FACTORS INFLUENCING PREFATORY MATERNAL RESPONSE
IN THE PRIMIGRAVIDA

by

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Submitted in partial fulfillment of the requirements
for the Degree of Doctor of Philosophy

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January, 1988
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Abstract

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A prospective survey with two data collection periods was conducted to test a theoretical model deductively derived from a conceptual system suggested by Rubin (1967a, 1967b, 1984). A sample of 123 primigravid women were recruited from 5 sites in the greater Portland, Maine area. Study subjects completed six questionnaires: (a) the Self-Coherence Survey; (b) the Hassles Scale; (c) the Uplifts Scale; (d) the Health Responses Scale; (e) the Support Behaviors Inventory; and (f) the Psychosocial Health Reproductive Tool. Data were analyzed by path analysis and correlated t-tests.

Major findings of the study supported the theoretical model that was proposed. The most dominant finding was the relationship between self-coherence and the dependent variable, prefatory maternal response. Self-coherence was directly related to prefatory maternal response in both path models and indirectly related to prefatory maternal response through the endogenous variables included in the model.
Endogenous variables that were significantly related to prefatory maternal response changed between data collection period 1 and 2. The first path model included hassles, uplifts, and well-being as significant influences on prefatory maternal response. The second path model included satisfaction with partner support, satisfaction with other support, and symptoms as significant endogenous variables.

The findings of this study provide support for the proposed theoretical model. Further research needs to focus on (a) the relationship of self-coherence to the endogenous variables in the system; (b) interventions to increase self-coherence; and (c) qualitative approaches to understand more fully the nature of the relationships between the study variables.
Rosemary Ellis wrote, "One does not earn a PhD, one becomes a PhD in some special area." Having gone through the process, I know now what she meant. I feel a great sense of personal pride and accomplishment. I would also amend Dr. Ellis' statement to include the following additional comment: one becomes a PhD with a great deal of help from many people; it is not a process that occurs in isolation. It is with this thought I mind that I extend the following thanks to the numerous people who have assisted me in this endeavor.

Immediate thanks must go to my dissertation committee: Karen W. Budd, Ivo L. Abraham, Rozella M. Scholtfeldt, and Jacob F. Palomaki for their guidance and assistance. Each person contributed to the dissertation process in a unique way, with the end result being a group that worked well together and provided me with a range of opinions and help. Dr. Abraham offered expert statistical advice and provided careful guidance during the candidacy process. Dr. Schlotfeldt read my dissertation with a critical eye, finding flaws in thinking as well as writing. Dr. Palomaki, who graciously joined my committee at the
last minute, brought a clinical perspective to the group and helped me to think more realistically about the meaning of my research. To each of these people, a heartfelt thank you.

Karen Budd served as my dissertation advisor and in this role, helped me more than anyone else I worked with, and for this I am extremely grateful. Karen and I spent countless hours on the telephone (one of the hazards of long distance dissertation work!) discussing every aspect of the entire dissertation, every step of the way. I felt comfortable calling Karen at any hour, for I always knew that she would be willing to answer my questions, listen to my complaints, or provide a much needed bit of encouragement. A thank you is insufficient for the work that she did and so I would like to dedicate this dissertation to my advisor, Karen Walton Budd.

Thank you to my good friends, Sandy Wyper and Peggy Zack, who helped me by providing emotional support as well as food and shelter on my numerous trips to Cleveland. They both know they have a standing invitation to stay at my home in Maine and to eat lobster every day of their visit--it is the least I can do!
My research assistant, Kelly Wood, played a major role in the data entry and data analysis. Her cheery voice on the telephone, "Want to do numbers today?" kept me going through the long and tedious process of data coding, while her attention to detail helped to ensure accuracy throughout. Every researcher should be as lucky as I to have an assistant as qualified and talented as Kelly and for her help I am extremely grateful.

The nurses at each of the data collection sites also deserve a special thank you. They were all very interested in my work and supportive of the project. Their assistance allowed me to obtain the necessary sample in a timely and efficient manner. For many of the nurses, this was the first time they were involved in a research study and I am very appreciative of their continuing help, interest, and support.

To all the women who participated in the study, I also extend a special thank you. I appreciate the effort everyone took to complete two lengthy questionnaires and to return them to me in a prompt manner. Too often the study participants are forgotten after the data are analyzed; to the 123 individual women who participated in this investigation--thank you.
Finally, on the home front, I owe an enormous debt of gratitude to my husband Tony, who never questioned what I was doing or why—even when I did. Tony was always there—encouraging me, helping me, telling me, "Yes, you will finish." His constant support and belief in me gave me the energy I needed to keep going and for this I am deeply grateful. Thank you Tony—it comes from the heart.

LHN
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CHAPTER I

Introduction

Pregnancy, childbearing, and mothering are significant events in the lives of women. While some might argue, as Rich (1976) has, that motherhood is not "a woman's highest and holiest mission" (Spargo, 1914; cited in Rich, 1976, p. 42) there is agreement that childbearing and childrearing are important times in a woman's life and deserve recognition as such (Andersen, 1984; Dorr & Friedenberg, 1983; Gerson, Alpert, & Richardson, 1984; Valentine, 1982). A study of these events requires a conceptualization that recognizes their complexity and significance.

Stevenson (1983) has written of the need for research on the complex interactions of adult developmental stages. Identifying factors that influence a particular outcome and studying the interaction of the factors is one way to achieve this goal.

The purpose of this study was to test a model deductively derived from a conceptual system suggested by Rubin (1967a, 1967b, 1984) in an attempt to understand the process of maternal identity formation.
during pregnancy. Four factors: the self-system, biologic, social, and psychologic, were identified within the conceptual system and were seen as having an influence on the formation of a maternal identity. From the proposed theoretical system, a causal model was developed. Using this causal model as the basis of the operational system, the following research questions were proposed:

1. What are the relationships between (a) self-coherence, (b) stress, (c) support, (d) symptoms and well-being, and (e) prefatory maternal response in the primigravid woman?

2. What changes occur in (a) self-coherence, (b) stress, (c) support, (d) symptoms and well-being, and (e) prefatory maternal response between weeks 22 and 32 of gestation in the primigravid woman?

Definition of Terms

The following definitions of the study variables are presented to aid the reader in understanding the research questions and the preliminary discussion of the study purpose and significance. Derivation of the
variable definitions will be presented in subsequent chapters.

Self-coherence is "the ability to integrate present experience with past experience, motivations and goals and to find meaning in the present experience" (Budd, 1985, p. 114).

Stress is the experienced changes in equilibrium and mood that occur as a result of perceived events (hassles and uplifts) in the life of the expectant parent (Brown, 1986b). For this study, stressors have been operationalized as hassles, the irritating, frustrating, distressing demands that characterize everyday transactions with the environment, and uplifts, positive experiences that can be sources of peace, satisfaction and joy (Kanner, Coyne, Shaefer, & Lazarus, 1981).

Support is defined as interpersonal transactions that include one or more of the following: the expression of positive affect of one person toward another; affirmation or endorsement of another person's behaviors, perceptions or expressed views; the giving of symbolic or material aid to another person (Brown, 1986a).

Symptoms are perceived maternal discomforts related to the pregnancy, such as headache, backache, or
gastrointestinal upsets and emotional changes, such as feelings of sadness or depression (Brown, 1986b).

Well-being is a sense of psychologic wellness, pleasure, and/or energy (Brown, 1986a).

Prefatory maternal response is the outcome of the anticipatory phase of maternal role acquisition and is the development of a maternal identity during pregnancy. Prefatory maternal response consists of the components of competency, gratification, and attachment (Budd, 1985; Josten, 1981; Mercer, 1981; 1982, 1985; Rubin, 1967a, 1967b, 1975). Each of the components of prefatory maternal response can be further defined as follows:

Attachment is the development of an affectional tie to the fetus and recognition of the fetus as being a separate person from the mother. Examples of behaviors that indicate attachment include: selecting names for the baby, calling the baby/fetus by a nickname, having fantasies and/or dreams about the baby/fetus.

Competency is the recognition and accurate perception of the complexities of mothering; ensuring physical well-being of self for the well-being of the fetus. Examples of behaviors that
indicate competency include: eating a good diet, altering behaviors as necessary (quitting smoking, abstaining from alcohol), planning for after the baby comes (buying clothes, arranging daycare if necessary).

Gratification is finding pleasure in the pregnancy and anticipating the experience of motherhood and includes recognition by friends of the significance of the event. Examples of behaviors that indicate gratification include: sharing the experience with others, friends giving a baby shower.

Perspective of the Research

Becoming a Mother -- A Process or a Hurdle?

Breen (1975), in a review of literature on pregnancy, identified two major theoretical perspectives: the "hurdle" view and the "development" view. Hurdle research was characterized by the notion that pregnancy and birth are hurdles to be overcome and health is a return to the prepregnancy state. The implicit assumption in this view is that if the return to a prior state is health, then pregnancy is not health, but is something else, i.e., illness. The
development view, on the other hand, proposes pregnancy and birth to be a process in which "specifically feminine elements are experienced and integrated into the personality" (Breen, 1975, p. 19). The development view and the beliefs of the investigator are congruent.

The hurdle perspective is a more commonly held view than is the developmental view. Stevenson (1983) has criticized research with a hurdle perspective, noting:

Parent-child (maternal-child) research is an area where investigators have ignored the human developmental aspect of the adult subjects. Studies found in this literature did not give evidence of an appropriate grounding in the knowledge base of the parents' (mothers') developmental stages and of the multiple and conflicting developmental tasks facing young adults. . . Attention to development was absent in studies of adult pregnant subjects; these studies did not include focus on how the pregnancy influenced the mothers' development. (p. 58)

Hurdle research is characterized by transient changes and foci on single variables, such as anxiety (Beck et al., 1980; Blomberg, 1980; Glazer, 1980; Standley, Soule, & Copans, 1979), fear (Areskog, Kjessler, & Uddenberg, 1982, 1983a, 1983b, 1984), life change (Berkowitz & Kasl, 1983; Jones, 1978, Nuckolls, Cassel, & Kaplan, 1972), and ambivalence about the pregnancy (Davids & Holden, 1970; Grimm & Venet, 1966; Kumar, Robson, & Smith, 1984; Yank, Zweig, Douthitt, & Federman, 1976). In these studies, there was a focus on
the change in the identified variable with one of two results usually measured: the effect of the change in the variable on some other outcome measure, usually a complication such as premature labor, difficulty in labor, or low birth weight; or the measurement of the variable during pregnancy and after delivery to demonstrate a return to the pre-pregnant level.

The other major idea that is consistently present in hurdle research is the notion of adaptation. Oakley (1980) noted that in many of these adaptation studies it was unclear exactly to what the mother was adapting. Grossman, Eichler, and Winickoff (1980) studied adaptations of mothers, fathers, and infants and discussed "adaptive success" at length, but never made clear what was the focus of the adaptation. Likewise, Lederman (1984) studied adaptation in pregnancy and related this to physiologic changes during pregnancy. Once again, the hurdle perspective was clear: women who did not adapt well in pregnancy (as indicated by conflict and ambivalence) were predicted to have higher anxiety scores during labor and a relatively long labor.

In general, researchers with a hurdle perspective view pregnancy as a time of crisis that requires significant change and adaptation by the woman to cope effectively. Researchers grounded in a developmental
view, on the other hand, see pregnancy as a life change, a time of growth. Single variables do not contribute to a single outcome; rather, one must study the complex interaction of a group of variables in an attempt to understand the changes that occur as a result of the experience.

Research on Pregnancy
Based Upon a Developmental Perspective

Four groups of studies (Budd, 1985; Leifer, 1977; Mercer, 1982, 1985; Rubin, 1967a, 1967b) are examples of research on pregnancy with a developmental perspective. In these studies pregnancy is an experience that contributes to a woman's change from childless woman to mother. In two of the four studies (Leifer, 1977; Mercer, 1982, 1985) the subjects were first time mothers; Rubin (1967a) and Budd (1985) included multiparous women in their samples. Multiparous women were included by Rubin (1967a) so she could contrast their experiences to those of the primiparous women. Three of the four researchers (Leifer, Mercer, and Rubin) used longitudinal designs over several data collection periods. In each of the studies, data were collected on specific clusters of variables to
understand the processes occurring during maternal role acquisition, as opposed to understanding specific changes in each of the variables.

Rubin (1967a, 1967b) used a biological field study approach to study the subjects' verbal and nonverbal behavior and actions and interactions during pregnancy and the postpartum. Five primiparous and four multiparous women participated in the research from the twelfth week of pregnancy through the first month after delivery. From these data, Rubin (1967a) identified the processes and operations of what she termed taking-in, taking-on, and letting-go and described the components of the self system. Rubin (1975, 1984) has continued to refine this framework and it has been used by others who have studied pregnancy and childbearing (for example, Grubb, 1976, 1980; Rich, 1973; and Richardson, 1981).

Leifer (1977) studied 19 primigravid women throughout pregnancy and during the first year after delivery. Leifer (1977) studied affective changes occurring during pregnancy and traced the development of maternal feeling, and collected data on health responses, life changes, self-concept, body image, attachment and reactions to motherhood. Overall, Leifer (1977) found that a sense of fulfillment, adulthood, and
integration were clear during the pregnancy and postpartum. Personality integration in early pregnancy was predictive of psychological growth throughout pregnancy and early parenthood.

Mercer (1982, 1985) studied 294 primiparous women during the postpartum and the first year of motherhood to determine the form and strength of the relationship between a number of maternal, infant, and pregnancy experience variables and maternal role attainment. Mercer (1982) found that age was not a predictor of maternal role attainment when educational level, ethnicity, and marital status were controlled. She found that 38% of the variance in maternal role attainment at one year was explained by self-concept, maternal attitudes, and stress (life stress and infant related stress).

Budd (1985) studied the attainment of psychosocial health during high risk pregnancy. Budd (1985) recognized the holistic perspective of many nurses that emphasizes "the integrative function of the individual enabling one to achieve health as a consequence of experience with the environment" (p. ii). Budd (1985) further elaborated on the experience of pregnancy:

Considering high risk pregnancy from a holistic health perspective leads to a focus on the gravid woman's ability to integrate tension of the high risk designation and
tension of the psychosocial crisis of pregnancy with previous experience, self-relevant knowledge and motivations in a way which represents growth and development. (pp. ii-iii)

Budd (1985) interviewed 115 women to determine correlates of psychosocial health in pregnancy and found that the most direct determinants were problem-oriented coping with stressors and self-coherence.

To summarize, the literature on pregnancy can be classified as representing pregnancy as a hurdle or developmental process. Four developmental studies (Budd, 1985; Leifer, 1977; Mercer, 1982, 1985; Rubin, 1967a, 1967b) provide background for this proposed research. The derivation of the operational system from the conceptual system proposed by Rubin (1967a, 1967b, 1984) is discussed in the next chapter.

Significance

Phillips (1986) wrote that the significance of a study needs to be assessed in relation to the contribution the study can make to nursing and to society. Considering this study within the matrix of nursing knowledge, it is evident that this investigation can provide direction for future researchers, as well as providing information that can be used by nurses in
clinical practice. Also, as pregnancy is a universal experience, not delimited by disciplinary boundaries, there is the potential for this study to make a contribution to societal knowledge.

The purpose of this study was to test a causal model deductively derived from a conceptual framework suggested by Rubin (1967a, 1967b, 1984) in an attempt to understand the process of maternal identity formation during pregnancy. Identifying variables and understanding their influence on the outcome of the process, prefatory maternal response, is a necessary first step toward the generation of hypotheses about the relationships between the variables. This study will provide a foundation of information for the future development and testing of nursing interventions designed to enhance prefatory maternal response.

A second contribution of this study to nursing research is the development and testing of a causal model as a means to test theoretical propositions. Budd and McKeenan (1986) stated:

Causal modeling is a useful heuristic and analytic tool for nurse scientists as they set about the task of discovering and explaining relationships among nursing phenomena. (p. 121)

They also advocate the use of causal modeling in a practice discipline such as nursing where "experimental
research is frequently artificial and often does not
have external validity" (Budd & McKeehan, 1986, p. 122).
Likewise, Stember (1986) has advocated that model
building is a useful theory-building strategy in
nursing. This investigation will add to the current
body of research that has used causal modeling
methodology and will provide further information about
the usefulness of this strategy as a means to develop
nursing knowledge.

The results of this study can contribute to
clinical practice by providing data about the study
variables: self-coherence, stress, support, symptoms and
well-being and their relationship to prefatory maternal
response. Nurses working in prenatal settings have a
unique opportunity to teach and counsel women about the
experience of pregnancy and to help these women have a
satisfying pregnancy experience. However, from personal
experience and observation, it is apparent that
prenatal-care nurses often do little more than monitor
weight and blood pressure. Perhaps if nurses had more
specific information about the experience of pregnancy
and the factors that influence the experience, they
could take better advantage of opportunities for
teaching and counseling. This investigation provides a
starting point of information about the experience of
pregnancy and the interaction of identified factors. The results, while somewhat tentative, still provide data that can be used for effective clinical practice.

Finally, pregnancy is a universal phenomenon that knows no disciplinary boundaries. This investigation can provide information that is useful to society by seeking to understand pregnancy from a developmental perspective. Development is a notion that is widely understood and accepted. Pregnancy as a developmental event is not a new idea, but systematic investigation of the experience from this perspective is limited. This study will document the experiences of a women during a common life event, pregnancy, in an effort to move beyond intuitive ideas to tested knowledge.
CHAPTER II

Conceptual, Theoretical and Operational Systems of the Research

This study was approached from the belief that becoming a mother is a developmental process that begins in pregnancy and ends during the first year. In contrast to a view that maternal behavior is instinctive or acquired during childhood, this investigation is based on a belief that the maternal role is a complex cognitive, social, and psychologic process that is learned (Mercer, 1985). The cognitive component of the maternal role is described by Rubin (1984) as maternal intelligence:

> This is an open intellectual system and not a prepackaged bundle of traits, instinctive or otherwise, superimposed mechanistically for built-in obsolescence or entropy. (p. 3)

Maternal behavior is characterized by an openness to new and additional learning. There is silent organization and recognition of the complexity of the experience, and a high value is placed on knowing and understanding (Rubin, 1984). In the following paragraphs the conceptual basis of the study will be discussed. The theoretical and operational systems of the research will be deductively derived from the conceptual basis thus
presented (Phillips, 1986). The conceptual system of the study is based, in large part, on work of Rubin, and forms the foundation for the ensuing discussion of maternal identity.

The Concept of Development

Development and Time

Life is a process of growth and change. People are constantly growing as each day passes. Certain events are seen as highly significant in peoples' lives and as a result, these events have the potential to effect change and growth. Each person defines these events and interprets the influence of the event on his/her life. While every person is an individual and therefore every event is individualized, there are some events that are seen as having a universal capacity to influence people's development. Death, illness, marriage are often seen as major developmental phases in life; for this study, the process of becoming a mother is also recognized as a significant and complex event in the life of any woman (Andersen, 1984).

Development, as a concept, is not seen as linear or incremental; rather, development is an ever widening progress—a spiral that increases in complexity and
scope over time (Deutsch, 1944; Piaget, 1973, 1977). Biologic, environmental, and social experiences are all influences on a person's life. These elements combine to contribute to the continuous process of growth and change. When a person encounters a novel life event, prior events are used as a basis for understanding and accommodating the new event. Articulation, transformation, and consolidation are processes that incorporate the new element into the life structure and continue the forward process of growth and change (Rubin, 1984).

There is also the potential for growth to cease, as Rubin (1984) has described:

At the beginning of each novel stage, the capacities available for accommodation and regrouping are those of an earlier stage. There are essays, trials and errors, explorations, and searches for further elements to incorporate and to transform the available resources to meet the new situation of the self. In childhood these essays and explorations are acted out, usually in play. In adulthood these are as often carried out silently, in thought, as in action. When there is cessation of these essays and explorations before articulation and consolidation occur, there is an arrest in the developmental progression. (p. 4)

Pregnancy as a Developmental Event

Pregnancy, as a life event, is seen as significant and has the potential to contribute to growth and
change. Mercer (1986) has noted that "women assume many roles over a lifetime [and] one of the most significant and time-consuming is the maternal role" (p. 1). Breen (1978) elaborated this point by noting:

The birth of a child and in particular a first child is a meaningful experience which cannot leave a woman unaffected. If she is able to integrate this experience and change, one can talk of 'growth' and 'development'. (p. 19)

For the woman becoming a mother for the first time, she must rely on past experiences to work through the processes of articulation, transformation, and consolidation. Ideas about life and death, thoughts of her own childhood, mothering, and fathering, purposefulness, nurturance, dependence, and ability, all come forward during pregnancy as a torment of turbulent emotions (Breen, 1978). Coming to terms with these feelings (consolidation) can provide a sense of enrichment, while articulating and transforming these emotions allows the mother to recognize the meaningfulness of the event.

Maternal Identity

Becoming a mother involves a complete rethinking and redefining of self as the woman develops a maternal identity. This is a complex, active process that occurs
over time and can take up to two years for completion (Mercer, 1982). Maternal identity has been defined by Rubin (1967a, 1984) as a new personality dimension and the experience of pregnancy allows the woman to incorporate this dimension into her self-system. This incorporation can be either sustained and fostered or inhibited as a result of the interpersonal and intrapersonal experiences of pregnancy, childbearing, and childrearing. Maternal identity is total and complete, as Rubin (1984) has described:

The outcome is more than just a sentimental attachment and more than a role that is stepped into and out of again. There is a belonging as part to the whole personality, bound-in and inseparable, a maternal identity. (p. 38)

The Self-System

An important component of the woman is her self-system, and an understanding of the self, as described by Rubin (1967a, 1967b, 1984) is necessary for an understanding of maternal identity. Rubin (1984) described the self as a system of three selves, the ideal self, the known or actual self, and the body self, which are in "open communication and transaction with each other as well as with persons and events in the surrounding world" (p. 12).
The first component of the self-system, the ideal self, is the image of who a person wants to be; the ideal self is composed of bits, images, and fleeting thoughts seen or felt outside the self that one wishes to have as part of self. As these bits and pieces are acquired, they no longer are in the province of the ideal, and new aspirations are established as part of the ideal self. Times of becoming: childhood, puberty, childbearing, are characterized by dreams, hopes, and wishes and are times of dominant influence of the ideal self on the actual self. If the distance between the ideal self and the actual self is too great or cannot be breached, despair or depression can result.

The ideal self is in interaction with society as an open system. Language, customs, and values are transmitted to the person as images to be tried on and tried out as part of self. Acceptable images (to the self) are retained, unacceptable images are discarded, and the process begins again. As development is an ever increasing spiral that enlarges in scope and variety, the person with multiple life experiences has a varied repertoire of ideal images from which to select.

The woman becoming a mother searches in her mind and in society for ideal images of qualities, traits, attitudes and achievements that she believes are
desirable for a mother. Time is spent comparing ideals to lived experience: her mother and other mothers she has known are analyzed for qualities and traits as the woman attempts to define for herself the notion of mother and to incorporate the ideal self into the actual self.

Actual self or known self, the second component of the self-system, is the consistent 'myself': how one sees oneself at this time and in this situation. The actual self provides a measure for the ideal self: How am I doing? is a question posed by the ideal self to the actual self. Elements from the ideal self are internalized by the actual self, and this is accompanied by a feeling of accomplishment and gratification similar to that of children who experience success in developmental events that will soon be taken for granted: standing, walking, answering the telephone, etc. Adults, too, experience accomplishment and pride as ideal elements are incorporated into the actual self; completing requirements for a doctoral degree is a notable example that comes readily to mind. Making an element of the ideal self a part of the actual self is hard work that requires concentration, serious effort, and trial and error.
Frustration can be the result when one desires to incorporate elements into the self-system, but external conditions prevent incorporation from occurring. An accurate understanding of the real world is necessary. A clear perception of desired elements and how they can be acquired within the context of the physical and social world precedes successful attainment of idealized elements.

The actual self is in constant response to the physical and social world. The concept of 'self in action' allows one to imagine the self as changing, responding, and being enhanced by life experiences.

The capacity for self-observation, evaluation, correction, and action makes the sphere of self-imagery the regulator, much like a homeostat or governor, of the self-system. (Rubin, 1984, p. 15)

The body image self, the third component of the self-system, provides the structure and function of self within the self-image. Body image allows one to orient oneself as an entity in the real world. Body image information is provided to the self by sensation, tonus, mass, and movement. There is an informational feedback process from the body image self to the actual self which is often in a state of subliminal awareness. If a change in the body image occurs--a tic in an eye,
or decreased sensation in a finger—the self responds by focusing and identifying the change.

Body boundaries are established by the body image self. These boundaries are often different from the physical boundaries of the body and have been referred to in popular language as a person's 'space'. Body boundaries allow one to differentiate self from one's surroundings.

Pregnancy causes body image changes that can be profound and unsettling. Changes in body sensation, posture, tonus, mass, and movement all occur as the fetus grows inside the uterus. These changes provide constant input to the feedback system, causing the actual self and the ideal self to respond by focusing attention inward to assess and identify the change. Messages from the body image self are assessed as threats or as potentiators. For example, fetal movements have been studied as a sign of fetal well-being. An active fetus is indicative of adequate utero-placental reserve and function. Decreased fetal movements can be an early warning sign of fetal compromise and jeopardy (Sadovsky & Yaffe, 1973). A woman who knows little about fetal activity, though, may not interpret fetal movements accurately, and instead of
being reassured by the movements of an active fetus, may find that these movements are annoying or distressing.

"Body images emanate from the inner spaces of the self in the service of self-preservation, survival and potentiation in the world" (Rubin, 1984, p. 23). The self is seen as in action, mentally and physically, in the world. When there is congruence between the self in action and the body image self, there is an element of centeredness that is communicated to the actual self. The ideal self searches for elements to adopt as part of the actual self. The actual self, in essence, is a balance, a regulator, between the physical and mental components of the body self, and the dreams and aspirations of the ideal self.

The world is a world of action, constantly changing, just as people are people of action, also constantly changing. The self-system provides a comprehensive frame of reference that allows one to interpret and understand the world and the mutuality and reciprocity of experience. The self-system forms the "formal and informal learnings and knowledge base and the inner sense of continuity and consistency of self in a world of action" (Rubin, 1984, p. 24).
The Process of Redefining Self

In early work (1967a) Rubin identified operations that described the process of redefining self: two forms of taking-on: mimicry and role play; two forms of taking-in: fantasy and introjection-projection-rejection; and one form of letting-go: grief work. More recently, Rubin (1984) has redefined these processes as replication, fantasy, and dedifferentiation. The new terms are expansive, with greater description and a broader scope; the underlying belief, that a woman incorporates the maternal identity into her self-system through an idealized image of self as mother, remains the same.

Taking-on was limited to a description of the processes of mimicry and role play in Rubin's (1967a, 1967b) earlier work. The current term that Rubin (1984) has used, replication, includes the operations of mimicry and role play, but adds a component of recognition on the part of the mother. The woman identifies important elements in the world and replicates these elements for herself. She desires to be 'like' others and will copy practices and customs of pregnancy. Wearing maternity clothes before they are functionally necessary allows the her to be 'like' a pregnant woman. The woman searches the environment for
models and finds them in stores, newspapers, television, and offices. Role play allows the woman to try different elements as part of the self; desirable elements are remembered and aversive elements are discarded.

Replication is self-initiated. The woman is looking for desirable elements to be incorporated into the self-system. Models that possess desirable characteristics are valued. There is also a filtering of information by the woman and at different stages of the pregnancy and puerperium, different elements are valued (Rubin, 1984).

Taking-in is characterized by fantasy, that is, picturing oneself as a mother and imagining what it will be like. Fantasy allows internalization to occur; there is no third person in fantasy--the woman mentally explores the possibilities that exist for herself and her child. She imagines "how it will be." Fantasies occur both during the day as well as in dreams (Rubin, 1984).

Attachment to the fetus occurs within fantasy and in this way the woman makes the child uniquely her own (Rubin, 1970). She pictures the baby in an idealized form:

A typical fantasied image of this period is of a light-haired, light-complexioned child,
regardless of parental coloring, of about six-months in size, floating peacefully in space, very much like Michelangelo's pure cherubs. A woman's creative image of her wished-for child is that of an angel. (Rubin, 1984, p. 45)

As the woman binds-in to the child, there is a corresponding change in relationships with others. Letting-go behaviors occur in fantasy and there is a giving up of old roles and recognizing changes in lifestyle that must occur as one takes on a maternal identity. These changes, particularly changes in strong bonds with her husband and/or close friends, can be distressing, but the woman has a need to make room for the baby in her life and a realignment of relationships with others must occur. Likewise, the woman mourns the loss of her old lifestyle. Rubin (1967a) noted that women described themselves in the past tense, "I used to be . . .","I did . . . ."

This process does not occur readily. There is resistance to the letting-go of the old self, and Rubin (1967a) found some evidence that the degree of letting-go was directly related to the extent of binding-in and taking-on of the new role. In late pregnancy, letting-go behaviors were related in a large part to letting-go of the pregnancy role. As the maternal identity became more established after the birth of the baby, there was more letting-go of old self roles.
Introjection-projection-rejection (I-P-R) has been broadened by Rubin (1984) into dedifferentiation. Where I-P-R was originally described as a type of mimicry, dedifferentiation is seen as more discriminatory in subject and scope. The woman does not readily copy or adopt models, as in mimicry, but instead, carefully examines and evaluates a model for goodness of fit with her known, actual self. As the woman develops a maternal identity, she has a core self to test models against, and is able to accept or reject elements she observes in them as appropriate for herself.

A sense of completeness in maternal identity occurs when the woman shifts her thinking from the third person to herself as mother. This is the definition Mercer (1985) used in her research and asked women, "When did you feel that you were really a mother, automatically responding to the term 'mother,' and felt comfortable with your decisions as mother?" (p. 200). The women she interviewed were able to answer this question and identified the time frame when this occurred. Approximately 3% of the women had become comfortable with the role during pregnancy, while 4% had not internalized the role by the end of one year after delivery. Mercer's research provides empirical support for the concept of a maternal identity and also supports
the belief that it is an integral part of self that develops over time.

**Influence of Other Factors**

The present discussion has been limited to the process the woman goes through as she develops a maternal identity. As described, it is a very personal and private process, one that occurs largely in the woman's mind. This is the essence of what Rubin (1984) calls "the silent organization of thought" (p. 3).

But just as we do not live in a vacuum, so a woman does not become a mother in isolation. Psychologic, social, and biologic factors also contribute to the process of formation of a maternal identity.

Supportive relationships and sharing by other persons is seen as "a necessary condition for the giving of self in the totality required for childbearing" (Rubin, 1984, p. 8). Support from others is necessary so that the woman can enter into a relationship with a new and unknown individual, the fetus/child. Rubin (1984) identified four maternal tasks and the second, "to ensure social acceptance for herself and her child" (p. 10) speaks directly to the importance of social relationships for the woman becoming a mother.
Biologic changes send the inputs from the body image self to the actual self. Rising estrogen levels, progesterone, and increased circulating blood volume are necessary physiologically to the pregnancy but also have the psychologic effect of an improved sense of well-being (Bobak & Jensen, 1985). Changes in the woman's body size and the accompanying discomforts, such as constipation and urinary frequency, can be distracting enough to detract from a positive perception of well-being.

Psychologic changes, such as heightened awareness to events occurring in her life, can also have an impact on the woman's work to establish a maternal identity. Distressing events can inhibit the process. Mercer (1982) found that stress is positively related to difficulties during pregnancy and subsequent parenting. Conversely, positive events and pleasurable experiences can be thought to promote the process (Mercer, 1982).

Description of the Conceptual System

Based on this discussion, the conceptual system for the research can be summarized and described. At this level, the conceptual system is highly abstract. The conceptual system serves as the basis for the theoretical and operational systems, which become
progressively more specific, and consequently, easier to represent in illustrations. However, the conceptual system is a necessary starting point for the derivation of the theoretical and operational systems. As Fawcett (1984) has noted, "The utility of conceptual [systems] comes from the organization they provide for thinking, for observations, and for interpreting what is seen" (p. 3).

The conceptual system for this investigation consists of five major elements: maternal identity, the self-system, operations, factors, and time.

The process of maternal identity formation, becoming a mother, is the global idea that provides the major frame of reference for the existence of the conceptual system. Maternal identity is a complex cognitive, social, and psychologic process that is learned and occurs over time. The process begins at the time of conception and continues during the first postpartum year.

The self-system consists of system of selves: the ideal self, the known or actual self, and the body self. These components of the self-system are in transaction with each as well as with people and events in the world. As a woman becomes a mother, the maternal
identity is incorporated into and becomes a part of the self-system.

The process of incorporating the maternal identity into the self-system is one of redefinition. Three operations, replication, fantasy, and dedifferentiation, are active cognitive processes. These operations are continuous and on-going during the pregnancy and postpartum and describe the work that occurs as a woman develops a maternal identity.

A woman does not become a mother in a vacuum. External factors, such as the influence of friends, and internal factors, such as a sense of well-being, both contribute to the process.

A woman has the capacity to control and influence the outcome. The process of maternal identity formation is learned; it is not instinctive. If one has an understanding about how the process occurs, then one is in a position to provide information to the woman to enhance maternal identity formation. Fawcett (1984) stated that a conceptual system helps an investigator to recognize a problem; in this case, the problem is one of understanding the process of maternal identity formation. Using this as a basis for the research, a theoretical system can be derived that will allow for the development of specific research questions.
Derivation of the Theoretical System

Using the conceptual system thus developed, a theoretical system can be derived. The theoretical system is composed of the major constructs of the conceptual system and the axioms stating the relationships between the constructs. For the purpose of this research, constructs are terms denoting highly abstract notions that can only be partially defined (Gibbs, 1972). As Phillips (1986) has noted

A construct is so abstract that the conceptualizer realizes that any attempt to devise a 'complete,' 'comprehensive,' or 'closed,' definition would be artificial and oversimplified. (p. 114)

There are five major constructs that can be derived from the conceptual system: self-system, psychologic factors, biologic factors, social factors, and development of a maternal identity. The self-system determines how the person perceives the factors in the interpersonal system. This perception involves identifying, assessing, interpreting, and interacting with the factors. Translated linearly, the self-system is seen as preceding and thus influencing the interpersonal factors within the system. The self-system is seen as directly influencing the development of a maternal identity as well as indirectly influencing
this process through the interpersonal factors. This linear structure is represented in Figure 2-1.

The interpersonal factors in the system are identified and interpreted by the self-system. Part of this interpretation includes identifying a factor as contributing positively or negatively to the system. The relationships between the self-system, positive and negative factors, and maternal identity are also illustrated in Figure 2-1.

At this level of abstraction, it is not possible to test the model. It is necessary to move to a more operational level, in which concepts that are representative of the constructs are identified and relationships between the concepts are stated. Then variables, operational representations of the concepts can be identified (Phillips, 1986). Referents and referentials can be stated based on the identified variables. As this study will use path analysis to test the model, the referents can be stated as a series of simultaneous multiple regression equations. In the following section, the derivation of the concepts from the constructs will be presented.
Figure 2-1: Depiction of the Theoretical System
Derivation of Study Concepts

Self-System: Self-Coherence

Rubin (1967a, 1967b) used a qualitative research approach in which she identified the major components of her conceptual system that has been used as the basis for the current study. Rubin did not continue her research to identify other more quantitative measures of the components of the conceptual system. However, other researchers (for example, Grubb, 1976, 1980; Rich, 1973; and Richardson, 1981) have used Rubin's conceptualization and through their research have given support to her framework. Mercer, a former student of Rubin's, has consistently utilized Rubin's framework in her research (Mercer, 1974). In searching for a suitable concept to represent the self-system, the decision was made to review recent work done by Mercer.

In her research on maternal role acquisition, Mercer (1982) identified two measures of the woman's core self: self-concept and a group of maternal personality traits, including temperament, empathy, and rigidity. Mercer (1982, 1985) studied 294 primiparous women during the postpartum and the first year of motherhood to determine the form and strength of the relationship between a group of maternal, infant, and
pregnancy experience variables and maternal role attainment. She found that 38% of the variance in maternal role attainment at one year was explained by self-concept, maternal attitudes, and stress (life stress and infant related stress). Mercer's (1985) findings gave support to the idea of the self-system influencing the process of maternal identity formation.

Mercer (1985) used a total of 11 different referents as measures of the study variables. Four of these, the Empathy Scale (Disbrow & Doerr, 1982), the Perinatal Rigidity Scale (Larsen, 1968), the Adult Temperament Questionnaire (Thomas, Mittleman, & Chess, 1982) and the Tennessee Self Concept Scale (Fitts, 1985) were used to measure components of the self-system. While these referents were effective measures, in the present research there was a desire for a more parsimonious measure of the self-system.

Current research by Budd (1985) identified the concept of 'self-coherence,' conceptualized as:

a process or function of the perceiving self in which the self-concept and intentional aspects of the self are considered and utilized during the process of perception or interaction with the environment. (Budd, 1985, p. 75)

The concept of self-coherence was developed by Budd (1985) based on work by Antonovsky (1979), Allport (1955), and Goldstein (1981). Antonovsky (1979)
identified a 'sense of coherence' that was described as a "generalized, pervasive orientation" (p. 122) and "a way of looking at the world" (p. 8). Goldstein identified three aspects of the self, one of which, the perceiving self, was seen as similar to Antonovsky's description of sense of coherence.

Self-coherence is described by Budd (1985) as developing through a process of self awareness. Budd (1985) further elaborated that knowledge obtained through this process could be used when there is a deficit of pragmatic information. Events or stimuli in the environment can be determined to be threatening or non-threatening and appropriate problem-solving activities can be initiated by the individual.

Budd (1985) defined self-coherence as:

The ability to integrate present experience with past experience, motivations and goals and to find meaning in the present experience. (p. 114)

In her research, Budd (1985) studied high risk pregnancy from a holistic health perspective. Budd (1985) found that psychosocial health during pregnancy was directly influenced by problem-oriented coping and self-coherence. The framework that guided her study recognized the importance of the self-system in the process of attainment of psychosocial health during pregnancy.
Based on the conceptual congruence between the work by Budd (1985) and the conceptual system of the present study, self-coherence was selected as the concept to represent the more abstract construct, the self-system.

**Psychologic Factors: Positive and Negative Stressors**

Since the process of becoming a mother is seen as a time of growth and change, changes and transitions can have the effect of causing disequilibrium and this disequilibrium can produce tension within the self-system. Stress has been defined by Brown (1986b) as experienced disequilibrium that occurs as a result of perceived stressful events in the life of the person. Her definition includes the component of the self-system identifying, assessing, and interpreting the perceived event. When the event is seen as stressful, disequilibrium can occur.

Stressors can be perceived by the individual as positive or negative. The magnitude of the stressor is also appraised by the individual and the impact of the stressor on the system equilibrium is determined by this appraisal.

Studies of the relationship between stress and pregnancy outcomes have had a tendency to focus only on negative stressors. Mercer (1982) noted that negative
stressors were related to difficulties with pregnancy and parenting. Similar results were found by Larsen, 1966; Nuckolls, Cassel, and Kaplan, 1972; and Entwisle and Doering, 1981.

In the perspective of this research, psychologic factors, that is, stressors, are seen as both positive and negative. A suitable conceptualization of positive and negative stressors is contained in research by Kanner, Coyne, Shaefer, and Lazarus (1981) in which they studied hassles and uplifts. Hassles were defined as the irritating, frustrating, distressing demands that characterize everyday transactions with the environment. Uplifts are positive events that make a person feel good, and can be sources of peace, satisfaction or joy.

Kanner et al. (1981) also believed that day-to-day events are more representative of the pattern of stressors in the person's life, as opposed to major life events (Holmes & Rahe, 1967). Kanner et al. (1981) compared two modes of stress measurement: daily hassles and uplifts and major life events. They believed, and demonstrated in their research, that the impact of major life events on health outcomes comes from the disruption a person's daily pattern of hassles and uplifts. The impact of daily hassles and uplifts on physical and mental health depends on a number of factors, including
the number of hassles/uplifts consistently present in a person's life and how the person interprets and processes the influence of the hassles/uplifts. Life events disrupt this pattern and it is at this point of disruption that changes in health occur (Kanner et al., 1981).

Continuing research on hassles and uplifts (Lazarus, 1984; Miller, Tobacyk, & Wilcox, 1985; Miller, Wilcox, & Barlow, 1984) has supported this proposition. Hassles and uplifts are part of a person's daily experience. How the person interprets these events determines the impact of the events on health outcomes. The self is seen as influencing the psychologic factors, which in turn influence a specified outcome.

Social Factors: Support

Rubin (1984) noted that social interaction, reciprocal giving and receiving, is a necessary part of the process of formation of a maternal identity. "A woman moves closer to family, and to society, during the intense experience of childbearing and childrearing" (Rubin, 1984, p. 8). This social factor, for the present research, has been operationalized as support. Brown (1986a), in her research with expectant couples, considered support to be interpersonal transactions that
include one or more of the following: the expression of positive affect of one person toward another; affirmation or endorsement of another person's behaviors, perceptions, or expressed views; the giving of symbolic or material aid to another person. Brown (1986a) developed this definition, based on work by Kahn and Antonucci (1981) and House (1981).

Brown (1986a) found that for the expectant couple, support was seen as organizing at a very broad level, and was described as "the perceived degree of experienced support during pregnancy" (p. 8). Brown (1986a) investigated the multidimensionality of support as a construct and found that there was not independence of measurement between a priori categories of support: emotional, material, informational, and appraisal. Rather, Brown (1986a) indicated that while support activities may be varied, for the purpose of understanding the role that support plays in pregnancy, it is useful to conceptualize the construct as unidimensional.

As Brown (1986a, 1986b) noted, support has been widely studied and demonstrated to be perceived by the expectant woman as an important component of the pregnancy experience. Support has been shown to be positively related to a woman's mothering ability.
(Mercer, 1982). Social support has been studied in relation to coping, adjustment, adaptation, and problem solving during life transitions (Cobb, 1979; Kahn & Antonucci, 1981). Nuckolls et al. (1972) described social support as an environmental mediator. Support is seen as having influence on the outcome of the pregnancy.

For this study, social factors have been operationalized as support. The definition and measurement of support utilized by Brown (1986a, 1986b) will be used in this research.

**Biologic Factors: Illness Symptoms and Well-being**

The body image self sends strong messages to the actual self during pregnancy. Physical changes in body size and function can be irritating, uncomfortable, and for some women, unbearable. Hormonal changes, particularly rising levels of estrogen and progesterone, physiologically support the pregnancy as well as psychologically causing a sense of well-being and euphoria. The biologic factors associated with pregnancy and maternal identity are seen as having a positive component, well-being, and a more negative component, illness symptoms. Brown (1986b) developed
the Health Responses Scale which consisted of these two components.

The Health Responses Scale was designed to measure a woman's "overall gestalt reaction to her health during pregnancy" (Brown, 1986b, p. 73). The Symptoms subscale consists of common physiologic changes associated with the pregnancy, such as headache, backache, and gastrointestinal changes. The Well-being subscale is more psychologic in nature with items asking about a sense of well-being, energy, and a personal sense of pleasure. As with the other factors, this measure allows the woman to identify and appraise the influence of the biologic factor, whether symptoms or well-being, within the frame of her experience.

Maternal Identity: Prefatory Maternal Response

Development of a maternal identity is a complex cognitive and social process that occurs over time. The process is not complete with the birth of the baby, but continues into the first year after birth. The time at which the maternal identity is complete varies for different women, but Mercer (1982) found in her research that women could identify the time when it occurred.

Mercer (1981) used a framework that described the time dimension of maternal identity formation. She
identified four steps: anticipatory, formal, informal, and personal, that a woman moved through in the process of becoming a mother. These steps were identified by Mercer (1981) based on work by Thornton and Nardi (1975). As the current study has the anticipatory phase, that is, pregnancy, as a focus, a brief review of the work of Thornton and Nardi (1975) is relevant.

Stages of Role Acquisition. The process of role acquisition is sequential and orderly, following a series of progressive stages, according to Thornton and Nardi (1975). The process also has a developmental component and success or difficulty in one stage can contribute to success or difficulty in subsequent stages. As a person works through each stage, a sense of confidence in the role is established, until the outcome is achieved, that is, the time when the person has internalized the role and is comfortable in enacting the role. Thornton and Nardi (1975) named the stages: anticipatory, formal, informal, and personal. These are the same labels adopted by Mercer (1981).

The anticipatory phase was defined as "the period prior to incumbency in a social position during which individuals generally encounter a variety of relevant expectations" (Thornton & Nardi, 1975, p. 874). Social and psychological adjustment to the role begins at this
time. Anticipatory socialization, in which those acquiring a new role begin to adopt values of the role, is characteristic of the anticipatory phase. Role conceptions or expectations are developed from a variety of sources including the mass media, role incumbents, and future reciprocal-role others.

For the primigravid woman, the period prior to incumbency is the nine months of pregnancy. During this anticipatory phase, the mother-to-be learns of her future role through anticipatory socialization activities, such as reading books and watching television shows about mothering, and attending prepared childbirth classes. Her experiences as a child, observing mothering behaviors in the family, and as an adult, observing others in the role of mother, provide sources for observation of role-incumbents. Learning about mothering from her husband, a physician, or a nurse, would be an example of learning from reciprocal-role others. Rubin (1967a) described anticipatory socialization in pregnancy as psychosocial adjustment to the role and identified four components: role play, fantasy, empathy, and copying.

In the formal stage, the person assumes the role and shifts from viewing it from an outside perspective to an inside perspective (Thornton & Nardi, 1975). Role
behaviors are clearly and explicitly identified to the role taker by others in the individual's social system. Thornton and Nardi (1975) identified examples of explicit role expectations, such as written job descriptions and ethical codes for physicians, nurses, and lawyers. Thornton and Nardi (1975) indicated that an important characteristic of the formal phase is a high degree of consensus and suggested that this consensus may occur due to the idealized nature of the formal role expectations.

In the case of the new mother in the formal stage, expectations can be communicated by nurses in the hospital in the form of verbal and written instructions on baby care. During the first weeks of the baby's life, the mother may receive input on the maternal role from her mother, friends, and siblings. Mercer (1986) noted that for the maternal role, clarity, specificity, and consensus may be lacking or absent, thus making the transition to the role more difficult.

The informal stage begins as the individual learns unique ways of behaving in the role. These individual features of the role are not usually conveyed by the formal system; rather, they are conveyed and learned through peer interaction. Thornton and Nardi (1975) noted that these informal expectations might be, and
often are, in direct contradiction to the formal expectations of the role. The role taker must learn these informal expectations, and in doing so, begins to put greater weight on personal expectations of the role.

For the new mother, interaction with her role-partner (the infant) provides cues that she can use to adjust her activities to meet the infant's needs and these cues constitute a type of informal role expectation. Nurses often tell mothers that they can (and will) learn the different cries that the baby has: one cry to signal hunger; another to signal a wet diaper. During the formal stage the mother might not be able to differentiate between signals, so she runs through the entire checklist of possibilities: is the baby hungry? wet? uncomfortable? cold? to determine the cause of distress. In the informal stage, the mother is able to differentiate more easily and respond more individualistically to the baby's needs.

The last stage, personal, is characterized by the role-taker imposing an individual, personal style on the role performance, and acceptance by others of the role enactment. Adaptation, defined by Thornton and Nardi (1975) as "internalization of the role" (p. 880), occurs at this stage. The role is the linkage between the
person and the social structure and can be understood in terms of mutual transformation of self and role.

For the new mother, the personal stage is characterized by the mother establishing a maternal identity and having a sense of comfort with the role. Mercer (1981) stated, "Social adjustment has occurred through role modification, and psychological adjustment has resulted in the individual's feeling a congruence of self and role" (p. 74). For the mother, this is the linkage between the person and the social structure and represents a transformation of the person and the role.

Outcome. For this study, the outcome of interest is the outcome of the anticipatory phase and has been named prefatory maternal response. This outcome is believed to be the first stage in a four stage process of maternal role attainment. Therefore, in order to establish a operationalization of prefatory maternal response, descriptions of maternal role attainment as a final outcome need to be considered.

Mercer (1982) conceptualized the maternal role to include three components: attachment to the child, competency in mothering tasks, and gratification in maternal-infant interaction. Mercer's (1982) description of the maternal role was based on work by
Rubin (1975) who identified four maternal tasks in pregnancy:

1. Seeking safe passage for herself and her child through pregnancy, labor, and delivery.

2. Ensuring the acceptance of the child she bears by significant persons in her family.

3. Binding-in to her unknown child.

4. Learning to give of herself. (p. 145)

Rubin's conceptualization of maternal tasks in pregnancy formed the basis for Josten's (1981) conceptualization of the maternal role in pregnancy. Josten (1981) developed a prenatal assessment tool that was designed to be used to assess possible problems with parenting. Josten (1981) identified four components of the maternal role: perception of the complexities of mothering, attachment to the fetus; acceptance of the child by significant others; and ensuring physical well-being.

Budd (1985) studied psychosocial health as an outcome of pregnancy. Psychosocial health was defined as readiness to assume the mothering role and development of an affectional tie to the fetus. Budd (1985) measured psychosocial health with two instruments: the Cranley Maternal-Fetal Attachment Scale (1981) and the maternal role scale, which was
developed from items on Josten's (1981) prenatal interview tool.

For this research, maternal identity formation during pregnancy is the outcome of the anticipatory phase, and has been named prefatory maternal response. Based on work by Rubin (1967a, 1967b, 1975), Mercer (1981, 1982, 1985), Josten (1981), and Budd (1985), prefatory maternal response consists of the components of competency, gratification, and attachment.

Time

The final component of the conceptual system is time. In order to measure changes in prefatory maternal response over time, data will be collected at two time periods during the pregnancy. The data collection period will occur at approximately 18-22 weeks of gestation. This is the time of quickening, the first felt fetal movements by the mother (Bobak & Jensen, 1985). Quickening, for many women, is the time when the baby becomes 'real' and the pregnancy becomes an established fact. The second data collection period will occur at approximately 32 weeks gestation, when the woman is approaching term and is beginning to let go of the pregnancy role. It is believed that the 10-12 weeks between data collection should be enough time for
changes in prefatory maternal response to have occurred and to be measured.

Depiction of the Operational System

The operational system, consisting of the major study variables, was derived from the theoretical system of the study. This is depicted graphically in Figure 2-2. Stember (1986) identified five steps that must occur for the testing of a model. These are:

1. construct a clear, precise model.
2. translate the model into simultaneous equations.
3. collect data.
4. evaluate empirically.
5. refine the model. (p. 110)

The model, clearly and precisely specified, is illustrated in Figure 2-3. The corresponding simultaneous equations that have been developed are presented in Table 2-1. These are the equations that will be tested with path analysis. The final steps of the process, as identified by Stember (1986) will be discussed in the subsequent sections of this report.
Hassles
Uplifts
Symptoms
Well-being
Partner Support
Other Support

Self-coherence

Prefatory Maternal Response

Figure 2-2: Depiction of the Operational System
Figure 2-3: Depiction of Operational System Referents
TABLE 2-1
Simultaneous Equations

Data Collection Period 1

\[
\begin{align*}
X_1 &= e_1 \\
X_2 &= b_{21}X_1 + e_2 \\
X_3 &= b_{31}X_1 + e_3 \\
X_4 &= b_{41}X_1 + e_4 \\
X_5 &= b_{51}X_1 + e_5 \\
X_6 &= b_{61}X_1 + e_6 \\
X_7 &= b_{71}X_1 + e_7 \\
X_8 &= b_{81}X_1 + b_{82}X_2 + b_{83}X_3 + b_{84}X_4 + b_{85}X_5 + b_{86}X_6 + b_{87}X_7 + e_8
\end{align*}
\]

Data Collection Period 2

\[
\begin{align*}
Y_1 &= e_1 \\
Y_2 &= b_{21}Y_1 + e_2 \\
Y_3 &= b_{31}Y_1 + e_3 \\
Y_4 &= b_{41}Y_1 + e_4 \\
Y_5 &= b_{51}Y_1 + e_5 \\
Y_6 &= b_{61}Y_1 + e_6 \\
Y_7 &= b_{71}Y_1 + e_7 \\
Y_8 &= b_{81}Y_1 + b_{82}Y_2 + b_{83}Y_3 + b_{84}Y_4 + b_{85}Y_5 + b_{86}Y_6 + b_{87}Y_7 + e_8
\end{align*}
\]

Note:

X_i: Self-coherence
X_2: Hassles
X_3: Uplifts
X_4: Symptoms
X_5: Well-being
X_6: Partner support
X_7: Other support
X_8: Prefatory maternal response

Note:

Y_1: Self-coherence
Y_2: Hassles
Y_3: Uplifts
Y_4: Symptoms
Y_5: Well-being
Y_6: Partner support
Y_7: Other support
Y_8: Prefatory maternal response

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CHAPTER III

Methods

In this chapter the design, instruments, subjects, subject selection, data collection, ethical considerations, data coding and preparation for analysis are discussed.

Design

A prospective survey design was used with data collected via questionnaires at two times from a sample of primigravid women. The temporal sequencing of the data collection and the use of path analysis to analyze the data allows for possible causality between the variables to be examined, which in turn leads to the development of specific hypotheses for testing in future research (Burns & Grove, 1987).

Two research questions were proposed in this investigation. The first, "What are the relationships between (a) self-coherence, (b) stress, (c) support, (d) symptoms and well-being, and (e) prefatory maternal response in the primigravid woman?" led to the development of the theoretical system derived by the
investigator to describe the relationships between the study variables (see Figure 2-1, p. 35). A causal model (Figure 2-2, p. 53) was derived from the theoretical model and variables within the causal model were identified and measured. Path analysis was used to test the accuracy of this causal model. Path analysis permits one to determine whether the data are consistent with the proposed model (Pedhazur, 1982).

The second research question, "What changes occur in (a) self-coherence, (b) stress, (c) support, (d) symptoms and well-being, and (e) prefatory maternal response in the primigravid woman?" was studied through the use of a prospective design. The longitudinal approach permits changes occurring in the variables to be quantified and analyzed (Burns & Grove, 1987).

The prospective survey design was consistent with the study purpose and congruence between the research questions and the method was achieved.
Self-Coherence

Self-coherence was conceptualized by Budd (1985) based on work by Antonovsky (1979), Allport (1955), and Goldstein (1981). Antonovsky (1979) identified a 'sense of coherence' that was described as a "generalized, pervasive orientation" (p. 122) and "a way of looking at the world" (p. 8). Goldstein (1981) identified three aspects of the self, one of which, the perceiving self, was seen as similar to Antonovsky's description of sense of coherence. Budd (1985) described self-coherence "as a process or function of the perceiving self in which the self-concept and intentional aspects of the self are considered and utilized during the process of perception or interaction with the environment" (p. 76). Self-coherence is described as developing through a process of self-awareness. Budd (1985) further elaborated that knowledge obtained through this process could be used when there is a deficit of pragmatic information. Events or stimuli in the environment can be determined to be threatening or non-threatening and appropriate problem-solving activities can be initiated by the individual. Based on this conceptualization, Budd (1985) defined self-coherence as "the ability to integrate present
experience with past experience, motivations, and goals and to find meaning in the present experience” (p. 114).

Self-coherence is measured by the Self-Coherence Survey (SCS, Appendix A), a 45 item questionnaire answered on a 5 point scale. Answers range from "never" to "usually." Budd obtained alpha coefficients of .85 \((n = 32)\), .83 \((n = 86)\), and .88 \((n = 106)\) on tests of the instrument with pregnant women. In addition, in a test of the instrument modified for use with a non-pregnant population and a sample of 425, an alpha coefficient of .80 was obtained.

**Stress: Hassles and Uplifts**

For this study, hassles and uplifts contribute to experienced changes in equilibrium and mood that occur as a result of perceived events (hassles and uplifts) in the life of the expectant parent. This definition is based on research by Brown (1986b) and Kanner, Coyne, Shaefer, and Lazarus (1981). Kanner et al. (1981) compared two modes of stress measurement: daily hassles and uplifts and major life events. It was the position of Kanner et al. (1981) that day-to-day events--minor stresses and pleasures--are more characteristic of everyday life and ultimately have more impact on health outcomes than major life events. Further, Kanner et al. (1981) believed that
the impact of major life events came from disruption of a person's pattern of daily hassles. The impact of daily hassles and uplifts on physical and mental health depends on a number of factors, including the number of hassles and uplifts consistently present in a person's life and how the person reacts to the daily hassles and uplifts. Life events disrupt the pattern of hassles and uplifts and it is at this point of disruption that changes in health occur (Kanner et al., 1981).

Kanner et al. (1981) developed a Hassles Scale (Appendix B) and an Uplifts Scale (Appendix C) designed to measure hassles and uplifts in a person's life. Hassles were defined as the irritating, frustrating, distressing demands that characterize everyday transactions with the environment (Kanner et al., 1981, p. 3). Uplifts are positive experiences. The instruments were found to be reliable (test-retest correlations of \( r = 0.79 \) and \( r = 0.72 \) with an \( n \) of 100 were established) and valid.

The Hassles Scale is a 122 item questionnaire answered on 2 4 point scales that describe the frequency and severity of the identified hassle. The Uplifts Scale consists of 140 items that are rated for frequency and intensity on 2 4 point scales. Three measures are calculated from each scale: the count, the number of
hassles/uplifts identified by the respondent; the cumulative severity, the sum of the severity/intensity scores; and the intensity, a mean intensity score, calculated by dividing the cumulative severity by the count (Kanner et al., 1981).

**Symptoms and Well-Being**

Symptoms were defined as perceived maternal discomforts related to the pregnancy, such as headache, backache, or gastrointestinal upsets. Emotional changes, such as feelings of sadness or depression were also included. Women with pre-existing health conditions, such as diabetes or hypertension, would be experiencing a high-risk pregnancy, and therefore were not included in the study. Well-being was a sense of psychologic wellness, pleasure, and/or energy.

To measure symptoms and well-being, the Health Responses Scale (HRS, Appendix D) developed by Brown (1986b) was used. The HRS is a 50 item instrument that measures aspects of both well-being and illness symptoms during pregnancy. Brown (1986b) developed the HRS from Erickson’s Pregnancy Symptom Checklist (1967), the Hopkins Symptom Checklist (Derogatis, Lipman, & Rickels, 1974) and a review of the literature. Brown (1986b)
described the HRS as providing subjects' "overall gestalt reactions to their health during pregnancy" (p. 73).

The HRS is answered on a 5 point scale with responses ranging from "never" to "always." In testing the instrument, Brown (1986b) obtained an alpha coefficient of .89 (n = 313).

Support

Support is defined as interpersonal transactions that include one or more of the following: the expression of positive affect of one person toward another; affirmation or endorsement of another person's behaviors, perceptions or expressed views; the giving of symbolic or material aid to another person. This definition is from Brown (1986a), based on work by Kahn and Antonucci (1981) and House (1981).

Brown (1986a) found that for the expectant couple, support was seen as organizing at a very broad level, and was described as "the perceived degree of experienced support during pregnancy" (p. 8). Brown (1986a) investigated the multidimensionality of support as a construct and found that there was not independence of measurement between a priori categories of support: emotional, material, informational, and appraisal. Rather, Brown (1986a) indicated that while support
activities may be varied, for the purpose of understanding the role that support plays in pregnancy, it is more useful to conceptualize the construct as unidimensional.

As Brown (1986a, 1986b) noted, support has been widely studied and demonstrated to be perceived as influential during the pregnancy experience. Support has been shown to be positively related to a woman's mothering ability (Mercer, 1982). Social support has been studied in relation to coping, adjustment, adaptation, and problem solving during life transitions (Cobb, 1979; Kahn & Antonucci, 1981). Nuckolls, Cassel, and Kaplan (1972) described social support as an environmental mediator. They noted that support influences a woman's experience and the outcome of the pregnancy.

To measure perceived support, the Support Behaviors Inventory (SBI, Appendix E) was used. This instrument was developed by Brown (1986a) and consists of two subscales, Satisfaction with Partner Support and Satisfaction with Other People's Support. Each subscale consists of 45 items answered on a 6 point scale. Responses range from "very satisfied" to "very dissatisfied." The Satisfaction with Partner Support was tested with 313 subjects and determined to have an alpha
coefficient of .97. Satisfaction with Other People's Support was tested with 313 subjects and determined to have an alpha coefficient of .98.

Prefatory Maternal Response

The dependent variable, prefatory maternal response, was measured using the Psychosocial Health Reproductive Tool (PHRT, Appendix F) developed by Budd (1985) to measure readiness to assume the maternal role and development of an affectional tie to the fetus. The first 18 items comprise the Maternal Role Scale, developed from the Prenatal Assessment of Parenting Guide (Josten, 1981). The second 24 items comprise the Maternal-Fetal Attachment Scale developed by Cranley (1981) to measure maternal-fetal attachment during pregnancy.

The PHRT is a 42 item scale answered on a 5 point scale. Answers range from "definitely yes" to "definitely no." Budd (1985) obtained alpha coefficients of .87 (n = 108) on the Maternal Role Scale, .77 (n = 108) on the Maternal-Fetal Attachment Scale, and .84 (n=108) on the total PHRT.
Descriptive Data Sheet

Selected demographic data, age, gestational age, health care provider, marital status, occupation, ethnicity, and education were collected to describe the sample. Other data were collected to search for relationships with the study variables.

Subjects

Subjects for the investigation came from the population of primigravid women experiencing an uncomplicated pregnancy. Subjects were recruited from five sites in the Greater Portland, Maine area. A minimum sample of 110 subjects was determined to be necessary, for a study with six to eight variables, an alpha of .05, a medium effect size of .30, and a power of .83, based on procedures described by Cohen and Cohen (1983). The following criteria were used to select potential subjects:

1. Age greater than 17.
2. Primigravid mother (no previous pregnancies resulting in a live birth).
3. Period of gestation between 18 and 26 weeks at time of initial recruitment into the study.
4. Able to speak and read English.
5. Pregnancy considered to be no-risk or low-risk.
6. Willingness to participate in the research and complete questionnaires two times.

Criterion 6 was of particular concern to the investigator in this study, as loss of subjects in an longitudinal design is common and can affect the internal validity of the research (Cook & Campbell, 1979). A convenience sampling procedure was used wherein all subjects meeting the study criteria were identified and contacted by the investigator. The need for participation at two times was emphasized to the potential subjects in an effort to decrease loss of subjects from the sample during the course of the data collection.

The decision to use a convenience sample was made after careful deliberation by the investigator. The major constraint of a convenience sample is that the generalizability of the findings is limited. However, the testing of the proposed theoretical model is of primary importance in this investigation and in this case, generalization of findings is of lesser concern. Also, in an effort to increase the variation of subject characteristics within the sample, subjects were recruited from five sites, including a prenatal clinic, a large obstetrical/midwifery practice, and three different
private physicians' offices. It was believed by the investigator that this approach decreased the possibility of bias being introduced into the sample as a result of the convenience sampling procedure (Phillips, 1986).

Subject Selection

Subjects were recruited from five sites in the Greater Portland, Maine area, including a prenatal clinic, a large obstetrical/midwifery practice, and three different private physicians' offices. The prenatal clinic, which was held weekly, was affiliated with a 220 bed, Catholic hospital. Approximately 30 women were seen each week at the clinic. The obstetrical/midwifery practice included five physicians and two nurse midwives. Women seen at the practice come from a large geographical area that includes southern coastal New Hampshire and southern and central Maine. The three individual physicians each specialized in family centered obstetrical services for women experiencing an uncomplicated pregnancy.

It should be noted that health care services for women, particularly childbearing women, are somewhat limited in the state of Maine. These five sites provided a cross section of the options for obstetrical care that
are available to women in the southern part of the state. It was believed that by recruiting subjects from these five sites, a sample representing a cross section of the population of primigravid women in the region was obtained.

Permission to recruit subjects for the study was obtained from appropriate personnel at each site. Different strategies for subject recruitment were used at each location.

Prenatal Clinic

The investigator attended the clinic, which was held one morning per week. The clinic was staffed by a physician, three nurses, a nutritionist, a WIC (Women, Infants and Children) counselor, and a public health nurse. The investigator worked closely with the intake nurse to identify potential subjects. Before the clinic opened, the intake nurse reviewed the charts and identified potential subjects according to the criteria provided by the investigator. The investigator approached potential subjects at the time they arrived for their clinic appointment. A private room was available where the investigator could meet with the woman to discuss the study and ask her if she would be willing to be a participant. If the woman agreed, she
was given an information letter (Appendix G) and asked to sign an informed consent (Appendix H). At this time, the woman was given the booklet of questionnaires and a stamped, addressed envelope to be used to return the questionnaires to the investigator.

Obstetrical/Midwifery Practice

At this practice, all women are seen initially by the intake counselor. It was determined by the investigator and the head nurse that the intake counselor could identify potential subjects according to the criteria provided by the investigator. During the initial interview, the intake counselor told the woman about the study and gave her an information letter (Appendix I) from the investigator. After reading the letter, the woman was asked if she would be interested in participating in the study. If the woman was interested, the intake counselor informed the woman that the investigator would be provided with the woman’s telephone number and that the investigator would contact the woman directly.

Private Physicians’ Offices

A similar procedure was followed at the three individual physicians’ offices, except that the
information letter and the description of the study were provided to the woman by the office nurse instead of the intake counselor.

The investigator visited the offices weekly and obtained the list of names and telephone numbers from the nurses and the intake counselor. At this time, the investigator asked if there were any problems or questions about the study. By keeping in close contact with the personnel at each of the offices, problems related to subject recruitment were kept to a minimum.

Using the information obtained from the nurses and the intake counselor, the investigator contacted potential subjects by telephone. The initial plan was to visit each woman in person; however, it quickly became apparent that time and scheduling made this impossible. Instead, the investigator described the study to the woman on the telephone and determined her willingness to participate in the study. If the woman was interested, the investigator mailed her a packet that included an information letter (Appendix G), two copies of the informed consent (Appendix H), the booklet of questionnaires, and a stamped, addressed envelope to be used to return the questionnaires to the investigator.
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Data Collection

At the time of recruitment into the study, the investigator asked the woman the questions on the Demographic Data Form (Appendix J) and the Biographical Information Sheet (Appendix K). If the woman was being seen at the prenatal clinic, this interview was done in person. If the woman was contacted by the investigator on the telephone, this interview was done at the time of the initial telephone conversation. It took approximately 5 minutes to interview the woman and obtain this data. The woman was then given the "Expectant Mothers Study" booklet that included the 6 questionnaires and a stamped, addressed envelope to use to return the booklet to the investigator. The woman was informed that it took approximately 60 minutes to complete the questionnaires. Although it was not necessary that the entire booklet be completed at one time, the investigator asked that the woman complete the questionnaires within one week, if possible. If the investigator did not receive the questionnaire within 14 to 21 days of its distribution, a follow up phone call was made.

The investigator calculated, based on the woman's due date, the date when the second questionnaire should be mailed. The second questionnaire was sent to all
subjects during the calculated thirty-first week of pregnancy. Included in the second packet of information was the "Expectant Mothers Study" booklet, a stamped, addressed envelope, a thank you letter from the investigator, and a booklet entitled, "Touch: The Language of Love," written by Kathryn Barnard, PhD, RN. This booklet was included as a thank you to the subjects for their participation in the study. Once again, the women were asked to return the questionnaires to the investigator within one week, if possible.

The investigator maintained a logbook that included the subjects' code numbers, the date the first booklet was given/sent, the date it was returned, the date that the second booklet was to be sent, the date it was sent and the return date.

**Ethical Considerations**

The investigation was approved by the Institutional Review Board at Case Western Reserve University. In addition, the investigation was approved by appropriate personnel at each data collection site.

Every effort was made by the investigator to maintain the confidentiality and anonymity of all data. Subjects' names were kept separate from code numbers,
except on the master list, that was kept locked in a file in the investigator's office. Names were not included on any of the other questionnaires and subjects were identified only by code numbers.

At no time did the investigator have access to the women's charts at the physicians' offices or the prenatal clinic. Authorized persons at each location reviewed the charts to identify potential subjects. At the clinic, the investigator was provided with the woman's name and the investigator approached the woman in the waiting room. For women recruited from physicians' offices, the investigator was provided with names, due dates, and telephone numbers. However, this information was only provided to the investigator after the woman had read an information letter (Appendix I) and indicated a willingness to participate in the study. The woman was clearly told that her telephone number would be given to the investigator. When the initial telephone contact was made, the investigator ascertained that the woman had received the information letter and had a preliminary understanding of the study.

All subjects were provided with an information letter (Appendix G) and a copy of the informed consent (Appendix H). All subjects were given a complete description of the study and requirements for
participation. All subjects were instructed that they were free to ask questions and could withdraw from the study at any time.

Finally, all subjects were told that they would receive a summary of the study results after the investigation was completed.

**Data Coding**

The "Expectant Mother's Study" booklets, containing the six questionnaires, were returned to the investigator by mail. The date each booklet was received was recorded in the logbook by the investigator. Questionnaires were reviewed for accuracy and completeness. The completed booklets were kept in a locked file in the investigator's office.

Raw data were coded and entered directly into a computer file by the investigator and a trained research assistant. Data were analyzed using *Systat: The System for Statistics* on a Zenith ZW-158 microcomputer system. The microcomputer used for the analysis is equipped with an Intel 8087 math co-processor, that enhances computing speed and numerical accuracy and a 30 megabyte hard disk that provides for adequate data storage.
Each questionnaire was scored according to guidelines provided by the developer of the instrument.

**Self-Coherence Survey**

The 45 items of the SCS were scored as: never = 0 points; seldom = 1 point; sometimes = 2 points; often = 3 points; usually = 4 points. Using an array statement within Systat, the following items were reverse scored: 3, 4, 5, 9, 10, 13, 16, 17, 19, 20, 21, 24, 28, 30, 32, 33, 34, 35, and 37. Scores for all subjects were summed to provide a total score of self-coherence. Total scores could range from 0 to 180.

Ongoing work by the developer of the SCS has included factor analysis to further understand the dimensions included in the SCS. A short form of the SCS has been proposed, that is made up of items 6, 7, 8, 11, 12, 14, 15, 22, 23, 25, 26, 27, 29, 31, 36, 38, 39, 41, 42, and 45.

**Hassles Scale**

There were 117 items listed on the Hassles Scale, with space for a subject to include up to 5 more hassles, bringing the total number of items on the scale to 122. Subjects could select how often a hassle occurred and if a hassle occurred, how severe it was. How often a
hassle occurred was scored as follows: never = 0; seldom = 1; sometimes = 2; frequently = 3; most frequently = 4. If an item was not selected, it was scored as 0. Severity of identified hassles was scored as follows: not severe = 0; seldom severe = 1; somewhat severe = 2; moderately severe = 3; extremely severe = 4.

Three scores were calculated from the Hassles Scale. The count was the total number of hassles identified by the subject. Count scores could range from 0 to 122. Cumulative severity was the sum of the severity scores. Total cumulative severity scores could range from 0 to 488. Intensity, the mean intensity score, was calculated by dividing the cumulative severity by the count. Intensity scores could range from 0 to 4.

Uplifts Scale

There were 135 items listed on the Uplifts Scale, with space for a subject to include up to 5 more uplifts, bringing the total number of items on the scale to 140. Subjects could select how often an uplift occurred and if an uplift occurred, how intense it was. How often an uplift occurred was scored as follows: never = 0; seldom = 1; sometimes = 2; frequently = 3; most frequently = 4. If an item was not selected, it was scored as 0. Intensity, described as feelings of happiness of
identified uplifts was scored as follows: doesn't matter = 0; seldom happy = 1; somewhat happy = 2; very happy = 3; extremely happy = 4.

Three scores were calculated from the Uplifts Scale. The count was the total number of uplifts identified by the subject. Count scores could range from 0 to 140. Cumulative intensity was the sum of the intensity scores. Total cumulative intensity scores could range from 0 to 560. Intensity, the mean intensity score, was calculated by dividing the cumulative intensity by the count. Intensity scores could range from 0 to 4.

Health Responses Scale

The 50 item HRS consisted of two subscales, a Well-being subscale and a Symptoms subscale. Fourteen items (2, 6, 9, 12, 16, 20, 25, 28, 34, 38, 40, 43, 47, and 50) were included on the Well-being subscale; the remaining 36 items made up the Symptoms subscale.

All items on the HRS were scored as to frequency and intensity. Frequency scores were scored as: never = 0; rarely = 1; sometimes = 2; often = 3; always = 4 for the Well-being subscale. Items on the Symptoms subscale were reverse scored. The count was the total number of items selected; count scores could range from 0 to 50 for the total HRS; 0 to 14 for the Well-being subscale; and 0 to
36 for the Symptoms subscale. Cumulative frequency was calculated by summing the frequency scores; cumulative frequency scores could range from 0 to 200 for the total HRS; 0 to 56 for the Well-being subscale; and 0 to 144 for the Symptoms subscale. Higher scores on the Well-being subscale indicated a greater level of perceived well-being; lower scores on the Symptoms subscale indicated a higher level of perceived symptoms.

Support Behaviors Inventory

The SBI consisted of two subscales, Satisfaction with Partner's Support and Satisfaction with Other People's Support. Each subscale consisted of 45 items and were scored as follows: dissatisfied = 1; somewhat dissatisfied = 2; partly satisfied/partly dissatisfied = 3; somewhat satisfied = 4; satisfied = 5; very satisfied = 6. Scores on each subscale could range from 0 to 270.

Psychosocial Health Reproductive Tool

The 42 item PHRT consisted of two subscales: the Maternal Role Scale (items 1 to 18) and the Maternal Fetal Attachment Scale (items 19 to 42). All items were scored in the following manner: definitely yes = 4; yes = 3; uncertain = 2; no = 1; definitely no = 0. Using an array statement within Systat the following items were
reverse scored: 3, 6, 7, 8, 13, 14, 15, 16, and 40.
Responses were summed to give a total PHRT score, that could range from 0 to 168.

Descriptive Data Sheet
Non-numerical data contained on the Descriptive Data Sheet were coded as follows:

1. Health care provider: clinic = 1; physician = 2; midwife = 3.
2. Education: some high school = 1; high school = 2; some college = 3; trade, technical or business school = 4; baccalaureate degree = 5; some graduate education = 6; master's degree = 7; doctoral degree = 8; other = 9.
3. Prior pregnancy: yes = 1; no = 2.
4. Marital status: married and living together = 1; married and not living together = 2; not married and living with partner = 3; not married and not living with partner = 4.
5. Occupational status: working = 1; fulltime student = 2; not working = 3.

For those subjects who were working, occupation was coded using the following categories from Green (1970):
A: Professional and technical workers
B: Managerial workers, officials, proprietors
C: Clerical and sales
D: Craftsmen, foremen and skilled workers
E: Operatives and semiskilled workers
F: Service workers
G: Laborers
Socioeconomic status was calculated using the two factor index of SES developed by Green (1970):

\[ \text{SES} = (0.7 \times \text{education}) + (0.4 \times \text{occupation}) \]

Using this index, SES scores can range from approximately 30 to 85 (Green, 1970, p. 825).

**Conditioning Data**

The final step prior to data analysis was to carefully examine the data set for missing values and distribution of the variables. Multiple regression procedures, including path analysis, are particularly sensitive to variables with skewness and outliers (Tabachnick & Fidell, 1983). The following section describes procedures used to assure that the data set was as reliable as possible for the ensuing analysis.

**Missing Data**

Missing data is coded as "." within the Systat program. The SCS, SBI, and PHRT had questions that were occasionally left unanswered by subjects. Total scores for each of these scales were calculated by summing the responses. If only one question was left unanswered, a total score was not calculated, and a subject's score was listed as missing. It became apparent that there was a
great deal of data loss and the decision was made by the investigator to estimate missing data when possible to provide a more complete data set. Three steps were taken with each questionnaire to estimate missing data:

1. Each item was examined to determine if a pattern of items were not answered. An item was considered to be suspect if more than 10% of the subjects did not answer a particular item.

2. Each subject's responses were examined to determine if there was a pattern to the unanswered items. If more than 10% of a subject's responses to an item were missing, it was decided not to include that subject for that particular scale.

3. If, after examining the data, it was determined that the "10/10 rule" was satisfactorily met, item means were substituted for the missing values in the data set (Tabachnick & Fidell, 1983).

Tabachnick and Fidell (1983) suggest a variety of approaches for estimating missing data, including: substitution of item means; substitution of subject means; substitution of scale means (i.e., if a scale is answered on a range of 0 to 5, substitution of 2.5 for missing data); using prior knowledge to estimate missing data; and using regression procedures to predict missing data values. Each procedure has certain advantages and disadvantages.

In order to make an informed decision, the investigator ran several trials, using the data from the SCS, data collection period 1. Item means, subject
means, and scale means were calculated and substituted for the missing values. The results showed no significant differences between the three options. After consulting with a statistician, the decision was made to substitute item means (R. Zeller, personal communication, June 19, 1987). One disadvantage of the method is that it can have the effect of deflating the Pearson product-moment correlation, but this effect can be minimized by use of the "10/10" rule.

Distribution of Variables

Each variable was examined to determine if it was normally distributed. Scatterplots and skewness coefficients were used for this analysis (Tabachnick & Fidell, 1983). Variables that were skewed were transformed with a square root transformation statement within Systat (Wilkinson, 1986).
CHAPTER IV

Results

In the following chapter, the description of the sample and results of the data collection and analysis will be presented.

Description of the Sample

Using procedures described in the previous section, 148 women were contacted and asked to participate in the study. Complete data collection packets were sent to 148 women; 121 questionnaires (81.8%) were returned the first time and 100 (67.5%) were returned the second time. Ninety-eight women (66.2%) returned both questionnaires. Two women (1.4%) did not return the questionnaires the first time, but did return the questionnaires the second time, yielding a total sample of 123 subjects. For the first data collection period, questionnaires were returned to the investigator 2 to 99 days after distribution (M = 12.78; SD = 14.16). The second questionnaires were returned 3 to 90 days after distribution (M = 12.91; SD = 11.6). One woman took
three months to return both questionnaires; the majority of questionnaires were returned in 2 to 3 weeks.

The women in the sample ranged in age from 18 to 40 years (M = 27.38; SD = 4.9). The sample was composed of white women, who lived in a large geographic area from southern coastal New Hampshire to mid-central Maine. Sixty-seven (54.5%) of the women lived in urban areas, 27 (22%) in semi-urban, and 29 (23.5%) in rural areas. This is comparable to the distribution of the population in the geographic location (Bureau of the Census, 1982).

The majority of the women (n = 108; 87.8%) were married and living with their husbands. One woman was separated. Five women (4.1%) were not married but were living with their partners and nine women (7.3%) did not have an ongoing relationship with the baby's father. Of the 115 women who had an ongoing relationship with the baby's father, they reported that they had been together from 1 month to 17.5 years with a mean of 36.1 months (3 years; SD = 34.6).

The majority of the women had completed at least a high school education. There was a fairly even

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1 All analyses were done both including and excluding this one subject. There were no differences in the results. All analyses reported in the following pages were done using data from the total sample.
distribution of high school graduates ($n = 31; 25.2\%$), trade or technical school graduates ($n = 28; 22.8\%$), and college graduates ($n = 27; 22\%$). A summary of the level of education of the subjects is presented in Table 4-1.

The majority of the women ($n = 107; 87\%$) worked either full- or part-time outside the home. Six women (4.9\%) were full-time students and ten women (8.1\%) did not work. Using the work categories identified by Green (1970), 31 women (25.2\%) were in technical or professional positions; 17 women (13.8\%) were in managerial positions; 48 women (39\%) were in clerical and sales positions; 3 women (2.4\%) were skilled workers; 5 women (4.1\%) were semiskilled workers; 8 women (6.5\%) were service workers (primarily waitresses); and 1 woman (0.8\%) was a laborer in a factory. A summary of the employment characteristics is presented in Table 4-2. Socioeconomic status scores were calculated and ranged from 47.5 to 80.7 with a mean of 65.125 (SD = 6.853).

All of the women planned to deliver at a hospital. Health care providers included private physicians, nurse-midwives, and a prenatal clinic. Fourteen women (11.4\%) received prenatal care at the clinic. Twelve women (9.8\%) were seeing a nurse-midwife for prenatal care and the remaining 97 women (78.9\%) were seeing a
### TABLE 4-1

Educational Level of Subjects

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<th>EDUCATIONAL LEVEL</th>
<th>COUNT</th>
<th>CUM COUNT</th>
<th>PCT</th>
<th>CUM PCT</th>
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<td>4</td>
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<td>79</td>
<td>22.8</td>
<td>64.2</td>
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<td>22.0</td>
<td>86.2</td>
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<tr>
<td>Other</td>
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### TABLE 4-2

Occupational Categories of Subjects

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<tr>
<th>CATEGORY</th>
<th>COUNT</th>
<th>CUM COUNT</th>
<th>PCT</th>
<th>CUM PCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A: Technical/Professional</td>
<td>31</td>
<td>31</td>
<td>25.2</td>
<td>25.2</td>
</tr>
<tr>
<td>B: Managerial</td>
<td>17</td>
<td>48</td>
<td>13.8</td>
<td>39.0</td>
</tr>
<tr>
<td>C: Clerical/Sales</td>
<td>48</td>
<td>96</td>
<td>39.0</td>
<td>78.0</td>
</tr>
<tr>
<td>D: Skilled workers</td>
<td>3</td>
<td>99</td>
<td>2.4</td>
<td>80.4</td>
</tr>
<tr>
<td>E: Semiskilled workers</td>
<td>5</td>
<td>104</td>
<td>4.1</td>
<td>84.5</td>
</tr>
<tr>
<td>F: Service workers</td>
<td>8</td>
<td>112</td>
<td>6.5</td>
<td>91.0</td>
</tr>
<tr>
<td>G: Laborers</td>
<td>1</td>
<td>113</td>
<td>.8</td>
<td>91.8</td>
</tr>
<tr>
<td>Z: Not employed</td>
<td>10</td>
<td>123</td>
<td>8.2</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Note: Full-time students (n = 6) were classified under the work category they would assume after graduation (i.e., nursing, accounting) (Green, 1970)
private physician. The majority of the women planned to attend a prepared childbirth class (n = 118; 95.9%). One woman did not plan to attend a prepared childbirth class because her husband was a sailor and was at sea for the next six months; other reasons given for not attending classes included cost (too expensive) and proximity (no class was offered close to the woman's home).

Reliability of the Instruments

Reliability of the instruments was assessed by calculation of Cronbach's coefficient alpha for internal consistency (Cronbach, 1951). Results for each questionnaire are as follows:

Self-Coherence Survey

The alpha coefficient for the SCS at data collection period 1 was .774 (n = 121) and data collection period 2 was .792 (n = 100). The short form of the SCS had alpha coefficients of .741 (n = 121) and .734 (n = 100).
Hassles Scale

The alpha coefficient for the Hassles Scale at data collection period 1 was .954 (n = 121) and data collection period 2 was .969 (n = 99).

Uplifts Scale

The alpha coefficient for the Uplifts Scale at data collection period 1 was .981 (n = 121) and data collection period 2 was .982 (n = 100).

Support Behaviors Inventory

The alpha coefficient for the Satisfaction with Partner Support subscale of the SBI at data collection period 1 was .964 (n = 113) and data collection period 2 was .975 (n = 93). The alpha coefficient for the Satisfaction with Other Support subscale of the SBI at data collection period 1 was .964 (n = 107) and data collection period 2 was .981 (n = 93).

Health Responses Scale

The alpha coefficient for the Symptoms subscale of the HRS at data collection period 1 was .887 (n = 121) and data collection period 2 was .897 (n = 100). The alpha coefficient for the Well-being subscale of the HRS
at data collection period 1 was .785 (n = 121) and data collection period 2 was .815 (n = 100).

**Psychosocial Health Reproductive Tool**

The alpha coefficient for the total PHRT scale at data collection period 1 was .793 (n = 120) and data collection period 2 was .837 (n = 100). Alpha coefficients were also calculated for the two subscales of the PHRT, the MRS and MFA. For the MRS, the alpha coefficient at data collection period 1 was .520 (n = 121) and data collection period 2 was .637 (n = 100). For the MFA, the alpha coefficient at data collection period 1 was .815 (n = 120) and data collection period 2 was .851 (n = 100).

The reliabilities, means, and standard deviations of the instruments are presented in Table 4-3.

**Treatment of Missing Data**

Three questionnaires, the SCS, SBI, and PHRT had missing data.

**Self-Coherence Survey**

Fourteen subjects had missing data on the SCS after data collection period 1 and eight subjects had missing


TABLE 4-3

Reliability Assessment of Study Instruments

<table>
<thead>
<tr>
<th>Scale</th>
<th>Data Period</th>
<th>No. Items</th>
<th>Alpha Coeff.</th>
<th>M</th>
<th>SD</th>
<th>Valid Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS - long form</td>
<td>1</td>
<td>45</td>
<td>.774</td>
<td>115.69</td>
<td>12.97</td>
<td>121</td>
</tr>
<tr>
<td>SCS - short form</td>
<td>1</td>
<td>20</td>
<td>.741</td>
<td>47.82</td>
<td>8.15</td>
<td>121</td>
</tr>
<tr>
<td>SCS - long form</td>
<td>2</td>
<td>45</td>
<td>.792</td>
<td>114.13</td>
<td>13.12</td>
<td>100</td>
</tr>
<tr>
<td>SCS - short form</td>
<td>2</td>
<td>20</td>
<td>.734</td>
<td>47.13</td>
<td>7.87</td>
<td>100</td>
</tr>
<tr>
<td>Hassles Scale</td>
<td>1</td>
<td>122</td>
<td>.954</td>
<td>48.72</td>
<td>25.21</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>93.06</td>
<td>48.82</td>
<td>121</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.97</td>
<td>0.46</td>
<td>121</td>
</tr>
<tr>
<td>Hassles Scale</td>
<td>2</td>
<td>122</td>
<td>.969</td>
<td>54.65</td>
<td>25.13</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>97.57</td>
<td>55.82</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.76</td>
<td>0.46</td>
<td>99</td>
</tr>
<tr>
<td>Uplifts Scale</td>
<td>1</td>
<td>140</td>
<td>.981</td>
<td>89.72</td>
<td>36.04</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>255.67</td>
<td>103.74</td>
<td>121</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.89</td>
<td>0.38</td>
<td>121</td>
</tr>
<tr>
<td>Uplifts Scale</td>
<td>2</td>
<td>140</td>
<td>.982</td>
<td>96.15</td>
<td>33.66</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>273.65</td>
<td>102.84</td>
<td>100</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.86</td>
<td>0.43</td>
<td>100</td>
</tr>
<tr>
<td>SBI - Partner</td>
<td>1</td>
<td>41</td>
<td>.964</td>
<td>205.72</td>
<td>28.86</td>
<td>113</td>
</tr>
<tr>
<td>SBI - Partner</td>
<td>2</td>
<td>41</td>
<td>.975</td>
<td>208.97</td>
<td>30.05</td>
<td>93</td>
</tr>
<tr>
<td>SBI - Other</td>
<td>1</td>
<td>35</td>
<td>.964</td>
<td>169.23</td>
<td>23.38</td>
<td>107</td>
</tr>
<tr>
<td>SBI - Other</td>
<td>2</td>
<td>35</td>
<td>.981</td>
<td>170.85</td>
<td>27.19</td>
<td>93</td>
</tr>
<tr>
<td>HRS - Symptoms</td>
<td>1</td>
<td>36</td>
<td>.887</td>
<td>55.03</td>
<td>16.28</td>
<td>121</td>
</tr>
<tr>
<td>HRS - Symptoms</td>
<td>2</td>
<td>36</td>
<td>.897</td>
<td>57.34</td>
<td>16.40</td>
<td>99</td>
</tr>
<tr>
<td>HRS - Well-being</td>
<td>1</td>
<td>14</td>
<td>.785</td>
<td>26.94</td>
<td>6.14</td>
<td>121</td>
</tr>
<tr>
<td>HRS - Well-being</td>
<td>2</td>
<td>14</td>
<td>.815</td>
<td>27.25</td>
<td>6.57</td>
<td>99</td>
</tr>
<tr>
<td>PHRT - Total</td>
<td>1</td>
<td>42</td>
<td>.793</td>
<td>117.57</td>
<td>13.15</td>
<td>120</td>
</tr>
<tr>
<td>PHRT - Total</td>
<td>2</td>
<td>42</td>
<td>.837</td>
<td>128.56</td>
<td>13.71</td>
<td>100</td>
</tr>
<tr>
<td>PHRT - MRS</td>
<td>1</td>
<td>18</td>
<td>.520</td>
<td>55.56</td>
<td>5.46</td>
<td>121</td>
</tr>
<tr>
<td>PHRT - MRS</td>
<td>2</td>
<td>18</td>
<td>.637</td>
<td>57.99</td>
<td>5.76</td>
<td>100</td>
</tr>
<tr>
<td>PHRT - MFA</td>
<td>1</td>
<td>24</td>
<td>.815</td>
<td>61.96</td>
<td>10.48</td>
<td>120</td>
</tr>
<tr>
<td>PHRT - MFA</td>
<td>2</td>
<td>24</td>
<td>.851</td>
<td>70.56</td>
<td>10.72</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: Mean, standard deviation of the frequency scores
Note: Mean, standard deviation of the cumulative scores
Note: Mean, standard deviation of the intensity scores

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data after data collection period 2. Questionnaires were examined for a pattern of unanswered questions; none was apparent. No subject had answered fewer than 41 questions (the 10% parameter); in fact, most subjects had missed only one question on the questionnaire. Item means were substituted for the missing data values.

Support Behaviors Inventory

The SBI scales, Satisfaction with Partner Support and Satisfaction with Other Support, had numerous cases of missing data. In reviewing the Satisfaction with Partner Support, a pattern of missing questions was apparent. The following items were deleted as more than 10% of the subjects had not answered them: 2, 31, 39, 42.

After data collection period 2, the Satisfaction with Partner Support scale was again reviewed and the same items were deleted. Individual subject responses were reviewed and subjects that answered fewer than 37 items (10%) were deleted. Item means were substituted after the items and subjects were deleted. There were 113 valid cases after data collection period 1 and 93 valid cases after data collection period 2.

The same process was undertaken with the Satisfaction with Other Support scale. The following
items were deleted from the scale: 3, 5, 7, 10, 18, 24, 25, 26, 29, and 37. Individual subject responses were reviewed and subjects that answered fewer than 33 items (10%) were deleted. Item means were substituted. There were 107 valid cases after data collection period 1 and 93 valid cases after data collection period 2.

Overall scores on both of the scales were examined and found to be negatively skewed after data collection periods 1 and 2. The Satisfaction with Partner Support had a skewness score of -1.303 (time 1) and -1.852 (time 2) and the Satisfaction with Other Support had a skewness score of -1.211 (time 1) and -1.847 (time 2). Using procedures described in Tabachnick and Fidell (1983) the scores were reflexed and a square root transformation was done. The resulting skewness scores were: Satisfaction with Partner Support -0.182 (time 1) and -0.347 (time 2); Satisfaction with Other Support -0.022 (time 1) and -0.282 (time 2). The transformed scores were used in subsequent analyses.

**Psychosocial Health Reproductive Tool**

Nine subjects had missing data on the PHRT after data collection period 1 and eight subjects had missing data after data collection period 2. Questionnaires were examined for a pattern of unanswered questions:
none was apparent. One subject did not answer the last 24 questions of the PHRT; it appeared that the subject had inadvertently missed the last page of the booklet. This subject's responses on the PHRT were deleted from the data file. None of the other subjects with missing data had answered fewer than 38 questions (the 10% parameter); in fact, most subjects missed only one question on the questionnaire. Item means were substituted for the missing data values.

**Selection of Variables for Analysis**

The Hassles Scale, the Uplifts Scale, and the HRS were scored in such a way that multiple scores measuring essentially the same concept were calculated. To use three measures of each variable in the analyses would be misleading and could potentially provide false information; therefore, a decision had to be made as to which score from each questionnaire should be used in the analyses. Stepwise multiple regression procedures were done to determine the most effective predictors for each of the measures (Wilkinson, 1986). The following scores were selected and used in subsequent analyses: Hassles Scale -- mean intensity score; Uplifts Scale -- mean intensity score; HRS: Symptoms subscale --
cumulative symptoms score; HRS: Well-being subscale -- cumulative well-being score.

The original intention was to collect data at two time periods to assess the time dimension within the study framework. This was done. However, an additional, serendipitous measure of time, gestational age, became apparent. The original study intent was to have women complete the questionnaires within a fairly narrow time frame of gestational age, 18-22 weeks. The actual range that occurred, however, was from 18-26 weeks. There was enough variation within the gestational age that the concept of time could be analyzed within the data collection period as well as through the entire data collection process.

Data Analysis - Research Question 1

Research question 1, "What are the relationships between (a) self coherence, (b) stress, (c) support, (d) symptoms and well-being, and (e) prefatory maternal response in the primigravid woman?" was answered through the use of correlation coefficients and path analysis. The results of these analyses are presented in the next section.
Interrelations Among Variables - Time 1

Table 4-4 contains the Pearson Correlation Matrix of the nine variables of the theoretical framework of the study. Relationships between the study variables can be stated as follows:

1. Gestational age (representing the time dimension) is positively related to prefatory maternal response, \( r = 0.377 \).

2. Self-coherence: (a) is positively related to uplifts, \( r = 0.256 \); (b) is positively related to satisfaction with partner support, \( r = 0.272 \); (c) is positively related to symptoms related to the pregnancy, \( r = 0.272 \); (d) is positively related to well-being, \( r = 0.472 \); and (e) is positively related to prefatory maternal response, \( r = 0.292 \).

3. Hassles: (a) are positively related to uplifts, \( r = 0.332 \); (b) are negatively related to symptoms related to the pregnancy, \( r = -0.330 \).

4. Uplifts: (a) are positively related to satisfaction with other support, \( r = 0.213 \); (b) are negatively related to symptoms, \( r = -0.217 \); (c) are positively related to well-being, \( r = 0.227 \); and (d) are positively related to prefatory maternal response, \( r = 0.283 \).
\begin{table}
\centering
\caption{Pearson Correlation Matrix}
\label{table:correlation_matrix}
\begin{tabular}{cccccccc}
\hline
 & $X_1$ & $X_2$ & $X_3$ & $X_4$ & $X_5$ & $X_6$ & $X_7$ \\
$X_1$ & 1.000 & & & & & & \\
$X_2$ & 0.106 & 1.000 & & & & & \\
$X_3$ & 0.003 & -0.070 & 1.000 & & & & \\
$X_4$ & 0.098 & 0.256 & 0.332 & 1.000 & & & \\
$X_5$ & 0.041 & 0.055 & 0.030 & 0.213 & 1.000 & & \\
$X_6$ & 0.125 & 0.272 & -0.097 & 0.029 & 0.129 & 1.000 & \\
$X_7$ & -0.090 & 0.272 & -0.330 & -0.217 & 0.007 & 0.232 & 1.000 \\
$X_8$ & 0.085 & 0.472 & -0.081 & 0.217 & 0.193 & 0.101 & 0.041 & 1.000 \\
$X_9$ & 0.377 & 0.222 & -0.143 & 0.283 & 0.197 & 0.245 & -0.102 & 0.399 & 1.000 \\
\hline
\end{tabular}

\begin{tabular}{cccccccc}
\hline
$X_1$ & 123 & & & & & & \\
$X_2$ & 121 & 121 & & & & & \\
$X_3$ & 121 & 121 & 121 & & & & \\
$X_4$ & 121 & 121 & 121 & 121 & & & \\
$X_5$ & 107 & 107 & 107 & 107 & 107 & & \\
$X_6$ & 113 & 113 & 113 & 113 & 102 & 113 & \\
$X_7$ & 121 & 121 & 121 & 121 & 107 & 113 & 121 & 121 \\
$X_8$ & 121 & 121 & 121 & 121 & 107 & 113 & 121 & 121 & 120 \\
$X_9$ & 120 & 120 & 120 & 120 & 106 & 112 & 120 & 120 & 120 \\
\hline
\end{tabular}

Note*: xs differ because of pairwise deletion of missing data. Correlations of $\geq .16$ significant at $p \leq .05$; two-tailed $t$-test.

Note+: $X_1$ = Gestational age $X_4$ = Satisfaction/Partner Support
$X_2$ = Self-coherence $X_5$ = Symptoms
$X_3$ = Hassles/intensity $X_6$ = Well-being
$X_7$ = Uplifts/intensity $X_8$ = Psychosocial Reproductive Health
$X_9$ = Satisfaction/Other Support

\end{table}
5. Satisfaction with Partner Support: (a) is positively related to satisfaction with other support, \( r = 0.329 \); (b) is positively related to well-being, \( r = 0.197 \); and (c) is positively related to prefatory maternal response, \( r = 0.197 \).

6. Satisfaction with Other Support: (a) is positively related to symptoms, \( r = 0.232 \); and (b) is positively related to prefatory maternal response, \( r = 0.245 \).

7. Well-being is positively related to prefatory maternal response, \( r = 0.399 \).

8. Symptoms: (a) are positively related to self-coherence, \( r = 0.272 \); (b) are negatively related to hassles, \( r = -0.330 \); (c) are negatively related to uplifts, \( r = -0.217 \); (d) are positively related to satisfaction with partner support, \( r = 0.232 \).

Comparing these results to the operational system of hypothesized relationships (Figure 2-2, p. 53), the majority of the results were in the predicted direction. However, the positive relationship between self-coherence and symptoms was unexpected; it had been theorized that self-coherence would be negatively related to symptoms. Also, the relationships between symptoms and the other study variables are not theoretically understandable.
In order to more fully understand the relationships, a causal model was developed and tested using path analysis. Causal ordering cannot be determined from the correlation matrix alone (Volicer, 1984). The causal model that was tested included time and self-coherence as independent exogenous variables; hassles, uplifts, symptoms, well-being, partner support, and other support as independent endogenous independent variables; and prefatory maternal response as the dependent variable. This causal model was tested for indirect and direct effects.

Path Analysis - Time 1

The original model that was tested included nine variables: self-coherence, gestational age, satisfaction with partner support, satisfaction with other support, well-being, symptoms, hassles, uplifts, and prefatory maternal response. In the initial multiple regression calculations, it became clear that satisfaction with other support was not an effective predictor and the variable was dropped from the equation. Further, it became apparent that two other variables, partner support and symptoms, were producing unstable estimates. In addition, the scores calculated from the long form of the SCS also seemed to be producing unstable estimates.
Therefore, these variables were excluded from the analyses and the path model was estimated using the following variables: gestational age, SCS-short form, well-being, hassles, uplifts, and prefatory maternal response.

The six variable model was estimated using a series of multiple regression equations. A total of seven cases were excluded from the analyses as there were shown to have high leverage scores. Leverage is an index of the influence of each observation on the size of the mean square error. Leverage should have an average value of: \( p/N \), where \( p \) is the number of estimated parameters (including the constant) and \( N \) is the number of cases. If the leverage for an individual case is larger than \( 2p/N \), it is an indication that the observation is having undue influence on the regression estimates (Belsley, Kuh, & Welsch, 1980; Velleman & Welsch, 1981). The final \( n \) for the tested model was 110.

Path analysis models are presented in two forms. The first model illustrates all the paths hypothesized to exist. The second model illustrates the significant paths. This model is frequently referred to as the 'trimmed' model, as non-significant paths have been 'trimmed' from the model. Path coefficients are
estimated using ordinary least squares multiple regression procedures. Path coefficients are the standardized regression coefficients. Figure 4-1 illustrates the complete model before trimming, and Figure 4-2 illustrates the trimmed model. The adjusted $R^2$ of the model presented in Figure 4-1 was 0.392.

To further understand the relationships between the variable, the direct effects, indirect effects, spurious effects and unexplained effects implied by the model can be identified. This is done through decomposition of the correlation coefficients. The results of this analysis are presented in Table 4-5.

**Testing of the Model**

Four approaches can be used to test the validity of a model. Two approaches, 'theory trimming' and testing of paths not included in the model for significance (Budd & McKeehan, 1986) were done in the prior analysis to determine the model presented in Figure 4-2.

Another test of validity is to assess whether the model is able to reproduce the zero-order correlation matrix by using the path coefficients. The reproduced matrix is presented in Table 4-6. The reproduced correlations appear to be close approximations of the original correlation coefficients. As Budd and McKeehan
Figure 4-1: Six Variable Model of Prefatory Maternal Response

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Figure 4-2: Trimmed Six Variable Model of Prefatory Maternal Response

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# TABLE 4-5
Decomposition of the Correlation Coefficients

<table>
<thead>
<tr>
<th>Bivariate Relationship</th>
<th>$r$</th>
<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Spurious Effect</th>
<th>Unexplained Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>$X_1X_2$</td>
<td>.336</td>
<td>.270</td>
<td>.041</td>
<td>---</td>
<td>.030</td>
</tr>
<tr>
<td>$X_1X_3$</td>
<td>.382</td>
<td>.324</td>
<td>.029</td>
<td>---</td>
<td>.025</td>
</tr>
<tr>
<td>$X_1X_4$</td>
<td>.392</td>
<td>.213</td>
<td>---</td>
<td>.082</td>
<td>---</td>
</tr>
<tr>
<td>$X_1X_5$</td>
<td>.269</td>
<td>.177</td>
<td>---</td>
<td>.109</td>
<td>---</td>
</tr>
<tr>
<td>$X_1X_6$</td>
<td>-.227</td>
<td>-.325</td>
<td>---</td>
<td>.139</td>
<td>---</td>
</tr>
<tr>
<td>$X_2X_4$</td>
<td>.297</td>
<td>.297</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>$X_2X_5$</td>
<td>.404</td>
<td>.404</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>$X_2X_6$</td>
<td>.290</td>
<td>.290</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>$X_3X_5$</td>
<td>.244</td>
<td>---</td>
<td>.120</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>$X_3X_6$</td>
<td>-.141</td>
<td>---</td>
<td>---</td>
<td>.086</td>
<td>---</td>
</tr>
<tr>
<td>$X_4X_6$</td>
<td>.242</td>
<td>---</td>
<td>---</td>
<td>.117</td>
<td>---</td>
</tr>
</tbody>
</table>

$X_1$: Prefatory Maternal Response  
$X_2$: Self-coherence, short form  
$X_3$: Gestational age  
$X_4$: Well-being  
$X_5$: Uplifts/intensity  
$X_6$: Hassles/intensity
TABLE 4-6

Pearson Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2</td>
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<tr>
<td>X3</td>
<td>0.382</td>
<td>0.093</td>
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</tr>
<tr>
<td>X4</td>
<td>0.392</td>
<td>0.297</td>
<td>0.071</td>
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</tr>
<tr>
<td>X5</td>
<td>0.269</td>
<td>0.408</td>
<td>0.085</td>
<td>0.244</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>X6</td>
<td>-0.227</td>
<td>0.290</td>
<td>-0.025</td>
<td>-0.141</td>
<td>0.242</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Reproduced Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
<th>X6</th>
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<td>0.384</td>
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<td>1.000</td>
<td>0.044</td>
<td>0.047</td>
<td>-0.052</td>
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<tr>
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<td>0.297</td>
<td>0.071</td>
<td>1.000</td>
<td>0.244</td>
<td>-0.141</td>
</tr>
<tr>
<td>X5</td>
<td>0.269</td>
<td>0.408</td>
<td>0.085</td>
<td>0.244</td>
<td>1.000</td>
<td>0.242</td>
</tr>
<tr>
<td>X6</td>
<td>-0.227</td>
<td>0.290</td>
<td>-0.025</td>
<td>-0.141</td>
<td>0.242</td>
<td>1.000</td>
</tr>
</tbody>
</table>

X1: Prefatory Maternal Response
X2: Self-coherence, short form
X3: Gestational age
X4: Well-being
X5: Uplifts/intensity
X6: Hassles/intensity

Note*: Reproduced correlations are in italics
(1986) noted, "Although slight inconsistencies in the correlation coefficients are to be expected, there are no criteria for judging slight from large inconsistencies" (p. 130).

A final test of validity of the model is a $X^2$ goodness-of-fit test (Pedhazur, 1982). The statistic that is used is:

$$Q = \frac{1-R_m^2}{1-M}$$

$M$ and $R_m^2$ calculated in a similar manner, thus:

$$1-(1-R_1^2)(1-R_2^2)...(1-R_p^2)$$

where $R_m^2$ is the product of all the squared residual paths of a fully recursive model and $M$ includes only the paths of the overidentified model. For the six variable model, $Q = .98$. $Q$ can be tested for significance with the following formula:

$$W = -(N-d) \log_e Q$$

In the present instance, $W = .947$, $p > .05$, and the null hypothesis is not rejected, indicating that the model does fit the data.

**Intercorrelations Among Variables - Time 2**

Table 4-7 contains the Pearson Correlation Matrix of the nine variables of the theoretical framework of
TABLE 4-7

Pearson Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>$X_1$</th>
<th>$X_2$</th>
<th>$X_3$</th>
<th>$X_4$</th>
<th>$X_5$</th>
<th>$X_6$</th>
<th>$X_7$</th>
<th>$X_8$</th>
<th>$X_9$</th>
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</thead>
<tbody>
<tr>
<td>$X_1$</td>
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<td>0.393</td>
<td>0.286</td>
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<td>$X_9$</td>
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<td>0.396</td>
<td>0.085</td>
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<td>0.362</td>
<td>0.284</td>
<td>-0.207</td>
<td>0.299</td>
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</tr>
</tbody>
</table>

Frequency Table

<table>
<thead>
<tr>
<th></th>
<th>$X_1$</th>
<th>$X_2$</th>
<th>$X_3$</th>
<th>$X_4$</th>
<th>$X_5$</th>
<th>$X_6$</th>
<th>$X_7$</th>
<th>$X_8$</th>
<th>$X_9$</th>
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</thead>
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<td>99</td>
<td>99</td>
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<td>92</td>
<td>99</td>
<td>99</td>
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</tr>
<tr>
<td>$X_9$</td>
<td>100</td>
<td>100</td>
<td>99</td>
<td>100</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td>99</td>
<td>100</td>
</tr>
</tbody>
</table>

Note*: $n$s differ because of pairwise deletion of missing data. Correlations of $\geq .16$ are significant at $p \leq .05$; two-tailed $t$-test.

Note*: $X_1$ = Gestational age $X_6$ = Satisfaction/Partner Support
$X_2$ = Self-coherence $X_7$ = Symptoms
$X_3$ = Hassles/intensity $X_8$ = Well-being
$X_4$ = Uplifts/intensity $X_9$ = Psychosocial Reproductive Health
$X_5$ = Satisfaction/Other Support

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the study from data collection period 2. Relationships between the study variables can be stated as follows:

1. Gestational age (representing the time dimension): (a) is positively related to self-coherence, $r = .225$; and (b) is positively related to satisfaction with other support, $r = .185$.

2. Self-coherence: (a) is negatively related to hassles, $r = -0.168$; (b) is positively related to uplifts, $r = 0.409$; (c) is positively related to satisfaction with other support, $r = 0.299$; (d) is positively related to satisfaction with partner support, $r = .358$; (e) is positively related to symptoms, $r = 0.297$; (f) is positively related to well-being, $r = 0.474$; and (g) is positively related to prefatory maternal response, $r = 0.396$.

3. Hassles: (a) are positively related to uplifts, $r = 0.207$; (b) are negatively related to satisfaction with partner support, $r = -0.228$; and (c) are negatively related to symptoms, $r = -0.486$.

4. Uplifts: (a) are positively related to satisfaction with other support, $r = 0.233$; (b) are positively related to satisfaction with partner support, $r = 0.327$; (c) are positively related to well-being, $r = 0.426$; and (d) are positively related to prefatory maternal response, $r = 0.338$. 

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5. Satisfaction with Other Support: (a) is positively related to satisfaction with partner support, \( r = 0.317 \); (b) is positively related to well-being, \( r = 0.393 \); and (c) is positively related to prefatory maternal response, \( r = 0.362 \).

6. Satisfaction with Partner Support: (a) is positively related to symptoms, \( r = 0.248 \); (b) is positively related to well-being, \( r = 0.286 \); and (c) is positively related to prefatory maternal response, \( r = 0.284 \).

7. Symptoms related to the pregnancy are negatively related to prefatory maternal response, \( r = -0.207 \).

8. Well-being is positively related to prefatory maternal response, \( r = 0.299 \).

Comparing these results to the operational system of hypothesized relationships (Figure 2-2, p. 53), the majority of the results were in the predicted direction, except for the positive relationship between satisfaction with partner support and symptoms, which was unexpected. It is interesting to note that self-coherence was positively related to symptoms for both time 1 and time 2 and that the correlation coefficients are quite similar for both times (time 1, \( r = 0.272 \); time 2, \( r = 0.297 \)). This relationship was predicted to
be negative, but the fact that the relationship was positive both times gives strong support to the notion that it is a true relationship and not a spurious finding. The correlations among the variables are compared and presented in Table 4-8.

Once again, a causal model of the variables was developed and tested using path analysis. Time (gestational age) and self-coherence were included as independent exogenous variables; hassles, uplifts, symptoms, well-being, partner support, and other support were independent endogenous variables; and prefatory maternal response was the dependent variable. The causal model was tested for indirect and direct effects.

Path Analysis - Time 2

The model that was tested included nine variables: self-coherence, gestational age, satisfaction with partner support, satisfaction with other support, well-being, symptoms, hassles, uplifts, and prefatory maternal response. In the initial multiple regression calculations, it became clear that gestational age, hassles, uplifts, and well-being were contributing very little to the explained variance and were deleted from the model. A five variable model, consisting of self-coherence, symptoms, satisfaction with other support,
TABLE 4-8
Comparison of Correlation Coefficients

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<tr>
<th>PMR with:</th>
<th>Time 1</th>
<th>Time 2</th>
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<td>Gestational age</td>
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</tr>
<tr>
<td>Self-coherence</td>
<td>0.292</td>
<td>0.396</td>
</tr>
<tr>
<td>Hassles</td>
<td>-0.143</td>
<td>0.085</td>
</tr>
<tr>
<td>Uplifts</td>
<td>0.283</td>
<td>0.338</td>
</tr>
<tr>
<td>Symptoms</td>
<td>-0.102</td>
<td>-0.207</td>
</tr>
<tr>
<td>Well-being</td>
<td>0.399</td>
<td>0.299</td>
</tr>
<tr>
<td>Partner support</td>
<td>0.245</td>
<td>0.284</td>
</tr>
<tr>
<td>Other support</td>
<td>0.197</td>
<td>0.362</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Self-coherence with:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational age</td>
<td>0.106</td>
<td>0.225</td>
</tr>
<tr>
<td>Hassles</td>
<td>-0.070</td>
<td>-0.168</td>
</tr>
<tr>
<td>Uplifts</td>
<td>0.256</td>
<td>0.409</td>
</tr>
<tr>
<td>Symptoms</td>
<td>0.272</td>
<td>0.297</td>
</tr>
<tr>
<td>Well-being</td>
<td>0.472</td>
<td>0.474</td>
</tr>
<tr>
<td>Partner support</td>
<td>0.272</td>
<td>0.358</td>
</tr>
<tr>
<td>Other support</td>
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<td>0.299</td>
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</table>

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<thead>
<tr>
<th>Hassles with:</th>
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</tr>
</thead>
<tbody>
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<td>-0.028</td>
</tr>
<tr>
<td>Uplifts</td>
<td>0.332</td>
<td>0.207</td>
</tr>
<tr>
<td>Symptoms</td>
<td>-0.330</td>
<td>-0.486</td>
</tr>
<tr>
<td>Well-being</td>
<td>-0.091</td>
<td>-0.019</td>
</tr>
<tr>
<td>Partner support</td>
<td>-0.097</td>
<td>-0.229</td>
</tr>
<tr>
<td>Other support</td>
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<td>-0.034</td>
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<table>
<thead>
<tr>
<th>Uplifts with:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
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<td>0.097</td>
</tr>
<tr>
<td>Symptoms</td>
<td>-0.217</td>
<td>-0.144</td>
</tr>
<tr>
<td>Well-being</td>
<td>0.193</td>
<td>0.426</td>
</tr>
<tr>
<td>Partner support</td>
<td>0.029</td>
<td>0.327</td>
</tr>
<tr>
<td>Other support</td>
<td>0.213</td>
<td>0.233</td>
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</tbody>
</table>
### TABLE 4-8 (cont.)

#### Symptoms with:

<table>
<thead>
<tr>
<th></th>
<th>Value 1</th>
<th>Value 2</th>
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</thead>
<tbody>
<tr>
<td>Gestational Age</td>
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<td>0.009</td>
</tr>
<tr>
<td>Well-being</td>
<td>0.041</td>
<td>-0.040</td>
</tr>
<tr>
<td>Partner support</td>
<td>0.232</td>
<td>0.248</td>
</tr>
<tr>
<td>Other support</td>
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<td>-0.002</td>
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</table>

#### Well-being with:

<table>
<thead>
<tr>
<th></th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational Age</td>
<td>0.089</td>
<td>0.116</td>
</tr>
<tr>
<td>Partner support</td>
<td>0.101</td>
<td>0.286</td>
</tr>
<tr>
<td>Other support</td>
<td>0.193</td>
<td>0.393</td>
</tr>
</tbody>
</table>

#### Partner support with:

<table>
<thead>
<tr>
<th></th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational Age</td>
<td>0.042</td>
<td>0.125</td>
</tr>
<tr>
<td>Other support</td>
<td>0.329</td>
<td>0.317</td>
</tr>
</tbody>
</table>
satisfaction with partner support, and prefatory maternal response was tested. Two cases were deleted due to leverage. The final \( n \) for the model that was tested was 89. The complete model is presented in Figure 4-3. The trimmed model is presented in Figure 4-4. The adjusted \( R^2 \) for the model in Figure 4-3 was 0.362. The decomposition of the correlation coefficients is presented in Table 4-9.

**Testing of the Model**

As described earlier, two procedures were used to test the validity of the model. First, the zero-order correlation matrix was reproduced using the path coefficients. The reproduced matrix is presented in Table 4-10. \( Q \) was also determined and for the five variable model was calculated to be .970. In the significance testing, \( W = 1.16, p > .05 \) and the null hypothesis is not rejected, indicating that the model does fit the data.

**Data Analysis - Research Question 2**

Research question 2, "What changes occur in (a) self-coherence, (b) stress, (c) support, (d) symptoms and well-being, and (e) prefatory maternal response
Figure 4.3: Five Variable Model of Perinatal Maternal Response
Figure 4-4: Trimmed Five Variable Model of Preparatory Maternal Response
TABLE 4-9
Decomposition of the Correlation Coefficients

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<tr>
<th>Bivariate Relationship</th>
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<th>Direct Effect</th>
<th>Indirect Effect</th>
<th>Spurious Effect</th>
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<td>.482</td>
<td>-.003</td>
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</tr>
<tr>
<td>( X_1X_3 )</td>
<td>.234</td>
<td>.107</td>
<td>---</td>
<td>.149</td>
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<tr>
<td>( X_1X_4 )</td>
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<td>.199</td>
<td>---</td>
<td>.161</td>
</tr>
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<td>( X_1X_5 )</td>
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<td>-.330</td>
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<td>.142</td>
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<td>( X_2X_3 )</td>
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<td>.312</td>
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<tr>
<td>( X_2X_4 )</td>
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<td>.405</td>
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<td>---</td>
</tr>
<tr>
<td>( X_2X_5 )</td>
<td>.263</td>
<td>.253</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

\( X_1 \): Prefatory Maternal Response
\( X_2 \): Self-coherence
\( X_3 \): Satisfaction with Partner Support
\( X_4 \): Satisfaction with Other Support
\( X_5 \): Symptoms
TABLE 4-10

Pearson Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>X1</th>
<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>X2</td>
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<td>1.000</td>
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<td>X3</td>
<td>0.318</td>
<td>0.414</td>
<td>1.000</td>
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<td>0.029</td>
<td>1.000</td>
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Reproduced Correlation Matrix

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<tr>
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<th>X2</th>
<th>X3</th>
<th>X4</th>
<th>X5</th>
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</thead>
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<td>1.000</td>
<td>0.414</td>
<td>0.263</td>
<td>0.312</td>
</tr>
<tr>
<td>X3</td>
<td>0.381</td>
<td>0.414</td>
<td>1.000</td>
<td>0.029</td>
<td>0.405</td>
</tr>
<tr>
<td>X4</td>
<td>-0.201</td>
<td>0.263</td>
<td>0.029</td>
<td>1.000</td>
<td>0.253</td>
</tr>
<tr>
<td>X5</td>
<td>0.482</td>
<td>0.330</td>
<td>0.402</td>
<td>0.277</td>
<td>1.000</td>
</tr>
</tbody>
</table>

X1: Prefatory Maternal Response
X2: Partner support
X3: Other support
X4: Symptoms
X5: Self-coherence

Note: Reproduced correlations are in italics

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between weeks 22 and 32 of gestation in the primigravid woman?" was answered through the use of correlated samples $t$-tests to compare the means of the variables from data collection periods 1 and 2. The results of these analyses are presented in the next section.

**Comparison of Variable Means - Time 1 and 2**

Table 4-11 contains the results of the correlated samples $t$-tests comparing the study means from data collection period 1 and 2. The results can be described as follows:

1. **Self-coherence:** There were no significant differences in self-coherence between time 1 and 2 for either the long form or the short form.

2. **Hassles:** The count hassles score (total number of hassles selected by the subject) increased from a mean of 48.719 to 54.646, with a $t$ of 2.592 ($df = 96$, $p = .011$). The intensity score decreased from 1.968 to 1.755 ($t = 4.468$, $df = 96$, $p = .000$). The severity score (sum of the total number of selected hassles) did not change significantly from time 1 to time 2.

3. **Uplifts:** The count, severity, and intensity scores did not change significantly between time 1 and time 2.
TABLE 4-11
Comparison of Means of Study Variables by Correlated t-Tests

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M1</th>
<th>M2</th>
<th>df</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS-short form</td>
<td>98</td>
<td>115.685</td>
<td>114.134</td>
<td>97</td>
<td>1.275</td>
<td>.205</td>
</tr>
<tr>
<td>SCS-long form</td>
<td>98</td>
<td>47.819</td>
<td>47.132</td>
<td>97</td>
<td>.749</td>
<td>.456</td>
</tr>
<tr>
<td>Hassles-count</td>
<td>97</td>
<td>48.719</td>
<td>54.646</td>
<td>96</td>
<td>2.592</td>
<td>.011</td>
</tr>
<tr>
<td>Hassles-severity</td>
<td>97</td>
<td>93.058</td>
<td>97.566</td>
<td>96</td>
<td>.982</td>
<td>.329</td>
</tr>
<tr>
<td>Hassles-intensity</td>
<td>97</td>
<td>1.968</td>
<td>1.755</td>
<td>96</td>
<td>4.468</td>
<td>.000</td>
</tr>
<tr>
<td>Uplifts-count</td>
<td>98</td>
<td>89.719</td>
<td>96.150</td>
<td>97</td>
<td>1.566</td>
<td>.121</td>
</tr>
<tr>
<td>Uplifts-severity</td>
<td>98</td>
<td>255.669</td>
<td>273.650</td>
<td>97</td>
<td>1.591</td>
<td>.115</td>
</tr>
<tr>
<td>Uplifts-intensity</td>
<td>98</td>
<td>2.889</td>
<td>2.861</td>
<td>97</td>
<td>.389</td>
<td>.698</td>
</tr>
<tr>
<td>Symptoms-count</td>
<td>98</td>
<td>27.000</td>
<td>28.040</td>
<td>97</td>
<td>2.217</td>
<td>.029</td>
</tr>
<tr>
<td>Symptoms-severity</td>
<td>97</td>
<td>88.967</td>
<td>86.970</td>
<td>96</td>
<td>2.356</td>
<td>.021</td>
</tr>
<tr>
<td>Well-being-count</td>
<td>98</td>
<td>12.273</td>
<td>12.290</td>
<td>97</td>
<td>.042</td>
<td>.967</td>
</tr>
<tr>
<td>Well-being-severity</td>
<td>97</td>
<td>26.934</td>
<td>27.131</td>
<td>96</td>
<td>.442</td>
<td>.659</td>
</tr>
<tr>
<td>Partner support</td>
<td>89</td>
<td>7.485</td>
<td>8.929</td>
<td>88</td>
<td>8.456</td>
<td>.000</td>
</tr>
<tr>
<td>Other support</td>
<td>82</td>
<td>6.462</td>
<td>8.090</td>
<td>81</td>
<td>11.184</td>
<td>.000</td>
</tr>
<tr>
<td>FMR-Role</td>
<td>94</td>
<td>55.605</td>
<td>57.993</td>
<td>93</td>
<td>5.062</td>
<td>.000</td>
</tr>
<tr>
<td>FMR-Attachment</td>
<td>93</td>
<td>61.653</td>
<td>70.561</td>
<td>92</td>
<td>10.088</td>
<td>.000</td>
</tr>
<tr>
<td>FMR-Total</td>
<td>97</td>
<td>117.347</td>
<td>128.555</td>
<td>96</td>
<td>11.048</td>
<td>.000</td>
</tr>
</tbody>
</table>

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4. Symptoms: The count and severity scores both changed significantly between time 1 and time 2. The mean symptoms count, time 1 was 27 and the mean for time 2 was 28.040 ($t = 2.217$, $df = 97$, $p = .029$). The mean severity score, time 1 was 88.967 and time 2 was 86.970 ($t = 2.356$, $df = 96$, $p = .021$).

5. Well-being: The count and severity scores did not change significantly between time 1 and time 2.

6. Support: Satisfaction with partner support increased significantly between time 1 ($M = 7.485$) and time 2 ($M = 8.929$; $t = 8.456$, $df = 88$, $p = .000$). Satisfaction with other support also increased significantly between time 1 ($M = 6.462$) and time 2 ($M = 8.090$; $t = 11.184$, $df = 81$, $p = .000$).

7. Prefatory maternal response: There were significant changes in the overall PMR score, as well as the subscales of role and attachment. Role time 1 was 55.605 and time 2 was 57.993 ($t = 5.062$, $df = 93$, $p = .000$). Attachment time 1 was 61.653 and time 2 was 70.561 ($t = 10.088$, $df = 92$, $p = .000$). Total score time 1 was 117.347 and time 2 was 128.555 ($t = 11.048$, $df = 97$, $p = .000$).

Calculation of multiple $t$-tests on one data set can greatly increase the probability of making a Type I error. Two approaches can be used to guard against
making undue inferences. One of the simplest, the Bonferroni procedure, controls the overall comparison error rate for multiple hypotheses, by adjusting the alpha rate for k comparisons: \( \frac{\alpha}{k} \) (Wilkinson, 1986). In this example, 17 comparisons were done, so the adjusted \( \alpha = .003 \). Referring back to Table 4-11, it is apparent that the differences between hassles-count, symptoms-count, and symptoms-severity are not significant when \( \alpha = .003 \).

A second approach to assess the differences between the variables measured at Time 1 and Time 2 is to calculate a multivariate analysis of variance (MANOVA). For this estimation, the following pairs of variables were entered into the equation: hassles-count; hassles-intensity; symptoms-count; symptoms-intensity; partner support; other support; and prefatory maternal response. The results are presented in Table 4-12. The univariate F-tests control for the multiple comparisons and the results are significant for the seven pairs of variables. Wilks' lambda (likelihood ratio criterion) is equal to 0.221 (\( p = .000 \)) indicating an overall difference between the variable means.

A final point made by Wilkinson (1986) relates to the situation where the Bonferroni results are different from another multiple comparison procedure, as is the
TABLE 4-11

Comparison of Means of Study Variables by Univariate F-tests

<table>
<thead>
<tr>
<th>Variable</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hassles-count</td>
<td>3207.91</td>
<td>1</td>
<td>3207.91</td>
<td>5.90</td>
<td>0.017*</td>
</tr>
<tr>
<td>Error</td>
<td>41293.10</td>
<td>76</td>
<td>543.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hassles-intensity</td>
<td>2.96</td>
<td>1</td>
<td>2.96</td>
<td>13.37</td>
<td>0.000*</td>
</tr>
<tr>
<td>Error</td>
<td>16.83</td>
<td>76</td>
<td>0.221</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptoms-count</td>
<td>212.78</td>
<td>1</td>
<td>212.78</td>
<td>14.300</td>
<td>0.000*</td>
</tr>
<tr>
<td>Error</td>
<td>1131.22</td>
<td>76</td>
<td>14.88</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symptoms-intensity</td>
<td>628.57</td>
<td>1</td>
<td>628.57</td>
<td>7.93</td>
<td>0.006*</td>
</tr>
<tr>
<td>Error</td>
<td>6025.43</td>
<td>76</td>
<td>79.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner support</td>
<td>222.79</td>
<td>1</td>
<td>222.79</td>
<td>69.43</td>
<td>0.000*</td>
</tr>
<tr>
<td>Error</td>
<td>243.89</td>
<td>76</td>
<td>3.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other support</td>
<td>210.59</td>
<td>1</td>
<td>210.59</td>
<td>116.99</td>
<td>0.000*</td>
</tr>
<tr>
<td>Error</td>
<td>136.79</td>
<td>76</td>
<td>1.80</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prefatory maternal response</td>
<td>10733.94</td>
<td>1</td>
<td>10733.94</td>
<td>115.62</td>
<td>0.000*</td>
</tr>
<tr>
<td>Error</td>
<td>7055.95</td>
<td>76</td>
<td>92.84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Multivariate Test Statistics

<table>
<thead>
<tr>
<th></th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wilks' Lambda F-statistic</td>
<td>0.221</td>
<td>7,70</td>
</tr>
<tr>
<td>Pillai Trace F-statistic</td>
<td>0.779</td>
<td>7,70</td>
</tr>
<tr>
<td>Hotelling-Lawley Trace</td>
<td>3.520</td>
<td>7,70</td>
</tr>
<tr>
<td>Hotelling-Lawley F-statistic</td>
<td>35.199</td>
<td>7,70</td>
</tr>
</tbody>
</table>
case for the difference between hassles-count and symptoms-severity. Wilkinson (1986) noted, "... you are on slippery ground. The results probably won't replicate" (p. MGLH-28). Therefore, in this case, the difference between hassles-count and symptoms-severity should be considered with some caution. The differences between the other pairs of variables, hassles-intensity, symptoms-count, partner support, other support, and prefatory maternal response, are probably true differences.
CHAPTER V

Discussion, Conclusions, and Recommendations

The purpose of this study, as stated in Chapter I, was to test a model deductively derived from a conceptual system suggested by Rubin (1967a, 1967b, 1984) in an attempt to understand the process of maternal identity formation during pregnancy. Two research questions were proposed, based on the causal model derived from the theoretical system:

1. What are the relationships between (a) self-coherence, (b) stress, (c) support, (d) symptoms and well-being, and (e) prefatory maternal response in the primigravid woman?

2. What changes occur in (a) self-coherence, (b) stress, (c) support, (d) symptoms and well-being, and (e) prefatory maternal response between weeks 22 and 32 of gestation in the primigravid woman?

In the following paragraphs, the data analysis and the findings of the study will be related to the research questions. Conclusions about the validity of the proposed model will be made based on the interpretation of the findings.

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Research Question 1

The theoretical system of the study proposed that maternal identity formation during pregnancy was influenced by the self system, biologic, social, and psychologic factors. An operational system, consisting of self-coherence (self system), hassles and uplifts (psychologic), support (social), and symptoms and well-being (biologic) variables was deductively derived from the theoretical system. Data were collected on each of the study variables and the proposed model was tested empirically using path analysis. As data were collected at two time points during the pregnancy (22 and 32 weeks), two models were tested. The trimmed models that were found to be consistent with the data after analysis are illustrated in Figures 4-2 and 4-4.

Six Variable Model - Time 1

After data collection period one, a nine variable model, consisting of gestational age, self-coherence, satisfaction with partner support, satisfaction with other support, well-being, symptoms, hassles, uplifts, and prefatory maternal response was tested. During the testing of the model, three variables were trimmed:
symptoms, satisfaction with other support, and satisfaction with partner support. This 'trimming' and subsequent model refinement is the final step in model testing proposed by Stember (1986). The trimmed six variable model is presented in Figure 4-2.

Relationships between the variables in the model can be stated as follows:

1. Self-coherence: (a) is directly related to prefatory maternal response in a positive direction; (b) is directly related to well-being in a positive direction; (c) is directly related to uplifts in a positive direction; (d) is directly related to hassles in a positive direction; and (e) is indirectly related to prefatory maternal response through the three endogenous variables, well-being, uplifts, and hassles.

2. Gestational age is directly related to prefatory maternal response in a positive direction. There are no indirect paths from gestational age to prefatory maternal response through any of the endogenous variables.

3. Each of the endogenous variables, hassles, well-being, and uplifts, are directly related to prefatory maternal response. Uplifts and well-being are related in a positive direction and hassles are related in a negative direction.
4. The trimmed six variable model explains 39.2% of the variance accounted for in the dependent variable, prefatory maternal response.

This model is consistent with the theoretical model that was proposed, except for the positive relationship between hassles and self-coherence. This relationship was proposed to be negative in the theoretical system (the higher the level of self-coherence, the lower the level of identified hassles). The major theoretical construct, that is, the direct and indirect influence of the self system on maternal identity formation was supported by the tested model.

How can the unexpected positive relationship between hassles and self-coherence be explained? Self-coherence, the ability to integrate present experience with past experience, motivations, and goals, and to find meaning in the present experience, is a developmental characteristic, as proposed by Budd (1985). A person with high self-coherence would be expected to have a high level of awareness to the immediate situation, life experience, and events. A high level of self-coherence is seen as helping the woman to manage the tension of a new or unfamiliar situation. As the women in this study were all pregnant with their first babies, the experience of pregnancy for
them is a new and unfamiliar situation. They are acutely aware of events occurring within this situation (hassles, uplifts, and a sense of well-being). Therefore, in this context, the positive relationship between self-coherence and hassles can be understood. This might have been a problematic situation if there was not the mediating influence of the other situational factors, well-being and uplifts. That is, hassles has a negative effect on prefatory maternal response. If the only relationship that was found was the one between hassles and self-coherence, then the whole notion of self-coherence would need to be reconsidered. This is not the case. Self-coherence is positively related to prefatory maternal response through a positive direct path as well as two positive indirect paths. These relationships have the effect of mediating the relationship between self-coherence and hassles, and subsequently, between hassles and prefatory maternal response.

Three variables, satisfaction with partner support, satisfaction with other support, and symptoms, were trimmed from the model. What possible explanations exist for this finding?

Measurement error is one possible reason. Stember (1986) noted that "measurement errors have been
demonstrated to have an effect on the ability of the model to explain variance" (p. 114). This fact might be particularly relevant with respect to the measurement of satisfaction with partner support. In inspecting the scores on this variable, subjects tended to answer within a very restricted range—satisfied (5) to extremely satisfied (6). This had the effect of causing the scores to be negatively skewed. Even though a square root transformation was done, the small amount of variability within the range of scores could cause the variable to be an inadequate predictor within the multiple regression equation. Satisfaction with other support also exhibited some of the same problems, although not to the same degree as the satisfaction with partner support scale.

The measurement of symptoms also seemed somewhat problematic. Inspection of the correlation coefficients revealed that three out of four significant correlations were in a direction opposite to what would be expected based on the theoretical model. In addition, symptoms was not significantly correlated with the dependent variable, prefatory maternal response. During the multiple regression analyses, when the symptoms variable was included, a number of unstable estimates were calculated. Changing signs and high leverages within
different cases were present. However, when the symptoms variable was dropped from the equation, the estimates become more stable and leverage was not a problem. Considering these results, it seems that symptoms may be acting as a suppressor variable (Marascuilo & Levin, 1983). Suppressor variables can have the effect of causing zero-order correlations to move further from zero or to change signs.

Five Variable Model - Time 2

After data collection period two, a nine variable model, consisting of gestational age, self-coherence, satisfaction with partner support, satisfaction with other support, well-being, symptoms, hassles, uplifts, and prefatory maternal response, was tested. During the testing of the model, four variables were trimmed: gestational age, well-being, hassles, and uplifts. This 'trimming' and subsequent model refinement is the final step in model testing proposed by Stember (1986). The trimmed five variable model is presented in Figure 4-4.

Relationships between the variables in the model can be stated as follows:

1. Self-coherence: (a) is directly related to prefatory maternal response in a positive direction; (b) is directly related to satisfaction with partner support
in a positive direction; (c) is directly related to other support in a positive direction; and (d) is directly related to symptoms in a positive direction. Self-coherence is indirectly related to prefatory maternal response through two of the three endogenous variables, satisfaction with other support and symptoms.

2. Satisfaction with other support is directly related to prefatory maternal response in a positive direction.

3. Symptoms are directly related to prefatory maternal response in a negative direction.

4. The trimmed model explains 36.2% of the variance in the dependent variable, prefatory maternal response.

Once again, the model is consistent with the proposed theoretical model, except for the positive relationship between self-coherence and symptoms. However, there was also a positive relationship between self-coherence and hassles in the first model, which was unexpected. The same possible explanation would seem to be appropriate in this instance: high levels of self-coherence indicate a high awareness of the situation and the environment. Therefore, the woman is aware of both positive and negative events in her life. The positive relationship between self-coherence and the support...
variables has the effect of mediating the negative effect of symptoms on prefatory maternal response.

The path between satisfaction with partner support and prefatory maternal response was trimmed from the model, but this finding must be viewed with caution and the possibility of a Type II error must be considered. The path coefficient for this path was .107 with a $p = .287$. The $n$ for the final model that was tested was 87, smaller than the estimated necessary sample size of 110. Also, the range of scores was once again restricted, with a narrow range of answers between satisfied and extremely satisfied. These factors could contribute to the non-significant finding and should be considered in future research.

**Comparison of Models from Time 1 and Time 2**

When looking at the two models from the different data collection periods, it is immediately apparent that self-coherence is consistent both times, having both direct and indirect effects on the dependent variable, prefatory maternal response. The endogenous variables change completely from time 1 to time 2, with a different cluster of variables contributing to the outcome each time.
These findings, when considered together with the theoretical model, are really quite exciting and contribute to an understanding of the experience of pregnancy. First, the self system, as represented by self coherence, does seem to be the dominant influence on the development of maternal identity. Second, the woman's experience of pregnancy changes over the course of the pregnancy. The variables that were influential in the first model, hassles, uplifts, and well-being, tend to be psychologic in nature. During this early part of the pregnancy, the woman is turning inward and considering herself in relation to her world and her personal goals. She finds pleasure in little things, but also finds the day-to-day irritations of life to be annoying. The phrase used repeatedly by Rubin (1984), "the silent organization of thought" seems particularly appropriate here. Pregnancy, at this time, is a private and personal event, and the variables that are influential are those that are personal and psychologic in nature.

The second model, in contrast, includes two variables that indicate the woman is sharing the experience with others. Satisfaction with others support has a significant influence on the outcome, prefatory maternal response. Why is this an influence
later in pregnancy and not earlier? Consider some of the experiences the woman is having, particularly attending prepared childbirth classes. The woman is starting to meet other women who are in the same situation. They can share their experiences and provide support to each other. Also, the waiting room of the clinic or the physician's office is a place of interaction. By the 32nd week, the woman is being seen every two weeks and begins to recognize the other people in the waiting room. It was interesting to observe the dynamic in the clinic waiting room. The women early in their pregnancy tended to interact little with the others and sat in the corners of the room, away from the group. As the pregnancy went on, the women became part of the group, talking to the people they saw each week and discussing their pregnancies. There were lots of books and pamphlets about pregnancy and childcare available in the clinic. Many women recommended particular books to others, "This one is very good--it's easy to read and very complete." There was a progressive sharing and interaction throughout the group. Rubin (1984) noted "the transaction modality in mutual and reciprocal giving and receiving" (p. 8). This was observed by the investigator as well as being supported by the research findings.
Symptoms also became dominant in the latter part of the pregnancy. Not feeling good could have the effect of impeding the work of maternal identity formation during pregnancy. Many of the comments written on the questionnaires after the second data collection period were related to symptoms. "Swollen feet," "swollen hands," were frequently listed as hassles and one woman wrote, "not being able to wear my wedding ring bothers me." Another woman commented, "I feel like a beached whale! I hope it is all worth it!" It seemed that irritations (hassles) that had been problematic earlier were not as important in comparison to the physical symptoms that came later, hence the change in the model.

Overall, all the variables proposed in the theoretical model, the self system, biologic, psychologic, and social factors, are all part of the pregnancy experience and do have an influence on the formation of a maternal identity. What was not expected and was demonstrated by the path analysis, is that the variables exert their influence at different times during the pregnancy. Psychologic variables were predominant earlier in the pregnancy and biologic and social factors were more influential later in the experience. The self-system was influential throughout, having direct and indirect effects both times.
Research Question 2

The pattern of changes in the variables between data collection period 1 and 2 further support the findings of the path model. Most importantly, prefatory maternal response increased between the two data collection periods, supporting the belief that maternal identity is a construct that develops over time. The changes in the overall scale as well as in the two subscales support the concept of development of identity during the course of the pregnancy experience.

Hassles increased in count but decreased in intensity. It is almost as if the woman is saying, "I've got a lot on my mind, but I have more important things to worry about." It is also the change in the hassles score that most likely caused the variable to be eliminated from the second path model.

Symptoms increased in count and decreased in severity. This change also probably influenced the second path model, with symptoms included as an influence on prefatory maternal response. Perhaps one problem that needs to be sorted out is the relationship between hassles and symptoms. Are symptoms a subset of hassles? Does this mean that more specific hassles
(symptoms) are more important in the second part of pregnancy? There is not enough information contained within the study data to be able to determine, but it is an area of thought that should be pursued.

Satisfaction with partner support and other support both increased from time 1 to time 2. As discussed earlier, the woman is probably making new friends and finding others to share the experience with, hence a change in the perception of other support. Likewise, as she becomes more visibly pregnant, her partner may be more able to identify things to do that she perceives as supportive or helpful.

Uplifts, well-being, and self-coherence did not change from time 1 to time 2. The lack of change in self-coherence is understandable. Self-coherence is considered to be a component of the personality and as such, can be believed to be a somewhat stable characteristic. Budd (1985) has discussed research to identify interventions to increase self-coherence. It would seem that these interventions, to be effective, would need to be specifically targeted towards changing self-coherence through increasing awareness.

The lack of change in uplifts and well-being is a little harder to understand. Two explanations seem possible. Perhaps women are experiencing a certain
level of uplifts and well-being and are satisfied with the level experienced. If this is the case, then a change would not be expected, since a person would not expect to experience more uplifts or to feel a greater sense of well-being over two different time periods. A second possibility is that people just do see happy events as important and therefore, are not aware of happy events or do not process the need for having uplifts in day-to-day life. There is so much emphasis on the pressures of American life, that sometimes it seems that the pleasures of life are forgotten in the confusion. Increasing awareness to increase self-coherence might also have the effect of increasing uplifts and well-being. This is an interesting idea for future investigation.

A Final Finding

One final piece of information needs to be considered in the interpretation of the results. Two of the measures, the Self-Coherence Survey and the Psychosocial Health Reproductive Tool, were also used by Budd (1985) in her investigation of psychosocial health in high risk pregnancy. The relationship between self-coherence and the dependent variable was the same in
both investigations, that is, direct in a positive direction. This finding was consistent in path model 1 and 2 of the current investigation. This replication of Budd's (1985) work gives further support to the usefulness of self-coherence as a variable for nursing research.

**Implications of the Investigation**

Implications of study findings include considering the meanings of the findings for the body of nursing knowledge, for theory, research, and clinical practice. This investigation, its methodology and findings, has implications for each of these areas.

**Implications for Theory**

Fawcett (1978/1986) wrote that "the body of knowledge of a [discipline] must rely on repeated investigations of theoretically based problems that are redefined as research results accumulate" (p. 573). One purpose of this study was to test a theoretical model deductively derived from a conceptual system suggested by Rubin (1967a, 1967b, 1984) in an attempt to understand the process of maternal identity formation.
during pregnancy. An eight variable theoretical system was proposed and tested empirically. The data indicated that revisions in the model were necessary. The next step in the theory-development-testing process would be to develop new research questions, collect data and empirically test the revised model. Therefore, this study has provided a model for future testing that was deductively derived from a conceptual system and empirically revised based on research findings. One major implication of this investigation for nursing theory is the reaffirmation of the usefulness of the process of theory testing as a method to develop nursing knowledge. A second implication is the model that now exists for future testing.

Rubin's work was an early attempt to develop a conceptualization describing the process of maternal identity formation from a distinctly unique nursing perspective. Rubin borrowed concepts from other disciplines (primarily psychology) but was able to derive meanings of the concepts in such a way that they reflected a nursing perspective. Mercer has continued this process in her research that has been based on Rubin's conceptualization. The discipline of nursing has a need for theoretical propositions that have been derived from a nursing perspective. This investigation
used Rubin's conceptualization as a basis for the study, and the nursing perspective of the investigator was influential in the selection and definition of the study concepts. Therefore, this research provides validity for the process of theory derivation within the discipline of nursing and gives, as an example, a model that reflects a unique nursing perspective.

Implications for Research

As mentioned in the preceding paragraphs, this study has provided a model for future empirical testing. This is one major implication of the study for future research activities. Other research activities that derive from this investigation include further studies to understand the concept of self-coherence. A focus on the identification of variables to increase self-coherence would be a useful endeavor. Studying the relationship between self-coherence and other factors, such as hassles, uplifts, well-being, and symptoms could provide more understanding of the role self-coherence plays in a person's life.

Future research should also focus on the concept of support and the role support plays in pregnancy. One of the major limitations of this study were the problems with the measurement of support, particularly
satisfaction with partner support. It seems that women are going to indicate that they are satisfied with their partner, when measured with instruments that are currently available. Research needs to focus on a more effective measure of satisfaction that taps the range that exists between satisfied and extremely satisfied.

This research supports the importance of longitudinal studies that measure variables over time. It is only through this type of data collection that the interaction of complex groups of variables can be understood. This study should be replicated with several data collection periods (more than 2) during pregnancy with data collection extending into the postpartum, similar to Mercer's (1982) longitudinal study of role acquisition.

As this study supports the theoretical model that was proposed, it would be interesting to conduct a qualitative study to understand more thoroughly the nature of the relationships that exist between the study variables. This is particularly relevant in the case of self-coherence and the positive relationship that was found between hassles (time 1) and symptoms (time 2). A qualitative approach would allow an in-depth exploration into the totality of the pregnancy experience and would
enhance understanding of the relationships that were supported by this research.

**Implications for Clinical Nursing Practice**

The findings of this study have implications for professional nursing practice. A cluster of variables, self-coherence, support, stress, symptoms, and well-being, have been measured and documented to be relevant to the experience of pregnancy. The relationships between these variables have also been more clearly explicated as a result of the model testing that occurred in the investigation. The changes in the models from data collection period 1 and data collection period 2 also point to changes occurring during the course of the pregnancy experience. All of this information is useful for clinical decision making and nursing practice.

Prior research has provided a basis of understanding about the major variables included in the study design. However, there is less research about the relationships between the variables, and this investigation provides a tentative model to describe this structure. The fact that self-coherence has a major influence on the other variables in the model and in turn, influences the outcome, provides a rationale
for developing nursing interventions designed to influence self-coherence. Schlotfeldt (1986) has suggested that nursing strategies should focus on assisting people to use their health assets to achieve their health potential. If self-coherence is seen as a health seeking characteristic, then nursing strategies to enhance self-coherence should ultimately result in desirable outcomes for the client, in this case the pregnant woman. Budd (1985) has also suggested that nursing interventions to enhance self-coherence need to be developed; this investigation supports that contention.

The change in the two models from data collection period 1 and 2 suggests a change in the focus of the pregnancy for the woman--moving from a more internal, personal event to one that is shared with others. Sharing the experience with others (friends and relatives) also provides the woman with a sense of support related to the pregnancy. Understanding the pregnancy from this perspective can help the nurse to consider what information needs to be provided to the woman at each prenatal visit, as well as assisting the nurse to make decisions about appropriate counseling strategies. Earlier in the pregnancy, the woman might benefit from discussions about how she is feeling,
psychologically as well as physically, while later on she might find information about mothers' clubs, LaLeche League, and prepared childbirth classes more helpful.

The majority of the women in this study planned to attend prepared childbirth classes, which reflects a national trend (Bobak, 1985). Considering the importance of support during the second data collection period, instructors need to be aware of the benefits of the classes to the expectant couple. It seems reasonable to believe that a benefit of the class is the opportunity to meet other pregnant women and to share experiences, as well as to receive information about labor, delivery, and newborn care. Instructors should include time for discussion and interaction among the class members and not just lecture and provide information.

During the process of arranging for data collection sites, the investigator contacted childbirth instructors to find out if there were any early pregnancy classes (designed for women in the first trimester). Many instructors stated that they had tried such classes, but they were not very popular and had been dropped from the program. Thinking about this fact in relation to the findings of this study, there seems to be some correlation between the intrapersonal nature of early
pregnancy and the lack of interest in sharing the experience with others through an early childbirth class. This thought, while highly tentative, is one that has puzzled the investigator, and nurses in clinical practice are in a position to gather data and make observations to support/refute this idea.

Finally, nurses in professional practice are constantly assessing, classifying, and categorizing data gained from their clinical observations. Unfortunately, they seem to have difficulty with understanding the meanings of the data that they collect. It is hoped that nurses that read the findings of this study will say, "That is obvious; I knew that" as the findings are really not that surprising. But recognition of the fact that research findings are not mysterious and are based on clinical observations, will enable nurses to move more rapidly towards having a knowledge base that is clinically based and empirically tested.

Summary

A prospective survey with two data collection periods was conducted to test a theoretical model deductively derived from a conceptual system suggested by Rubin (1967a, 1967b, 1984). A sample of 123
primigravid women were recruited from 5 sites in the greater Portland, Maine area. Study subjects completed six questionnaires: (a) the Self-Coherence Survey; (b) the Hassles Scale; (c) the Uplifts Scale; (d) the Health Responses Scale; (e) the Support Behaviors Inventory; and (f) the Psychosocial Health Reproductive Tool. Data were analyzed by path analysis and correlated t-tests.

Major findings of the study supported the theoretical model that was proposed. The most dominant finding was the relationship between self-coherence and the dependent variable, prefatory maternal response. Self-coherence was directly related to prefatory maternal response in both path models and indirectly related to prefatory maternal response through the endogenous variables included in the model.

Endogenous variables that were significantly related to prefatory maternal response changed between data collection period 1 and 2. The first path model included hassles, uplifts, and well-being as significant influences on prefatory maternal response. The second path model included satisfaction with partner support, satisfaction with other support, and symptoms as significant endogenous variables.

The findings of this study provide support for the proposed theoretical model. Further research needs to
focus on (a) the relationship of self-coherence to the endogenous variables in the system; (b) interventions to increase self-coherence; and (c) qualitative approaches to understand more fully the nature of the relationships between the study variables.
REFERENCES


APPENDICES
APPENDIX A

Self Coherence Survey
Please circle the number that reflects your opinion according to the following key:
0 = never, or happened once or twice
1 = seldom true, or happens once a month
2 = sometimes true, or happens two to four times a month
3 = often true, or happens two or three times a week
4 = usually, or happens every day or every other day

<table>
<thead>
<tr>
<th></th>
<th>never</th>
<th>seldom</th>
<th>sometimes</th>
<th>often</th>
<th>usually</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I listen to music</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. I participate in creative movement (dancing, sports)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>3. I feel that I am not useful</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>4. I feel unsure of myself</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>5. What I get in my life is beyond my control</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>6. I have tried to understand my dreams</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. I feel creative (by sewing, cooking, drawing, etc.)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>8. I am interested in spiritual things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>9. I feel my emotions run me</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>10. I feel bored</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>11. I try to remember my dreams</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>12. I can see the end-product in my head before I make something</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>13. I have difficulty expressing anger, and find that I hold grudges</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>14. I am aware of the loudness and pitch of my voice</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>15. I pray</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>16. I feel my pregnancy is going badly</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>17. I hate being alone</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>18. I like to watch “make-believe” movies</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>19. I feel that if I ask for help, I’ll show weakness and inability</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>20. My life is stressful</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<tr>
<td></td>
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</tr>
<tr>
<td>21.</td>
<td>I feel as if my life is going to pieces</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>I can remember faces</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>I feel my life has meaning and direction</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.</td>
<td>I get caught up in details and do not see the total picture</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.</td>
<td>Seeing the total picture is easier for me than seeing details of the picture</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26.</td>
<td>When I am in a room I notice things like pictures, furniture, temperature, light</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>I read poetry, draw pictures, play a musical instrument, sing (while alone or in public)</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>I am sensitive to criticism</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>When I failed, I learned valuable lessons</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30.</td>
<td>I feel my life is disordered and without structure</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>31.</td>
<td>I like to look at magazines and catalogs</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>32.</td>
<td>I feel I have “messed up” my life</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>33.</td>
<td>I feel I love my partner more than he loves me</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>34.</td>
<td>My failures have been destructive experiences</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35.</td>
<td>I feel that “spiritual” talk is nonsense</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>36.</td>
<td>I have a lot of intuition</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>37.</td>
<td>I have to look for reasons to be happy</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>38.</td>
<td>I am pleased with the direction my life is taking</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>39.</td>
<td>I practice meditation</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.</td>
<td>I relax my muscles when I am nervous</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>41.</td>
<td>I relax when I am nervous by breathing abdominally</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42.</td>
<td>I make myself relax by imagining peaceful scenes or patterns</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>43.</td>
<td>My pregnancy has progressed the way I wanted it to</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>44.</td>
<td>I see humor in things</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45.</td>
<td>I am interested in learning new things</td>
<td>never</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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APPENDIX B

Hassles Scale
PLEASE NOTE:

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These consist of pages:

161-166
168-174
176-178
180-183
185-187
APPENDIX C

Uplifts Scale
APPENDIX D

Health Responses Scale
APPENDIX E

Support Behaviors Inventory
APPENDIX F

Psychosocial Health Reproductive Tool
APPENDIX G

Investigator's Information Letter
Dear Mother:

Thank you for your interest in my research and for considering my request to participate in the study. I am investigating the experiences of women during the second half of pregnancy who are pregnant for the first time. In this letter, I will answer some of the most common questions people have about my research. If you have additional questions, please feel free to ask me. You can call me at 834-2175 to ask questions or to talk about the study.

1. **What is the purpose of the study?**

I am interested in learning how women become mothers. I believe that becoming a mother begins during pregnancy. The main purpose of this study is to learn how different experiences during pregnancy influence the process of becoming a mother.

2. **What would be required of me to participate in this study?**

During this prenatal appointment, you will be asked to complete a personal information sheet. Then, I will give you a packet of questionnaires that you can complete at home. I will give you a stamped, addressed envelope so that you can return the questionnaires to me. Approximately 2 months later, I will mail you another packet of questionnaires that you can complete at home. Again, I will give you a stamped, addressed envelope so that you can return the questionnaires to me. I would like you to complete each packet of questionnaires within one week of receiving them.

3. **Will filling out the questionnaires take a long time?**

No. The average time to complete each set of questionnaires is 1 hour, for a total of 2 hours. You can complete them at home, at a time that is convenient to you. I only ask that you complete the questionnaires and that you return them to me within one week.

4. **What kinds of questions are on the questionnaires?**

The questionnaires ask about different experiences you have had during your pregnancy, for example, how you have felt, what things have bothered you while you have been pregnant, what things have been helpful, and what kind of things you have thought about. They are not questions with right or wrong answers. I am interested in your opinion about your experiences during your pregnancy.
5. **What will be done with the information?**

If you agree to participate, you will be one of 110 women who are part of this study. All of the women are pregnant with their first baby, like yourself. I will carefully study the information and will write a report of the results of the study. These results may also be published in a professional nursing journal where they can be read by other nurses who care for pregnant women. Therefore, in the long run, the information you provide will be helpful for pregnant women and for the nurses who care for pregnant women.

Your name will not be used anywhere in the reports. Your questionnaires will be given a special code number to protect your identity. All the information you provide will be kept confidential. The information you provide will not be part of your prenatal record and will not affect your prenatal care.

6. **Can I receive a copy of the study results?**

Yes, if you wish. Just tell me and I will make a note on the personal information sheet. I will mail you the results when the report is complete. I am anticipating that the report will be complete by Summer, 1987.

I hope you will consider participating in this study. If you do agree to participate, I will give you an informed consent form to sign. You may keep this letter and a copy of the informed consent form. Again, if you have any questions, please feel free to ask them at any time.

Thank you for taking the time to read this.

Sincerely yours,

Leslie H. Nicoll, MS, RN
Investigator
APPENDIX H

Informed Consent
Consent to Participate in a Research Study

Leslie H. Nicoll is a doctoral student in nursing at Case Western Reserve University in Cleveland, Ohio. She is studying the experiences of pregnant women during the second half of their pregnancy. I have been asked to participate in this study because I am pregnant with my first baby.

If I agree to be in this study, I will fill out a personal information sheet during a scheduled prenatal appointment when I am approximately 5-6 months pregnant. Ms. Nicoll will give me a packet of 6 questionnaires which I will complete at home. After eight weeks, when I am approximately 7-8 months pregnant, Ms. Nicoll will mail me another packet of 6 questionnaires which I will complete at home. I agree to complete both sets of questionnaires within one week of receiving them and will return them to Ms. Nicoll by mail. Ms. Nicoll will provide me with stamped, addressed envelopes for me to use to mail her the questionnaires.

I understand that Ms. Nicoll will keep my responses confidential. Ms. Nicoll will separate my name from my responses and will keep them coded and locked so my privacy will be protected as much as possible under the law.

There will be no direct benefit to me from participating in this research study. I understand that Ms. Nicoll hopes to learn more about the experiences of pregnant women, which may help nurses care for pregnant women more effectively in the future.

I have talked to Ms. Nicoll about this study and have had my questions answered. If I have other questions, I may call her at

I (AGREE) (DO NOT AGREE) (circle one) to be a participant in this study. I have received a copy of an Information Letter and this form to keep. Participation in this research is voluntary. I have the right to refuse to participate and the right to withdraw my consent later without any jeopardy to my nursing care.

Date __________________________ Subject's signature __________________________

Date ____________________________ Leslie H. Nicoll, RN Investigator
APPENDIX I

Physician's Information Letter
Winter, 1987

Dear Mother:

As part of my doctoral studies at Case Western Reserve University in Cleveland, Ohio, I am doing research on how women become mothers. My experiences as a nurse, working in the field of maternal-child health for more than ten years, helped me to develop my research project. I am particularly interested in how women who are pregnant for the first time develop a sense of "being a mother" during their pregnancy. I believe that many of the changes that occur during pregnancy--both physical and psychological--are important to the process of becoming a mother. The purpose of my research is to explore some of these changes in greater depth.

I have received permission from Dr. and his staff to obtain participants for the study from the population of women seen at the practice. As you are pregnant with your first baby, you could, if you wish, be a participant in the study. The purpose of this letter is to acquaint you with my work so that you can decide if you would be interested in being a study participant.

I am sure you are thinking, "What would I have to do if I were to participate in the study?" Good question! As I said, I am interested in different experiences and changes that occur during pregnancy. I obtain this information through a series of questionnaires that I have compiled in a small booklet. If you were to participate, you would complete the questionnaires at two separate times during your pregnancy: the first time when you are about 5-6 months pregnant, and again when you are about 7-8 months pregnant. It takes about 1 hour to complete all the questionnaires in the booklet. I would give you an envelope so that you could mail the questionnaires back to me when you are done. That's it! Women who have already participated in the study have told me that they enjoyed completing the questionnaires--they found the questions to be interesting and fun to answer. The questions ask about different experiences you have had during your pregnancy, for example, how you have felt, what things have bothered you while you have been pregnant, what things have been helpful, and what kinds of things you have thought about. They are not questions with right or wrong answers; rather, they ask your opinion about your experiences while you have been pregnant.

I will follow up this letter with a phone call to you sometime in the next few days. At that time, I can tell you more about the study and see if you would be interested in answering my questionnaires. If so, we can arrange a time to meet in person, either during a scheduled prenatal appointment or at your home--it all depends on what is convenient for you. When we meet, I will ask you some preliminary questions, give you a consent form, the booklet of questionnaires, and an envelope so that you can return the questionnaires to me when you are done. About two months later, I will mail you a second booklet and an envelope. Again, when you complete the questionnaires you can just mail them back to me.

I hope you will seriously consider my request to participate in this study. If you have any questions at all, please feel free to call me at home at (####). I am looking forward to talking with you on the phone in the next few days.

Thank you for taking the time to read this.

Sincerely yours,

Leslie H. Nicoll, RN
Investigator
APPENDIX J

Demographic Data Sheet
The following information will be used to help me interpret the results of the study.

What was your age at your last birthday? _______ years

How many weeks pregnant are you at this time? _______ weeks

What is your expected date of delivery (baby's due date)? Month  Day  Year

Who do you consider to be your primary health care provider during this pregnancy?

Physician ____________________________

Midwife ____________________________

What hospital do you intend to deliver at? ____________________________

Do you plan to attend childbirth classes during your pregnancy? NO YES

If yes, which organization or hospital? ____________________________

What is your highest educational level? (Please circle)

Some high school  Some graduate education
High school  Master's degree
Some college  Doctoral degree
Trade, technical or business school  Other (please specify) __________
Baccalaureate degree  ____________________________

What is your race or ethnicity? (Please circle)

White  American Indian
Black  Mexican American or Latino
Asian American  Other (please explain) ____________________________

(over, please)
Have you ever been pregnant before?  NO  YES

If yes, enter the number of times the following occurred

Stillbirth
Miscarriage
Elective abortion

What is your current marital status?

Married and living together
Married and not living together (please explain)
Not married and living with partner
Not married and not living with partner
Other (please explain)

If you are living with your husband/partner, how long have you
been living together?

(Please check to make sure that you answered all questions on both sides of this
sheet. Thank you very much for your help.)
APPENDIX K

Biographical Information Sheet
CODE # __________

The following information will be kept confidential. It will only be used so that I may contact you if necessary.

Name: __________________________________________________________

Mailing Address: _________________________________________________

City, State, ZIP: ________________________________________________

Home telephone number: __________________________________________

When is a good time to call you at home? (circle your preference)

Morning  Afternoon  Evening

Do you work?  YES  NO

If yes, where do you work? ________________________________________

Position: _______________________________________________________

Work telephone number: __________________________________________

May I call you at work, if necessary?  YES  NO

Would you like to receive a copy of the study results when the study is completed?  YES  NO

If you answered yes, I will mail them to your home address in approximately 1 year. If you prefer that I send this information to another address, please indicate it here:

__________________________

Thank you for this information. Please answer the questions on the next sheet. Please do not put your name on the next page.