already gathered and are talking.
- T F 88. I have several times given up doing a thing because I thought too little of my ability.
- T F 89. Sometimes some unimportant thought will run through my mind and bother me for days.
- T F 90. I love to go to dances.
- T F 91. If given the chance I would make a good leader of people.
- T F 92. I enjoy the excitement of a crowd.
- T F 93. I can remember "playing sick" to get out of something.
- T F 94. I shrink from facing a crisis or difficulty.
- T F 95. I am not afraid of fire.
- T F 96. Religion gives me no worry.
- T F 97. I hate to have to rush when working.
- T F 98. I tend to be interested in several different hobbies rather than to stick to one of them for a long time.



- T F 99. I feel sure that there is only one true religion.
- T F 100. When I am feeling very happy and active, someone who is blue or low will spoil it all.
- T F 101. Policemen are usually honest.
- T F 102. I do not like to see women smoke.
- T F 103. I very seldom have spells of the blues.
- T F 104. When someone says silly or ignorant things about something I know about, I try to set him right.
- T F 105. I am often said to be hotheaded.
- T F 106. I feel unable to tell anyone all about myself.
- T F 107. Lightning is one of my fears.
- T F 108. I like to keep people guessing what I'm going to do next.
- T F 109. The only miracles I know of are simply tricks that people play on one another.
- T F 110. I am afraid to be alone in the dark.
- T F 111. My plans have frequently seemed so full of difficulties that I have had to give them up.
- T F 112. I have often felt badly over being misunderstood when trying to keep someone from making a mistake.
- T F 113. Horses that don't pull should be beaten or kicked.
- T F 114. I frequently ask people for advice.
- T F 115. The future is too uncertain for a person to make serious plans.
- T F 116. Often, even though everything is going fine for me, I feel that I don't care about anything.
- T F 117. I am not easily angered.

SHIPLEY INSTITUTE OF LIVING SCALE  
*Vocabulary Test and Abstraction Test*

NAME 005

In the test below, the first word in each line is printed in capital letters. Opposite it are four other words. Draw a line under the one word which means the same thing, or most nearly the same thing, as the first word. A sample has been worked out for you. If you don't know, guess. Be sure to underline the one word in each line that means the same thing as the first word.

		sample		
LARGE	red	<u>big</u>	silent	wet
		begin here		
(1) TALK	draw	eat	speak	sleep
(2) PERMIT	allow	sew	cut	drive
(3) PARDON	forgive	pound	distill	tell
(4) COUCH	pin	eraser	sofa	glass
(5) REMEMBER	swim	recall	number	defy
(6) TUMBLE	drink	dress	fall	thank
(7) HIDEOUS	silvery	tilted	young	deadly
(8) CORDIAL	swift	muddy	leafy	heartly
(9) EVIDENT	green	obvious	sceptical	afraid
(10) IMPOSTOR	conductor	officer	book	pretender
(11) MERIT	deserve	distrust	light	separate
(12) FASCINATE	welcome	fix	stir	enchant
(13) INDICATE	defy	excite	signify	bicker
(14) IGNORANT	red	sharp	uninformed	precise
(15) FORTIFY	submerge	strengthen	vent	deaden
(16) RENOWN	length	head	come	loyalty
(17) NARRATE	yield	buy	associate	tell
(18) MASSIVE	bright	large	speedy	low
(19) HILARITY	laughter	speed	grace	malice
(20) SMIRCHED	stolen	pointed	remade	soiled
(21) SQUANDER	tease	belittle	cut	waste
(22) CAPTION	drum	ballast	heading	apo
(23) FACILITATE	help	turn	strip	bewilder
(24) JOCOSE	humorous	paltry	fervid	plain
(25) APPRISE	reduce	strew	inform	delight
(26) RUE	eat	lament	dominate	cure
(27) DENIZEN	senator	inhabitant	fish	atom
(28) DIVEST	dispossess	intrude	rally	pledge
(29) AMULET	charm	orphan	dingo	pound
(30) INEXORABLE	untidy	involatile	rigid	sparse
(31) SERIATED	dried	notched	armed	blunt
(32) LISSOM	muldy	loose	supple	convex
(33) MOLLIFY	mitigate	direct	pertain	abuse
(34) PLAGIARIZE	appropriate	intend	revoke	maintain
(35) ORIFICE	brush	hole	bulding	lute
(36) QUERULOUS	maniacal	curious	devout	complaining
(37) PARIAH	outcast	priest	'ul	locker
(38) ABET	waken	ensue	incite	placate
(39) TEMERITY	rashness	tumidly	desire	kindness
(40) PRISTINE	vain	sound	first	level

## SECTION V

Please draw a person in the space provided below. Do not worry about artistic abilities. Just do the best you can.

APPENDIX B

Permission to Use MMPI for Research Purposes

## AGREEMENT

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 between The Psychological Corporation, a subsidiary of Harcourt Brace Jovanovich, Inc., 737 Third Avenue, New  
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**P.O. BOX 614**  
 Address **BOONE, NORTH CAROLINA 28607**

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**MINNESOTA MULTIPHASIC PERSONALITY INVENTORY**

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11. This instrument constitutes the entire agreement between the parties and there are merged herein all prior and collateral understandings and agreements. No amendment or modification of this Agreement shall be valid unless in a writing signed by both parties.
12. Regardless of the place of its physical execution or performance this Agreement shall be governed by and interpreted under the laws of the State of New York.

Richard Smith Ridley  
 Title Graduate Student  
 Date Sept. 9, 1982

THE PSYCHOLOGICAL CORPORATION  
 a subsidiary of Harcourt Brace Jovanovich, Inc.

\_\_\_\_\_  
 Date

## VITA

Kathryn Smith Ridley was born in Morehead City, North Carolina on March 27, 1953. She attended elementary school in Beaufort, North Carolina, and graduated from East Carteret High School in June, 1971. She attended The University of North Carolina in Greensboro from 1971-1973, then transferred to The University of North Carolina in Chapel Hill, where in 1975 she received a Bachelor of Arts degree in Psychology. In the fall of 1975 she accepted a teaching position at the Rockingham County Enrichment Center in Reidsville, North Carolina, a center for developmentally disabled children. During her employment with the Enrichment Center, she assisted with the opening of a new center in Madison, North Carolina, and served as Program Director for that center from 1977-1979.

In 1979, she entered Appalachian State University as a candidate for a Master's degree in Clinical Psychology. This degree was awarded in May 1985. She was employed as an outpatient therapist for Davidson County Mental Health, Mental Retardation, and Substance Abuse

Services in Thomasville, North Carolina, from November, 1982, through February, 1984.

Ms. Ridley has taught part-time for Rockingham County Community College, Wentworth, North Carolina, and Walter State College Extension Program in Mountain City, Tennessee. She was co-speaker for a panel discussion on programming for handicapped children at the 1976 International Conference for Exceptional Children in Atlanta, Georgia. Her work experience with developmentally disabled children stimulated her interest in birth defects and research related to intervention during the prenatal period.

Ms. Ridley currently resides at 905 Sixth Street, High Point, North Carolina. Her parents are the late Mr. and Mrs. James L. Smith, Jr., of Havelock, North Carolina. She is married to Gary F. Ridley of Eden, North Carolina.