

MATERNAL IDENTITY FORMATION IN A MILITARY SAMPLE: A LONGITUDINAL  
PERSPECTIVE

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ABSTRACT  
KAREN L. WEIS: Maternal Identity Formation in a Military Sample:  
A Longitudinal Perspective

(Under the direction of Catherine Ingram Fogel)

The individual growth curve perspective provided the foundation for a developmental framework of maternal identity formation and attainment in a military sample. Data from a military study of pregnancy adaptation to birth outcomes provided data for an investigation of change over time in conflict for prenatal maternal identity formation, and the impact of family adaptability, community support and military deployment on this trajectory. The individual slopes and intercepts of maternal identity formation were assessed for 421 active-duty women and wives of military servicemen in each trimester of pregnancy. Fitting of unconditional growth models indicated that significant variation in prenatal Acceptance of Pregnancy (ACCPREG) existed across time and rate of change for individuals. No evidence existed for significant change in Identification of the Motherhood Role (IDMORO). Significant variability existed in the conflict associated with IDMORO between individuals. Fitting of conditional growth models for ACCPREG and IDMORO predicted by Family Adaptability (FADAPT) and Community Support (SSI) showed that FADAPT and SSI significantly affected the conflict associated with ACCPREG and IDMORO, but not the pattern of change over time. First-trimester Deployment significantly affected conflict with ACCPREG. The ability of prenatal maternal identity formation to predict six-month postpartum maternal identity attainment was assessed for 113 women from the original

sample. Identification of the Motherhood Role significantly impacted postpartum Satisfaction with Infant and Infant Care as well as Confidence in Motherhood Role and Tasks. Change over time in Family Adaptability and Community Support had significant affects on Confidence in Motherhood Role and Tasks. First-trimester Deployment on Identification of the Motherhood Role predicted Satisfaction with Infant and Infant Care. Prenatal Deployment was not predictive of any change in Confidence in Motherhood Role and Tasks. The findings provide information for appropriate timing of interventions to improve maternal-fetal and infant attachment and for policies impacting military families. First trimester maternal identity formation significantly impacted maternal role satisfaction at six-months postpartum. First trimester family adaptability and community support both decreased conflict associated with maternal identity formation and attainment. In addition, first trimester deployment, even with prenatal return from deployment continued to impact maternal identity at six-months postpartum.

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## CHAPTER I

### INTRODUCTION

During pregnancy, a woman reformulates and alters her existing identity to develop a maternal identity and role (Flagler & Nicoll, 1990). The concepts of maternal identity linked with maternal role attainment have been studied for over 40 years (Muller, 1990; Walker, Crain, & Thompson, 1986a). Rubin (1967b) was the first nurse researcher to recognize the importance of viewing the pregnancy experience in terms of its timing in a woman's life course (Gottesman, 1992). Her work tied identity formation (Mead & Morris, 1934) to role theory (Sarbin, 1954) with the conceptualization of identity as an interplay of self and role (Rubin, 1967a). Together, the two theories represent a theoretical framework that posits "behaviors and actions of a role are acquired, conditioned, reinforced learnings and are culturally determined" (Rubin, 1967b). Rubin (1977) hypothesized that the recognition of one's maternal role and the attachment to the fetus and infant is an active, intermittent, and cumulative process that develops over 12 to 15 months from pregnancy through three trimesters following birth, with the origin and endpoint in maternal identity. A woman's ability to visualize herself as a mother during pregnancy is associated with her postpartum acceptance of the maternal role (Flagler & Nicoll, 1990). More importantly, the ability to visualize oneself as a mother prenatally, correlates with maternal adaptation and responsiveness to the infant (Shereshefsky & Yarrow, 1973). Sensitive, attentive, warm, stimulating, and responsive caregiving have been found to promote socio-emotional

development and cognitive-motivational competence during infancy and the preschool years (Casey, 1989; Walker & Montgomery, 1994).

Maternal identity formation and role attainment is a developmental process that begins predominantly during the earliest stages of pregnancy, and continues well into the postpartum period (Grace, 1993; Mercer & Ferketich, 1994b). The woman's progressive maternal identity formation does not occur in isolation from her environment. The availability of positively perceived informal and formal support systems have been shown to positively impact maternal role attainment (Koniak-Griffin, 1993). Achieving maternal role identity requires "self-socialization" and testing of self-definitions (Deutsch, Ruble, Fleming, Brooks-Gunn, & Stangor, 1988). Identity formation is a constructive process involving active information seeking (Deutsch et al., 1988). The availability of a role model is a major determinant in the development of a sensibility regarding maternal role competence (Lederman, 1996). Support from a role model as well as support from family and friends provides information and validation for the changes the pregnant woman experiences prenatally (Liese, Snowden, & Ford, 1989; Sorenson, 1990), decreases depressed mood both prenatally and postpartum (Ritter, Hobfoll, Lavin, Cameron, & Hulsizer, 2000), and has been shown to increase maternal sensitivity to one's infant postpartum (Goldstein, Diener, & Mangelsdorf, 1996). Maternal adaptation requires the gravida to realign kinship and friendship bonds, tightening some and loosening others (Sleutel, 2003). The gravida makes social shifts to obtain the necessary support, be it informational, tangible, or emotional support, to complete her maternal identity formation (Rubin, 1967a). Support, however, can be damaging if it does not match the support that is desired (Logsdon, Birkimer, Simpson, & Looney, 2005). Social relationships offer self-confirmatory feedback (Swann & Brown,

1990). Substantial changes in self-conceptions require a massive reorganization of a person's conceptual existence (Thoits, 1991).

Additional support comes from the family through the shifting of boundaries to accommodate a new member and altered roles (Abell, Baker, Clover, & Ramsey, 1991). The inability of the family to adapt and accept the changes in family member roles could impact the woman's role identification and cause greater conflict with maternal adaptation.

### Statement of the Problem

Maternal identity formation and role attainment is a developmental process that begins predominantly during the earliest stages of pregnancy and continues well into the postpartum period. Longitudinal design lies at the heart of developmental research (Magnusson & Cairns, 1996). Most maternal role attainment research has either approached the investigation with cross-sectional, correlational designs (Mercer, 1985b, 1986b; Tarkka, 2003; Tarkka, Paunonen, & Laippala, 1999; Walker, Crain, & Thompson, 1986b), or designs of repeated measures with descriptive comparisons of means at each time point (Fowles, 1998; Grace, 1993; Mercer, 1986b; Mercer & Ferketich, 1994b; Schachman, Lee, & Lederman, 2004; Walker et al., 1986b; Weis, 2005a; Weis, Lederman, & Lilly, 2004).

Developmental processes can only be fully understood by looking at individual functioning together with associated environmental factors (Magnusson & Cairns, 1996). With a goal of intervention to aide maternal identity formation and role attainment, factors that influence the outcomes must be identified a priori and incorporated in the theoretical framework (Sidani & Braden, 1998). A priori propositions require empirical support for the selected theoretical framework with the intended population (Conn, Rantz, Wipke-Tevis, & Maas, 2001).



Research regarding the interrelationships among maternal prenatal psychosocial adaptive processes, family functioning, and community support and their relationship to maternal identity formation and role attainment in civilian populations is limited. Longitudinal studies, focused on maternal identity formation and role attainment for wives of military service members and active duty women are almost nonexistent. The impact of military family separation on pregnancy adaptation, identity formation, and role attainment is unknown, despite 90,000 babies being born to U.S. military families each year (Ryan, 2003), and current deployments of more than 200,000 troops with sustained deployments of these numbers projected to continue through 2007 (Sherman, 2004).

#### Purpose of the Study

The purpose of this study is to follow individual growth models to determine if:

1. Prenatal identity formation can be characterized as a trajectory.
2. Family adaptability or community support predict the slope of individual prenatal maternal identity trajectories.
3. Prenatal maternal identity trajectories differ by the deployment history of the gravida's husband.
4. Prenatal maternal identity trajectories are predictive of postpartum maternal identity attainment.
5. Postpartum maternal identity attainment is impacted by prenatal deployment of the gravida's husband.

#### Significance of the Problem

The developmental transformation and identity formation experienced by the woman during the antenatal and postnatal periods significantly influences the evolution of an

attachment relationship with the infant (Trad, 1991). The attachment relationship is essential for the promotion of social stimulation, protection from pain or danger, and satisfaction of physical need (Lozoff, Brittenham, Trause, Kennell, & Klaus, 1977). Sensitive, attentive, warm, stimulating, and responsive caregiving has been found to promote socio-emotional development and cognitive-motivational competence during infancy and the preschool years (Casey, 1989; Walker & Montgomery, 1994). Rubin (1975, 1977) emphasized the unique relationship between maternal identity formation and maternal-fetal attachment and later maternal-infant attachment. The attachment process begins during pregnancy (Rubin, 1975, 1977). Rubin hypothesized that this recognition and attachment process is an active, intermittent, and cumulative process that develops over a 12- to 15- month period from pregnancy through three trimesters following birth (Rubin, 1977). A lack of acceptance of pregnancy and poor maternal identity formation have profound effects on maternal-infant attachment (Bloom, 1998). These crucial steps towards adaptation to parenthood are critical for the mental and physical health of the mother as well as her infant (Peacock et al., 2001). Acceptance of pregnancy and the initial steps towards maternal identity formation occur primarily in the first and early second trimester of pregnancy (Lederman, 1996; Rubin, 1977), although it is recognized that this process continues through pregnancy. Shereshefsky and Yarrow (1973) found that a women's ability to visualize motherhood correlated with maternal adaptation postpartum and with responsiveness to the infant. Importantly, no other studies were found that followed women from early first and second trimester to postpartum with the aim of comparing prenatal maternal identity formation to postpartum role attainment.

The gradual, yet continual process of a woman's maternal identity formation and role attainment entails an acceptance of the pregnancy, of identification with a maternal role, attachment to the unborn baby, knowledge of the family's acceptance of the unborn child and mutual understanding of the various role changes that must occur within the family, and understanding and support from one's spouse (Huizink, de Medina, Mulder, Visser, & Buitelaar, 2002; Lederman, 1996; Rubin, 1984). As early as the first trimester, expectant couples engage in conversations about child rearing and future roles (Leifer, 1980). One of the most important tasks of first trimester is for the pregnant woman and her partner to accept the reality of their conception (Colman & Colman, 1971). Changes in the relationship as a result of the pregnancy may require negotiation (Huizink et al., 2002). In addition, overwhelmingly, the spouse or partner is perceived to be the most supportive person to the gravida (Crnic, Greenberg, Robinson, & Ragozin, 1984; Lederman, 1996; Rosen & Moghadam, 1988). There is little doubt that the presence of a supportive social network positively enhances pregnancy (Leifer, 1980; Norbeck, DeJoseph, & Smith, 1996). However, researchers studying either maternal attachment or role attainment have focused increasingly on third trimester and primarily postpartum interactions of mother and baby (Mercer & Ferketich, 1994b; Pridham, Chang, & Chiu, 1994; Reece, 1995) instead of the systematic maternal identity formation and role attainment that occur throughout pregnancy. Like any other role, mothering is learned over time by acquiring skills and refining ideas (Rubin, 1967a). The current emphasis by maternal role theorists on the postpartum period exclusively, has limited the body of knowledge about maternal identity formation and its effect on role attainment. Moreover, the focus on the postpartum period with little inclusion of Rubin's work on the psychology of pregnancy and systematic prenatal maternal identity

formation may negatively impact the effectiveness of intervention programs aimed at preventing maladaptive maternal roles. It is important to recognize however, that although Rubin's work focuses on a developmental perspective, it fails to delineate the importance of the husband's presence during the gravida's formative stages of maternal identity attainment.

### Significance of Problem to a Military Population

Developmental processes of an individual can be more effectively studied in the context of social and environmental influences (Magnusson & Cairns, 1996). Clearly, all levels of social activity cannot be investigated simultaneously, but an important first step in understanding the contribution of forces on an individual, is increased understanding of subsets of people within a larger population.

Similarly, the multi-dimensional psychosocial factors of maternal identity formation and maternal role adaptation require understanding at different levels of social activity, in different subsets of larger populations. In addition, much of the literature pertaining to role attainment is dated (Koniak-Griffin & Verzemnieks, 1991; Lederman & Lederman, 1987; Mercer, 1981, 1985a, 1985b; Walker et al., 1986a, 1986b). The need for longitudinal studies focused on a developmental model for maternal identity formation and role attainment has been emphasized (Lederman, 1990). The need to understand maternal identity formation and role attainment within the military population is especially important given the military's heightened deployment status, and more frequent and possibly longer family separations. Defining family balance for adapting to pregnancy and parenthood in a military population is essential for designing effective interventions. Successful interventions to assist military wives with maternal adaptation and role adjustment will be possible with a greater

understanding of individual prenatal maternal identity trajectories and the impact of these trajectories on postpartum maternal identity attainment.

The profile of military families has changed in the two decades since the military became an all volunteer force. Today, approximately 58% of the 1.4 million active duty service members are married (Martin, Mancini, Bowen, Mancini, & Orthner, 2004). Forty-seven percent of the active-duty force is 25 years old or younger (Martin et al., 2004). These young adults are entering major transition points which include marriage and birth of their first child (Elder, 1996). Pregnancy and childbearing warrant additional work addressed from the perspective of the individual within the social structure.

A pertinent demographic factor unique to the military culture is the lengthy deployments and family separations. In March 2004, 464,395 military service men and women were deployed in and around Iraq alone (Keil et al., 2004). The approximate numbers deployed as of April 2005 were 182,500 in Iraq, 21,200 in and around Afghanistan, and an additional 17,800 deployed in the Middle East, Far East, and Europe, supporting current military operations (Directorate for Information Operations and Reports, 2005).

Deployment and family separations have become the dominant aspects of 21st century military service and military family life (Martin et al., 2004), yet little is known regarding the impact of military lifestyle on maternal identity formation for military wives. Research suggests that service members and family members feel isolated and disconnected from available support systems (Bowen, Martin, & Mancini, 1999). A group that is uniquely vulnerable and the least likely to make connections and necessary adaptations within the military environment, are the junior enlisted and officer couples (Bowen et al., 1999; Wolpert, Martin, Dougherty, Rudin, & Kerner-Hoeg, 2000). This group is the most likely to

start families, and the young military wife runs the risk of compounding existing feelings of isolation and vulnerability inherent in pregnancy (Ferguson, 2005; McVeigh, 1997). A military wife also faces the reality that family needs and demands are secondary to those of the military organization (Bowen, 2000). The presence of one's partner in an environment like the military, with frequent and rapid change, helps stabilize self-conceptions and organize the experience (Swann & Brown, 1990).

Maternal role adaptation is difficult for many women because it lacks clarity and specificity (Koniak-Griffin, 1993). The continual role shifts experienced by wives of military servicemen (Rosen & Durand, 2000) may further complicate maternal identity formation and role adaptation.

Despite the obvious need for focused interventions to assist women with maternal identity formation and role attainment, there is little research describing the simultaneous interaction of family or community support networks on increasing or decreasing a woman's level of conflict with maternal identity formation. Even fewer studies exist that address role attainment in a military population. Splonskowski and Twiss (1995) compared social support, maternal coping, and transition difficulties for civilian and military mothers, but only in the postpartum period. There was no prenatal assessment of maternal identity formation. Rich (1993) evaluated pregnancy attitudes, ambivalence, and psychological symptom distress during the three trimesters of pregnancy with a large study of 602 women recruited from three military hospitals. The study did not, however, compare prenatal ambivalence regarding motherhood with later maternal role attainment.

The systematic role development and maternal identity formation is optimally studied throughout pregnancy in a longitudinal design in order. There is a need for descriptive

research of a longitudinal design to understand the maternal identity trajectory for women in a military population. In order to develop effective intervention programs for this unique population, the impact of family balance in role adaptability as well as the perceived support from the community network needs elucidation. The purpose of this study is to explore, for women in a military population, the individual patterns of change for prenatal identity formation, the impact of family adaptability and community support on the individual trajectories of prenatal identity formation as well as on postpartum maternal identity attainment, and the impact of partner or spouse deployment on the individual trajectories.

## CHAPTER II

### LITERATURE REVIEW

#### Identification and Attainment of Maternal Identity

##### *Pregnancy*

The physical changes that women undergo during pregnancy are paralleled by psychological and emotional changes that affect self-esteem and self-identity (Trad, 1991). The self-identity changes occurring during pregnancy are important antecedents to the visualization of oneself as a mother and subsequent satisfaction with the mothering role (Deutsch et al., 1988).

During the first trimester of pregnancy, a woman comes to accept the idea of being pregnant (Lederman, 1996; Rubin, 1984). A woman's acceptance of her pregnancy has been shown to impact pregnancy outcomes (Lederman, 1996) and later infant and child development (A. J. Ward, 1991). Lederman (1996) found that women having difficulty accepting pregnancy were more likely to have difficulty in their adaptation to pregnancy and motherhood and to also experience greater fears regarding labor. Some ambivalence is recognized as being normal. However, substantial ambivalence continuing into the third trimester is indicative of unresolved conflicts regarding maternal adaptation (Lederman, 1996). Leifer (1977) found that women who were ambivalent in the first trimester expressed anxiety related to the somatic and psychological changes associated with pregnancy. The intensity of the changes was "ego-threatening" (p. 69) to the women. Excessive ambivalence is considered to be the equivalent of rejection of the pregnancy and/or the infant (Lederman,



1990). In a study by Gottesman (1992), unplanned pregnancies tended to be unwanted and remain unwanted even in late gestation. In her sample, the women describing the greatest number of unplanned pregnancies were in the age group of 20-24 years old. The women considered in the middle (25-29 year old) and late (30 and older) childbearing years described greater planning and readiness for parenting. This however does not indicate greater ease of maternal identity formation for women of middle to late childbearing years.

Maternal identity formation requires a relinquishing of the former physical, mental, and social self (Rubin, 1984). The more mature a woman is in terms of intellect and life experience, the more costly maternal adaptation may become (Rubin, 1984). Pregnancy entails entering into a “pregnant role.” While the role is often valued, the social role of pregnancy can be restrictive (Leifer, 1980). Women interviewed by Oakley (1980) described enormous disruptions to their life styles, routines and identities. If a woman values professional activities, pregnancy can be an embarrassment and a psychological blow (Colman & Colman, 1971). Leifer (1977) described an emotional withdrawal from the environment occurring as early as the first trimester. The withdrawal was an attempt to consolidate resources to avoid further stress brought about by psychological and physical pressures.

The second trimester is seen as more gratifying and stabilizing (Rubin, 1984). After feeling the baby move, the mother begins in earnest to formulate her parenting role and the expected interactions with her infant (Lederman, 1990). The woman realizes in the second trimester that she cannot control the changes that are occurring (Colman & Colman, 1971). The “binding-in” phase defined by Rubin (1984) as the point that fetal movements begin to transform the theoretical child to a real, living child is an integral part of the second trimester.

During the binding-in phase there is a tipping of the balance in favor of the perceived benefits versus the costs of pregnancy that sustain and accommodate the woman to term and through labor. Prior to the binding-in, that occurs with fetal movement, pregnancy is an experience of self; it takes over the woman's body--its boundaries, functions, appearance, and intactness (Rubin, 1984). Muller (1990) replaced the term "binding-in" with "prenatal attachment." The extent of maternal identity is directly related to the development of the child (Rubin, 1984). Shereshefsky and Yarrow (1973) found that a woman's ability to visualize motherhood correlated with maternal adaptation postpartum and with responsiveness to the infant. Although many studies have looked at postpartum role attainment and maternal competence as well as infant interactions, no other studies were found that followed women from early first and second trimester of pregnancy to postpartum with the aim of comparing prenatal identity formation to postpartum role attainment. From diaries maintained by women over the course of pregnancy, Lederman (1996) found that women who had been nurtured and had good role models during earlier life experiences had greater self-confidence and were able to formulate their maternal identity. Greater motherhood role satisfaction and confidence with tasks of motherhood, was shown to correlate highly with prenatal role identification (Halman, Oakley, & Lederman, 1995). Rubin (1984) emphasized that the taking-on of modeled behaviors and attitudes is foremost in the process of reaching maternal identity attainment. Near the end of the second trimester, the woman's focus is directed toward her vulnerability (Rubin, 1984). The woman becomes concerned about venturing outside the home and about complications that could arise during labor that might harm herself or the baby (Lederman, 1996; Rubin, 1984). The feeling of

vulnerability leads to a withdrawal from social spheres outside the immediate family (Rubin, 1984).

Concerns regarding vulnerability continue into the third trimester (Lederman, 1990). The mother is in need of reassurance and validation (Di Martile Bolla, De Joseph, Norbeck, & Smith, 1996). The gravida becomes aware of a growing sense of mortality (Rubin, 1984). While anxiety regarding pregnancy decreases in the second trimester, anxiety increases in the third trimester with concerns over the dangers of delivery, the fetus becoming a separate being, and the expected demands after childbirth (Lederman, 1990; Rubin, 1984). Importantly, few differences exist in the level of anxiety experienced during pregnancy based on parity or age (Gottesman, 1992; Lederman, 1996; Stark, 1997). In third trimester interviews, Gottesman identified no significant differences between 20-24 year olds, 25-29 year olds, or women older than 30 years regarding their attitudes toward pregnancy or preparation for motherhood. There was significant age-related variation for their conceptualization of the maternal role. Stark dichotomized the women in her study into a group of older women, 35-42 years old, and a younger group of women, 20-31 years old. The younger women had greater anxiety pertaining to a sense of helplessness and fear regarding the labor and delivery experience, but otherwise the findings suggest neither age nor previous pregnancy and birth experience diminish or accentuate the concerns an older gravida may have regarding her maternal role.

*Anxiety associated with pregnancy adaptation.*

The dramatic developmental changes a woman experiences in regard to her self-image may cause anxiety, fear, anger, and grief during pregnancy (Trad, 1991). A fear of never being the same again can be unsettling and cause stress and anxiety (Lederman, 1990). The ability of a woman to adapt to the changes and challenges occurring throughout pregnancy appears to influence her mental and physical health as well as the health of the developing fetus (Rini, Dunkel-Schetter, Wadhwa, & Sandman, 1999).

Leifer (1977) identified a difference in the level of anxiety related to self and the amount of adjustment made in early pregnancy and found that women with the lowest anxiety (almost an absence) focused on themselves, while the women with the greatest anxiety focused on the fetus and had the highest level of adjustment throughout pregnancy and the postpartum period. These women were also characterized with the highest self-esteem and feelings of personal growth. In contrast, the women experiencing moderate adjustment to early pregnancy expressed less satisfaction with their body image and self-concept. They developed only moderate attachment to the fetus and were less confident about their potential for being successful mothers.

Maternal prenatal anxiety has also been shown to impact birth outcomes. Copper et al. (1996) found that women who perceived their lives as stressful had a significantly greater likelihood of having preterm labor, a growth restricted infant, or a low birth weight infant than the women who did not perceive their lives as stressful. There were no statistically significant differences however, for measures of self-esteem, depression, or trait anxiety. Rondo et al. (2003) found that women with higher scores for maternal psychological distress in the second trimester were more likely to have low birth weight infants and women with

higher scores for maternal psychological distress in the third trimester were more likely to experience preterm delivery. Wadhwa, Sandman, Porto, Dunkel-Schetter, and Garite (1993) measured state anxiety in the third trimester of pregnancy and found that women with greater perceived anxiety were more likely to have low birth weight infants. Women describing greater pregnancy anxiety were more likely to have slight decreases in their length of pregnancy. Rini et al. (1999) found that women with greater third trimester pregnancy-related anxiety, as well as state anxiety, delivered at earlier gestational ages than those women with lower scores on measures of anxiety. The anxiety measures were not associated with infant birth weight but personal resource measures (mastery, optimism, and self-esteem) were directly associated with infant birth weight. Women with stronger resources gave birth to heavier babies after controlling for age, marital status, nulliparity, ethnicity, and socioeconomic variables. Personal resources also mediated stress reduction, leading to an indirect effect on gestational age. In a similar study looking at the association of prenatal stress and optimism on infant birth weight and gestational age, prenatal stress was not associated with infant birth weight or gestational age (Lobel, DeVincent, Kaminer, & Meyer, 2000). Although stress and optimism were highly inversely correlated, only optimism predicted birth weight. Women who were more optimistic delivered significantly larger infants than women having low optimism scores. There was no association between optimism and gestational age. Importantly, the measures of prenatal stress were for “perceived stress,” “state anxiety,” and “pregnancy-specific distress,” but only perceived stress and the state anxiety were measured in all trimesters. The pregnancy-specific distress was measured only once during the second trimester when anxiety related to the pregnancy generally diminishes (Lederman, 1990; Lederman, Harrison, & Worsham, 1993). In addition,

self-esteem and possibly optimism may not lend themselves to individual assessment as well as prenatal personality variables (Lederman, 1996). Even women with a strong sense of self may have feelings of vulnerability at differing points during pregnancy (Lederman, 1996). Responses to stress and affective state are progressively altered during pregnancy, suggesting that timing of stress exposure during gestation may be critical in determining its impact. However, the timing of stress during gestation is a factor that has rarely been studied (Glynn, Dunkel-Schetter, Wadhwa, & Sandman, 2004). Higher prenatal anxiety is associated with increased anxiety during the first year after birth (Lederman, 1990). Understanding prenatal anxiety as it relates to maternal identity and role formation is important for establishing effective intervention programs that engender positive maternal adaptation.

#### *Postpartum (Fourth Trimester)*

With the birth of a child there is a massive shift in orientation (Rubin, 1984). There is a shift from mother with child to mother of child (Lederman, 1996; Rubin, 1984). An immediate reconstruction of the self-system occurs following delivery to one of mother-child system, and family system (Rubin, 1984). The “binding-in” described by Rubin (1984) as beginning in the second trimester with the awareness of fetal movement, continues for two trimesters following delivery (Rubin, 1977). Prior to delivery, the infant has no objective form or appearance. After delivery the identification of the child organizes the woman’s maternal behavior and attitudes (Rubin, 1977). Identification of the infant’s characteristics, qualities in appearance and behaviors is important in the “claiming” process following birth. The bonds that were created by identification and attachment during pregnancy secure the relationship. There is an intense need for the new mother to examine the baby visually and ensure that it is normal (Leifer, 1980). There is a need to see the baby as “exceptional,

special, or out of the ordinary” (p. 85). Importantly, Leifer found a direct relationship between the emotional attachment to the fetus during pregnancy and the intensity of maternal feelings expressed toward the infant after birth. Rubin (1984, 1977) emphasized a developmental approach to maternal identity formation. She described maternal identity formation as having cognitive, affective, and behavioral pathways (Walker & Montgomery, 1994).

Despite urging by Rubin to study maternal identity formation as a developmental process occurring from the first trimester through the postpartum period, much of the research aimed at investigating maternal role attainment has focused solely on the postpartum period. When prenatal adaptation is assessed in conjunction with repeated measures in the postpartum period, much of the emphasis has been on maternal infant interactions after delivery rather than compared to maternal role satisfaction or competence at various points during the postpartum period and up to one year following delivery (Flagler, 1990; Fowles, 1996; Mercer, 1985b, 1986b; Tarkka, 2003; Walker et al., 1986a, 1986b).

Walker and Montgomery (1994) compared women’s perceived maternal role attainment and maternal identity at 1-3 days postpartum and 4-6 weeks postpartum to the child’s social competence and behavior problems at 9 years and found that maternal identity was a significant predictor of a child’s socioemotional outcomes. Walker and Montgomery attempted to measure the affective as well as cognitive components of a woman’s identity formation and role attainment. A mother’s view of herself related to the feelings she had of the infant. The scores for multiparas reflected more positive attitudes towards themselves as mothers and towards their infants than the scores of the primiparas. Grace (1993) also found that primiparas rated themselves less favorably than multiparas for their evaluation of their

parenting skills, life changes, and for the level of stress in their lives. Women with more than three children perceived less stress postpartum than women with 1-3 children. Maternal age was unrelated to any of the subscales. The women in Walker and Montgomery's study described more positive feelings towards themselves and their infants at 1-3 days postpartum than at 4-6 weeks postpartum. Lederman, Weingarten, and Lederman (1981) had similar responses for measures of satisfaction with life circumstances and motherhood from 3 days postpartum to 6 weeks postpartum, as did Mercer (1985a) for gratification of the motherhood role at 4 months to 6 months postpartum. Lederman and Lederman (1987) suggest that the decrease in postpartum maternal satisfaction is related to alienation in the motherhood role and the need for childcare assistance. These feelings occur at a time when multiparas describe concerns over not having enough love for their other children (Mercer, 1979).

Results from Lederman and Lederman (1987) indicate that the marital relationship and the mother's perceptions of her child and of her role at 3 days are more predictive of maternal adaptation at 6 weeks than the mother's initial self-confidence or knowledge about the infant and infant responses. In addition, these particular variables are only minimally influenced by supportive relationships. Lederman, Weingarten, and Lederman (1981) found that a third trimester measurement of maternal identification had a statistically significant correlation with the woman's satisfaction with motherhood and her confidence in her motherhood role. Kutzner (1984) used the same sample and obtained additional measurements of maternal adaptation at 2-3 years after birth, and found that 6-week postpartum assessments of maternal role adaptation were highly correlated and predictive of interview and questionnaire results obtained 2-3 years. The results from these studies indicate that maternal response to one's motherhood role is relatively constant and not likely to change without intervention



(Lederman, 1996). Walker et al. (1986a) found that indicators of maternal identity and role attainment were more highly interrelated for primiparas than for multiparas. A multipara's self-confidence in the maternal role is not reliably related to the woman's relationship with her baby, whereas the relationship a primipara has with her infant is correlated with building her self-confidence in the maternal role. Grace (1989) found no relationship between the results obtained from the Maternal Fetal Attachment Scale (MFAS) (Cranley, 1981a) and What Being the Parent of a New Baby is Like scale (WPL) (Pridham & Chang, 1985). The MFAS is comprised of items that describe the expectant mother's baby-related thoughts and actions (Grace, 1989). The WPL is believed to measure distinct aspects of role attainment. From a sample of 90 single adolescent women, Koniak-Griffin (1988) found that "intent to keep the baby" and "differentiation of self from fetus" were the only variables significantly related to Role taking ( a scale within the MFAS). Identity formation and building self-esteem have been shown to be integral to maternal role attainment (Lederman, Weingarten, and Lederman, 1981; Walker, Crain, and Thompson 1986a). Curry found no differences in adaptation to motherhood on differing levels of income, education, length of labor, or whether the pregnancy was planned or unplanned.

Mercer (Mercer, 1985a; 1985b, 1986b) investigated differences in maternal role attainment by maternal age and found few statistically significant differences between the three groups of less than 20 year olds, 20-29 year old women, and 30-42 year old women. The teenagers had fewer psychosocial assets for performing the maternal role (Mercer, 1986b), yet they experienced greater gratification in the role at 8 months than the group of 20-29 year olds and the younger women within the 30-42 year old group (Mercer, 1985b). Within the 30 to 42 year-old group, the older the woman, the greater her gratification (Mercer, 1985b).

Importantly, the hypotheses that greater role clarity and readiness would increase gratification in the maternal role were rejected (Mercer, 1985b). The hypothesis that women with less education would find greater maternal role gratification was only supported with the oldest group of women. Self concept decreased dramatically in the first and eighth month for the two older groups of women (Mercer, 1986c), but they had higher scores in adaptability, flexibility, and empathy than the teenagers. In a study of women over 35 years of age, Reece (1995) found higher mean scores for a measure of global perceived stress at one year following birth than investigators studying stress for a sample of women from varying backgrounds between the ages of 30 to 44 (S. Cohen & Williamson, 1988). The levels of stress for the women in Reece's study were only obtained at the one time point so they could not be compared with levels of earlier postpartum stress. In a study that followed 19 primiparas through each trimester of pregnancy and through the seventh month postpartum, Leifer (1977) described negative mood "tones" persisting through the postpartum period, that were "not transient reactions to the stress accompanying delivery and adaptation to the infant, but a more permanent part of the postpartum year" (p. 75). For more than two-thirds of the sample, the early postpartum period was characterized by "extreme negative affect." It might take us much as nine months following delivery for a woman to feel a "goodness of fit" with herself (Rubin, 1984, p. 109).

In another of the few studies that followed women from first trimester pregnancy through 6 months postpartum, maternal prenatal measures of "ego strength" were found to have statistically significant, positive correlations with adaptation to pregnancy and later acceptance of maternal role, confidence in the maternal role, and responsiveness to the infant (Shereshefsky & Yarrow, 1973). Differing measures of "nurturance" from the first trimester

of pregnancy through the 6 month postpartum were also found to have statistically significant, positive correlations to adaptation to pregnancy, acceptance of the maternal role, acceptance of infant, responsiveness to infant, and confidence in the maternal role. Adaptation to pregnancy at 3 months was significantly correlated with 6-month postpartum measures of acceptance of the maternal role and responsiveness to the infant. Prenatal interest in children had statistically significant, positive correlations to postpartum acceptance of the maternal role, confidence in maternal role, and responsiveness to the infant. Halman, Oakley, and Lederman (1995) found significant correlations between third trimester Identification of the Motherhood Role and 6-week postpartum measures of Confidence with Motherhood Tasks, and Satisfaction with the Motherhood Role. These studies emphasize a developmental framework proposed by Rubin. In addition, the concept of prenatal maternal identity formation to postpartum maternal role attainment was investigated rather than attempting to correlate isolated measurements or observations of maternal infant interactions to maternal role attainment.

#### *Perinatal and Postpartum Depression*

The issue of depression has been addressed sporadically within the role attainment and maternal identity literature, yet depression is twice as common in women as it is in men, with its peak incidence during the primary reproductive years of 25 to 45 years of age (Breslau, Chilcoat, Peterson, & Shultz, 2000; Hammen & Mazure, 2003; Robertson, Grace, Wallington, & Stewart, 2004). Affect changes that occur as a result of depression may impact the development of the woman's self-image as a mother (Boyer, 1990) or the emotional attachment between mother and baby (Beck, 1995; Fowles, 1996). The process of forming a maternal identity is interwoven with the process of developing an emotional tie to the fetus or

infant (Rubin, 1984). Fowles (1998) found that postnatal depression was negatively and significantly related to all measures of maternal role attainment. However, prenatal maternal attachment was not significantly related to postpartum depression, but significantly related to all measures of maternal role attainment (Fowles, 1996). Whereas, Priel and Besser (1999) found that increased levels of prenatal attachment were significantly correlated with depression in the last trimester and 8 weeks postpartum. It cannot be determined however whether low prenatal attachment is the cause or the effect of the depressive mood.

At one month postpartum, depressive symptoms explained 24% of the variance in maternal role competence for 93 women who had been hospitalized during pregnancy for high-risk conditions (Mercer & Ferketich, 1994b). For women experiencing normal pregnancies, depression only explained 6.4% of the variance for a measure of parenting competence. Importantly, depression did not predict multiparas' competence but only that of primiparas (Mercer & Ferketich, 1995). Rubin (1984) emphasized that postpartum depression and hostility occur as a result of a disparity between the ideal image of self as a woman, wife, and mother and the experience of self in body that occurs during the postpartum period. The depression and hostility are incompatible with self-esteem, which increases the woman's self-depreciation. Ritter, Hobfoll, Lavin, Cameron, and Hulsizer, (2000) found lower depression both prenatally and postpartum for women with higher self-esteem. Berthiaume, Saucier, and Borgeat (1998) also found that greater self-esteem prenatally significantly correlated with less prenatal depressive symptomatology.

Greater depression has been reported when pregnancy is unwanted (Najman, Morrison, Williams, Andersen, & Keeping, 1991). Lederman (1996) found that despite high-self esteem, women having feelings of ambivalence and conflict regarding motherhood tended to

have accompanying depression. The women described concerns regarding the constraints of pregnancy--the fatigue, feelings of isolation, and possible guilt. Shereshefsky and Yarrow (1973) found varying combinations and degrees of ambivalence and anxiety throughout their prenatal sample, with almost one-half of the women giving indications of depressive symptoms at intermittent periods. During the third and fourth month of pregnancy, less than half gave responses indicating a happy or positive mood.

It is recognized that anxiety and depression are interconnected (Austin & Priest, 2005; Ross, Gilbert Evans, Sellers, & Romach, 2003), and women presenting with prenatal or postpartum depression are more likely to exhibit anxious symptoms than women suffering from depression at other times in their lives (Hendrick, Altshuler, Strouse, & Grosser, 2000). In addition, state anxiety, depression, and self-esteem are variables that have been found to be interrelated and significantly related to infant complications (Norbeck & Tilden, 1983). One of the strongest predictors of postpartum depression is the presence of depression or anxiety during pregnancy (Robertson et al., 2004). However, investigators have found that some anxiety and depression prenatally can lead to good postnatal prognosis (Robson, 1982). Lederman (1996) found that most prenatal mood swings and depressive episodes in her sample of women were a result of the anticipation of maternal fulfillment combined with fear of failure as a mother. The episodes tended to be short lived, and the prenatal depression was tempered with reassurance and support. Although differing predictor variables for prenatal and postpartum depression have been proposed (Beck, 2002; Horowitz & Goodman, 2004; O'Hara, 1985; Ritter et al., 2000; Robertson et al., 2004; Robson, 1982), lack of partner support has been consistently predictive of depressive symptomatology in meta-analyses, as has satisfaction with the marital relationship (Beck, 1996, 2001; Robertson et al., 2004). A

supportive relationship with one's husband can help mitigate the stresses of being a new mother (Robertson et al., 2004). An intervention of antenatal classes aimed at helping expectant parents understand and anticipate the psychosocial issues related to becoming first-time parents was effective in decreasing distress at six weeks postpartum for the mothers with the lowest self-esteem (Matthey, Kavanagh, Howie, Barnett, & Charles, 2004). The women in the treatment group also reported greater satisfaction with the sharing of home and baby tasks which was attributed to their husbands having heightened awareness of their wives' feelings. A significant relationship between low self-esteem and higher levels of depression (both antenatally and postpartum) were found for all women in the study, and there were no significant differences in rates of depression across the treatment and control groups.

Intervention programs which offer support through information manuals and videos have been less successful (Logsdon et al., 2005; Reid, Glazener, Murray, & Taylor, 2002). The findings have important implications given that higher parental distress is associated with higher depression scores for mothers at two years after delivery (Horowitz & Goodman, 2004).

### Family Functioning

As early as the first trimester of pregnancy, the woman must deal with the loss and dissolution of portions of her world (Rubin, 1984). In a stable family relationship, there is a network of people that can offer "intimate care, protection, and support nurturance" to ease the transition to the maternal role (Rubin, 1984, p. 59). Successful "binding-in" described by Rubin requires supportive sharing and balanced aspirations from the woman's family. A woman's attachment relationships with her husband and mother are positively associated

with psychological well-being during and following pregnancy, mother-child interaction, and later child development (Zachariah, 1994).

Apart from pregnancy, family and marital dysfunction have been found to have profound effects on the risk for or course of illness and the overall functioning of individuals (Ramsey, 1989b). The family has been shown to play a major role in: 1) defining health versus sickness (and the amount of attention that is paid to a symptom), 2) promoting conscious and unconscious health behaviors, 3) determining when to seek or not to seek medical care, and 4) determining compliance with a medical or rehabilitation regimen (Ramsey, 1989b).

Pregnancy planning has been found to occur more frequently within families that have moderate adaptability and cohesion (Ramsey, 1989a). In addition, women perceiving greater intimate support from a husband, partner, or family member are more likely to obtain earlier and more adequate prenatal care than women without the support of an intimate family relationship (Giblin, Poland, & Ager, 1990; Lederman, Weis, Brandon, & Mian, 2001). For a large sample of predominantly African-American women living in an urban area, intimate support provided by one's family, reflected a statistically significant relationship to the use of drugs while pregnant, having initial happy feelings regarding the pregnancy, and being hopeful for the future (Giblin et al., 1990). Zachariah (1994) found that other than the age of the woman, husband-wife attachment and mother-daughter attachment were significant predictors of a woman's psychological well-being in the third trimester of pregnancy. In a military population, Weis, Lederman, Lilly, and Bush (2003) found that women experiencing deployment of their husbands had greater concerns regarding the acceptance of their pregnancy. Self-esteem for some women is dependent upon their husbands' approval (Lederman, 1996). A lack of approval or confirmation from one's husband may impact the

woman's maternal identity formation and her ability to withstand what may seem like a burdensome pregnancy (Rubin, 1984). Kalil, Gruber, Conley, and Sytniac (1993) found women with supportive husbands were likely to have lower Trait anxiety in each trimester of pregnancy, whereas, women with an emotional confidante had lower Trait anxiety in only the second and third trimester of pregnancy.

A supportive relationship from a husband throughout pregnancy has been shown to be the most important predictor of the woman's state anxiety (Norbeck & Anderson, 1989). The woman's mother was also found to be a significant source of support but only in mid-pregnancy. There was no evidence of support substitution when support from the husband or mother was not available. The results held for three ethnic groups of women, African-American, Hispanic, and White non-Hispanic women who spoke English or Spanish. Primigravidas have reported fewer concerns related to family relationships (mother and husband) than multigravidas (Lederman, 1996). However, multigravidas may be under increased stress because of other children, or they may be more willing to acknowledge conflict within their marriages (Lederman, 1996). The importance of the family's ability to decrease the woman's prenatal level of anxiety cannot be underestimated. A preponderance of both human and animal studies indicate that mothers exposed to greater stress or having greater anxiety during pregnancy have significantly shorter gestations and deliver infants who weigh less at birth (Copper et al., 1996; Da Costa, Larouche, Dritsa, & Brender, 1999; Mancuso, Schetter, Rini, Roesch, & Hobel, 2004; Rondo et al., 2003; Ruiz, Fullerton, Brown, & Dudley, 2002).

Family functioning has been directly linked to negative birth and postpartum outcomes. Abnormal family functioning (too much or too little family cohesion) was found to account



for 4.5 percent of variance in birth weight (Ramsey, Abell, & Baker, 1986). A composite family functioning score was found to be the best indicator of complicated labor and delivery, and low birth weight infants (Reeb, Graham, Zyzanski, & Kitson, 1987). Women perceiving their families as dysfunctional were at higher risk for both outcomes. In another study of family functioning to birth and postpartum complications, the psychosocial risk evaluation of family functioning considered with individual biomedical risk factors was the most consistent predictor of postpartum complications (bleeding, infection, pain, fever, difficulty with infant feeding, health problems of the infant and depression) when evaluated with the psychosocial variables of recent life experiences, life changes and general social support. Women considered to have high biomedical risk, coupled with low family functioning scores, had significantly more postpartum complications than women perceiving their families as “high” functioning. Importantly, reports of more life changes in the year preceding pregnancy were associated with “good” family functioning. This finding points to the importance of continual adaptation within a family unit to deal with ongoing stressors. Family cohesion and emotional support from one’s partner contribute to a woman’s postpartum mental health (Weiss & Chen, 2002). This in turn is associated with greater infant responsiveness and less physical health problems during the first year following birth. In a Finnish sample, mothers perceiving negative family dynamics were also more likely to experience depressive symptoms (Tammentie, Tarkka, Astedt-Kurki, Paavilainen, & Laippala, 2004). Shereshefsky and Yarrow (1973) found that a woman’s accommodation to the infant and acceptance of her maternal role were significantly associated with the relationship she had with her husband at 1, 3, and 6 months postpartum. Lederman, Weingarten, and Lederman (1981) also found that a woman’s relationship with her husband

at 6-8 weeks postpartum had the strongest relationship to the woman's confidence in her motherhood role.

During the early postpartum period, the new mother is the most likely to be assisted by her mother and possibly her husband. There is a certain amount of novelty in both the new mother's and father's roles, and the husband is anxious to help (LaRossa and LaRossa, 1981). LaRossa and LaRossa (1981) account the early honeymoon stage of parenthood to a theory of "interchangeability" (p. 214). It is hypothesized that during the first year of the baby's life, interchangeability fluctuates. It starts high and then dips to low and moves toward high again. The fluctuations occur as the husband has to return to work and the wife becomes the primary caregiver. Although the father is willing to care for the infant, both the mother and the father of the baby refer to the contribution of the father as "helping" or "babysitting" (LaRossa & LaRossa, 1981). Even today, twenty-four years after this publication, it is not unusual to find that fathers left at home with the children while their wives travel are invited over to friends and neighbors for meals. Oddly, when the wife is at home with the children alone she is not invited over as it is accepted that she will manage in the father's absence; that she is the primary caregiver and not just helping.

The husband may try to support his wife but finds that his efforts are ineffective when he provides the type of support he values rather than discovering the type of support his wife prefers (Lederman, 1996). Expectant mothers as well as mothers caring for newborns and young children have a strong desire to be cared for and supported by their husbands (Bowlby, 1988). The earlier review of research findings support LaRossa and LaRossa's theory of "interchangeability" fluctuation (Kutzner, 1984; Lederman et al., 1981; Walker & Montgomery, 1994). However, rather than the fluctuation dipping and then recovering as

they suggest, women experiencing little role support from their husbands in terms of an egalitarian relationship may experience negative maternal role adaptation well after the postpartum period (Lederman, 1990). Importantly, a couple's flexibility and cohesion in preparing for and accommodating a new family member has been shown to be significantly related to maternal-fetal attachment (S. G. Fuller, Moore, & Lester, 1993).

### *Gender Differences in Family Functioning Perceptions*

The relationship between social support and marital satisfaction is different for husbands and wives (Acitelli, 1996). Studies of older married couples, have shown that the husband, more than the wife, shapes the trajectory of marital well-being (Ferraro & Wan, 1986). There are differing hypotheses as to why there is a lack of connection between marital support and well-being for men. It has been suggested that sex-role expectations make males more hesitant to acknowledge their wives' emotional support contribution (Barbee et al., 1993). Barbee et al. also suggested that the support wives provide may match husbands' expectations of marriage so well that it does not impact marital satisfaction. It has also been suggested that husbands literally do not recognize the level of support provided by their wives. In other words, a supportive wife is expected, and may not affect the husband's evaluation of the marriage (Acitelli, 1996). It may be that men are supported more by factors outside of marriage than by factors within marriage (Acitelli, 1996).

A husband's behaviors and attention to the marital relationship are not lost on the wife however. Husbands' behaviors are extremely important to their wife's well-being, especially when they take-on a more "wifely" role (Acitelli, 1996, p. 94). In fact, perceived unfairness in household labor was demonstrated to impact the wife's marital satisfaction yet the husband's satisfaction remained unchanged (R. Ward, 1996).

Russell (1974) found that for a group of new parents, the couples with the highest levels of marital adjustment were less likely to perceive crisis within the family. Although this finding is not surprising, of note is the finding that age was found to be negatively related to crisis for men, but unrelated to crisis in the women. In addition, the lower the husband perceived the role of “father” to be within his hierarchy of identities, the greater his reported level of crisis. For the women in the sample, the hierarchy of identities or personally significant roles was not a significant predictor of their reported level of crisis. However, the women’s mean crisis scores were significantly higher than those of the men. These findings would lead one to believe that there is little interchangeability of roles within the family. The issue of hierarchy of identities does not impact the woman because she is faced with being the primary caregiver regardless of her other roles. In addition, the woman is contemplating her identity change and maternal role during the pregnancy, while the husband may not consider his role adjustment and inherent reorganization that has to occur within the family. The findings suggest a sequence of developmental tasks a family goes through in preparation for an infant. The better the tasks are completed through greater communication and understanding, the better the transition will be towards incorporating the new child into the family (Russell, 1974).

### *Summary*

It is established that family functioning is correlated with individual functioning (Lewis, 1976). Central to functional families is the ability to negotiate differences and resolve conflicts among members (Lewis, 1976). It can be anticipated, that as a family transitions to new roles, relationships, and identities, there will be disruption and uncertainty (M. A. McCubbin, 1999). Rubin (1984) emphasized the need for esteem-building, and nurturant

support (preferably from family members), occurring throughout pregnancy, in order for a woman to formulate her maternal identity. Interestingly, there have been no studies that have investigated the woman's perception of her family's flexibility and adaptation to her maternal role formation in the first and second trimesters of pregnancy to later maternal role attainment. Research related to support from the family, specifically the husband, has focused on the woman's perception of support from the husband but not necessarily the woman's perception of the family's accommodation of the changing roles. This would seem to be an essential step for the formulation of effective interventions aimed at improving maternal role satisfaction.

### Social Support

#### *Support for Role Modeling and Identity Formation*

Social support is considered essential to the health and well-being of the expectant mother (A. Oakley, Rajan, & Grant, 1990). The provision of emotional, informational, and material resources are believed to mitigate the physical and psychological strains associated with pregnancy (Feldman, Dunkel-Schetter, Sandman, & Wadhwa, 2000). It is believed that support may also motivate the expectant woman to engage in lifestyle changes that may improve her health. Understandably, the pathways through which social support is linked to maternal and infant physical and psychological health are numerous (Feldman et al., 2000).

The formation of a maternal identity stresses the social fabric of a woman's established relationships (Rubin, 1984). During the first trimester, when the woman is accepting her pregnancy, she is also facing the prospect of possible dissolution and loss of parts of her social world. During the first trimester, however, there is a need for a network of people to provide intimate care, protection, and supportive nurturance (Rubin, 1984). The emotional

and tangible support a mother receives from her family or social network has been shown to protect her mental health (Weiss & Chen, 2002) and have enduring and cumulative effects on self-esteem (Swann & Brown, 1990). In the second trimester, there is an increasing emphasis on role modeling (Rubin, 1984). Identity formation is a constructive process involving active information seeking and self-definitional changes (Deutsch et al., 1988). Self-identity emerges from and is sustained by role relationships (Heller, Swindle, & Dusenbury, 1986). The availability of a role model is a major determinant in the formation of maternal identity and the development of a sensibility regarding maternal role competence (Lederman, 1996; Rubin, 1984; White, 1974). Adaptation to the maternal role may require realignment of kinship and friendship bonds; tightening of some and loosening of others (Sleutel, 2003). As childbirth approaches, there may also be a transition from one set of “social groupings” to other, less demanding, social groups (Rubin, 1984). The mother makes these social shifts to obtain the necessary support, be it through informational, tangible, or emotional support, to complete her maternal identity formation (Rubin, 1967a).

#### *Support, Pregnancy and Birth Outcomes*

Intimate social support from a partner or family member appears to improve fetal growth, even for women with little life stress through main rather than buffering effects (Hoffman & Hatch, 1996). Less clear is the impact of perceived availability of support from sources other than the husband and family (Hoffman & Hatch, 1996).

In two frequently cited nonintervention studies, increased psychosocial assets (of which support was considered) were found to have buffering effects on life stress and subsequent pregnancy complication rates (Norbeck & Tilden, 1983; Nuckolls, Kaplan, & Cassel, 1972). Nuckolls et al. emphasized that neither the measure of the woman’s perceptions concerning

herself, her pregnancy and her overall situation nor the measure of psychosocial assets were related to complications of pregnancy if considered separately within the analysis. Norbeck and Tilden measured the three most commonly cited functional aspects of received support-- informational, emotional, and tangible, in addition to life stress and emotional disequilibrium (Dunkel-Schetter, Sagrestano, Feldman, & Killingsworth, 1996). No main effects for life stress or tangible support to pregnancy complications were found, but the interaction of these two variables were predictive of gestational, labor, and infant complications. The interaction of life stress and emotional support was not predictive of any type of pregnancy complication, but the interaction of life stress with tangible support was predictive of these complications. Emotional support was the variable significantly related to emotional disequilibrium during pregnancy but not to pregnancy complications. It is important to highlight that a concurrent measurement of life stress and support at Time 2 (approximately 6 weeks prior to delivery) was not made. At Time 2, the participants only completed a second questionnaire on life stress. The measure of support used in the analysis of the interaction of life stress and tangible support was from data collected at Time 1 (12-20 weeks gestation). A similar issue existed with the Nuckoll's study. The women completed the measure of psychosocial assets at the initial recruitment meeting (sometime prior to 24 weeks). However, the measure of recent experiences (stresses) was mailed to participants during the 32nd week of their pregnancies. Neither study provides a longitudinal description of the impact of support on measures of life stress. Longitudinal perspective is essential for understanding the impact of the "timing" of support on pregnancy adaptation.

Da Costa, Dritsa, Larouche, and Brender (2000) conducted a longitudinal study of the impact of prenatal maternal stress, social support and coping strategies to labor and delivery

difficulties and low infant birth weight. A factor score for multidimensional stress was created for each trimester. Then a factor analysis was computed from the collapsed scores from each trimester to obtain a multidimensional stress score for the entire pregnancy. The stress variable consisted of state anxiety, hassles, and pregnancy-specific stress. Prenatal stress did not emerge as a significant predictor of lower birth weight. Greater emotional coping in the second trimester was related to higher birth weight, and prenatal social support was related to infant birth weight. Importantly, none of the interaction terms, 1) multidimensional stress during pregnancy, emotional coping (second trimester), and satisfaction with social support (second trimester), 2) multidimensional stress during pregnancy, and emotional coping (second trimester), or 3) multidimensional stress during pregnancy and perceived satisfaction with social support (second trimester) were significant when entered into a hierarchical regression model predicting infant birth weight. Admittedly, the determination of any stress-buffering effect from coping or social support was complicated by the inability to find an association between the stress variable and infant birth weight.

Feldman et al. (2000) found that greater social support and less obstetric risk predicted higher birth weight. Structural equation modeling was used to test a latent variable of both tangible and emotional forms of support. The relation between social support and birth weight held after controlling for length of gestation. Understanding what type of support provided the greatest effect on the outcome is complicated by the multidimensional, social support variable that was created. It is important to recognize that all measurements were taken only in the third trimester of pregnancy. Pryor et al. (2003) found that ethnicity rather than informal social support accounted for the variability in infant birth weight. After



controlling for ethnicity and socioeconomic status, Buka, Brennan, Rich-Edwards, Raudenbush, and Earls (2003) found neighborhood-level factors of support were significantly associated with infant birth weight, and the neighborhood-adjusted predictors reduced the White versus African-American difference in birth weight to 124 grams. Weis and Lederman (2006) found that emotional esteem-building support from a community network in the first and second trimester of pregnancy was a significant predictor of infant birth weight. The parameter estimates for community support to infant birth weight indicate that first trimester support has greater impact on infant birth weight than second trimester support.

*Support and Postpartum Adaptation (Identity and Role Attainment)*

In terms of studies that followed women prenatally to postpartum, Goldstein, Diener, and Mangelsdorf (1996) found that prenatal and postpartum social support were both associated with maternal sensitivity at 3 months postpartum. In addition, women indicating larger support networks were found to be more sensitive in interactions with their infants than women with smaller networks.

Halman, Oakley, and Lederman (1995) found statistically significant correlations between scales of Confidence with motherhood tasks, Satisfaction with the Motherhood Role, and Support from Family and Friends. Reece (1995) also found that support from family and friends correlated with confidence in one's mothering role. Women living closer to their parents also had lower stress scores related to aspects of the maternal role.

Mercer and Ferketich (1994a) found that women with optimal family functioning and greater perceived support reported improved infant attachment. Atkinson et al. (2000)

confirmed through a meta-analysis that the mean effect size relating to maternal social support, marital satisfaction, and depression was significantly related to infant attachment.

The stress-buffering effects of social support and self-esteem to postpartum depressive symptoms were evaluated (Ritter et al., 2000). Although stress, self-esteem and social support all had significant main effects on prenatal and postpartum depression (stress was positively related to postpartum depression and social support and self-esteem were negatively related to postpartum depression), none of the interaction terms were statistically significant.

Cronenwett (1985) delineated the types of support provided as well as support network characteristics for a sample of 50 primigravid fathers and mothers in the third trimester of pregnancy and six weeks postpartum. Emotional support was the best predictor of satisfaction with the parenting role and infant for both men and women. The female respondents reported higher confidence in parenting with greater emotional support, but less overlap between their own and their spouse's support network and less perceived access to instrumental support. Importantly, men felt greater support for their parenting role at six weeks postpartum when they had greater access to instrumental support, greater network size and boundary density. Boundary density was inversely related to the women's confidence in their ability to cope with parenting tasks. These findings further highlight significant gender differences in the transition to parenting. The social networks for both groups were dominated by relatives.

### *Support Interventions*

Prenatal support interventions have focused on varying outcomes from decreasing anxiety (B. Barnett & Parker, 1985; K. D. Scott, Klaus, & Klaus, 1999), improving birth outcomes (Dyson et al., 1998; Norbeck et al., 1996; A. Oakley et al., 1990; Zimmer-Gembeck & Helfand, 1996), promoting attachment (Armstrong, Fraser, Dadds, & Morris, 2000), to parental caregiving (Olds et al., 1997; Olds, Henderson, & Kitzman, 1994). Few studies have focused specifically on improving maternal role attainment.

Schachman, Lee, and Lederman (2004) designed an intervention program to facilitate maternal role adaptation for military wives by enhancing internal and external resources unique to the military population. The program was based on the Resilience Model (Woodgate, 1999). The treatment group received a 4-week formalized program of classes focused on helping the women recognize and use internal and external resources unique to military wives. Small-group discussions with reflection and sharing of coping strategies were established, with positive feedback and reinforcement to bolster confidence and self-esteem. The women were given informational packets about area resources and nontraditional support systems. The comparison group received only the 4-week traditional childbirth education program. All the participants were in the third trimester of pregnancy. Immediately following the intervention, there were statistically significant differences between the two groups; the treatment group reported greater prenatal adaptation/preparation for the challenges of labor and delivery. They also reported greater internal resources and greater perceived social support, than the comparison group, but these results were not sustained at the six-week postpartum measurement. The treatment group also had significantly higher scores for self confidence, self-esteem, and sense of mastery, but the differences were not

sustained at the six-week measurement. The resilience scores showed little difference from the initial baseline scores for the two groups.

Schachman et al (2004) accounts the results to: 1) the mothers having too much information to assimilate immediately postpartum, (“a data collection point at 4 or 6 months may have yielded different results,” p. 114), 2) the women were queried about support when the support resources are at their greatest, 3) the women in the treatment group spent an additional hour with the researcher each week, and 4) a possible “contagion effect” (p. 114), referred to because of the small size of the military and the opportunity for participants to mingle and share information.

Importantly, issues surrounding the theoretical framework, operationalization of the theory, timing of the intervention, and the chosen outcome measures may be the culprits for the study findings (Sidani & Braden, 1998). The investigator sought to affect maternal adaptation. However, the intervention focused on providing informational support. Maternal adaptation literature points to the importance of support for role modeling, identity formation, acceptance and understanding (Lederman, 1996; Rubin, 1984; Zachariah, 1994). The intervention was primarily focused on providing information regarding available resources at a point in time when the woman is actually needing reassurance and validation (Norbeck et al., 1996). The vulnerability a woman feels in the third trimester also causes her to desire to withdraw from social contact (Rubin, 1984) rather than be involved in an information-seeking support group. If the theoretical foundations of the maternal adaptation theories (Rubin, 1984; Lederman, 1996) are used, the need for intervention would be in the first and second trimesters of pregnancy if effective maternal adaptation (identity formation) is to be made. The constructs of flexibility and self-reliance (important constructs for seeking

support resources) have been found to be related to maternal competence (Mercer, 1986c) versus any maternal identity formation that needs to occur for maternal adaptation and role attainment. Information support has been shown to reduce complications of labor and delivery (Gjerdingen, Froberg, & Fontaine, 1991). It is not surprising that the women in the treatment group reported the greatest difference in prenatal adaptation for dimensions measuring “fear of pain or loss of self-control in labor,” and “concern for well-being of self and baby” (the vulnerability factor).

Koniak-Griffin and Verzemnieks (1991) also implemented an intervention program with the aim of improving certain affective and behavioral dimensions of maternal role attainment. Those in the experimental group received informational support from nurses. Their sample comprised 20 high-risk primiparous adolescents. The theoretical framework for the project was based on maternal role theory. Importantly, the conceptual definition for maternal role attainment was “the process in which the mother achieves competence in the role and integrates mothering behaviors into her established role set, so that she is comfortable with her identity as a mother” (Mercer, 1985a). Rubin (1967b) describes maternal role attainment as an intense and earnest “taking-in” to herself the *task* and *meaning* of becoming a mother. This description brings with it the concept of identity formation. The affective component of maternal role attainment was operationalized with the Maternal-Fetal Attachment Scale (MFAS) (Cranley, 1981a); the Semantic Differentials: Myself as Mother (SD-Self) and My Baby (SD-Baby) (Walker, 1982). The behavioral component of maternal role attainment was evaluated using the Nursing Child Assessment Feeding Scale (NCAFS) (Barnard, Eyres, Lobo, & Snyder, 1983).

The intervention program was made up of four parts: 1) four 1 1/2 hour classes held at weekly intervals, 2) selected maternal-fetal interactive activities, 3) recording fetal movements, and 4) maintaining of maternal diaries. The classes were nurse taught and designed to increase knowledge about fetal/infant behaviors and to encourage positive feelings toward the child. Anticipatory socialization for the maternal role, and mother-infant interactions were covered in topics such as independence versus dependence on the family for childrearing and economic assistance, and conflict issues generated as a result of their responsibilities as parents. During each class, adolescents had opportunities to listen to the fetal heart tones and observe fetal responses to auditory and tactile stimuli. The activities were designed to facilitate recognition of the unborn child as an individual with unique characteristics. Fetal activity records were maintained over seven consecutive 24-hour periods. This activity was aimed at increasing the adolescents' awareness of their baby's patterns and individuality. Personal thoughts were recorded in a maternal diary. The participant was encouraged to record thoughts focused on her feelings related to the fetus rather than her concerns about her maternal identity formation. The comparison group received the usual care that was offered in the maternity care home for single mothers in addition to two classes, one on infant needs related to clothing and supplies, and one on postpartum exercises.

Results indicated a significant increase in maternal-fetal attachment scores over time for the treatment group. There were no significant changes in the scores between the two groups for the scale measuring self-confidence or "Myself as Mother," and "My Baby" scales. There were also no statistically significant differences between the two groups on the "Nursing Child Assessment Feeding Scale (NCAFS).

The investigators listed limitations of the project as: 1) a small sample size which limited generalizability of the findings, 2) the inability to evaluate the long-term effects of the intervention, and 3) a sampling bias created by participation of individuals from both control and treatment groups in an alternative school offering on child development and parenting. The timing of the intervention was believed to be ideal for capitalizing on a prenatal period when adolescent's feelings are labile and they have accessibility to health professionals.

A primary task of designing an effective intervention is to learn which treatments are appropriate to which problems. Yeaton and Sechrest (1981) describe this as the "conceptual relevance of treatment." (p. 157). The theoretical framework for the project was the theory of maternal role attainment (Rubin, 1967; 1984), which emphasizes cognitive identity formation, rather than behavioral factors. The intervention as well as the selected measures focused on interactions and behaviors versus cognitive changes. The concepts were more closely tied to maternal-fetal attachment theory (Cranley, 1981b). The MFAS reportedly measures concepts related to the woman's interaction with the fetus, and her differentiation of self from the fetus, (the focus of much of the intervention), but it also measures an aspect of "giving of self," of which no portion of the intervention focused. Grace (1989) found that the MFAS did not predict any aspects of postpartum maternal role attainment measured by the "What Being the Parent of a New Baby is Like" subscales (Pridham and Chang, 1985). The findings point to the need for appropriate conceptualization and operationalization of support.

It makes sense for an intervention study aimed at helping women achieve maternal role attainment to be based on the theoretical concepts inherent within the maternal role attainment literature. Paramount to the theory is the concept of maternal identity; that

mothering is learned over time by acquiring skills and refining ideas (Rubin, 1967a). Women who are nurtured and have positive role models have greater self-confidence and are able to build their maternal identity (Lederman, 1996). Clearly, intervention aimed at helping women achieve maternal role attainment would include role models. Results from a study by Lederman et al. (1981) indicate a need to provide care that is interpreted by the woman as supportive and to facilitate the development and use of “lay” support groups (Curry, 1981). Curry also stressed the need to evaluate each woman’s perception of her support systems. This approach not only requires a design that incorporates a means of obtaining the appropriate information, it also requires a different approach to analysis. Rather than analyzing the data in a conventional statistical model with positive or negative values added to a dependent variable for subjects in respective groups, plotting of the response on a particular dependent variable as a function of the treatment dose for each individual must be made (Lipsey, 1990).

The theory will also determine the appropriate timing for the support intervention. Early in the second trimester, the woman realizes that she cannot control the changes that are occurring (Colman & Colman, 1971) and she begins to formulate her parenting role and the expected interactions with her infant (Lederman, 1990). The intervention needs to begin when the woman begins to formulate her maternal role. The theory also describes maternal role attainment and identity formation as a longitudinal process occurring throughout pregnancy. The interactions between the participant and the interventionist would then need to occur throughout the course of pregnancy.

In another intervention project with adolescents, Fulton, Murphy, and Anderson (1991) sought to increase mothers’ knowledge about child growth and development, with the hopes



of decreasing inappropriate interactions with their children, and increasing the mothers' self-esteem. The majority of the participants were in their first or second trimesters of pregnancy when they entered the program. The intervention included interviews and needs assessments in addition to home visits. Informational resources were provided throughout pregnancy. The results indicated the mothers participating in the program had greater knowledge related to their children's growth and their parenting skills, which significantly correlated with a decrease in inappropriate interactions with their children. However, no measurable differences were found in self-esteem at the end of the program, yet the study found a strong negative correlation between self-esteem and the Child Abuse Potential Inventory.

Fulton, Murphy, and Anderson correctly conceptualized the timing of support for building self-esteem through ongoing identity formation, but the type of support provided would not necessarily increase one's self-esteem. It is plausible that if the information provided assisted the woman in her self-evaluation, then self-esteem might be promoted (Heaney & Israel, 2002). However, informational support and needs assessments to provide individually-tailored parent teaching programs increased the women's knowledge of parenting but seemed to do little for building self-esteem.

In an intervention project that included professional and peer support, Marcenko and Spence (1994) sought to decrease out-of-home placement of newborns by empowering families to help themselves and increase self-esteem through a home-visitation program offered by a peer home visitor, a social worker, and a nurse. The intervention was provided from the first prenatal visit through the child's first birthday. The role of the home visitor was to assist in identification of service needs and provide home-based education and parent training. Social workers assessed the psychosocial needs of the families and helped connect

the families with drug treatment programs or housing as needed. They also provided individual and family group counseling on parenting, child development, and relationships. The nurses were primarily responsible for addressing health care needs. There were no significant differences between the experimental and control groups for the HOME inventory despite the experimental group receiving a greater volume of services. The women in the experimental group reporting a significant increase in total support, there were no changes in the level of self-esteem for either group. The women in the experimental group did experience a significant decrease in their overall psychological distress between baseline and follow-up.

Again this intervention points to possible problems with the operationalization of support for the stated or anticipated outcome. The goal was to increase self-esteem. The primary types of support provided were instrumental and informational. There was an element of individual and family group counseling, but it is unclear if this support provided information useful for self-evaluation. Interactions with others do have enduring and cumulative effects on self-esteem (Swann & Brown, 1990), if the person feels cared for and valued (Procidano & Heller, 1983). Empathic understanding is relevant to instrumental and informational support (Heaney & Israel, 2002) but it may have not been provided at a strength necessary to effect change in self-esteem (Yeaton & Sechrest, 1981). In addition, peer support has been found to be unrelated to the level of distress in the maternal role. Crnic, Greenberg, Ragozin, Robinson, and Basham (1983) found perceived intimate and community support were significant predictors of maternal stress. However, friendship support was not a significant predictor. It may be that the participants were in “nonproviding” primary relationships

(Coyne & DeLongis, 1986). These type of relationships can be a source of stress rather than a buffer to stress (Coyne & DeLongis, 1986).

### *Theoretical Issues of Social Support*

The term social support is an umbrella term that covers a variety of diverse phenomena (Sarason, Pierce, & Sarason, 1990). However, an underlying assumption of all models and empirical investigations is that “supported people are physically and emotionally healthier than nonsupported people” (Shumaker & Brownell, 1984). Emotional support is believed to be most strongly and consistently associated with good health and well-being (Heaney & Israel, 2002). The effectiveness of the type of support may vary by the population and by the timing of the support. However, Collins, Dunkel-Schetter, Lobel, and Scrimshaw (1993) found that instrumental support predicted physical health outcomes (higher infant birth weight and less postpartum depression) more consistently than did emotional support for a group of low-income Latino women. The measure was made late in pregnancy during the third trimester. It may be that women, who described greater instrumental support in the third trimester of pregnancy, also had greater emotional support during the first and second trimester of pregnancy. Emotional support has been found to reduce distress but not directly aide efforts to cope (Pierce, Sarason, Sarason, Joseph, & Henderson, 1996).

Individuals who are able to seek out and elicit support are believed to fare better than those who are unable to obtain support (Pierce et al., 1996). The manner in which a person seeks support may be impacted by the ability to trust or the level of anxiety experienced when seeking support (Hobfoll & Lerman, 1988). Discomfort in seeking support is especially problematic because the mere act of contemplating seeking support may cause additional

distress, making it less likely for the person to seek support, thereby reducing the efforts to cope with a stressful event (Hobfoll & Lerman, 1988).

Much of social support research is framed theoretically and empirically within a stress and coping paradigm (Cassel, 1976; Cobb, 1979; Hamburg, Coelho, & Adams, 1974; Shumaker & Brownell, 1984). This implies that support is only relevant to mental and physical health when individuals are stressed (Shumaker & Brownell, 1984). Another alternate model conceptualizes support as enhancing esteem and identity formation (Heller et al., 1986). Shumaker and Brownell (1984) refer to this type of support as health-sustaining rather than health compensating (associated with stress-buffering).

Complicating the two proposed approaches of conceptualizing support is the overlap that occurs when a “needs” model of stress is applied that postulates that individuals have needs that are met through interaction with other persons and unmet needs are experienced as distress (Jacobson, 1986). Clearly, individuals having difficulty with self-esteem and identity formation are likely to experience some distress. But social support can exist independently of coping (Shumaker & Brownell, 1984). If the process of identity formation is considered developmentally, then role modeling (an aspect of social support, possibly occurring through unrecognized interactions) is occurring simultaneously with identity formation and any potential distress or conflict is hopefully eliminated. Conceptualizing social support in this manner would explain why numerous investigations show a main effect for support but no stress-buffering effect. When social support represents a basic social need, then the test should be for a main effect versus an interaction effect (Rook & Dooley, 1985).

The timing of the support must be considered. The supportive exchanges or the perception of available support can produce consistent short- and long-term effects or effects that may

dissipate over time (Brownell & Shumaker, 1984; Shumaker & Brownell, 1984). People absorb information when it fits with their existing views or needs (Jacobson, 1986). During the third trimester of pregnancy, parents are concerned with the imminent birth; they are less likely to be concerned about postpartum tasks (Jacobson, 1986). For supportive interventions to be effective, these differences across time must be recognized and understood.

### *Summary*

Incongruent conceptual and operational definitions for social support impact interpretation and the generalizability of the findings (Depner, Wethington, & Ingersoll-Dayton, 1984). There is only a dim understanding of the varied meanings and expressions of support in social networks that vary along ethnic, racial and cultural lines (Gottlieb, 1996). This information is necessary to plan effective interventions that show “ecological fidelity” (Gottlieb, 1996, p. 53). The distinction between the type of support, whether it is moderating (buffering) a deleterious impact of stressful life circumstances, or affecting the functioning of individuals in an overall sense (main effect), must be made (Finney, Mitchell, Cronkite, & Moos, 1984). The literature on longitudinal effects of social support on maternal identity formation and role attainment are limited.

Clearly, there is a need to conceptualize the type of support being offered as well as the timing of the support. The timing of the support, in terms of the trimesters of pregnancy and after childbirth provides an additional complexity. There is a tendency for researchers studying support and parenting to focus on the last trimester of pregnancy and the 3 months following delivery (Jacobson, 1986). Understandably, the period just before delivery and immediately following delivery is characterized by fatigue and exhaustion. During this period, emotional and tangible support would be expected to be more helpful than

informational support (Jacobson, 1986). Analyzing the timing of support may resolve some of the ambiguity and disagreements found in different studies (Jacobson, 1986).

### Military Significance

Maternal identity formation and role attainment or “binding-in to the child,” occur during the three trimesters of pregnancy and the two trimesters following delivery (Rubin, 1977, p. 67). The process can either be promoted or protracted by society, but is particularly impacted by closely- related family members (Rubin, 1977). An important aspect of maternal binding-in, whether prenatally or postpartum is an acceptance of the mother by significant others within her social environment (Rubin, 1977, 1984).

### *Military Environment*

Military families share the same life course issues faced by all members of our society. However, certain challenges faced by families within the military set them apart (Martin, Rosen, & Sparacino, 2000). There are frequent family separations because of deployments for training or military operations (Martin et al., 2000). The frequency of the separations has increased and becoming a dominant aspect of military service and military family life (Martin et al., 2004). Compounding the challenge of frequent separations is the added recognition by all members of the family that their needs and demands are secondary to those of the organization (Bowen, 2000). Clearly, the families are in need of an environment with strong social support networks. However, the development of strong social support networks is complicated by geographical separations from family and trusted friends (Bowen & Martin, 1998). The level of deployments and military operations have also been found to impact the military families ability to feel settled and meet neighbors whether they are within an on-base or off-base, civilian community (Bowen et al., 1999).

### *Marriage and Family Life in the Military*

Although the military family has existed throughout time and dealt with continual military deployments and operations, today, relatively few Americans experience military duty or military family life (Martin et al., 2000). Little is known about the military family and even less about the pregnant military wife, despite a greater growth in military families than any time since the All-Volunteer Force was initiated (Martin et al., 2000). In 1973, 51 percent of the active military force was married; by 1997, 58 percent was married Martin (Martin & McClure, 2000). Many recruits, although single when entering the military, will marry before the end of their initial enlistment. These young enlistees also tend to have children early in their marriages. Sadly, it is the young enlisted couples that experience the most stress in dealing with marriage, parenthood, and military life (Martin & McClure, 2000). The junior enlisted members often perceive the “sense of community” whether on-base or off-base as weak. Bowen, Martin, and Mancini (1999) found that fewer than two in five junior enlisted members gave the sense of community at their base a *very strong* or *strong* rating. One quarter of the junior enlisted members polled felt that making connections was difficult. Notably, junior officers had similar complaints. All respondents, whether single or married, junior or senior in rank, felt that living on base was an advantage for meeting people and making connections. However, fewer housing resources and human services are available on base (Martin et al., 2000). Now approximately 73% of military couples/families live off base in the civilian community (Martin et al., 2004). With substantial military reorganization and downsizing, many human services are now offered by civilian organizations, located off base (Martin et al., 2000). Weis, Lederman, and Lilly (2004) found that women discerning their

support network as on-base versus off-base, perceived higher levels of support and greater Acceptance of Pregnancy than women without on-base support networks.

### *Pregnancy within the Military Environment*

For pregnant military wives attempting to accommodate feelings connected to maternal identity formation, the isolating factors associated with military life may add to the inherent conflict. New mothering behaviors are constructed from information obtained from family and friends as well as observations that are made of mothers interacting with infants or children (Rubin, 1967a). Regardless of the type, roles are discovered, created, modified and defined through interaction (Meleis, 1975). Importantly, for primiparas as well as multipara, the significant role models are generally women (Lederman, 1996; Mead & Morris, 1934; Rubin, 1967a). Social support has been shown to have a positive effect on the woman's self-esteem and improve birth outcomes (Norbeck et al., 1996; A. Oakley et al., 1990; Olds, Henderson, Tatelbaum, & Chamberlin, 1986). The support in these studies was provided by immediate family or medical professionals in nonmilitary samples.

Engebretsen (1996) investigated the relationship between psychosocial profiles of military mothers and infant birth weight. Stress, self-esteem, and social support were the specific constructs measured. Although the role of the partner was delineated, the scales did not delineate the support offered from the family versus that from the community. The importance of the family versus other social networks should be elucidated. The study also focused only on pregnant active-duty women. The conflict associated with lack of support is likely to be somewhat different for active-duty women versus wives of service men. Pregnant active-duty women are placed on medical profiles that eliminate them from military deployment. Although they will undoubtedly experience conflict related to maternal identity



formation, it will most likely not be due to separation from one's spouse, unless the spouse is also active duty and is deployed. The respondents completed the instruments only once during pregnancy between 20-30 weeks gestation.

Evans and Rosen (1996) collected data from 345 pregnant active-duty military women recruited from three different military medical centers. The women were asked about pregnancy planning and timing, work experiences and climate, coworker support, harassment-discrimination, performance, turnover, transition difficulty and psychological well-being through two questionnaires provided at two separate times: one during pregnancy, (timing varied widely between respondents) and once after delivery. The study provided a large amount of data regarding overall demographics. The psychological well-being measure used was the Brief Symptom Inventory (Derogatis & Melisaratos, 1983). This instrument has nine subscales that measure somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychotic tendencies. Although the scale provides a measure of the woman's anxiety and depression, it is not necessarily related to her pregnancy. The participants were, however, given a measure of pregnancy attitudes, the Pregnancy Questionnaire (Rich, 1993), which includes attitudes and ambivalence scales. Married participants reported more pregnancy profile support (questions on whether medical conditions that restrict work were honored without question or harassment) than separated/divorced participants. Yet single participants reported less role transition stress (measured with the Pregnancy Questionnaire) than both married and separated/divorced participants (Evans & Rosen, 2000). Perceived family support was not measured.

The majority of studies related to pregnancy in a military population focus on birth outcomes with active-duty women (Adams, Harlass, Sarno, Read, & Rawlings, 1994; Fox, Harris, & Brekken, 1977; Magann & Nolan, 1991; Magann, Winchester, Carter et al., 1995; Magann, Winchester, Chauhan et al., 1995; McNeary & Lomenick, 2000; Messersmith-Heroman, Heroman, & Moore, 1994; Ramirez, Grimes, Annegers, Davis, & Slater, 1990; Stinson & Lee, 2003). A few studies have assessed issues related to pregnancy for wives of military members (G. R. Alexander, Baruffi, Mor, Kieffer, & Hulsey, 1993; Greenberg, Yoder, Clark, Butzin, & Null, 1993; Novicoff et al., 2000; Sylvia et al., 2000). None of these studies addressed issues related to family separations and support. Schachman et al. (2004) is one of the few studies that addresses maternal role attainment and support. Brown (1986) and Nuckolls, Cassel, and Kaplan (1972) used military samples, but their research questions were not military focused. Brown assessed health status related to support behaviors and stress for expectant mothers and fathers in the second half of pregnancy. Satisfaction with partner support, stress, and history of chronic illness contributed significantly to health status. Satisfaction with others' support approached but did not reach significance in explaining one's overall health status. Importantly, partner support had a greater effect on the men's overall health status than the women's. Support for mothers included a larger domain and social network beyond that of the partner support for greater health status.

In a sample of 170 white primigravidas, married to enlisted men, Nuckolls et al. (1972) found that in the presence of mounting life change (before and during pregnancy), women with high psychosocial asset had only one-third the complication rate of women whose psychosocial assets were low. When life changes were absent (particularly before

pregnancy), the level of psychosocial assets was irrelevant to any difference in complication rates between those having high or low assets.

Kugler, Yeash, and Rumbaugh (1993) assessed the impact of family functioning on prenatal care utilization within the military, and found that lower scores for family cohesion and the combined family function scores (including adaptability) were statistically associated with lower levels of prenatal care utilization. Black race, marital status, age, appointment access, and telephone access, were all reasons found to be significant factors for healthcare utilization in other studies (G. R. Alexander, Kogan, & Nabukera, 2002; Augustyn & Maiman, 1994; Fiscella, 1995; Joyce, Diffenbacher, Greene, & Sorokin, 1983; Vintzileos, Ananth, Smulian, Scorza, & Knuppel, 2002).

In a study that compared transition to parenthood difficulties for civilian and military mothers no statistically significant differences were identified for transition difficulty scores between the two groups (Splonskowski & Twiss, 1995). However, military mothers were found to utilize more internal family resources than civilian mothers, and civilian mothers tended to use more external coping resources. Military mothers also perceived significantly lower social support from the community network than the civilian mothers. All measures were obtained once at three months postpartum.

### *Summary*

Research on maternal identity formation within a military population is limited. Yet studies point to differences between military and civilian populations (Barfield et al., 1996; Kugler et al., 1993; Splonskowski & Twiss, 1995). Given the importance of environmental factors to maternal identity formation and attainment, a deeper understanding of military factors impacting this process would seem essential to designing effective interventions for

this population. Descriptive research provides the foundation for intervention development (Conn et al., 2001). Poorly designed interventions based on general notions lead to weak results (A. G. Scott & Sechrest, 1989). Similarly, basing an intervention on a theory for which it has never been studied in the proposed population, may result in findings that cannot be interpreted (Conn et al., 2001).

The evidence is fairly convincing that the presence of a supportive husband or partner is essential to the developmental task of maternal identity and confidence and satisfaction in the motherhood role (Lederman, 1996; Reece, 1993; Zachariah, 1994). Weis, Lederman, and Lilly (2004) found that military wives and active-duty women with deployed husbands experienced greater conflict with Acceptance of Pregnancy in the first trimester than the group of women without deployed husbands. The conflict remained long after the men returned home. The high correlation found between Acceptance of Pregnancy and Identification of the Motherhood Role throughout pregnancy ( $r = .61-.63$ ) indicates that constructing one's maternal identity is conditional on accepting the pregnancy and the father needs to be present in order to make this adjustment. Given the likelihood of military women seeking support from internal family resources rather than external resources (Splonskowski & Twiss, 1995), it is important to understand this relationship. Marriage is frequently used as a proxy variable for social support (Coyne & DeLongis, 1986). Yet adaptability within a relationship, which is important for role development (LaRossa & LaRossa, 1981; Lederman, 1990) may be especially important for a military family. In addition, the value of the perceived support available from the community network to maternal identity attainment has not been investigated within the military.

Clearly, pregnant military wives, isolated from family and friends, are a potentially high-risk population for poor maternal identity formation and attainment. They may lack a support network able to provide necessary esteem-building support. A better understanding of this unique population is necessary if intervention theories that describe the problem elucidate the changes anticipated with delivery of the intervention that are expected (Sidani & Braden, 1998).

### Maternal Identity Formation versus Maternal Attachment

#### *Maternal Identity Formation*

Rubin (1977) hypothesized that the recognition of one's maternal role and the attachment to the fetus and infant is an active, intermittent, and cumulative process. At the onset of pregnancy, there is no object of attachment, but just an idea of a child, as an abstraction (Rubin, 1984). The other half of the equation is the subjective experience of the woman of becoming and being a mother. Rubin describes a constant reformulation of the "I" in relation to the concept of "you." During pregnancy, the fetal movement, the visible prominence, and the impact of the fetus on the women's bodily appearance create a feeling of unity in wholeness and in oneness (Rubin, 1984).

#### *Taking-in of maternal identity.*

Maternal behaviors in relationship to or in behalf of the child occur as early as the fourth month of pregnancy (Rubin, 1984). Maternal behaviors are goal-oriented maternal tasks towards taking-in the maternal role (Rubin, 1967b). Dressing-the-role is one such behavior. "Dress" is a symbol of the status the woman wants to obtain. Rubin (1967b) describes the symbolic manifestations of status or the desired role as *mimicry*. The women will also *role play*. A pregnant woman may search for a young mother in her neighborhood, or offer to help

baby-sit (Rubin, 1967b). There is a certain amount of *fantasy* involved in the role playing. However, Rubin stresses that with fantasy there is no role playing. The woman wishes, fears, daydreams, and dreams with an increasing emphasis on taking-in from taking-on. When a woman begins to take-in events or information there is *introjection-projection-introjection* to bind-in role traits (Rubin, 1967b). The end-point of these maternal behaviors is identity to the maternal role. Rubin (1967b, p. 240) describes these steps as “operations” towards maternal role attainment. Rather than just behaviors, these “operations” are silent cognitive identification with others that aide role acquisition (Sarbin, 1954).

#### *Maternal Identity Attainment (Role Attainment)*

*Behavioral process, cognitive processes or both.*

Building on the work of Rubin, Mercer (1985a) defined maternal role attainment as “a process in which the mother achieves competence in the role and integrates the mothering behaviors into her established role set, so that she is comfortable with her identity as a mother” (p. 198). Mercer hypothesized that competency in the maternal role would increase as longevity in lived experiences and self-complexity increased. This hypothesis follows Rubin’s developmental maternal identity and role attainment theory. Later, Mercer (1986a) identified: “Major components of the mothering role include attachment to the infant through identifying, claiming, and interacting with the infant, gaining competence in mothering behaviors, and expressing gratification in the mother-infant interactions” (p. 6). This definition of maternal role or identity speaks little of cognitive processes but focuses on interactive behaviors and mother-infant attachment. Koniak-Griffin (1993) found that most studies conducted to identify and describe variables affecting maternal role attainment focused on developmental confidence and the acquisition of caretaking skills of the mother

or the formation of the mother-infant attachment, rather than any affective components.

Observed maternal behavior may be inconsistent with a woman's perception of her maternal identity (Mercer, 2004).

### *Maternal Attachment*

In the literature, maternal attachment research includes the concepts of prenatal attachment, antenatal attachment, fetal attachment, maternal-infant attachment, and maternal attachment security and insecurity in the literature (Atkinson et al., 2005; Atkinson et al., 2000; Bloom, 1998; Britton, Gronwaldt, & Britton, 2001; Condon & Corkindale, 1997; Fonagy, Steele, & Steele, 1991; Laxton-Kane & Slade, 2002; Smith & Pederson, 1988). The concepts have evolved from attachment theory (Bowlby, 1969), bonding theory (Klaus & Kennell, 1976), maternal-infant adjustment theory (Brazelton, 1963; Tronick, Als, & Brazelton, 1977), and instrument development by Cranley (1981a), Condon (1993), and Muller (1993). In nursing research, the term prenatal attachment replaced Rubin's (1977) term of binding-in (Muller, 1990).

Interestingly, Rubin recognized that the term "binding-in" might be clumsier than the use of attachment or bonding, but felt it was more descriptive of a process rather than a state (Rubin, 1977).

### *Development of attachment.*

Rubin emphasized that the initial stimulus of maternal binding-in comes with the awareness of fetal movement and augments the woman's maternal identity formation. Bloom (1995) and Zeanah, Carr, and Wolk (1990) found that the more often the mother perceived infant movement, the greater her prenatal attachment. Earlier recognition of the fetus by the mother through ultrasound technology may alter maternal-fetal attachment (Muller, 1990).

Caccia, Johnson, Robinson, and Barna (1991) found that women receiving first trimester ultrasounds during chorionic villus sampling (CVS) procedures reported significantly higher post-procedure maternal-fetal attachment (measured with Cranley's Maternal-Fetal Attachment Scale (MFAS)) than the pre-ultrasound measures of maternal-fetal attachment for women at 16.5 to 21 weeks gestation obtaining amniocentesis procedures. Importantly, there was no significant pre-result differences for either group despite the difference in gestational age. Importantly, the maternal-fetal attachment measures were obtained prior to the women receiving any report of results for either the CVS or amniocentesis. The results did increase significantly however once the women received normal test results. Regardless, the first sonogram tended to have the greatest effect on the woman's feelings toward the pregnancy. Clearly, technology is fundamentally related to personal knowledge (Phenix, 1964), and the binding-in process becomes an observable event, rather than a singularly emotional, internal event experienced by the mother.

*Support and attachment.*

There is conflicting evidence to support the hypothesis that increased levels of social support are associated with higher levels of prenatal attachment. For a group of pregnant adolescents, Bloom (1998) found a significant relationship between a perceived close relationship with the father of the baby and higher scores on the MFAS in the first trimester. The significant effect disappeared by the third trimester. Koniak-Griffin, Lominska, and Brecht (1993) found no significant correlations between total MFAS scores and social support for a group of 14 to 19 year old pregnant adolescents in the third trimester of pregnancy. Condon and Corkindale (1997) did find a statistically significant relationship between the quality of antenatal attachment and the number of people within the support



network, satisfaction with the support, and support from the family in the third trimester. The intensity of antenatal attachment, defined “as the extent to which the fetus occupies a central place in the woman’s emotional life,” was only significantly correlated to satisfaction with the social support. The quality of antenatal attachment was defined as “experiences of closeness, tenderness, pleasure in interaction, distress at fantasized loss and the conceptualization of the fetus as a little person” (p. 359).

### *Summary*

Neither parity nor age have been shown to effect prenatal attachment (Berryman & Windridge, 1994; Bloom, 1995; Koniak-Griffin et al., 1993). Although Mercer, Ferketich, May, DeJoseph, and Sollid (1988) found that scores for the MFAS decreased with increasing parity in low-risk pregnancies. Laxton-Kane and Slade (2002) suggest that maternal prenatal attachment increases over the course of pregnancy. The results from Condon and Corkindale suggest that the form of attachment may also change over the course of pregnancy.

The concept of prenatal attachment describes the unique relationship that occurs between a mother and her unborn baby represented by the way in which the mother conceptualizes the unborn baby (Laxton-Kane & Slade, 2002). Condon (1993) postulates that the core experience of attachment is love. The love for the unborn infant creates a desire for knowledge about the fetus, pleasure in interaction with the fetus (both in reality and fantasy) and a desire to protect the unborn baby and meet his or her needs even at the expense of the mother’s own (Condon & Corkindale, 1997). These are all concepts Rubin (1984) described as important to the formation of maternal identity. Rubin contended that it is the elusiveness of these characteristics that cause them to be explained away as instinct. Their maternal emotions may not be expressed as behaviors. Unlike maternal-infant interactions,

observations of maternal–fetal behaviors have limited potential (Condon & Corkindale, 1997). However, the goals the woman formulates as a result of her attachment do manifest as observable behaviors (Rubin, 1984).

### Summary

During the course of pregnancy and the early postpartum period, a woman must balance the idea of a child with the subjective experience of becoming and being a mother (Rubin, 1984). There are concerns are family disruptions and acceptance of the pregnancy by the family (Lederman, 1996; Peacock et al., 2001), financial security (Lederman, 1996), career conflicts (Lederman, 1996), and body-image and discomforts (Lederman, 1996; Sammons, 1990; Schmied & Lupton, 2001). Generally, the woman has certain expectations of pregnancy. When there is an absence of certain expectations such as morning sickness, abdominal growth, excitement over the pregnancy or the infant postpartum, there is frequently self-doubt which brings a “destabilizing dissonance” (Rubin, 1984). Support from a role model as well as support from family and friends provides information and validation for the changes the gravida experiences prenatally and postpartally (Muller, 1990; Rubin, 1984). The gradual, yet continual process of a woman’s maternal identity formation and attainment requires an acceptance of pregnancy, assurance of the family’s acceptance of the unborn child, and understanding and support from one’s spouse or partner (Lederman, 1996). The self-identity changes occurring during pregnancy, and the ability to visualize oneself as a mother prenatally, correlate with maternal adaptation (Deutsch et al., 1988; Shereshefsky & Yarrow, 1973). There are differing views regarding the timing of identity formation and prenatal attachment. Rubin (1984) indicates that the taking-in of one’s maternal identity

occurs around the fourth month of pregnancy when the mother feels fetal movement.

However, Caccia et al. (1991) findings indicate much earlier maternal-fetal attachment.

It is theorized that the degree of anxiety experienced by the expectant mother during the prenatal adaptive process affects the level of conflict she may feel during subsequent periods of maternal identity formation and adaptation to becoming and integrating motherhood roles and tasks postpartally.

For wives of military service members, the anxiety and vulnerability surrounding pregnancy and maternal identity formation (Lederman, 1996) may be compounded by the increased responsibilities and stress associated with military-imposed separations. In the event of military separations, a military wife is left to ensure the stability of the home during her husband's absence (Horrell, 2003). A pregnant military wife is faced not only with maintaining the home but also constructing her maternal identity. The impact of the isolation associated with deployment and geographical separation from family and friends and the affect on maternal identity formation has not been studied.

It is likely that simultaneous interaction with the family or community networks may eliminate any conflict the gravida may experience. In addition, a supportive network seems to improve the quality of antenatal attachment (Condon & Corkindale, 1997). Emotionally supportive, esteem-enhancing appraisals are believed to be a major component of perceived support and develop from ordinary socializing and companionship (Procidano & Heller, 1983). This type of support implies a health-sustaining model of support (Shumaker & Brownell, 1984).

## Theoretical Framework

Pregnancy is an interrelated physical, psychological, and social experience (Flagler & Nicoll, 1990) that is conceptually separate from the childbearing experience (Rubin, 1984). The experience is a developmental process of redefining oneself as a mother (Rubin, 1984), that occurs whether the woman is pregnant for the first time or is already a mother (Flagler & Nicoll, 1990). The importance of society, especially close family and friends in promoting or hindering the developmental process is emphasized (Rubin, 1984). Every expectant mother assesses herself and significant others in her life and prepares for the infant and the changes it will bring to the family (Lederman, 1990). The continual incorporation of the idea of a child and the idea of oneself as a mother is a progressive process building on each stage of pregnancy. Rubin refers to the psychological and biological changes of pregnancy as changes to the “self-system” (p. 39). The self-system includes the ideal-self, and body-image that the mother has during pregnancy. Incorporation of the fetus into the self-system is referred to as “binding-in” (p. 62). The psychological incorporation of oneself as a mother parallels the biological development of the fetus and the pregnancy (Rubin, 1984).

### *Maternal Identity Formation and Attainment*

Lederman (1996) incorporates the concepts of adaptation and maladaptation into the developmental process of maternal identity formation. Pregnancy is conceptualized as a complex developmental process that may include some conflict and ambivalence, but not as a crisis characterized by transient changes. Lederman’s conceptualization of the woman’s adaptation to pregnancy is similar to Rubin’s. Acceptance of Pregnancy and Identification of the Motherhood Role described by Lederman are the processes occurring in Rubin’s self-system and “binding-in.” Acceptance of Pregnancy refers to the adaptive processes inherent

in prenatal growth and development experienced by the gravida (Lederman, 1996).

Lederman conceptualizes accepting one's pregnancy as encompassing feelings related to planning and wanting the pregnancy, feelings of well-being and happiness regarding the pregnancy versus depression and discomforts experienced during pregnancy and feelings related to body changes. Differing aspects of all of these constructs are measured with the Acceptance of Pregnancy scale; one of seven scales within Lederman's Prenatal Self-Evaluation Questionnaire.

A separate concept, yet developmentally connected to accepting one's pregnancy and attaining maternal identity, is prenatal identification of the maternal role. Lederman conceptualized this domain as inconclusive of the gravida's motivation for motherhood; the ability to envision oneself as a mother, thoughts regarding the desirable characteristics of a mother, and the anticipation of life changes associated with being a mother. These constructs are measured with the Identification of a Motherhood Role scale, another scale within Lederman's Prenatal Self-Evaluation Questionnaire. Together, the Acceptance of Pregnancy and Identification of a Motherhood Role scales provide an understanding of the gravida's level of conflict she experiences in forming a prenatal maternal identity.

After delivery, the identification of the child and development of maternal behavior continues from pregnancy. Reconstruction of the self-system begins in order to incorporate the mother-child system (Rubin, 1984). Maternal identity is achieved and stabilized before the woman's full identity of self in the world is consistent with her self concept. This is believed to occur at about eight or nine months after childbirth (Rubin, 1984). Mercer (2004) has suggested that the term "maternal role attainment" be replaced with the term of "becoming a mother," to allow for a more developmental versus static approach. Rubin's

(1984) theory of maternal role attainment emphasizes a developmental approach. Maternal role attainment is viewed as role identity. The unique enduring quality of the maternal role, seen only with human relationships is emphasized (Rubin, 1984). The mother-child relationship coexists with two or more ongoing maternal-child relationships. The term identity attainment versus role attainment was selected for the conceptual framework of this study because it is believed to be more reflective of the maternal identity formation continuum.

The cognitive and behavioral aspects of maternal identity attainment are differentiated in this study because of the differing support requirements for each. In addition, a mother may have confidence in providing infant care but not be satisfied with her maternal identity (Lederman et al., 1981). Importantly, the study is measuring the level of conflict associated with acquiring a maternal identity and the effect of differing support on this continuum.

#### *Family Adaptability*

Both Rubin (1984) and Lederman (1996) identify the importance of the family in providing intimate care, protection, and supportive nurturance. A woman, becoming a mother, recruits supportive bonds with a partner, mother, family and friends. The formulation of a maternal identity requires role models that may guide expectations (Rubin, 1984). There is a direct relationship between the strength of the supportive bonds and the quality of a woman's binding-in to her child (Rubin, 1984). The woman's own mother is the strongest model (Rubin, 1967a; Lederman, 1996). Rubin however did not differentiate the importance of the husband from other family members to the expectant mother's identity formation. The importance of a husband's flexibility in role adaptation within the family was also not considered. Lederman (1996) does delineate the importance of the husband's support to

maternal adaptation. Adaptation to maternal identity formation requires identifying and adapting to changes in intimate relationships (Lederman, 1995). But it also requires mutuality (Lederman, 1996). Marriage has been found to have a weaker effect on psychological distress than marital-role quality (R. C. Barnett, 2004). The family system's boundaries, roles, and duties must be reorganized in preparation for the new family member (Duvall, 1977; Ingoldsby, Smith, & Miller, 2004; Whitchurch & Constantine, 1993). The baby's arrival signals additional realignment and delineation of routines and boundaries (Mercer, 2004).

### *Community Support*

Communication and social interaction are essential for role learning and role clarification (Meleis, 1975). Close relationship processes are recognized as playing an important role in the psychological well-being of pregnant women (Dunkel-Schetter, Gurung, Lobel, & Wadhwa, 2001). Social relationships provide a sense of identity, a source of positive and negative evaluation, and a sense of self-efficacy (Kaplan & Toshima, 1990). It is reciprocal relationships with others that provide enduring, normative role identities (Thoits, 1991). Thoits emphasizes the importance of ongoing relationships opposed to transitory interactions, whereas the symbolic interactionist believes that esteem-enhancing appraisals may not be anchored in any specific relationship (Heller et al., 1986). It is recognized however that individuals may shape networks and elicit feedback from others in affirming their self-identities (Heller et al., 1986; Swann & Brown, 1990) and the mere perception of available support bears some relationship to reports of actual behavioral support (Cutrona, 1986).

Information-seeking for constructing maternal self-definitions changes over the course of pregnancy and the postpartum period (Deutsch et al., 1988). Although not clear in the

pregnancy literature (Dunkel-Schetter et al., 2001), social support literature indicates esteem-building network support has direct effects (Rook & Dooley, 1985; Shumaker & Brownell, 1984).

The conceptual model for the proposed study indicates anticipated direct effects for family adaptability and community support on prenatal identity formation as well as postpartum identity attainment. The stress-buffering effects of family adaptability and community support on prenatal maternal identity formation will be tested.



## CHAPTER III

### METHODS

#### Study Design

The longitudinal study of “Military Families: Psychosocial Adaptation to Pregnancy” (Weis, 2005b), provided the data for this investigation of individual growth models of prenatal maternal identity formation. The specific research questions were:

1. Is there evidence for systematic change over time and individual variability in prenatal maternal identity formation?
2. Does the gravida’s perception of her family’s adaptability have an effect on the change over time of prenatal maternal identity formation?
3. Does the gravida’s perception of her community’s support have an effect on the change over time of prenatal maternal identity formation?
4. Does a history of military deployment (by the husband), prenatally, effect patterns of change in the gravida’s prenatal maternal identity attainment?
5. Are patterns of change over time in prenatal maternal identity formation predictive of postpartum maternal identity attainment?
6. Does maternal prenatal perception of family adaptability or community support nested within maternal identity formation predict postpartum identity attainment?
7. Does a history of deployment (by the husband), prenatally, effect postpartum maternal identity attainment?

### *Study Variables and Measurement*

Table 3.1. Conceptual and Operational Definitions

<b>Construct</b>	<b>Conceptual Definition</b>	<b>Instruments</b>
<b>Prenatal identity Formation</b>	A progressive self assessment and developmental step of being a women without a child to a woman with a child; recognizing the separateness and individuality of the coming child	PSEQ (7 scales) Using “Acceptance of Pregnancy” and “Identification of the Motherhood Role” scales. Measures obtained in each trimester of pregnancy (Appendix I).
<b>Family adaptability</b>	The ability to change power structure, roles, and rules in the relationship; the premise being that the most healthy families are the most adaptable (Olson, 2000).	FACES II: (2 scales) Using the Adaptation scale only. Measure obtained in each trimester of pregnancy (Appendix II and III).
<b>Community support</b>	The degree to which the person perceives the family is integrated into the community, views the community as a source of support, in providing emotional, esteem, and network support.	Social Support Index (17 items, one scale) Measure obtained in each trimester of pregnancy (Appendix IV).
<b>Deployment status</b>	The departure, travel, and arrival to some destination where temporary living quarters and work environments are established for the purpose of supporting a defined military mission for a specified time and duration.	One question: Has your spouse/father of the baby been deployed anytime during this pregnancy (asked with first trimester booklet, third trimester booklet)
<b>Postpartum maternal identity attainment</b>	The woman’s feelings regarding her ability to parent, to interpret her infant’s behavior, meet his/her needs and her level of pleasure with nurturant activities, relative preference for a motherhood role versus other roles.	PPSEQ (8 scales) Using “Confidence in Motherhood Role” and Satisfaction with Infant and Infant Care” scales for analyses (Appendix V). Measures obtained at 6-month postpartum pediatric appointment.
<b>Demographic variables</b>	Socioeconomic variables (rank of husband and participant if applicable; branch of service), educational level, parity, employment status	Questions related to education, parity, employment, military service branch and rank of service. Questions on first trimester booklet and at the 6-month pediatric appointment visit.

#### *Measures of prenatal maternal identity formation.*

The *Prenatal Self-Evaluation Questionnaire* (PSEQ) (Lederman, 1996) was developed to measure a woman’s adaptation to pregnancy over the course of the three trimesters of pregnancy. The instrument contains 79 statements, which comprise 7 scales measuring differing aspects of a woman’s prenatal maternal adaptation. All items have four Likert

response categories. The respondent is able to reflect on how she feels regarding the statement by circling, “*Very Much So*,” “*Moderately So*,” “*Somewhat So*,” or “*Not At All*.” Two scales, Acceptance of Pregnancy and Identification of the Motherhood Role scale focus on formative maternal identity concepts that occur early in pregnancy but continue throughout pregnancy. Acceptance of Pregnancy emphasizes the initial feelings the gravida has regarding her pregnancy, the extent to which she looks forward to assuming the motherhood role and anticipates gratification from caring for her baby. Sample items for the Acceptance of Pregnancy scale are: “This is a good time for me to be pregnant,” and “I am happy about this pregnancy.” The Identification of the Motherhood Role scale is the woman’s philosophy of motherhood; including her hopes, values, dreams, fears, fantasies concerning childbirth, motherhood and child rearing (Lederman, 1996). Examples of items from the Identification of Motherhood scale include, “It will be difficult for me to give attention to the baby,” and “I believe I can be a good mother.” Higher scores on a scale indicates greater anxiety related to the formulation of the motherhood role. The scores do not necessarily indicate a positive or negative adaptation to pregnancy, but rather the level of anxiety the woman is experiencing relative to the particular dimension of motherhood. Each scale contains both negatively and positively worded items. The instrument was developed from interviews and diaries of 32 primigravid women ranging in age from 20 to 32 years (Lederman, 1996). During instrument development, content validity was assessed by a panel of experts in maternal-child research. The interrater agreement for each of the subscales ranged from 0.9 to 1.0. Lederman, Lederman, Work, and McCann (1985) utilized a multitrait-multimethod approach (Campbell & Fiske, 1959; Ferketich, Figueredo, &

Knapp, 1991) to ascertain convergent and divergent construct validity for the theoretical model of anxiety and the questions within the PSEQ. Significant interrelationships were found for biochemical markers of stress and anxiety during labor with the three subscales dealing specifically with fears related to the birthing experience. Cronbach's alpha coefficients for the scales range from  $\alpha = .75$  to  $.92$  (Lederman, 1996). The instrument also has shown good reliability ( $\alpha = .83$  to  $.94$ ) in an intervention study with military wives (Schachman et al., 2004). The instrument has been translated into many different languages and used internationally with diverse ethnic groups showing good results (R. P. Lederman, personal communication, March 14, 2005). The two scales selected for use in this analysis were selected because of their conceptual link to prenatal maternal identity formation (Rubin, 1984) and the conflict associated with the gravida's real and imagined ideal maternal identity. Both scales have been shown to have high correlation with the postpartum maternal identity attainment variables (Lederman, 1996).

*Measure of family adaptability.*

The *Family Adaptability and Cohesion Evaluation Scales* (FACES II version) is a 30-item self-report instrument designed to measure adaptability and cohesion within the family system (Olson, 2000; Olson, Sprenkle, & Russell, 1979). The items are answered on a Likert-type scale with (1) indicating “*Almost Never*” to (5) indicating “*Almost Always*.” It is important to note however, that choices (2) and (3) are similar terms with (2) being “once in awhile”, and (3) being “sometimes.” The family adaptability scale contains 14 items which measure the theoretical concepts of assertiveness, leadership, or control, negotiation, roles, and rules within the family. The normative sample for the instrument was 2,543 adults across the life cycle. The reliability for the adaptability scale

for this sample was  $\alpha = .80$ . Test-retest at four weeks was .80. Considerable controversy exists regarding the nature of the scale measuring the curvilinear concept of balance or that of a linear relationship along a continuum (Anderson & Gavazzi, 1990; Cluff, Hicks, & Madsen, 1994; Lee, 1988a; Olson, Russell, & Sprenkle, 1983). Numerous studies identified a linear relationship with respect to family health and the variables of Cohesion and Adaptability (P. C. Alexander & Lupfer, 1987; Curtiss, Klemz, & Vanderploeg, 2000; Finello, Litton, deLemos, & Chan, 1998). A linear scoring approach is recommended (Olson, Bell, & Portner, 1992) and will be used for the study analyses. Conceptually and empirically, mean scores represent the couple or family as a unit. In terms of the adaptability scale, means scores from 55-70 indicate the perception of a “very flexible” family, means scores from 46-54 indicate a “flexible” family, mean scores from 40-45 indicate a “structured” family, and scores from 15-39 indicate a rigid family structure. Theoretically, the family is considered to have stable roles and a democratic style of leadership and negotiation with scores from 40 through 54 (Olson, 1995).

*Measure of community support.*

The *Social Support Index* (SSI) (H. I. McCubbin, Patterson, & Glynn, 1982), is a 17-item instrument designed to measure the degree to which families are integrated into the community, view the community as a source of support, and feel that the community can provide emotional, esteem, and network support. The instrument uses a 5-point Likert scale ranging from “strongly agree” (5) to “strongly disagree” (1). A higher score indicates more perceived, anticipated social support. Sample items are, “People can depend on each other in this community,” and “[l]iving in this community gives me a secure feeling.” The SSI was found to have a .40 validity coefficient with the criterion

measure of family well-being (H. I. McCubbin et al., 1982). Construct validity was assessed in a study with over 1,000 families and the perceived support was positively correlated with a family's sense of fit within the community ( $r = .40$ ). The fit was significantly related to successful family adaptation. The internal reliability of the SSI was reported as  $\alpha = .82$  and test-retest reliability as  $\alpha = .83$  (H. I. McCubbin et al., 1982).

*Measures of postpartum maternal identity attainment.*

The *Postpartum Self-Evaluation Questionnaire* (PPSEQ) (Lederman et al., 1981) contains seven subscales, totaling 82 items that measure the woman's perceived postpartum adaptation to motherhood. The seven subscales each represent a dimension of postpartum adaptation developed through qualitative work by Lederman and associates. Similar to the PSEQ, the respondent is able to reflect on how she feels regarding a statement by circling, "Very Much So," "Moderately So," "Somewhat So," or "Not At All." The Confidence in Motherhood Role scale (13 items) measures the mother's doubts about her ability to parent, to interpret her infant's behavior, and to meet his or her needs (Lederman et al., 1981). Sample items are "I trust my own judgment in deciding how to care for the baby" and "I feel that I know my baby and what to do for him/her." The Satisfaction with Infant/Infant Care scale (13 items) assesses the mother's pleasure with nurturant activities and her preference for a motherhood role versus other roles (Lederman et al., 1981). This scale was developed because data reflected a mother, particularly a multipara, might have confidence in her infant care skills, but not be satisfied with the infant or providing infant care. Sample items are "It is boring for me to care for the baby and do the same things over and over" and "I feel overburdened with the many demands made on me as a mother." The reliabilities ranged from  $\alpha = .77$  to .93

for 3-day postpartum measurement, to  $\alpha = .66$  to  $.95$  for a 6-week postpartum assessment. The lowest reliabilities were for the Satisfaction with Life Circumstances scale and Confidence in Motherhood Role and tasks scale. Reece (1995) showed concurrent validity and predictive validity for the instrument at 1 and 3 months after delivery and at 1 year following delivery. The PPSEQ was given in conjunction with another measure of self-evaluation and the scales on the PPSEQ with the same conceptual meaning had statistically significant correlations.

### *Setting and Sample*

The original study targeted all primigravid and multigravid patients between the ages of 18-35 years receiving prenatal care at 4 different military treatment centers and delivering at one of two large military medical centers. The four treatment facilities provided obstetrical services to Air Force, Army, and Navy personnel. Exclusion criteria for participation in the study included particular medical conditions known to either increase or decrease infant birth weight and certain characteristics that might alter one's psychosocial adaptation to pregnancy. Eligibility criteria included: 1) singleton pregnancy, 2) no preexisting medical conditions such as diabetes, hypertension, cardiac disease, collagen disease, or chronic anemia and 3) must be on active duty or a dependent wife of a member of one of the American Armed Services during the period of participation in the study. Daughters of active duty or retired military were not included in the study secondary to unique psychosocial concerns inherent to this population. In addition, women older than 35 years of age were not included in the study secondary to increase risks for low birth weight associated with advanced-age pregnancy. Women expecting a change of duty station during the course of their pregnancy were not recruited

into the project. For participation in the sixth-month postpartum data collection point, only women delivering at the primary study site were approached for recruitment (the largest clinic and delivery site in the study). Of this group, only women electing to receive pediatric care at the primary study site or one other satellite pediatric clinic were recruited. These exclusionary criteria were added due to cost-containment issues related to the study.

### *Procedure*

Following approval by the institutional review boards, all women attending obstetrical orientation classes from September 2002 through April 2003 were invited to participate in the study. All women indicating interest in the project were met at their initial obstetrical appointment. The study was described and consent was obtained. The first of three sets of study questionnaires was completed at the initial appointment. A minimum interval of six weeks was ensured between each data collection point throughout pregnancy when possible. Prior to each trimester's data collection point, the participant was reminded by postcard that she would be met at her obstetrical appointment by a research assistant and given the next packet of questionnaires to complete while waiting for her appointment. One thousand three hundred and twenty-four women were approached for participation in the study. Of that number, 503 consented, 279 declined participation and 542 did not meet inclusion criteria. Of the 503 consented, 421 women completed all portions of the prenatal phase of the study, from first trimester through delivery. Women agreeing to participate in the sixth-month postpartum follow-up were met at the infant's sixth month pediatric appointment where they were consented and provided the last of four questionnaire packets. One hundred and twenty-five women



were recruited and consented into the project. Of that number, one hundred and thirteen were married or living with the father of the baby. This subset of 113 military wives and active duty women were used to answer the proposed questions pertaining to postpartum maternal identity formation. Of the women completing all portions of the prenatal component of the study ( $n = 421$ ), 388 were married or living with the father of the baby. This subset of military wives and active duty women was used to answer the proposed questions pertaining to individual prenatal maternal identity trajectories and the impact of family adaptability and community support on the trajectories.

#### Protection of Human Subjects

Approval from the 59th Medical Wing (Wilford Hall Medical Center) Institutional Review Board and the 81st Medical Group (Keesler Medical Center) Institutional Review Board was obtained prior to initiation of the study. Joint agreements between Brooke Army Medical Center's IRB and the IRB for the 59th Medical Wing eliminated the need to meet a separate IRB at Fort Sam Houston for recruiting potential participants at Brooke Army Medical Center. The IRB approval through the 59th Medical Wing also covered recruitment at Randolph Air Force Clinic (Appendix VII). Approval to add the sixth-month postpartum data collection point was obtained through an amendment to the original study proposal. Participants electing to participate in the second phase of the study were reconsented (Appendix VIII). No individuals were excluded from participating in the study based on ethnicity, marital status, disability (other than the medical conditions listed), or religion. Women less than 18 and those women older than 35 years of age were excluded from the study due to anticipated differences on certain outcome variables related to age that were believed to impact the internal validity of the

study findings. Although it was necessary to obtain the participants' names, addresses, and phone numbers for the purpose of contacting them prior to their appointments or in the event they missed a scheduled appointment, the information was destroyed at the completion of the study. All questionnaires and demographic data sheets were identified by numerical code only and maintained in separate files from the study log. All electronic logs were maintained on only one computer, password protected and used exclusively for the purposes of the study. All files were stored in a locked file cabinet with one key maintained by the project coordinator.

Any risks expected as a result of participating in the project were minimal. A program was established in conjunction with the psychiatric department at both medical centers and with counselors assigned to the "New Parent Program," an affiliate program within the Family Support centers at both primary military bases participating in the study, to accept referrals from the investigator for any women indicating concerns identified as a result of the study. The concerns could be a result of the study or possibly concerns the woman had prior to the study that were brought to light during the course of participation in the study. All women were given a card listing all community mental health care providers and services that accepted military TriCare beneficiaries or had free services. The card was designed for study use, but later incorporated into the regular obstetrical program. In addition, all primary healthcare providers and the healthcare integrator (a Registered Nurse) received a letter indicating that, if any of their assigned patients participating in the study marked anything other than "never" for the question referring to "thoughts of harming oneself" (item #10 on the Edinburgh Postnatal Depression Scale) immediate referrals would be made to an on-call psychiatric consultant and then follow-

up by the healthcare integrator to ensure the participant had received the necessary referral services or care by their primary care provider. The instrument was scored immediately upon completion while the patient remained in the clinic. Any participant who had an overall scale score equal to or greater than 12, was referred to the psychiatric consultant established for the project. These processes were described within the consent.

### Data Analysis

Statistical Analysis System (SAS) version 9.1 was used for all analyses. All data was entered twice, reviewed, and cleaned. Analysis was conducted only for the women who were married or living with the father of the baby and having completed questionnaire booklets for each trimester of pregnancy (hence the reduction from 421 to 388 participants). Complete prenatal datasets for 388 women (which included the subset of 113 women also participating in the postpartum data point) and the postpartum dataset for 113 women were assessed. Descriptive statistics were obtained from the prenatal sample and the postpartum sample separately. Differences for the two groups on the outcome variables were assessed using one-way ANOVA. There were no significant differences between the two groups on any of the outcome variables, so the two data sets were combined for questions pertaining to the prenatal variables. Thus the initial two datasets were examined as one dataset. One hundred and twenty-five women agreed to participate in the six-month postpartum follow-up; of these 113 were married or living with the father of the baby. Differences on the outcome variables were assessed between military wives and the active-duty women in the sample, for age, ethnicity, military service branch and rank of husband or active-duty woman using one-way ANOVA.

To answer the first aim of the study, is there evidence for individual change over time for prenatal maternal identity formation, a two-level unconditional linear growth model was applied, with the level-1 model representing the linear individual growth, and the level-2 model expressing variation in parameters from the growth model as random effects unrelated to any personal-level covariates (Singer, 1998). Given that two variables were used for the operationalization of prenatal maternal identity formation, two separate linear growth models were fit. The proposed multilevel model contained fixed and random parts. The fixed part of the model contained two fixed effects for the intercept and for the effect of TIME (trimesters of pregnancy), and the random portion of the model contained three random effects for the intercept, the TIME slope, and the within-person residual. Importantly, the random effects statement within the model allowed for both intercepts and slopes to vary across individuals. The intercepts and slopes for the proposed models were tested with an unstructured (UN) covariance matrix, a compound symmetric (CS) matrix structure, and an autoregressive matrix structure with 1 lag (AR1). The variance-covariance matrix structure having the lowest BIC (*Bayesian Information Criterion*) was determined to have the best fit. With three or fewer waves of data, the unstructured covariance matrix is recommended (Littell, Milliken, Stroup, & Wolfinger, 1996). However, all three methods were tested. Having established the method for specifying the structure of the within-person error covariance matrix, a model was chosen that indicated whether there was significant individual variation in both intercepts and slopes. The variation in individual growth parameters was determined with the  $\chi^2$  statistic. Fitting an unconditional model first provided the baseline for determining

proper specification and baseline statistics for the subsequent models (Bryk & Raudenbush, 1992).

To answer the questions pertaining to study aim two, regarding the change over time effects of family adaptability (FADAPT) and community support (SSI) on prenatal identity formation, the two covariates FADAPT and SSI, were assessed in conjunction with the model proposed in aim one. The additional level provided the variation across individual trajectories of prenatal identity formation for family adaptability and community support.

Study aim three, regarding the impact of deployment on prenatal maternal identity trajectories, was determined by fitting separate models for each maternal identity formation variable (ACCPREG and IDMORO). For each variable of maternal identity formation, two separate models were fit, one using the variable of deployment in the first trimester (having been deployed in the first trimester (1) and not having been deployed in the first trimester (0)) and another model using the variable of deployment across all of pregnancy (having been deployed (1) and not having been deployed (0)). The models included statements for random intercepts and slopes across time for each individual.

Study aim four, pertaining to prenatal identity formation predicting postpartum maternal identity attainment, was answered using two models, one for the dependent variable of Confidence with Motherhood Role and Tasks, and another for Satisfaction with Infant and Infant Care. Rather than entering the actual variable for maternal identity formation in each trimester into the model with the variables for family adaptability and community support from each trimester, the prenatal slopes of each variable, ACCPREG, IDMORO, FADAPT, and SSI for each individual, were used in the model. Secondly,

separate models were fit with the interaction terms for FADAPT and SSI to ACCPREG and IDMORO on each dependent variable. A regression model rather than a mixed model was used for this analysis. Simple slopes and intercepts for significant interaction terms were assessed using a computer program designed for assessing simple intercepts and slopes for two-way interactions (Preacher, Curran, & Bauer, 2003)

For the last aim of the study, which addresses the affect of prenatal deployment and the change over time for prenatal maternal identity formation to maternal identity attainment, the variables of the slopes of ACCPREG and IDMORO were each used in separate models, one each for the two dichotomous variables for deployment (first trimester and throughout pregnancy variables), and for each dependent variable Confidence with Maternal Role and Tasks and Satisfaction with Infant and Infant Care.

## CHAPTER IV

### RESULTS

A description of the sample and results of the proposed research questions are presented for longitudinal data from four data points across pregnancy and the postpartum period (1st trimester, 2nd trimester, 3rd trimester, and 6-months postpartum).

#### Characteristics of the Sample

##### *Demographic Characteristics of Prenatal Sample*

Table 4.1 provides the descriptive statistics for the prenatal sample. The sample comprised predominantly active-duty Air Force women or wives of Air Force service men ( $n = 388$ , 84.3%), married (94.59%) or living with the father of the baby (5.41%), and White NonHispanic (62.89%). Almost all of the subjects were active-duty enlisted or wives of enlisted service men (versus officers) between the ranks of E1-E7 (92.27%). These ranks correspond with annual salaries of approximately \$14,000 for the enlisted member at the lowest rank with no time in service to approximately \$48,000 for the enlisted member at the rank of E7 with 26 years of service (Mehuron, 2005). These figures are base pay only, and do not include any additional military benefits. The majority of the sample were pregnant with their first or second child (83.51%), worked outside the home prior to the pregnancy (74.23%) and continued to work throughout the pregnancy (69.33%).

Table 4.1. Demographic Characteristics of Prenatal Sample ( $n = 388$ )

Age	$\bar{X}$ 26.5	S.D. 4.54
Education	<u>N</u>	<u>%</u>
High school	57	14.69
Some College	159	40.98
Associate/Bachelor degree	123	31.70
Graduate education <sup>a</sup>	49	12.63
Ethnicity		
Black	45	11.60
Hispanic	84	21.65
White	244	62.89
Other <sup>b</sup>	15	3.86
Marital Status		
Married	367	94.59
Not Married <sup>c</sup>	21	5.41
	<u>Gravida</u>	<u>Partner</u>
Military Branch	<u>N</u>	<u>%</u>
Active Duty		
Air Force	123	31.70
Army	20	5.15
Navy	10	2.58
Other <sup>d</sup>	4	1.03
Non-Active Duty	231	59.54
	<u>Gravida</u>	<u>Partner</u>
Military Rank <sup>e</sup>	<u>N</u>	<u>%</u>
Non-Active Duty	232	59.79
E <sub>1</sub> -E <sub>4</sub>	68	17.53
E <sub>5</sub> -E <sub>7</sub>	62	15.98
O <sub>1</sub> -O <sub>3</sub>	23	5.93
O <sub>4</sub> -O <sub>9</sub>	2	0.05
Other <sup>e</sup>	1	0.02
Deployment of Spouse	<u>N</u>	<u>%</u>
Deployed (first trimester)	71	18.30
Not Deployed (first trimester)	317	81.70
Deployed (third trimester)	154	39.69
Not Deployed (third trimester)	234	60.31

<sup>a</sup> Some Graduate Education  $n=19$ ; Graduate Degree  $n=30$

<sup>b</sup> Alaskan/American Indian  $n=2$ ; Asian/Pacific Islander  $n=13$

<sup>c</sup> Number reflects only those living with the father of the baby

<sup>d</sup> Other; Coast Guard  $n=2$ ; National Guard  $n=2$ ; Marine  $n=7$

<sup>e</sup> Other; E8-E9  $n=4$ ; W1-W4  $n=1$ ; Retired  $n=2$ ; Reservist  $n=2$



The sample was highly educated, with 40.98% having some college education and 12.63% having completed some requirements towards or received a graduate degree. The average age of the sample was 26.5.

#### *Demographic Characteristics of Postpartum Sample*

Table 4.2 represents the descriptive statistics for the postpartum sample. The sample included only the women from the sample of 125 consented at the six-month postpartum data point that indicated they were married or living with the father of the baby ( $n = 113$ ) during the pregnancy. The breakdowns of demographic characteristics were similar to the original dataset of 421. The sample remained predominantly Air Force (65.22%; number reflects dual-military families), White, non-Hispanic (60%) between the rank of E1 – E7 (60.87%). Over half of the sample was pregnant with their first child, with 40% of the sample between the ages of 24-27. Similar to the larger dataset, well over half of the women worked outside of the home throughout their pregnancies (74.78%), and were highly educated.

Table 4.2. Demographic Characteristics of Postpartum Sample ( $n = 113$ )

Age	$\bar{X}$	S.D.
	26.32	4.23
Education	<u>N</u>	<u>%</u>
High school	13	11.50
Some College	55	48.67
Associate/Bachelor degree	34	30.10
Graduate education <sup>a</sup>	11	9.73
Ethnicity		
Black	12	10.62
Hispanic	29	25.66
White	68	60.18
Other <sup>b</sup>	4	3.54
Marital Status		
Married	106	93.81
Not Married <sup>c</sup>	7	6.19
	<u>Gravida</u>	<u>Partner</u>
Military Branch	<u>N</u>	<u>%</u>
Active Duty		
Air Force	48	42.48
Army	4	3.54
Navy	0	0.00
Other <sup>d</sup>	0	0.00
Non-Active Duty	61	53.98
	<u>Gravida</u>	<u>Partner</u>
Military Rank	<u>N</u>	<u>%</u>
Non-Active Duty	61	53.98
E <sub>1</sub> -E <sub>4</sub>	30	26.55
E <sub>5</sub> -E <sub>7</sub>	18	15.93
O <sub>1</sub> -O <sub>3</sub>	3	2.65
O <sub>4</sub> -O <sub>9</sub>	1	0.89
Other <sup>e</sup>	0	0.00
Deployment of Spouse	<u>N</u>	<u>%</u>
Deployed (postpartum)	37	32.74
Not Deployed (postpartum)	76	67.26

<sup>a</sup> Some Graduate Education  $n=4$ ; Graduate Degree  $n=7$

<sup>b</sup> Alaskan/American Indian  $n=2$ ; Asian/Pacific Islander  $n=2$

<sup>c</sup> Number reflects only those living with the father of the baby

<sup>d</sup> Marine  $n=1$

<sup>e</sup> Other; E8-E9  $n=2$

## Characteristics of Study Measures

### *Measures of Prenatal Maternal Identity Formation*

The concept of prenatal maternal identity formation was measured with two scales from the *Prenatal Self-Evaluation Questionnaire*; Acceptance of Pregnancy (14 items) and Identification of the Motherhood Role (15 items). Measures were taken in each trimester of pregnancy. Mean scores for both scales across all trimesters are presented (Table 4.3). The Cronbach alpha for both scales across the trimesters were similar to those reported previously by (Lederman, 1996; Schachman et al., 2004; Stark, 1997). Intercorrelations for all prenatal scales with the postpartum scales across all trimesters are presented in Tables 4.4 – 4.6. Correlations for Acceptance of Pregnancy with Identification of the Motherhood Role were high across all trimesters ( $r = 0.61, p \leq .01$ ;  $r = 0.63, p \leq .01$ ;  $r = 0.63, p \leq .01$ , for 1st, 2nd, and 3rd trimesters respectively). Moderately high negative correlations for both prenatal maternal identity formation measures (Acceptance of Pregnancy and Identification of Motherhood Role) with community support (SSI) ( $r^s = -0.37$  to  $-0.45, p \leq .01$  across all trimesters) indicate a strong relationship between increasing community support and decreased conflict with each aspect of prenatal maternal identity formation. The correlations reflect the strongest negative relationship in the second trimester of pregnancy. The correlations for family adaptability to the measures for prenatal maternal identity formation were similar to those for community support. However, the correlations are not as high in any of the trimesters as those for community support to the prenatal maternal identity formation variables. Of note is the difference between the correlations.

Table 4.3. Descriptive Statistics for Maternal Identity Formation

	Acceptance of Pregnancy Trimesters			Identification of Motherhood Role Trimesters		
	One	Two	Three	One	Two	Three
Mean	20.09	19.07	19.27	18.55	18.81	18.71
Mode	14.00	14.00	14.00	15.00	15.00	15.00
Range	14-49	14-44	14-42	15-47	15-43	15-41
<i>SD</i>	6.18	5.50	5.51	4.07	3.95	4.01
<i>n</i>	388	388	387	388	388	387

for community support to Acceptance of Pregnancy and Identification of the Motherhood Role. The correlations indicate that there is a stronger relationship to community support for Identification of the Motherhood Role than for Acceptance of Pregnancy.

Table 4.4. Intercorrelations for First Trimester and Postpartum Scales

Scales	ACCPREG	IDMORO	ADAPT	SSI	CMRT	SIC
Acceptance of Pregnancy (ACCPREG)	-	0.61**	-0.37**	-0.37**	0.33**	0.26**
Identification of Motherhood Role (IDMORO)	-	-	-0.35**	-0.44**	0.23**	0.25**
Family Adaptability (ADAPT)	-	-	-	0.35**	-0.26**	-0.23*
Social Support Index (SSI)	-	-	-	-	-0.27**	-0.25**
Confidence with Motherhood Role/Tasks (CMRT)	-	-	-	-	-	0.64**
Satisfaction with Infant/Infant Care (SIC)	-	-	-	-	-	-

\* $p < .05$ ; \*\* $p < .01$

Table 4.5. Intercorrelations for Second Trimester and Postpartum Scales

Scales	ACCPREG	IDMORO	ADAPT	SSI	CMRT	SIC
Acceptance of Pregnancy (ACCPREG)	-	0.63**	-0.35**	-0.45**	0.28**	0.21*
Identification of Motherhood Role (IDMORO)	-	-	-0.32**	-0.48**	0.45**	0.41**
Family Adaptability (ADAPT)	-	-	-	0.32**	-0.07	-0.15
Social Support Index (SSI)	-	-	-	-	-0.32**	-0.24**
Confidence with Motherhood Role/Tasks (CMRT)	-	-	-	-	-	0.64**
Satisfaction with Infant/Infant Care (SIC)	-	-	-	-	-	-

\* $p < .05$ ; \*\* $p < .01$

Table 4.6. Intercorrelations for Third Trimester and Postpartum Scales

Scales	ACCPREG	IDMORO	ADAPT	SSI	CMRT	SIC
Acceptance of Pregnancy (ACCPREG)	-	0.63**	-0.39**	-0.43**	0.24**	0.22**
Identification of Motherhood Role (IDMORO)	-	-	-0.32**	-0.45**	0.45**	0.37**
Family Adaptability (ADAPT)	-	-	-	0.36**	-0.18	-0.17
Social Support Index (SSI)	-	-	-	-	-0.31**	-0.18
Confidence with Motherhood Role/Tasks (CMRT)	-	-	-	-	-	0.64**
Satisfaction with Infant/Infant Care (SIC)	-	-	-	-	-	-

\* $p < .05$ ; \*\* $p < .01$

### *Measure of Family Adaptability*

The concept of family adaptability was measured with the Family Adaptability scale from the FACES II instrument (Olson et al., 1992) with measurement obtained in each trimester of pregnancy. The FACES II “couples version” was given to women who were having their first child. Women who already had children completed the FACES II version for families.

Cronbach’s alpha for the couples and families version of the adaptability scale are found in

Table 4.7. The mean scores across the trimesters were within the range for “flexible” adaptability (values of 46-54), indicating less structure in regards to adaptability (Olson et al., 1992). Values were not significantly different for the women experiencing deployment of their husbands at anytime during their pregnancy ( $F(1, 388) = 1.33, p \geq .05$ ). The correlations between the family adaptability scale and the prenatal maternal identity formation measures were statistically significantly negative (Tables 4.3 – 4.5), indicating that with decreasing flexibility there was increasing conflict associated with maternal identity formation. Of note is the stronger negative relationship between family adaptability to postpartum maternal identity attainment measures in the first trimester than in subsequent trimesters. This reflects the developmental changes the woman is making early in pregnancy. The range of scores for the family adaptability measure is quite wide and may be partially due to using the two separate scales. The mode indicates however, that the majority of the participants did perceive a flexible family system.

Table 4.7. Descriptive Statistics for Measures of Family Adaptability

	Trimesters		
	One	Two	Three
Mean	54.62	54.36	54.19
Mode	56.00	51.00	55.00
Range	19-67	24-68	25-66
<i>SD</i>	6.84	7.08	7.83
$\alpha$	.84 <sup>a</sup> /.91 <sup>b</sup>	.84 <sup>a</sup> /.91 <sup>b</sup>	.85 <sup>a</sup> /.94 <sup>b</sup>
<i>n</i>	387	387	387

<sup>a</sup>Cronbach’s alpha for FACES II Family version

<sup>b</sup>Cronbach’s alpha for FACES II Couples version

#### *Measure of Community Support*

The concept of community support was measured with the Social Support Index (H. I. McCubbin et al., 1982). Measures were taken in each trimester of pregnancy. The scores

reflected the perception of strong community support networks (Table 4.8). Neither McCubbin et al. (1982) or Splonskowski and Twiss (1995) reported as high a score for military samples as those obtained for this sample. Notably, Splonskowski and Twiss sampled military wives at 3 months postpartum rather than prenatally, and reported a mean score of 38.04. In the current study, there was a decreasing perception of community support across the trimesters, yet increasing significant negative correlation between the prenatal maternal identity formation measures and community support (Tables 4.3 – 4.5). The estimated correlations suggest the strongest association between Identification of the Motherhood Role and SSI was in the second trimester ( $r = -0.48, p \leq .01$ ). This finding indicates that, in this study, with decreases in perceived community support, there was an increase in the conflict associated with Identification of the Motherhood Role. The relationship between Acceptance of Pregnancy and Community Support was also strongest during the second trimester ( $r = -0.45, p \leq .01$ ). The association remained high into the third trimester, but decreased slightly from the second trimester relationship. Further, of interest was the difference in the correlations for SSI and the postpartum maternal identity attainment measures (Tables 4.3 – 4.5). Early in pregnancy, there was a low, but significant negative association between community support and Confidence in a Motherhood Role/Tasks ( $r = -0.27, p \leq .01$ ) and community support to Satisfaction with Infant/Infant Care ( $r = -0.25, p \leq .01$ ). In the first trimester, there was little difference in the correlations between the two postpartum maternal identity attainment variables and community support. However, there is a significant association between Community Support and Satisfaction with Infant/Infant Care in the first and second trimesters which becomes nonsignificant in the third, while the

statistically significant relationship between Community Support and Confidence in a Motherhood Role/Tasks is significant in each trimester of pregnancy.

Table 4.8. Descriptive Statistics for Measures of Community Support

	Trimesters		
	One	Two	Three
Mean	53.39	52.74	53.90
Mode	57.00	51.00	50.00
Range	24-68	28-68	23-68
<i>SD</i>	7.41	7.88	7.54
$\alpha$	0.85	0.88	0.88
<i>n</i>	388	388	387

#### *Measures of Postpartum Maternal Identity Attainment*

The concept of postpartum maternal identity attainment was measured with two scales from the *Postpartum Self-Evaluation Questionnaire* (Lederman et al., 1981); Confidence with Motherhood Role and Tasks, and Satisfaction with Infant and Infant Care scales. Values for this sample, at 6-months postpartum (Table 4.9), appear to be lower than those reported for two different samples at 6-weeks postpartum (Halman et al., 1995; Schachman et al., 2004), suggesting the women have fewer concerns associated with Confidence in the Motherhood Role and Tasks and with Satisfaction with Infant and Infant Care. The mode was quite low indicating that the majority of the women perceived relatively little conflict associated with their postpartum maternal identity attainment. Further, correlation values indicated (Tables 4.3 – 4.5) a weaker association between Acceptance of Pregnancy and Satisfaction with Infant and Infant Care (SIC) ( $r = 0.26, p \leq .01$ ) than might have been anticipated. There was a stronger correlation for Acceptance of Pregnancy and Confidence in Motherhood Role and Tasks ( $r = 0.33, p \leq .01$ ) than for SIC. Further, the relationship was the strongest in the first trimester when the woman is having the greatest concerns related to



Acceptance of Pregnancy. The relationship of Identification of the Motherhood Role (IDMORO) to Confidence in Motherhood Role and Tasks (CMRT) was stronger in second and third trimesters than IDMORO to Satisfaction with Infant and Infant Care, and this relationship remained consistent from the second to the third trimester ( $r = 0.45, p \leq .01$ ). The results indicate that Acceptance of Pregnancy and Identification of the Motherhood Role were uniquely different dimensions for the women in the sample.

Table 4.9. Descriptive Statistics for Measures of Postpartum Maternal Identity Attainment

Confidence with Motherhood (n= 113)	
Mean	17.02
Mode	14.00
Range	14-32
S.D.	3.57
$\alpha$	0.73
Satisfaction with Motherhood (n=113)	
Mean	15.07
Mode	13.00
Range	13-29
S.D.	2.86
$\alpha$	0.79

#### Individual Prenatal Maternal Identity Formation Trajectories

Research questions 1-4 focused on individual prenatal maternal identity trajectories. Question 1 asked about change over time for an unconditional growth model of maternal identity formation. Two individual growth curves were tested; one for Acceptance of Pregnancy and one for Identification of the Motherhood Role, both variables of prenatal maternal identity formation. Results from Acceptance of Pregnancy indicated a significant intercept ( $\beta = 20.09, p \leq .001$ ), a significant linear slope ( $\beta = -1.62, p \leq .001$ ) and a significant curvilinear slope ( $\beta = 0.61, p \leq .001$ ) (Table 4.10). The developmental trajectory of Acceptance of Pregnancy for the women began at 20.09 in the first trimester, decreased linearly by -1.62 per trimester over the three trimesters of the study and this decline

decreased by 0.61 from the first to the second and the second to the third trimester. The variance of the intercept (29.50) and the variance of the linear slope (1.84) were significant, indicating that there were significant individual differences in the starting point and rate of change over the three trimesters for the mothers. A statistical model with random slopes and intercepts was required for each case.

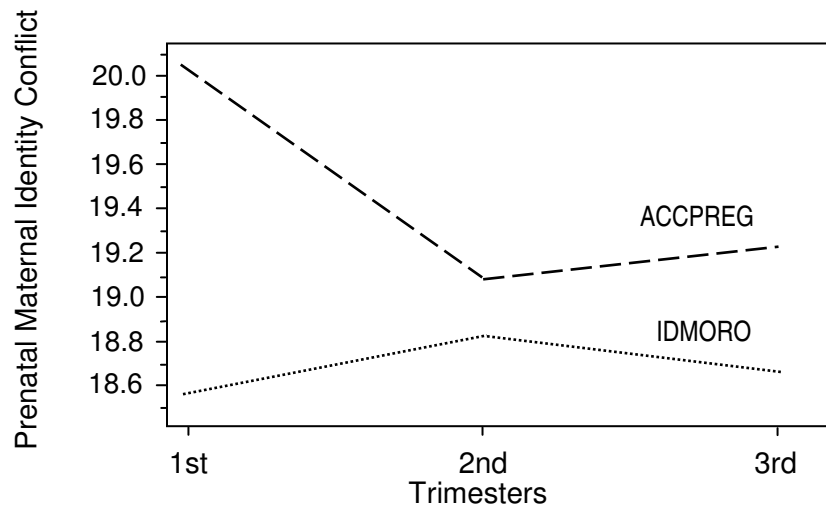
Table 4.10. Unconditional Growth Curve estimates for Prenatal Maternal Identification Parameters

Parameter	Estimate	SE	df	t	p
ACCEPTANCE <sup>a</sup>					
Intercept	20.09	0.31	387	65.25	≤ 0.001
Linear	-1.62	0.36	773	-4.55	≤ 0.001
Curvilinear	0.60	0.17	773	3.60	≤ 0.001
IDENTIFICATION <sup>b</sup>					
Intercept	18.55	0.21	387	90.03	≤ 0.001
Linear	0.44	0.27	773	1.65	≤ 0.10
Curvilinear	-0.18	0.13	773	-1.45	≤ 0.15

<sup>a</sup> Acceptance of Pregnancy Scale

<sup>b</sup> Identification of the Motherhood Role Scale

The results for Identification of the Motherhood Role indicated a significant intercept ( $\beta = 18.55, p \leq .001$ ), a nonsignificant slope ( $\beta = 0.44, p \leq .10$ ) and a nonsignificant curvilinear slope ( $\beta = -0.18, p \leq 0.15$ ) (Table 4.10). The developmental trajectory of Identification of the Motherhood Role for the women began at 18.55 in the first trimester with little change across the trimesters (Figure 4.1).



*Figure 4.1. Maternal Identity Formation Trajectories*

The variance of the intercept (12.35) and the variance of the linear slope (0.95) were significant, indicating that there were significant individual differences in the starting point and rate of change over the three trimesters for the mothers, again supporting the need for a statistical model with random slopes and intercepts.

A SAS macro for estimating and visualizing individual growth curves was used to assess outliers (Curran, 2006). Women with values for Acceptance of Pregnancy or Identification of the Motherhood Role greater than 30 in any trimester, a large increase or decrease in conflict from first trimester for Acceptance of Pregnancy and second trimester for Identification of the Motherhood Role, or an extreme curvilinear response were considered outliers. Model analysis was conducted with and without the designated outliers. The analyses were run with and without the outliers. There were no differences between the models for results. The change over time in Acceptance of Pregnancy was also tested for differences by parity, age of the gravida, rank of husband or active-duty gravida (socioeconomic variable), and branch of service for the husband or active-duty gravida. There were no significant differences in the

change over time in Acceptance of Pregnancy by parity, age of the gravida, or rank of the husband or gravida. The branch of service for the husband was a significant predictor of change over time in Acceptance of Pregnancy. ( $\beta = 0.58, p \leq .001$ ). Gravidas with husbands in the Navy had significantly smaller rates of decline in the conflict they experienced across pregnancy for Acceptance of Pregnancy ( $\beta = -0.41, p \leq .001$ ) than for the gravidas with husbands in the other services. The gravidas with husbands in the Air Force had the lowest levels of conflict associated with Acceptance of Pregnancy.

There was no significant change over time in Identification of the Motherhood Role. The variables of parity, age, husband's and gravida's rank and branch of service for the husband or gravida were considered with Identification of Motherhood over time to identify if these variables might predict change over time in Identification of Motherhood Role. None of the variables altered the change over time in Identification of Motherhood Role. However, the gravida's rank (socioeconomic status) impacted the level of conflict experienced across the trajectory ( $\beta = 0.50, p \leq .001$ ). The gravidas with increasing rank in the military had increasing conflict associated with Identification of the Motherhood Role. The military service branch of the husband also significantly increased the level of conflict across the trajectory (although not the shape) for Identification of the Motherhood Role ( $\beta = 0.26, p \leq .05$ ). Similar to Acceptance of Pregnancy, the results indicated that women with husbands in the Air Force had less conflict associated with Identification of the Motherhood Role than women with husbands in either the Army or Navy branch of services. The gravidas with husbands in the Navy had the highest level of conflict. The gravida's branch of service did not impact the level of conflict or the shape of the trajectory.

The covariance matrix structure for the above models was chosen by comparing the *Bayesian Information Criterion* (BIC) of an unstructured (UN) covariance matrix, a compound symmetric (CS) matrix structure, and an autoregressive matrix structure with 1 lag (AR1). Values of the BIC will be smallest for a model with good fit and the smallest number of predictors (J. Cohen, Cohen, West, & Aiken, 2003). The BIC is a measure of fit that takes into consideration the number of predictors (J. Cohen et al., 2003). The unstructured covariance structure provided the lowest scores for the BIC and was chosen for the above models.

#### *Family adaptability and Prenatal Maternal Identity Trajectories*

Conditional individual growth curve models were used to answer questions 2 and 3 which ask about the effects of Family Adaptability and Community Support on the random individual slopes and intercepts of Acceptance of Pregnancy and Identification of the Motherhood Role. Results from Family Adaptability regressed on Acceptance of Pregnancy over time indicated a significant intercept ( $\beta = 32.29, p \leq .001$ ). Family Adaptability had a significant effect on Acceptance of Pregnancy ( $\beta = -0.22, p \leq .001$ ) (Table 4.11).

Table 4.11. Coefficients from Regression of Acceptance on Time, Family Adaptability, and Interaction Variables

<b>Variables:</b>	<b>Model 1</b>			<b>Model 2</b>		
	<b>Coeff.</b>		<b>S.E.</b>	<b>Coeff.</b>		<b>S.E.</b>
Linear Trend	-1.69	***	0.35	1.08		2.89
Curvilinear Trend	0.62	***	0.17	-0.04		1.33
Family Adaptability	-0.22	***	0.02	-0.24	***	0.03
Linear Trend* Family Adaptability				-0.01		0.05
Curvilinear Trend* Family Adaptability				0.01		0.02
Intercept	32.29	***	1.26	32.98	***	1.79
Null Model Chi Square	585.84			583.67		
Degrees of Freedom	3			3		

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

Decreases in perceived Family Adaptability (flexibility) increased the woman's conflict associated with Acceptance of Pregnancy. The interaction of Family Adaptability with Time was nonsignificant indicating that Family Adaptability did not predict the change over time in Acceptance of Pregnancy.

The results are similar for Family Adaptability regressed on Identification of the Motherhood Role (Table 4.12). Family Adaptability had a significant negative effect on Identification of the Motherhood Role ( $\beta = -0.13$ ,  $p \leq .001$ ). Decreasing flexibility within the family increased conflict associated with Identification of the Motherhood Role. The nonsignificant interaction terms indicated that Family Adaptability did not alter the trajectory over time for Identification of the Motherhood Role.

Table 4.12. Coefficients from Regression of Identification on Time, Family Adaptability, and Interaction Variables

<b>Variables:</b>	<b>Model 1</b>			<b>Model 2</b>		
	<b>Coeff.</b>		<b>S.E.</b>	<b>Coeff.</b>		<b>S.E.</b>
Linear Trend	0.40		0.27	0.06		2.21
Curvilinear Trend	-0.18		0.02	-0.25		1.02
Family Adaptability	-0.13	***	0.17	-0.14	***	0.02
Linear Trend* Family Adaptability				-0.00		0.04
Curvilinear Trend* Family Adaptability				0.00		0.02
Intercept	25.65	***	0.94	26.20	***	1.27
Null Model Chi Square	487.51			484.42		
Degrees of Freedom	3			3		

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

#### *Community Support and Prenatal Maternal Identity Trajectories*

Question 3 asked about the effect of Community Support on the individual prenatal maternal identity trajectories. The intercept for the regression of Acceptance of Pregnancy on Time and Community Support was significant ( $\beta = 31.50$ ,  $p \leq .001$ ), and Community Support significantly effected Acceptance of Pregnancy (Table 4.13). However, while results indicated that increases in support from the community decreased the conflict associated with accepting pregnancy, the interaction terms for Community Support with Time were not significant, indicating that Community Support did not predict the change over time in Acceptance of Pregnancy.

Table 4.13. Coefficients from Regression of Acceptance on Time, Community Support, and Interaction Variables

<b>Variables:</b>	<b>Model 1</b>			<b>Model 2</b>		
	<b>Coeff.</b>		<b>S.E.</b>	<b>Coeff.</b>		<b>S.E.</b>
Linear Trend	-1.95	***	0.36	-3.11		2.64
Curvilinear Trend	0.80	***	0.17	1.07		1.23
Community Support	-0.21	***	0.02	-0.23	***	0.03
Linear Trend* Community Support				0.02		0.05
Curvilinear Trend* Community Support				-0.00		0.02
Intercept	31.50	***	1.15	32.28	***	1.60
Null Model Chi Square	538.05			536.36		
Degrees of Freedom	3			3		

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

Community Support also significantly predicted change in the level of conflict for Identification of the Motherhood Role (Table 4. 14) but did not change the shape of the trajectory for Identification of the Motherhood Role. Similar to Acceptance of Pregnancy, increases in Community Support decreased the conflict associated with Identification of the Motherhood Role.

Table 4.14. Coefficients form Regression of Identification on Time, Community Support, and Interaction Variables

<b>Variables:</b>	<b>Model 1</b>			<b>Model 2</b>		
	<b>Coeff.</b>		<b>S.E.</b>	<b>Coeff.</b>		<b>S.E.</b>
Linear Trend	0.17		0.27	0.14		1.97
Curvilinear Trend	-0.03		0.13	0.00		0.93
Community Support	-0.17	***	0.02	-0.17	***	0.02
Linear Trend* Community Support				0.00		0.04
Curvilinear Trend* Community Support				-0.00		0.02
Intercept	27.70	***	0.83	27.69	***	1.11
Null Model Chi Square	421.65			419.86		
Degrees of Freedom	3			3		

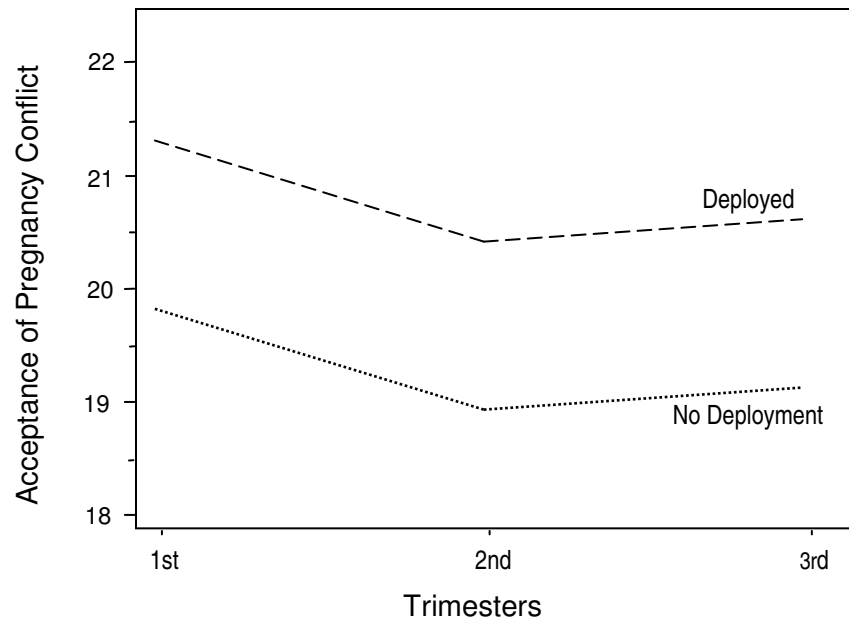
\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

For all the models compared for questions 2 and 3, an unstructured covariance matrix structure was found to provide the smallest values for BIC.



### *Deployment and Prenatal Maternal Identity Trajectories*

Question 4 asked about the effect of a husband's (father of the baby) deployment on the prenatal maternal identity formation. Two differing variables for Deployment, 1) a variable for deployment, specified as occurring in the first trimester and 2) a variable for deployment, unspecified, as having occurred at any point during the course of pregnancy were used in two separate conditional growth curves, in which the effect of deployment on individual change over time for Acceptance of Pregnancy and then Identification of the Motherhood Role were assessed. Model 1 (Table 4.15) uses the first-trimester variable of Deployment and Model 2 uses the variable of Deployment which encompasses all of pregnancy. Results for first-trimester Deployment regressed on Acceptance of Pregnancy over time indicated a significant intercept ( $\beta = 19.83, p \leq .001$ ), and a significant effect for first-trimester Deployment on Acceptance of Pregnancy. The results indicated that for women experiencing deployment there was a significant increase in the conflict associated with Acceptance of Pregnancy across all trimesters of pregnancy (Figure 4.2).



*Figure 4.2. Acceptance of Pregnancy Trajectory and Deployment*

To answer the question whether Deployment predicted change over time in Acceptance of Pregnancy, an interaction term of Deployment by Time was assessed. The results indicated that while Deployment in the first trimester increased the overall conflict experienced with Acceptance of Pregnancy, it did not change the trajectory of Acceptance of Pregnancy. The results for the measure of Deployment across pregnancy regressed on Acceptance of Pregnancy and Time were also significant. Deployment occurring at any point during pregnancy increased the conflict the woman experienced relative to accepting her pregnancy. Given the significance of this finding, the interaction of this variable of Deployment and Time was regressed on Acceptance of Pregnancy. The results were nonsignificant. Again, Deployment did not alter the change over time in Acceptance of Pregnancy, but the level of the conflict occurring across time.

Table 4.15. Coefficients from Regression of Acceptance on Time and Deployment

<b>Variables:</b>	<b>Model 1</b>			<b>Model 2</b>		
	<b>Coeff.</b>		<b>S.E.</b>	<b>Coeff.</b>		<b>S.E.</b>
Linear Trend	-1.62	***	0.36	-1.62	***	0.36
Curvilinear Trend	0.60	***	0.17	0.60	***	0.17
Deployment	1.41	*	0.67	1.59	**	0.53
Intercept	19.83	***	0.33	19.46	***	0.37
Null Model Chi Square	663.09			658.22		
Degrees of Freedom	3			3		

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

The effects of Deployment on Identification of the Motherhood Role and Time were assessed in the same process as Acceptance. Neither variable for Deployment had a significant effect on the Identification of the Motherhood Role.

Table 4.16. Coefficients from Regression of Identification on Time and Deployment

<b>Variables:</b>	<b>Model 1</b>			<b>Model 2</b>		
	<b>Coeff.</b>		<b>S.E.</b>	<b>Coeff.</b>		<b>S.E.</b>
Linear Trend	0.44		0.27	0.44		0.27
Curvilinear Trend	-0.18		0.13	-0.18		0.13
Deployment	0.74		0.47	0.55		0.37
Intercept	18.42	***	0.22	18.34	***	0.25
Null Model Chi Square	579.31			579.47		
Degrees of Freedom	3			3		

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

### Postpartum Maternal Identity Attainment

Research questions 5-7 asked about the impact of prenatal maternal identity formation on postpartum maternal identity attainment. To address how change over time in prenatal maternal identity formation impacted a woman's six-month postpartum identity attainment, random slopes for the prenatal identity formation variables across time (Acceptance of Pregnancy and Identification of the Motherhood Role) were regressed on each six-month maternal identity attainment variable. In the same model, the main effects of the slopes across pregnancy for Family Adaptability and Community Support were also tested. To

answer the questions regarding the impact of Family Adaptability and Community Support nested within prenatal identity formation to postpartum maternal identity attainment, interaction terms for the random slopes of the prenatal maternal identity variables with Family Adaptability, and with Community Support were entered into a model. The last question regarding the effect of prenatal deployment on postpartum maternal identity attainment was assessed with Deployment (both dichotomous variables, 1) first-trimester deployment, and 2) deployment at any point prenatally) and the random slopes of the maternal identity formation variables regressed on the various postpartum maternal identity attainment variables.

#### *Prenatal Maternal Identity Formation on Postpartum Maternal Identity Attainment*

Results indicated that the prenatal slope of Acceptance of Pregnancy did not significantly affect the woman's Confidence with Motherhood Role and Tasks or her Satisfaction with the Infant and Infant Care at 6-months postpartum (Table 4.17 and 4.18). The prenatal slope of Identification of the Motherhood Role did have a statistically significant effect on the woman's Confidence with Motherhood Role and Tasks ( $\beta = 1.49, p \leq .001$ ) and with Satisfaction with Infant and Infant Care ( $\beta = 1.16, p \leq .001$ ). The findings for change over time prenatally in Identification of the Motherhood Role regressed on Confidence with Motherhood Tasks indicated that the intercept for Confidence with Motherhood Tasks at 6-months postpartum began at 17.36 and for every unit increase in Identification of Motherhood Role conflict prenatally, there was an increase of 1.49 in the conflict a woman experienced regarding postpartum Confidence with Motherhood Role. For Satisfaction with Motherhood at 6-months postpartum, the intercept was 15.30, and for every unit increase in the conflict associated with Identification of the Motherhood role prenatally, there was a 1.16

unit increase in the conflict the woman experienced postpartum related to Satisfaction with Motherhood.

Table 4.17. Confidence with Motherhood Role and Tasks Regressed on Slopes of Prenatal Maternal Identification Parameters, Family Adaptability, and Community Support

	Model 1			Model 2		
<b>Variables:</b>	<b>Coeff.</b>		<b>S.E.</b>	<b>Coeff.</b>		<b>S.E.</b>
Acceptance Slope <sup>a</sup>	0.23		0.28	0.28		0.28
Identification Slope <sup>b</sup>	1.49	***	0.34	1.21	***	0.38
Family Adaptability Slope <sup>c</sup>	0.10		0.12	0.14		0.12
Community Support Slope <sup>d</sup>	-0.20		0.13	-0.28	*	0.14
Acceptance * Family Adaptability <sup>e</sup>				-0.00		0.08
Acceptance * Community Support <sup>f</sup>				0.00		0.12
Identification * Family Adaptability <sup>g</sup>				0.28	†	0.15
Identification * Community Support <sup>h</sup>				-0.27	†	0.15
Intercept	17.36	***	0.29	17.27	***	0.33
Critical Value	11.25			6.79		
Degrees of Freedom	4			8		

<sup>a</sup> Slope for Acceptance of Pregnancy scale over the course of pregnancy

<sup>b</sup> Slope of Identification of Motherhood Role scale over the course of pregnancy

<sup>c</sup> Slope for Family Adaptability scale over the course of pregnancy

<sup>d</sup> Slope for Community Support scale over the course of pregnancy

<sup>e</sup> Interaction of the slopes of Acceptance of Pregnancy and Family Adaptability

<sup>f</sup> Interaction of the slopes of Acceptance of Pregnancy and Community Support

<sup>g</sup> Interaction of the slopes of Identification of Motherhood Role and Family Adaptability

<sup>h</sup> Interaction of the slopes of Identification of Motherhood Role and Community Support

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; †  $p < .10$

*Prenatal Family Adaptability and Community Support on Postpartum Maternal Identity Attainment*

Research question 6 asked about the prenatal effects of Family Adaptability and Community Support nested within prenatal maternal identity formation to later postpartum maternal identity attainment. Although the slopes of Family Adaptability and Community Support did not significantly change over time prenatally, both variables had some borderline predictive value for differing aspects of postpartum maternal identity attainment (Table 4.18). The main effect for the slope of prenatal Family Adaptability had a borderline significant effect to a woman's Satisfaction with Infant and Infant Care ( $\beta = -0.20, p \leq .07$ ) and the slope of Community Support had a statistically significant main effect on Confidence in Motherhood Role and Tasks ( $\beta = -0.28, p \leq .05$ ). Both results indicated that increases in support either through greater flexibility within the family, or through greater perceived support from the community network decreased the conflict associated with Satisfaction with Infant and Infant Care and for Confidence in Motherhood Role and Tasks. The change over time for the interaction of Family Adaptability and Identification of the Motherhood Role did have a borderline significant impact on Confidence in Motherhood Role and Tasks ( $\beta = -0.28, p \leq 0.06$ ). Change over time for the interaction of Community Support and Identification of the Motherhood Role had a significant impact on Confidence of the Motherhood role at alpha 0.10 ( $\beta = -0.27, p \leq 0.08$ ). None of the results for the slopes of Family Adaptability or Community Support nested within either of the prenatal identity formation variables had any statistically significant effect on Satisfaction with Infant and Infant Care (Table 4.18).

Table 4.18. Satisfaction with Infant and Infant Care Regressed on Slopes of Prenatal Maternal Identification Parameters, Family Adaptability, and Community Support

<b>Variables:</b>	<b>Model 1</b>			<b>Model 2</b>		
	<b>Coeff.</b>		<b>S.E.</b>	<b>Coeff.</b>		<b>S.E.</b>
Acceptance Slope <sup>a</sup>	-0.15		0.23	-0.09		0.28
Identification Slope <sup>b</sup>	1.16	***	0.28	0.94	**	0.32
Family Adaptability Slope <sup>c</sup>	-0.15		0.10	-0.20	†	0.11
Community Support Slope <sup>d</sup>	-0.06		0.11	-0.08		0.12
Acceptance * Family Adaptability <sup>e</sup>				0.03		0.06
Acceptance * Community Support <sup>f</sup>				0.16		0.10
Identification * Family Adaptability <sup>g</sup>				-0.08		0.12
Identification * Community Support <sup>h</sup>				-0.20		0.13
Intercept	15.30	***	0.24	15.20	***	0.29
Critical Value	8.35			4.53		
Degrees of Freedom	4			8		

<sup>a</sup> Slope for Acceptance of Pregnancy scale over the course of pregnancy

<sup>b</sup> Slope of Identification of Motherhood Role scale over the course of pregnancy

<sup>c</sup> Slope for Family Adaptability scale over the course of pregnancy

<sup>d</sup> Slope for Community Support scale over the course of pregnancy

<sup>e</sup> Interaction of the slopes of Acceptance of Pregnancy and Family Adaptability

<sup>f</sup> Interaction of the slopes of Acceptance of Pregnancy and Community Support

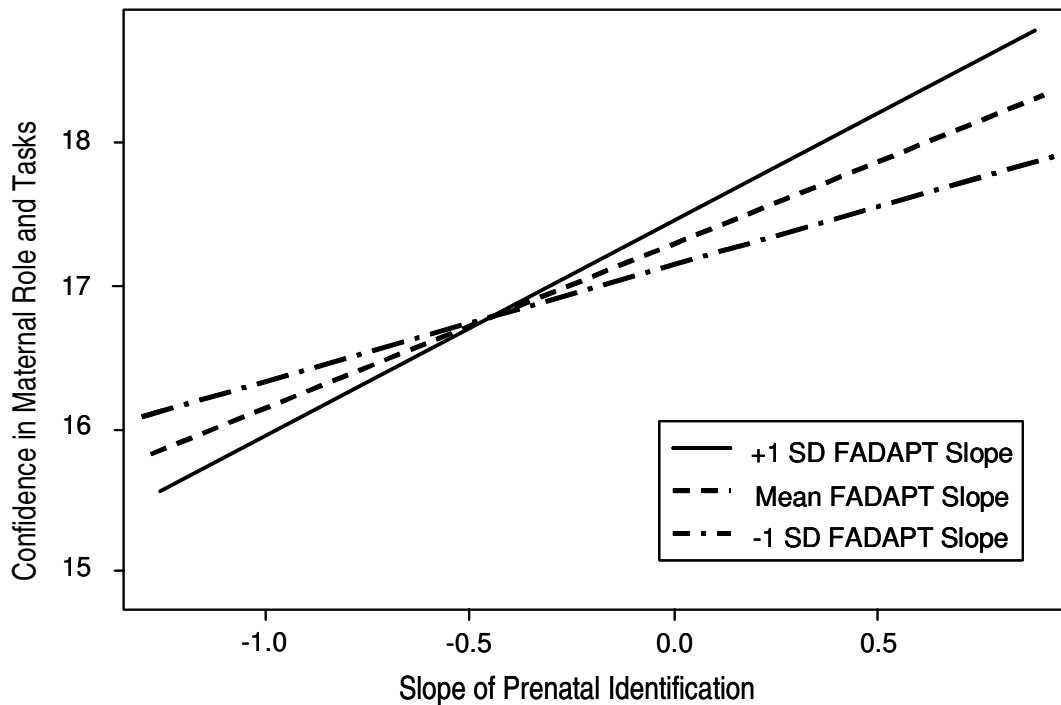
<sup>g</sup> Interaction of the slopes of Identification of Motherhood Role and Family Adaptability

<sup>h</sup> Interaction of the slopes of Identification of Motherhood Role and Community Support

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; †  $p < .10$

In an effort to better understand the relationship of IDMORO to CMRT with the moderating effects of Community Support and Family Adaptability, the simple slopes of each moderator term (Family Adaptability and Community Support) to the slope of IDMORO and CMRT were assessed. Preacher, Curran and Bauer's 's (2003) computer webpage was used to calculate the simple intercepts, simple slopes, and the region of significance for the continuous-level moderators within the model. For the moderator of Family Adaptability on the relationship of Identification of the Motherhood Role to

Confidence in Motherhood Role and Tasks, simple slopes were determined for one standard deviation above the mean for the prenatal slope of Family Adaptability, the mean of the prenatal slope of Family Adaptability, and one standard deviation below the mean for the prenatal slope of Family Adaptability (Figure 4.3).

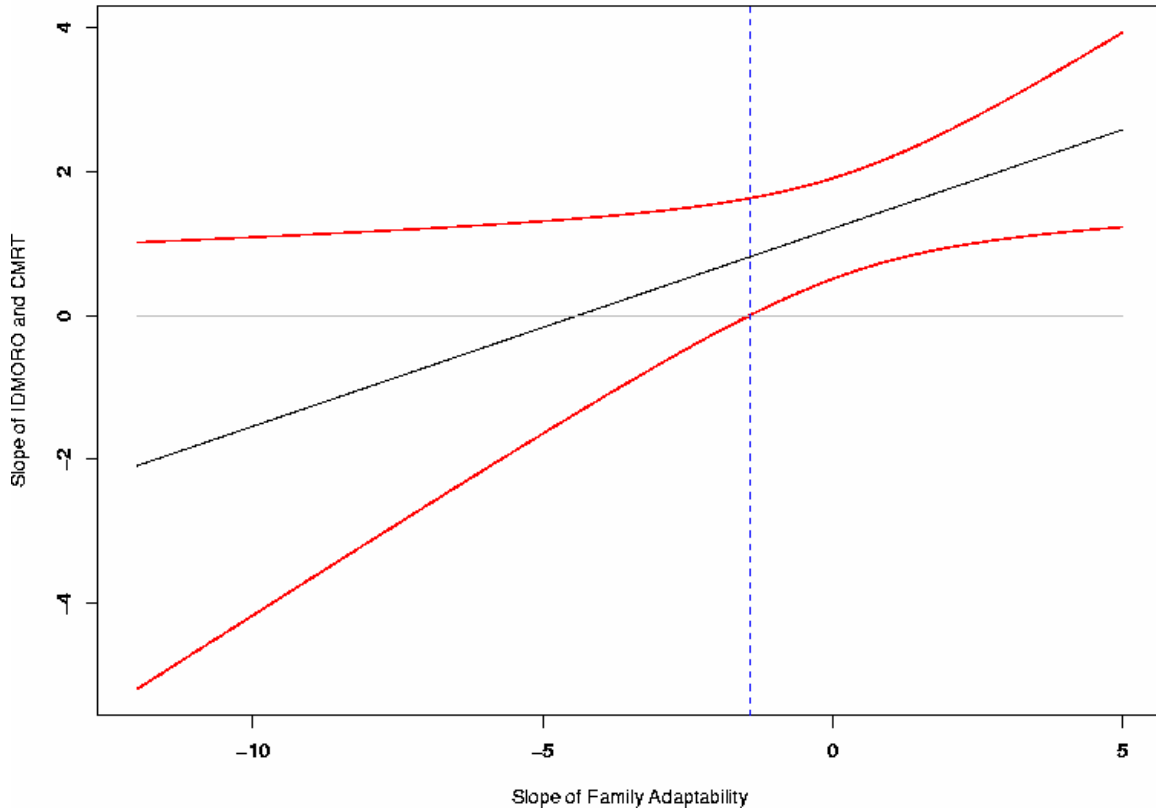


*Figure 4.3.* Simple Slopes of Family Adaptability on Identification of the Motherhood Role and Confidence with Maternal Role and Tasks

The simple slopes were statistically significant to the relationship between Identification of the Motherhood Role (IDMORO) and Confidence in Motherhood Role and Tasks (CMRT) at one standard deviation above the mean for the measure of Family Adaptability,  $t(106) = 4.12, p \leq .001$ , and at the mean for the measures of Family Adaptability  $t(106) = 3.22, p \leq .01$ . The simple slope at one standard deviation below the mean did not significantly affect the relationship between IDMORO and CMRT  $t(106) = 1.91, p \leq .06$ . Increasing family adaptability strengthened the relationship between

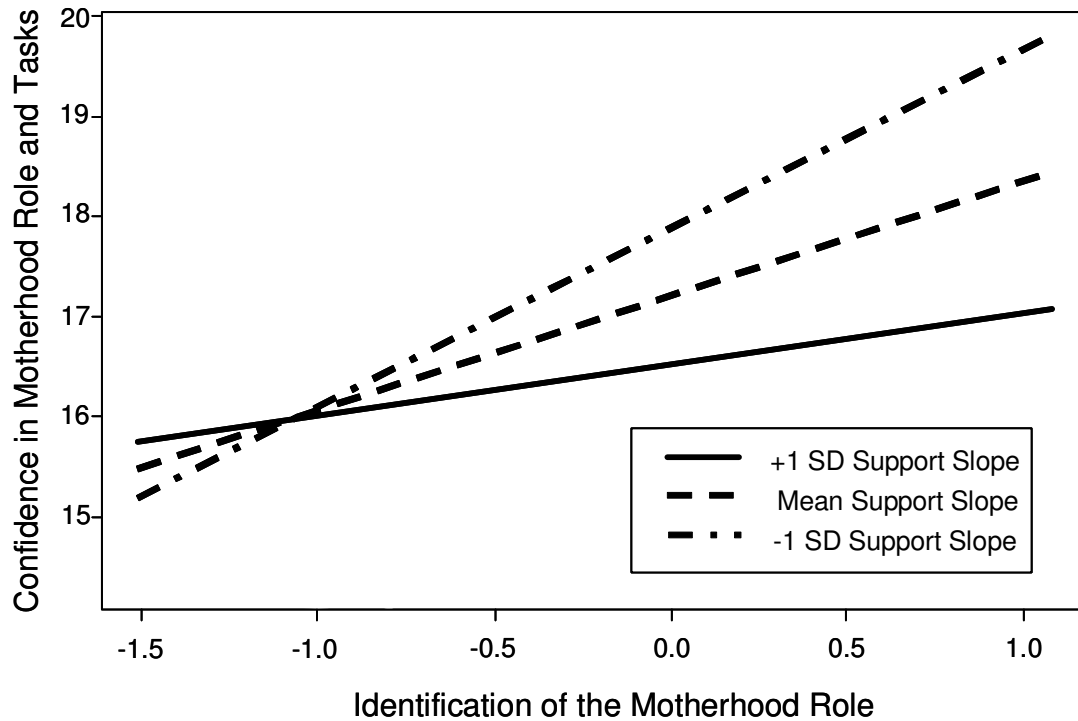


Identification of the Motherhood Role and Confidence with Motherhood Role and Tasks  
(Figure 4.4).



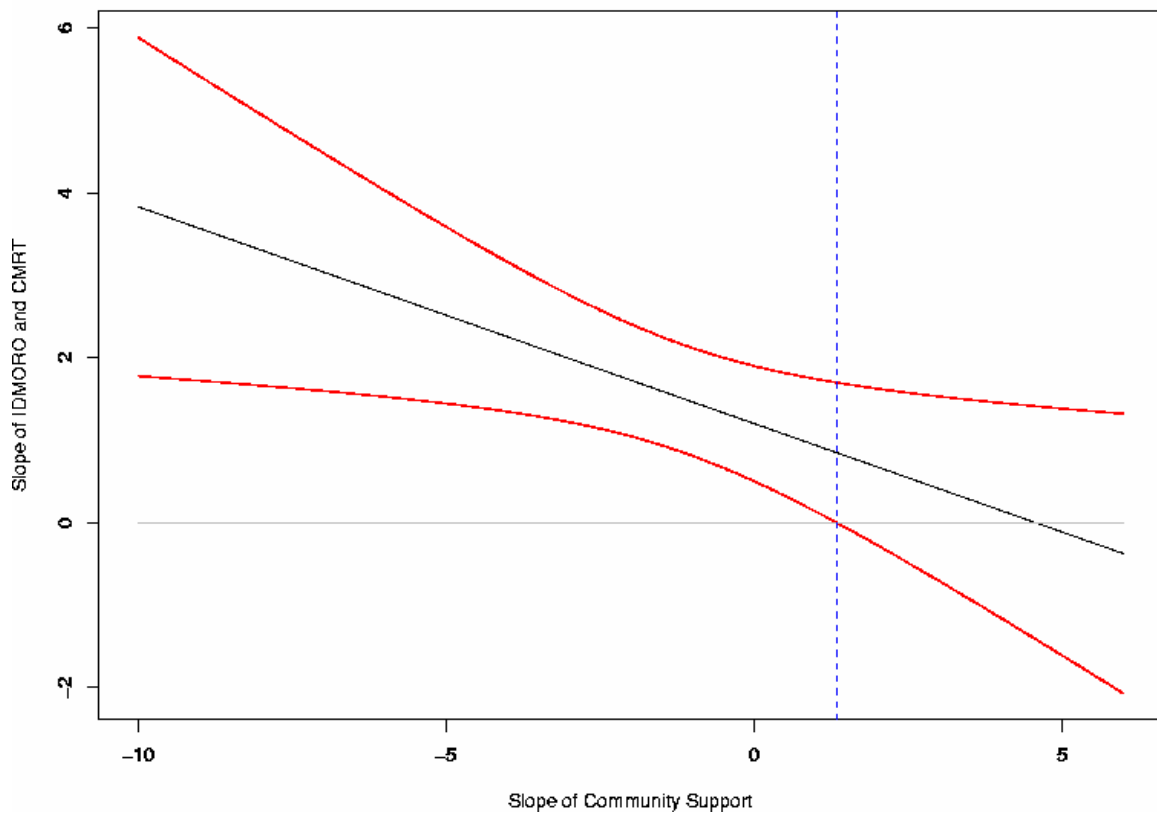
*Figure 4.4.* Confidence Interval Bands for Family Adaptability on Identification to the Motherhood Role and Confidence with Maternal Role and Tasks

For Community Support, the simple slopes were significant at the mean for the slope of Community Support  $t(106) = 3.19, p \leq .001$ , and one standard deviation below the mean  $t(106) = 5.10, p \leq .001$  (Figure 4.5). With a slope of Community Support at one standard deviation above the mean or higher, the relationship between IDMORO and CMRT becomes nonsignificant  $t(106) = 0.95, p > .05$ .



*Figure 4.5.* Simple Slopes for Community Support on Confidence with Maternal Role and Tasks

Increasing values for the slope of Community Support had an inverse affect on the relationship of prenatal Identification of the Motherhood Role and postpartum Confidence with Maternal Role and Tasks. Figure 4.6 shows that at increasing levels of community support the relationship between Identification of the Motherhood Role and Confidence with Motherhood Role and Tasks becomes nonsignificant (evidenced by the horizontal gray line running through the C.I. band and increasing levels of community support).



*Figure 4.6. Confidence Interval Bands for Community Support on Identification to the Motherhood Role and Confidence with Maternal Role and Tasks*

#### *Deployment and Postpartum Maternal Identity Attainment*

Research question 7 asked about the effects of deployment on prenatal maternal identity formation to later postpartum maternal identity attainment. Individual models were tested for the effects of first trimester deployment with each of the prenatal identity formation variables on Confidence in Motherhood Role and Tasks as well as Satisfaction with Infant and Infant Care. Identical models except for a change in the Deployment variable to the third trimester variable of Deployment were also tested. Table 4.19 reflects the findings for first-trimester Deployment only. Findings were nonsignificant for the variable of deployment for any point prenatally. The effects of first-trimester

Deployment and Identification of the Motherhood Role predicted Satisfaction with Infant and Infant Care (Table 4.19). Borderline significant results were obtained for first-trimester Deployment and Acceptance of Pregnancy to Satisfaction with Infant and Infant Care ( $\beta = 0.97, p \leq .07$ ) (Table 4.19). Deployment was not predictive of Confidence with Motherhood Role and Tasks at 6 months postpartum.

Table 4.19. Coefficients from Regression of Satisfaction with Infant and Infant Care on Deployment and Prenatal Maternal Identity Variables

Variables	Model 1		Model 2	
	B (S.E.)		B (S.E.)	
Intercept	15.09 (0.16)	***	15.22 (0.15)	***
Prenatal Maternal Identity	0.50 <sup>a</sup> (0.12)	***	1.25 <sup>b</sup> (0.13)	***
Deploy <sup>c</sup>	0.97 (0.53)	†	0.95 (0.49)	*
R <sup>2</sup>	0.07		0.22	

<sup>a</sup> Acceptance of Pregnancy Scale

<sup>b</sup> Identification of the Motherhood Role Scale

<sup>c</sup> First Trimester Deployment

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; †  $p < .10$

## CHAPTER V

### DISCUSSION

#### Significance of Findings

The findings from the present study provide evidence for change over time in prenatal maternal identity formation and statistically significant effects for family adaptability, community support, and deployment on the level of conflict associated with prenatal maternal identity attainment. Additionally, the change over time in prenatal maternal identity formation predicted maternal identity attainment at 6 months postpartum. Prenatal changes in the family's flexibility and perceived available emotional support from a community network also predicted maternal identity attainment at 6 months postpartum. First-trimester deployment was found to have a statistically significant effect on Satisfaction with Infant and Infant Care at six months postpartum.

#### *Prenatal Maternal Identity Formation*

The results provide evidence that prenatally a woman undergoes significant changes related to her feelings about acceptance of her pregnancy. In this study, the conflict the women experienced for accepting the pregnancy was highest in the first trimester and then decreased over the course of the pregnancy. The changes that a woman experienced regarding mental preparation for identifying herself as a mother were less pronounced. For the majority of the women in the study, there was very little change in their feelings regarding Identification of Motherhood Role over the course of the pregnancy. The findings, regarding the shape of the trajectories support Lederman's (1996) contention that although

closely linked, Acceptance of Pregnancy and Identification of the Motherhood Role are distinct concepts. Not only is the conflict associated with Identification of the Motherhood Role less during pregnancy than that of Acceptance of Pregnancy, but it remains relatively constant. This would indicate that the feelings a woman has regarding her anticipated role as a mother are formulated earlier than pregnancy. This is extremely important given that most maternal-fetal attachment researchers agree that the pregnant woman's perception of herself as a mother is particularly important in the progressive, interactive phenomenon of maternal-fetal attachment (Bloom, 1998; J. R. Fuller, 1990; Koniak-Griffin, 1988; Rubin, 1975, 1977; L. Tulman, 1981). It has also been consistently reported that the adaptational changes of identifying oneself as a mother occur predominantly during pregnancy (Cranley, 1984; Kemp & Page, 1987; Muller, 1990; Rubin, 1984). Instead, the findings from this study point to patterns of adaptation being much more complicated (Sameroff, 2000) and socialization processes throughout the course of the woman's life are integral to her development as a mother (Cairns & Rodkin, 1998; Fonagy et al., 1991; Lutenbacher & Hall, 1998). Rubin described giving of oneself as the most "intricate and complex task of childbearing and childbirth" (1984, p. 66). Giving of oneself refers to a mother's willingness and ability to make personal sacrifices (Sleutel, 2003). This ability is not learned during pregnancy but throughout life through continual experiences and reflections. It is through these experiences that a woman prepares herself to be a mother (Flagler & Nicoll, 1990). There is however a strong correlation between the feelings a woman has regarding her pregnancy, the changes she will undergo during her pregnancy and the ideals she carries regarding her identity as a mother. In this study, Acceptance of Pregnancy and Identification of the Motherhood Role were highly intercorrelated ( $r = 0.61, p \leq 0.01$ ). Lederman (1996) reported a similar

intercorrelation. In addition, parity, age and ethnicity did not significantly alter the change over time in either the Acceptance of Pregnancy or Identification of the Motherhood Role trajectories. Age, parity, and ethnicity did not affect the change over time in Acceptance of Pregnancy. Regardless of which pregnancy, women must accept different changes in their appearance and limitations in their activity each time they become pregnant (Lederman, 1996). Concerns over changes in work and spousal acceptance of pregnancy are very real regardless of one's age, parity, or ethnicity (Lederman, 1996; Nelson, 2003). In terms of Identification of the Motherhood Role, it might be anticipated that multigravidas would have a greater understanding of the motherhood role and less associated conflict. However, they continue to be conflicted with emotional, physical, and financial concerns (Lederman, 1996), and although concerns may differ by age, ethnicity, and parity, there is still significant conflict in terms of the fantasized "ideal" mother regardless of one's age, or ethnicity, or number of children. Each pregnancy brings with it a new beginning and an end (Lederman, 1990), and with this comes some amount of conflict. Of interest in this sample, the rank of the active-duty women impacted the level of conflict associated with Identification of the Motherhood Role (not Acceptance). Importantly, given that there were no differences in Acceptance of Pregnancy by "rank," it would seem, that the active-duty women were not experiencing any significant differences from the nonactive-duty women in regards to concerns over body image changes, ambivalence regarding the pregnancy, or issues associated with pregnancy discomforts. It would seem however, that the active-duty women were conflicted between the dreams and fantasies they had regarding being a mother and their professional aspirations. Evans and Rosen (1996) found that junior enlisted women were less concerned about the "timing" of the pregnancy than women with more rank.

Pregnancy planning in terms of timing within a military career did predict turnover in the military for their sample. However, junior enlisted members are also more likely to leave the military regardless of pregnancy (Evans & Rosen, 1996). In this sample, there was no greater conflict for active duty women with Acceptance of Pregnancy than for wives of military service men. Despite the physical nature of many of the jobs within the military, the active-duty women did not have increased conflict regarding body changes associated with pregnancy. The active-duty women did have greater conflict related to Identification of the Motherhood Role, and the conflict was greatest for those active-duty women at higher ranks. Identification of the Motherhood Role dimension includes concepts related to motivation and preparation for motherhood (Lederman, 1996). Evans and Rosen (1996) reported that officers were more likely than enlisted participants (officers having more rank than enlisted) to plan their pregnancies. Officers were also more likely to believe there is a “good time” in a military career to become pregnant (Evans & Rosen, 1996). Active-duty members recognize that with greater rank comes increasing demands and responsibilities (United States Air Force, 2005). Although the wives of military members may be faced with similar issues, given the transitory nature of the military, generally military wives must take jobs or positions that are temporary and do not offer as many promotion opportunities (Bureika, Reiser, Salvucci, Maxfield, & Simmons, 1999). In addition, women not on active duty have the option of quitting their jobs or taking part-time work at any point during or after pregnancy. The lack of options for those on active duty may contribute to greater conflict with Identification of the Motherhood Role. An indicator of a woman’s success in crystallizing her motherhood role is an ability to anticipate changes in her lifestyle (Lederman, 1996). Military life provides little opportunity to plan (Martin & McClure, 2000)



and for pregnant active-duty women the concerns may be compounded by pregnancy and maternal identity attainment.

The military branch of service for the husband (not the active-duty women) was also found to increase the conflict associated with accepting and identity with one's maternal identity. Wives of Army and Navy service men were found to have significantly greater conflict for Acceptance of Pregnancy and Identification of the Motherhood Role than wives of Air Force personnel. The Air Force population sampled (two San Antonio bases and Keesler Air Force Base) was totally from Air Education and Training Command. The likelihood of experiencing family separations is assumed to be slightly lower in a military-training environment than for active-duty members and their families serving in the Air Combat Command (ACC), Air Mobility Command (AMC) or Air Special Operations Command (ASOC) which all have primary mobility missions. The mission of Air Education and Training Command (AETC) bases is to recruit new people into the U.S. Air Force and provide them with military, technical, and flight training (United States Air Force, 2005). The Naval base where the majority of the Navy women in the study sample were stationed, was the Naval Construction Battalion Center in Gulfport, MS. This is home to the Atlantic Fleet Seabees, one of two Seabee bases in the U.S. They are generally one of the first units deployed during any campaign or humanitarian effort. They provide construction support for the infrastructure necessary to support the soldiers and airman or for communities ravished by natural disasters or war (Kimmel, 1995). Similar to the Air Force community sampled, the Army community in the study also had a mission primarily of education and training. The primary mission of Fort Sam Houston is support for the home of the U.S. Army Medical Command/U.S. Army Medical Department. Although its mission is largely education and

training, the base and Army medical facility have large deployment taskings (U.S. Army Medical Department Office of the Surgeon General, 2006). Deployment across this sample significantly impacted the woman's ability to accept her pregnancy. The absence of the husband because of deployment did not have a statistically significant affect on the woman's ability to visualize herself as a mother (Identification). Importantly, Identification was the prenatal parameter predictive of postpartum confidence in the role but not satisfaction. The interaction of first-trimester Deployment and Acceptance were predictive of later six-month postpartum satisfaction with one's infant and infant care.

*Family adaptability and community support.*

Researchers have long examined the effect of support on mitigating the physical and emotional strain experienced by the gravida during pregnancy (Dunkel-Schetter et al., 1996; Kalil et al., 1993; Liese et al., 1989; Norbeck, 1981; Norbeck & Anderson, 1989; Orr, 2004; Pryor et al., 2003). However, the type of support, by whom the support is provided, as well as the timing of the support are often poorly differentiated (Feldman et al., 2000; Norbeck & Tilden, 1983; Ramsey et al., 1986). The importance of support, especially support from the husband has been found to correlate with greater prenatal and postpartum adjustment (Halman et al., 1995; Lederman et al., 2001; Mercer & Ferketich, 1994a; Weiss & Chen, 2002). The concept of support in terms of adaptability within the family to the woman's changing role has not been well differentiated. For military populations faced with lifestyle changes requiring continual alterations in roles and rules, the impact on maternal identity formation and attainment is important to decipher. The aim of this project was to distinguish the support provided by the family in terms of adaptability, from the emotional, esteem-building support provided by a community network.

The mean scores for the Adaptability scale of FACES II indicated that the woman's perception of the family's adaptability during the three trimesters of pregnancy change very little. The values indicated the perception of stable roles with a democratic style of leadership within the family (Olson, 1995). Although the values being considered are recognized as being a positive family trait (Friedman, Utada, & Morrissey, 1987) they border on the side of "very flexible." Friedman et al. (1987) found that for 96 families, the perception of "ideal" adaptability within the family was a score of approximately 52 from the adults in the family. The national norm is 49.9 (Vega et al., 1986). In this sample, the mean across the trimesters ranged from 54.19 in the last trimester to 54.62 in the first trimester.

Family Adaptability was found to significantly affect Acceptance of Pregnancy. Results indicate that with perceived decreases in adaptability within the family, the gravida experienced increasing conflict associated with aspects of accepting her pregnancy. The unrelenting nature of pregnancy is not easy to accept (Rubin, 1984). In addition, the gravida is concerned about making the transition to being a family (or larger family) (Lederman, 1996). The women interviewed by Lederman (1996) consistently described aspects of mutuality as important in transitioning to parenthood. There were concerns regarding open communication and sharing of roles. The concept of mutuality suggests something much more than just a need for a supportive husband. It suggests an understanding that is inclusive of negotiation of rules and sharing of roles (LaRossa & LaRossa, 1981). In this sample, a lack of perceived flexibility significantly increased the woman's conflict related to accepting her pregnancy. The results indicate that the gravida's concerns about her pregnancy were inclusive of adjustments that she felt must be made within the family. However, rather than desiring greater structure within the family unit to combat feelings of uncertainty and

disruption caused by the shifting of roles (M. A. McCubbin, 1999), the gravida actually desired greater perceived flexibility within the family. The need for increased flexibility may be a by-product of a military population. Within the military community, a military wife recognizes that her needs are secondary to that of the organization (Bowen, 2000). She must be able to transition quickly to a family with a husband present to a family without a husband present. The military wife not only is more likely to perceive her family as more flexible, but understands the need for increased flexibility. Identification of the Motherhood Role was also significantly effected by Family Adaptability. During the first trimester of pregnancy, a woman is conflicted with the prospect of losing parts of her “world” because of the pregnancy (Rubin, 1984). Many social groups are structurally and functionally incapable of accepting the idea of a child (Rubin, 1984). For military wives who may be separated from life-long friends and family, there may be the need to lean even more on relationships within the family for validating or helping interpret what is occurring with pregnancy (Sorenson, 1990). Importantly, although family adaptability impacted the level of conflict the woman experienced with Acceptance of Pregnancy and Identification of Motherhood Role, family adaptability did not alter the trajectory of Acceptance of Pregnancy or Identification of the Motherhood Role. This further substantiates that maternal identity is deep-rooted in early childhood (Rubin, 1984). The perceived ability of the family to adapt to the woman’s changing identity does impact the gravida’s level of conflict regarding her prenatal maternal identity. Further, the changes in prenatal family adaptability significantly affect the gravida’s postpartum satisfaction and confidence with her maternal identity. The significance of this will be discussed with the postpartum results.

The descriptive statistics for Community Support provided a pattern that had the highest values for community support in the first trimester, decreased in the second trimester and then increased in the third trimester to values greater than those perceived in the first trimester. Interestingly, perceived community support is high in the first trimester when the gravida is likely to be sharing the news of her pregnancy with friends, coworkers and neighbors. Rubin (1984) describes the gravida filling the “empty time” with activities and commitments (p. 87). The newly pregnant woman is grateful for social demands (Rubin, 1984). In the first trimester, the gravida searches for information predominantly about pregnancy (Deutsch et al., 1988), but she is also beginning the process of disengaging from an identity as a woman without a child to a woman with a child (Rubin, 1984). Information is sought from “women friends,” who can share and listen.

The decrease in perceived available support comes at a time in the pregnancy that has been described as a period of quiescence (Arizmendi & Affonso, 1987); a period filled with feelings of increased well-being, adjustment, and validation (Huizink et al., 2002; Lederman, 1990). Rubin (1984) proposes that there is a “breaking of secondary group relationships” (p. 59) because they are incapable of accepting a child. There is also a growing sense of external threats. Although there may be a certain amount of “turning-in” during the second trimester, with some withdrawal from social spheres outside those from the family (Rubin, 1984); during the second trimester, the budding evidence of the woman’s motherhood demands attention. Comments on bodily appearance are important for the process of “taking-in” the pregnancy and “binding-in” to the fetus (fetal attachment) (Rubin, 1984). The results for the interaction of Community Support and Identification of the Motherhood Role indicate that although the woman desires information and acknowledgement during the second trimester,

there is increased conflict with her visualization of herself as a mother when she does not receive the anticipated or desired support. In the third trimester, there is an increase in the perceived availability of community support from those obtained in the second trimester. This increased perception comes at a time when the gravida is seeking information in order to take preventive or avoidance measures to ensure “safe passage” (Rubin, 1984, p. 55). She is also seeking out first-hand information. It is impossible to determine whether the decrease in perception in the second trimester is due to the gravida not seeking out support from her community or from a true perceived lack of availability. Interestingly, the perceived availability of support was at the lowest level in the second trimester when community support seems to have the greatest affect to later postpartum maternal identity attainment. The increased correlations for Acceptance of Pregnancy and Identification of the Motherhood Role to Community Support in the second trimester (Tables 4.4) support the importance of emotional-esteem building support specifically in the second trimester. The support the gravida received prenatally from the community is directly related to her level of comfort with her anticipated role and tasks as a mother. Community Support was found to have a statistically significant affect on the level of conflict experienced by the gravida for Acceptance of Pregnancy and Identification of the Motherhood Role. Prenatally, the support the gravida received from her community network is integral to her maternal identity formation.

*Prenatal deployment.*

Prenatal military deployment significantly impacted the level of conflict the gravida experienced regarding Acceptance of Pregnancy. Both the first-trimester variable and the third-trimester variable (encompassing deployment throughout pregnancy) were found to

significantly affect Acceptance of Pregnancy. However, the pattern of change in Acceptance of Pregnancy remained unaltered by deployment. Prenatal military deployment did not affect the pattern of change or the level of conflict experienced for Identification of the Motherhood Role. Supportive husband-wife relationships are predictive of psychological well-being during pregnancy (Kalil et al., 1993; Lederman, 1984, 1996; Zachariah, 1994; Zimmermann-Tansella, Bertagni, Siani, & Micciolo, 1994). The women in this study had little conflict regarding their relationships with their husbands. The mean across all trimesters ( $M = 14.33$ ,  $SD = 6.71$ ) for the Relationship with Husband scale from Lederman's Self-Evaluation Questionnaire reflects the presence of supportive relationships. Lederman (1996) reported a slightly higher mean ( $M = 16.2$ ,  $SD = 5.1$ ) for a sample of 115 low-risk multigravidas and primigravidas. The women with deployed husbands perceived significantly greater conflict associated with their relationship ( $M = 15.98$ ;  $F(1, 421) = 18.60$ ,  $p \leq .001$ ). However, the perceived conflict is still relatively low indicating that deployment did not change the supportive nature of the husband-wife relationship. Given the minimum change in the level of perceived support with deployment, it would seem the mere presence of the husband, not necessarily his level of support, is important for the gravida to accept the inherent psychological and physical changes that occur with pregnancy. Absence of the husband due to military deployment did not impact the level of conflict or the change over time for Identification of the Motherhood Role. This finding lends additional support to the earlier premise that 1) Identification of the Motherhood Role and Acceptance of the Pregnancy are distinct concepts, and 2) feelings regarding "oneself" as a mother are formulated earlier than pregnancy and are deep-rooted. In addition, the gravida is seeking the information related to her ideal image of a mother from society (Flagler & Nicoll, 1990). This process continues

throughout pregnancy unaltered by deployment. Importantly, the interaction of deployment with Identification of the Motherhood Role does predict the gravida's Satisfaction with Infant and Infant Care. The significance of this finding is included in the discussion of prenatal deployment to postpartum maternal identity attainment results.

Regardless of the length of deployment, even after the husband's return, the women showed higher levels of conflict for Acceptance of Pregnancy that persisted across the entire pregnancy. The majority of the deployments were relatively short, lasting only 3 months or less. Rather than the level of conflict for Acceptance of Pregnancy returning to a non-deployed level upon the husband's return, it remained elevated. Understandably the formation of maternal identity is profoundly influenced by the supportive relationship of the husband (Rubin, 1984). Throughout pregnancy a gravida is forced to contemplate aspects of her personality and aspirations so that loosening and distancing from certain roles and commitments can take place in preparation for maternal identity attainment (Rubin, 1984). For some women it may be tantamount to grieving over a loss (Killien, 1990; Lederman, 1990). The deployed husband is absent as the gravida makes this emotional journey and is unaware of these immense changes. In addition, the gravida desires unsolicited attention and interest, with relief from criticism (Rubin, 1984). Not only is the husband unlikely to be prepared to provide this type of support upon his return, also he is anticipating a jubilant "honeymoon" focused on his needs (Fenell & Fenell, 2003). During his absence his wife has changed both physically and emotionally. Reintegration as a couple is likely to produce significant conflict.



### *Postpartum Maternal Identity Attainment*

The third aim of the study was to determine the predictive ability of prenatal maternal identity trajectories to postpartum maternal identity attainment. The individual trajectories of Acceptance of Pregnancy were not found to be predictive of postpartum Confidence with Motherhood Role Tasks or Satisfaction with Infant and Infant Care. The results for Type I sums of squares indicate a significant amount of variance explained by Acceptance of Pregnancy. However, Acceptance of Pregnancy is not explaining anything above that captured by Identification of the Motherhood Role on this variable. Given the high correlation for Acceptance of Pregnancy and Identification of the Motherhood Role, this issue is not unexpected. The correlation tables provide verification that concepts within Acceptance of Pregnancy are related to aspects of postpartum maternal identity attainment. Higher correlations for first trimester Acceptance of Pregnancy to the postpartum maternal identity attainment variables indicates some significance to very early identity formulations for the gravida. Information relative to Acceptance of Pregnancy was theoretically captured at the most appropriate point for distinguishing the difference in conflict between Acceptance and Identification. The majority of the participants were given the initial booklet of questionnaires at their first obstetrical visit ( $M = 10$  weeks gestation). At this point in pregnancy, the woman is concerned with the changes that are taking place with her body (discomforts and nausea, not outward signs of pregnancy) (Rubin, 1984). As the pregnancy progresses, the movement of the fetus is felt, and attachment increases, then concerns with role identification heighten. Given the high correlation between Acceptance of Pregnancy and Identification of the Motherhood Role, it is evident that concerns over Acceptance of the Pregnancy are impacting Identification of the Motherhood Role. Accepting the changes that

come with pregnancy and identifying with one's role as early as the first trimester appear to be interlinked with postpartum role satisfaction. Hiser (1987) identified weight issues and a "flabby figure" as being items consistently reported as worrisome to new mothers. Only concern over meeting the needs of a husband and children was more stressful. It may be that issues related to Acceptance of Pregnancy that carry over and impact Satisfaction with Infant and Infant particularly are not as apparent at 6 months postpartum as 6 weeks to 3 months postpartum. Confidence in Motherhood Role and Tasks was found to increase from 3 to 6 weeks postpartum and then again from 6 to 3 months (Lederman & Lederman, 1987; Lorraine Tulman & Fawcett, 2003). Theoretically, it follows that concepts inherent within prenatal Identification of the Motherhood Role would impact a woman's confidence with tasks and her satisfaction with her role. The change over time for Identification of the Motherhood Role was found to significantly predict Confidence in Motherhood Role and Tasks as well as Satisfaction with Infant and Infant Care at 6 months postpartum. The direction of the parameter estimate indicates that with increasing conflict prenatally for Identification of the Motherhood Role, there is increasing conflict postpartum with Confidence in the Motherhood Role and Tasks as well as with Satisfaction with Infant and Infant Care. In several studies by Lederman et al. (1981; 1995) statistically significant correlations were obtained between third trimester Identification of the Motherhood Role to both Satisfaction with Infant and Infant Care as well as Confidence with Motherhood Role and Tasks. Assessment of earlier trimester adaptation was not made. Prior studies have indicated increasing conflict with role gratification as the postpartum period increases (Lederman & Lederman, 1987; Mercer, 1985a; Walker et al., 1986a). The findings from this study indicate that there is little difference in the effect of second versus third trimester role

conflict (Identification of the Motherhood Role) on Confidence in Maternal Role and Tasks. However, the relationship between second trimester Identification of the Motherhood Role to Satisfaction with Infant and Infant Care is stronger than that for the third trimester. These findings provide validation for the timing of certain prenatal interventions. Researchers have tended to overlook changes occurring in the second trimester because of the perception of increased feelings of well-being by the gravida (Arizmendi & Affonso, 1987; Huizink et al., 2002). Clearly, maternal identity transformations occurring in the first and second trimesters of pregnancy are integral to maternal identity attainment. The importance of the prenatal changes is heightened by the fact that the relationships are being identified at 6 months postpartum.

*Prenatal family adaptability and community support.*

The correlation tables (4.4-4.6) provide insight into the relationships between family adaptability and community support to postpartum maternal identity attainment. Specifically, the correlations for Family Adaptability to Confidence in Motherhood Role and Tasks (CMRT) as well as Satisfaction with Infant and Infant Care (SIC) were low, with the only significant relationships having occurred in the first trimester. Importantly, the relationships between Community Support to CMRT and SIC were stronger than those for Family Adaptability; with Community Support having statistically significant relationships to both postpartum variables in the first and second trimester of pregnancy. The prenatal slope for Community Support across pregnancy was a statistically significant predictor of Confidence with Maternal Role and Tasks. The emotional-esteem building support from a community network prenatally decreased the conflict the woman had postpartally with her role and the tasks she had to accomplish as a mother. The correlations for Community Support to the

CMRT were consistent across all trimesters indicating that the benefits derived from community support were fairly equivalent for all trimesters. Much of the research looking at the effects of social support to postpartum adaptation has focused on support provided after birth, rather than prenatally (Crnic et al., 1984; McVeigh, 2000; Mercer & Ferketich, 1995). Tarkka (2003) found a positive significant correlation for functional support provided in the third trimester with maternal competence. The interaction of Community Support with Identification of the Motherhood Role approached significance in the larger model, and became significant in a smaller model with the Acceptance of Pregnancy interaction terms removed (nonsignificant terms within the model). Interpreting the results of the moderating affect of Community Support on Prenatal Identification of the Motherhood Role to Confidence with Motherhood Role and Tasks is made easier by assessing the affect of Community Support at three different levels (Preacher et al., 2003) on Identification of the Motherhood Role to Confidence with Motherhood Role and Tasks. Results indicate that at levels of community support one standard deviation above the mean there is no longer a significant relationship between Identification of the Motherhood Role and Confidence with Motherhood Role and Tasks.

Rubin (1984) describes a cognitive mapping of the “I” and the “you.” (p. 9). She emphasizes that there is constant reformulation of the “I” that continues throughout pregnancy. This reformulation occurs through interaction with others. Although our perceptions of how we are expected to behave and the meaning of the behavior are effected by working models developed in early life (Bowlby, 1988), the results provide some evidence that the relationship of prenatal maternal identification (that varies little during pregnancy) to postpartum maternal identity attainment can be altered by emotional support

provided by a community network. Importantly, the results indicate that community support negatively effects the relationship between these two variables. Understandably, the significant relationship between Identification and Confidence is not necessarily the best situation for the mother. When conflict is high for prenatal Identification than conflict is generally high for Confidence with the Motherhood Role and Tasks. At higher levels of community support the relationship between Identification and Confidence with Motherhood Role and Tasks is broken and community support seems to compensate for women with poor visualization of their maternal identity. Perceived community support at the mean or below the mean however, does not compensate for poor prenatal maternal identity formation. It is also quite possible that for military wives, inexperienced as mothers in a military environment, may have increased conflict associated with Identification of the Motherhood Role, particularly as they become more aware of the added responsibilities of being a mother and wife within a military setting. Because they are more likely to be dislocated from family and life-long friends, they may obtain greater value from community network resources than women living closer to family. It is also important to note that the variable of community support measured the perceived availability of support rather than received support. Perceptions of available support may not be especially accurate (Dunkel-Schetter & Bennett, 1990). A person may believe that there is more support available than actually materializes at a time of stress, or more support may materialize than expected (Dunkel-Schetter & Bennett, 1990). Regardless of the potential inaccuracies, various studies have indicated that available support buffers the effects of stress, whereas received support does not (Gottlieb, 1996; Heller et al., 1986). In this study, prenatal community support had a direct effect on decreasing postpartum conflict with maternal competence in role tasks, an second trimester

support from had the strongest affect. More importantly, it seems that high levels of community support may compensate for low prenatal maternal identification.

The interaction of Family Adaptability and Identification of the Motherhood Role to Confidence with Motherhood Role and Tasks also approached significance in the larger model and became significant when the interaction terms with Acceptance of Pregnancy were removed from the model. Assessing the affect of Family Adaptability on Identification of the Motherhood Role (IDMORO) to Confidence with Motherhood Role and Tasks (CMRT) at three levels of Family Adaptability provides greater insight. Namely, with increases in the slope of prenatal family adaptability either at the mean or above the mean there is a statistically significant relationship between IDMORO and CMRT. With slopes for family adaptability below the mean, the significant relationship between IDMORO and CMRT is lost. Family adaptability is an important prenatal predictor of postpartum maternal identity attainment.

The support a gravida receives from her husband and family is integral to her process of becoming a mother (Rubin, 1984; Lederman, 1996). The importance of a father's prenatal flexibility to the woman's postpartum maternal adaptation has not been investigated. Marital-role quality has a strong effect on psychological distress within the family (R. C. Barnett, 2004). Mercer (2004) emphasized the need for realignment and delineation of routines and boundaries postpartum, but did not delineate the importance of this process occurring prenatally. The findings from this study point to the importance of prenatal family adaptability on prenatal Identification of the Motherhood Role and later postpartum confidence with one's maternal role and the tasks associated with that role. Rigid enmeshed families are known to provide little nurturance and support because of insecurity (Raines,

1991), while extreme flexibility affords little communication or support (Ingoldsby et al., 2004). Women experiencing extreme conflict with Identification of the Motherhood Role need increased communication and support from within the family. The absence of this important support impacts their prenatal developmental trajectory which impacts later postpartum adjustments. For the military women in this sample, there appears to be a need for higher levels of family adaptability than for women from nonmilitary samples. Given the nature of military family lifestyles, with continual, unexpected changes, there is a need for increased flexibility. Notably, this flexibility is essential for the woman's Identification of Motherhood Role and later Confidence with Maternal Role and Tasks.

The prenatal slope of Family Adaptability was the only support parameter found to significantly impact Satisfaction with Infant and Infant Care. Increased flexibility across pregnancy prenatally decreased the conflict the woman experienced postpartum for Satisfaction with Infant and Infant Care. Lower Trait and State anxiety scores have been found for women with supportive husbands (Kalil et al., 1993; Norbeck & Anderson, 1989). Kalil et al. measured aspects of emotional support, while Norbeck and Anderson measured emotional as well as tangible support offered from the husband and gravida's mother. Postpartum role adaptation has also been found to be significantly associated with a supportive relationship from the gravida's husband (Lederman, 1990; Lederman et al., 1981). Crnic et al. (1984) describe "intimate" support as being the most important predictor of positive maternal attitudes at 1, 8 and 18 months postpartum. Clearly, emotional support from a gravida's husband has been found to be important to maternal development. Family functioning has been found to aide maternal-fetal attachment (S. G. Fuller et al., 1993). In this study, the concept of adaptability, rather than cohesion, was the focus of support

provided by the family. Adaptability is a supportive element, closely tied to emotional support but further describing the type of support provided. The findings from this study provide longitudinal evidence of the importance of prenatal adaptability within the family for the woman's Satisfaction with Infant and Infant Care. Flexibility within the family in terms of roles and rules clearly impacts the woman's maternal identity attainment. More importantly, the woman's perception of the flexibility of the family in the first trimester had the strongest relationship to postpartum maternal identity attainment.

*Prenatal deployment.*

The findings for prenatal deployment to postpartum maternal identity attainment are profound. Namely, the significance of the enduring effects of first trimester military deployment beyond the deployments experienced at any other time during pregnancy on a woman's maternal identity attainment must be underscored. The change over time in Acceptance of Pregnancy regressed on first trimester deployment had borderline positive significance to Satisfaction with Infant and Infant Care. The change over time in Identification of the Motherhood Role regressed on first trimester deployment was a positive significant predictor of Satisfaction with Infant and Infant Care. Of note, despite the increased power of the variable for deployment across pregnancy, there were no significant findings. Additionally, the increased conflict that the woman experienced prenatally that impacted Satisfaction with Infant and Infant Care at 6 months postpartum endured despite the majority of the deployments lasting only 3 months or less.

Deployment causes feelings of isolation and abandonment for the military family (Duckworth, 2003; Wood, 2004). For the pregnant wife, the feelings of abandonment may be compounded because of the need to formulate her maternal identity through communication



with her spouse. The pregnant wife may also feel the stress of taking-on additional responsibilities at a time when she desires to concentrate fully on her changing role. Military wives voice their despair over feeling totally isolated during their husbands' deployments (Wood, 2004). They feel that neither friends nor neighbors understand or care what they are going through. It is possible too, that support from friends, especially those also experiencing deployment, can lead to a "pressure-cooker effect" (a compounding of negative feelings) (Hobfoll & Stephens, 1990). The pressure-cooker effect leads to more negative than positive supportive relationships. This could have profound effects on a pregnant woman who is working through maternal identity without a husband and dealing with the possibility that her husband and father of her baby might never return. This prenatal conflict impacts later postpartum maternal-infant attachment. Of note, the conflict imposed with prenatal deployment only impacted the woman's cognitive feelings regarding her satisfaction with maternal identity attainment and attachment with the infant not confidence with maternal tasks. The absence of the husband specifically impacted aspects of maternal identity formation and attainment directly related to the love and attachment the mother had for her infant and her satisfaction with her maternal role, not competence in the role. The subtle difference in these findings points to the long-lasting impact of the deployment. The need for certain role competencies is short-lived. A new mother learns to bathe, diaper and feed her new infant. As the infant grows the skills needed to accomplish these tasks change. The mother gathers information through various resources to make the necessary adjustments and gain confidence with these tasks. Satisfaction and attachment to the infant requires a gradual taking-in and binding-in to the fetus prenatally. The significance of first trimester deployment to later Satisfaction with Infant and Infant Care provides quantifiable support for

the underpinnings of Rubin's theoretical framework. Specifically, the continual incorporation of the idea of a child and the idea of oneself as a mother is a progressive process building on each stage of pregnancy (Rubin, 1984). This process is significantly affected by the absence of the husband, and the return of the husband even, prenatally, does little to improve the woman's maternal identity attainment.

### Limitations of the Study

The study design represents a reformulation of the original study's conceptualization and timeline. The primary study was designed to investigate prenatal adaptation to birth outcomes. Therefore the recruitment design did not include a postpartum data point. Well into the primary study, the postpartum data point was added to gain longitudinal perspective of prenatal adaptation to adaptation in the motherhood role. This design issue imposed certain limitations on the study findings. Foremost, the decrease in sample numbers of less than half the prenatal sample for the postpartum data point. The limited numbers at the 6-month postpartum data point may have increased the likelihood of a Type II error. In addition, the operationalization of maternal identity with independent variables for prenatal and postpartum limited the ability to use a growth curve analysis for the postpartum questions. Using one scale to measure concepts of maternal identity across pregnancy and into the postpartum period would have simplified the analyses. However, the likelihood of capturing the diverse feelings from across pregnancy and well into the postpartum period with one scale is unlikely.

The issue of external validity must be addressed. The data set was generated from a convenience sample of active duty women or wives of military service men. The four bases used in obtaining the sample were three large Air Force bases with the primary mission of

education and training of military service members (for nonflying missions), and one large Army base with an education focus. Notably, Keesler Air Force Base also provided all obstetrical care to the wives and women assigned to the Gulfport Construction Battalion. This may have created a sample slightly different from the general military population. The characteristics of the sample reflect very similar characteristics of the overall Air Force population. This was not surprising given the high percentage of Air Force personnel in the study. It is assumed that the feelings the women experienced in relationship to their identity formation and maternal role attainment are similar to those experienced by wives across the military. Active-duty women and wives of military service men were recruited for the study. Analysis of the data for the three trimesters of pregnancy reflected no statistically significant differences for these groups of women after controlling for women experiencing deployment and unmarried women. It is probable that a military sample from base(s) having a combat mission may have provided slightly different results. Most likely the numbers for women experiencing deployment would have been higher, increasing the power for the statistical analysis.

Correct measurement of the stated variables is one key to obtaining internal validity. Several issues related to measurement, may have impacted the findings related to that particular variable. The FACES II was administered in two different formats: 1) a family version, and 2) a couple's version. It was recognized during the course of the study that the questions on the family version, pertained more to a family with older children than to families with babies or toddlers. The intent of the FACES II instrument was to measure the woman's perception of family functioning during the course of her pregnancy and postpartum period. Given that the majority of the sample was quite young and either had no

children, or very young children, using the couple's version of the FACES II for all participants would have been more appropriate. It is also recommended that the FACES II be given twice, once to obtain measures of what the family functioning is believed to be and again to obtain measures of what would be the desired level of family functioning. This may have provided some useful information regarding the women's satisfaction with their family's adaptability. Although we have a measure of how the woman perceives her family functioning, we do not know if this is what she desires. It might be criticized that a measurement was not obtained from the father regarding his perception of family functioning. For the purposes of this study, the perception of the mother was considered the important factor in determining decreases in her identity formation conflict.

Almost 40% of the sample experienced deployment of their husband at some point during pregnancy. Only for those women experiencing deployment during the first trimester can the issue of timing really be considered. The variable of deployment asked in the third trimester inquired if the husband had been deployed at any point during the pregnancy. Notwithstanding the importance of the results for first trimester deployment, similar findings may have been found for second and third trimester if it had been measured in the same manner. It is apparent that the women experiencing deployment had very acute reactions that were captured with the measuring tools. Although differences were still being identified for these women long after their husbands returned, it is likely that women experiencing deployment in the second and third trimester may have had similar results that went undocumented because of the method of measurement.

### Implications for Future Research

Maternal identity is total and complete (Flagler & Nicoll, 1990). It is not a role that a mother can step into and out of again (Rubin, 1984). Rather, it requires constant, unending attention to meet the continual and nonnegotiable demands of an infant (LaRossa & LaRossa, 1981). This maternal-infant relationship is known to be integral to a child's emotional and cognitive growth and physical well-being (Atkinson et al., 2005; Barnard et al., 1983; J. R. Fuller, 1990; Zeanah et al., 1993). Given the connection between maternal identity and the process of emotional bonding to a child (Fowles, 1996) it would seem crucial to seek a deeper understanding of this developmental process. Little emphasis has been placed on understanding the developmental trajectory of the woman's maternal identity attainment to later role satisfaction and competence. The issue has been largely ignored within a military population with ever-growing numbers of young married couples of childbearing age (Martin, 2000).

The approach of examining individual intercepts and slopes of prenatal maternal identity formation in a military sample and then comparing these slopes to later postpartum adjustment provides the detailed information necessary to guide nursing intervention and policies impacting military families.

Foremost, the gravida experienced conflict associated with her maternal identity throughout pregnancy. Although this has been documented fairly consistently (Dunkel-Schetter et al., 2001; Flagler & Nicoll, 1990; Lederman, 1996; Leifer, 1977; Rubin, 1984), the impact of changes over time in this developmental process to later adaptation have largely been ignored. In this study, the changes the gravida experienced relative to her identity formation prenatally, significantly impacted her satisfaction with and her

competency in fulfilling her maternal role. More importantly, the conflict the woman experienced very early in pregnancy seemed to have the greatest impact on this process. The woman's maternal identity formation in the first trimester significantly impacted the satisfaction she felt in her role at 6 months postpartum. Importantly, emotional-esteem building support from a community network significantly decreased the conflict experienced by the gravida for both accepting and identifying with her role, as did the family's adaptability. The support from the community network, not surprisingly, had the greatest impact on the woman's role competencies, whereas the family's adaptability had the greatest impact on role satisfaction. The findings related to community support provide insight into the inherent difficulties found with support interventions. The ebb and flow of benefit derived from community support underscores the importance of the type of support offered as well as the timing of support. In regards to improving role competencies the timing of the support seems to be of little consequence. In terms of a woman's feelings concerning satisfaction with her role however, support is crucial very early in pregnancy. The support must be aimed at "building-up" the woman's self-esteem. This is especially important in a military population where the woman is faced with an alien role, possibly quite different from the one in which she was socialized. In terms of family adaptability, goal-directed interventions aimed at increasing family flexibility have a greater likelihood of success than interventions broadly focused on providing emotional support. In addition, flexibility is a concept that can be taught, mastered and measured rather than the more obscure concept of increasing emotional support. The success of these interventions is improved if timed in the first and early second trimester of pregnancy. The findings also highlight the importance of additional consideration be given to early first and second trimester maternal anxiety and

elements of support to birth outcome research. The use of general anxiety measures given only in the third trimester or even after delivery to collect pregnancy perceptions may hamper results (Da Costa et al., 2000; Glynn et al., 2004; Pryor et al., 2003). Research focusing on support measures has also offered inconsistent results because of multi-dimensional measures of support and the a lack of focus regarding the timing of the support (Dunkel-Schetter et al., 2001; Feldman et al., 2000; Hoffman & Hatch, 1996). The findings from this study provide evidence that the gravida experiences conflict associated with accepting pregnancy and identifying with her maternal role that is impacted by the adaptability of the family and by emotional-esteem support from the community. The benefits are the strongest from support occurring early in pregnancy.

The findings related to deployment have far-reaching implications for military programs and policy. Traditionally, the focus of support for the families of deployed service members has been the time-frame of the actual deployment. Much of the available support programs end when the member returns home. The findings related to first-trimester deployment to six-month postpartum role satisfaction and competencies point to the long-lasting effects of deployment on the family. There is an apparent need for ongoing supportive intervention for families of returned service members. While deployed, military service members could benefit from programs aimed at increasing their understanding of the changes their family has undergone during their absence and how they could improve their integration into the family. Specialized programs offered for “expectant” fathers would enlighten their understanding of the adaptational processes their wives have undergone during their absences and the continued developmental changes that will occur upon their return. The findings of this study point to the delicate balance that must be maintained between flexibility and

structure within the family. This balance significantly impacts the woman's maternal identity formation and maternal identity attainment, specifically her satisfaction in the role. Clearly the focus of prenatal intervention needs to move from the third trimester to the first and early second trimesters of pregnancy if improvements are to be made in overall role satisfaction and maternal-infant attachment.



## Appendices

### Appendix I:

#### THE LEDERMAN PRENATAL SELF-EVALUATION QUESTIONNAIRE

Directions: The statements below have been made by expectant women to describe themselves. Read each statement and decide which response best describes your feelings. Then circle the appropriate letter next to each statement.

	(4) Very Much So	(3) Moderately So	(2) Some-what So	(1) Not at All
1. This is a good time for me to be pregnant.	A	B	C	D
2. I like to watch other parents and children together.	A	B	C	D
3. I can tolerate the discomforts that I've had during pregnancy.	A	B	C	D
4. My husband/partner and I talk of the coming baby.	A	B	C	D
5. My husband/partner has been critical of me during the pregnancy.	A	B	C	D
6. I feel that rearing children is rewarding.	A	B	C	D
7. I feel it is necessary to know a lot about labor.	A	B	C	D
8. I can cope well with pain.	A	B	C	D
9. It's hard for me to get used to the changes brought about by pregnancy.	A	B	C	D
10. My husband/partner is understanding (calms me) when I get upset.	A	B	C	D
11. I can perform well under stress	A	B	C	D
12. I think my labor and delivery will progress normally.	A	B	C	D
13. There is little I can do to prepare for labor.	A	B	C	D
14. My mother shows interest in the coming baby.	A	B	C	D

	(4) Very Much So	(3) Moder- ately So	(2) Some- what So	(1) Not at All
15. I have confidence in my ability to maintain composure in most situations.	A	B	C	D
16. I am worried that the baby will be abnormal.	A	B	C	D
17. I think the worst whenever I get pain.	A	B	C	D
18. Realizing that labor has to end will help me maintain control in labor.	A	B	C	D
19. I look forward to caring for the baby.	A	B	C	D
20. My mother is happy about my pregnancy.	A	B	C	D
21. My mother offers helpful suggestions.	A	B	C	D
22. I have enjoyed this pregnancy.	A	B	C	D
23. My husband/partner is interested in discussing the pregnancy with me.	A	B	C	D
24. I have a good idea of what to expect during labor and delivery.	A	B	C	D
25. I understand how to work with the contractions in labor.	A	B	C	D
26. I look forward to childbirth.	A	B	C	D
27. I suspect the doctors and nurses will be indifferent to my concerns in labor.	A	B	C	D
28. It's easy to talk to my mother about my problems.	A	B	C	D
29. I have doubts about being a good mother.	A	B	C	D
30. I dwell on the problems the baby might have.	A	B	C	D
31. My mother looks forward to this grandchild.	A	B	C	D
32. I am glad I'm pregnant.	A	B	C	D
33. I like having children around me.	A	B	C	D

	(4) Very Much So	(3) Moder- ately So	(2) Some- what So	(1) Not at All
34. It will be hard for me to balance child care with my other commitments and activities.	A	B	C	D
35. My husband/partner helps me at home when I need it.	A	B	C	D
36. I find it hard to talk to my husband/partner about any changes in sex drive during pregnancy.	A	B	C	D
37. I feel good when I'm with my mother.	A	B	C	D
38. I am preparing myself to do well in labor.	A	B	C	D
39. I feel sure that I will lose control in labor.	A	B	C	D
40. I can count on my husband/partner's support in labor.	A	B	C	D
41. I am afraid that I will be harmed during delivery.	A	B	C	D
42. I feel that babies aren't much fun to care for.	A	B	C	D
43. My husband/partner feels I burden him with my feelings and problems.	A	B	C	D
44. When we get together, my mother and I tend to argue.	A	B	C	D
45. It will be difficult for me to give enough attention to a baby.	A	B	C	D
46. I think the baby will be a burden to me.	A	B	C	D
47. I feel prepared for what happens in labor.	A	B	C	D
48. I know some things I can do to help myself in labor.	A	B	C	D
49. When the time comes in labor, I'll be able to push even if it's painful.	A	B	C	D
50. I think about the kind of mother I want to be.	A	B	C	D
51. I am anxious about complications occurring in labor.	A	B	C	D
52. I feel that the stress of labor will be too much for me to handle.	A	B	C	D

	(4) Very Much So	(3) Moder- ately So	(2) Some- what So	(1) Not at All
53. I think I can bear the discomfort of labor.	A	B	C	D
54. I am concerned that caring for a baby will leave me little time for myself.	A	B	C	D
55. My mother reassures me when I have doubts about myself.	A	B	C	D
56. I feel well informed about labor.	A	B	C	D
57. I am worried that something will go wrong during labor.	A	B	C	D
58. It's difficult for me to accept this pregnancy.	A	B	C	D
59. My mother encourages me to do things in my own way.	A	B	C	D
60. I think my husband/partner would say we have made a satisfactory sexual adjustment during this pregnancy.	A	B	C	D
61. This has been an easy pregnancy so far.	A	B	C	D
62. I wish I wasn't having the baby now.	A	B	C	D
63. I worry that I will lose the baby in labor.	A	B	C	D
64. If I lose control in labor it will be hard for me to regain it.	A	B	C	D
65. My mother criticizes my decisions.	A	B	C	D
66. I'm having a problem adjusting to this pregnancy.	A	B	C	D
67. I am worried that my baby may not like me.	A	B	C	D
68. I focus on all the terrible things that could happen in labor.	A	B	C	D
69. This pregnancy has been a source of frustration to me.	A	B	C	D
70. I can count on my husband/partner to share in the care of the baby.	A	B	C	D
71. I am confident of having a normal childbirth.	A	B	C	D
72. I feel that childbirth is a natural, exciting event.	A	B	C	D

	(4) Very Much So	(3) Moderately So	(2) Some- what So	(1) Not at All
73. I feel I already love the baby.	A	B	C	D
74. I have found this pregnancy gratifying.	A	B	C	D
75. I believe I can be a good mother.	A	B	C	D
76. I have regrets about being pregnant at this time.	A	B	C	D
77. I find many things about pregnancy disagreeable.	A	B	C	D
78. I feel I will enjoy the baby.	A	B	C	D
79. I am happy about this pregnancy.	A	B	C	D

## Appendix II

### FACES II: Family Version

1	2	3	4	5
Almost Never	Once in Awhile	Sometimes	Frequently	Almost Always

Describe Your Family:

- \_\_\_\_\_ 1. Family members are supportive of each other during difficult times.
- \_\_\_\_\_ 2. In our family, it is easy for everyone to express his/her opinion.
- \_\_\_\_\_ 3. It is easier to discuss problems with people outside the family than with other family member.
- \_\_\_\_\_ 4. Each family member has input regarding major family decisions.
- \_\_\_\_\_ 5. Our family gathers together in the same room.
- \_\_\_\_\_ 6. Children have a say in their discipline.
- \_\_\_\_\_ 7. Our family does things together.
- \_\_\_\_\_ 8. Family members discuss problems and feel good about the solutions.
- \_\_\_\_\_ 9. In our family, everyone goes his/her own way.
- \_\_\_\_\_ 10. We shift household responsibilities from person to person.
- \_\_\_\_\_ 11. Family members know each other's close friends.
- \_\_\_\_\_ 12. It is hard to know what the rules are in our family.
- \_\_\_\_\_ 13. Family members consult other family members on personal decisions.
- \_\_\_\_\_ 14. Family members say what they want.
- \_\_\_\_\_ 15. We have difficulty thinking of things to do as a family.
- \_\_\_\_\_ 16. In solving problems, the children's suggestions are followed.
- \_\_\_\_\_ 17. Family members feel very close to each other.

1	2	3	4	5
Almost Never	Once in Awhile	Sometimes	Frequently	Almost Always

- \_\_\_ 18. Discipline is fair in our family.
- \_\_\_ 19. Family members feel closer to people outside the family than to other family members
- \_\_\_ 20. Our family tries new ways of dealing with problems.
- \_\_\_ 21. Family members go along with what the family decides to do.
- \_\_\_ 22. In our family, everyone shares responsibilities.
- \_\_\_ 23. Family members like to spend their free time with each other.
- \_\_\_ 24. It is difficult to get a rule changed in our family.
- \_\_\_ 25. Family members avoid each other at home.
- \_\_\_ 26. When problems arise, we compromise.
- \_\_\_ 27. We approve of each other's friends.
- \_\_\_ 28. Family members are afraid to say what is on their minds.
- \_\_\_ 29. Family members pair up rather than do things as a total family.
- \_\_\_ 30. Family members share interests and hobbies with each other.

### Appendix III

#### FACES II: Couples Version

1	2	3	4	5
Almost Never	Once in Awhile	Sometimes	Frequently	Almost Always

Describe Your Relationship:

- \_\_\_\_\_ 1. We are supportive of each other during difficult times.
- \_\_\_\_\_ 2. In our relationship, it is easy for both of us to express our opinion.
- \_\_\_\_\_ 3. It is easier to discuss problems with people outside the marriage than with my partner.
- \_\_\_\_\_ 4. We each have input regarding major family decisions.
- \_\_\_\_\_ 5. We spend time together when we are home.
- \_\_\_\_\_ 6. We are flexible in how we handle differences.
- \_\_\_\_\_ 7. We do things together.
- \_\_\_\_\_ 8. We discuss problems and feel good about the solutions.
- \_\_\_\_\_ 9. In our marriage, we each go our own way.
- \_\_\_\_\_ 10. We shift household responsibilities between us.
- \_\_\_\_\_ 11. We know each other's close friends.
- \_\_\_\_\_ 12. It is hard to know what the rules are in our relationship.
- \_\_\_\_\_ 13. We consult each other on personal decisions.
- \_\_\_\_\_ 14. We freely say what they want.
- \_\_\_\_\_ 15. We have difficulty thinking of things to do together.
- \_\_\_\_\_ 16. We have a good balance of leadership in our marriage.
- \_\_\_\_\_ 17. We feel very close to each other.



1	2	3	4	5
Almost Never	Once in Awhile	Sometimes	Frequently	Almost Always

- \_\_\_\_ 18. We operate on the principle of fairness in our marriage.
- \_\_\_\_ 19. I feel closer to people outside the marriage than to my partner
- \_\_\_\_ 20. We try new ways of dealing with problems.
- \_\_\_\_ 21. I go along with what my partner decides to do.
- \_\_\_\_ 22. In our marriage, we share responsibilities.
- \_\_\_\_ 23. We like to spend our free time with each other.
- \_\_\_\_ 24. It is difficult to get a rule changed in our relationship.
- \_\_\_\_ 25. We avoid each other at home.
- \_\_\_\_ 26. When problems arise, we compromise.
- \_\_\_\_ 27. We approve of each other's friends.
- \_\_\_\_ 28. We are afraid to say what is on our minds.
- \_\_\_\_ 29. We tend to do more things separately.
- \_\_\_\_ 30. We share interests and hobbies with each other.

## Appendix IV

### Social Support Index

Directions: Read the statements below and decide for your family whether you: (1) Strongly Disagree, (2) Disagree; are (3) Neutral, (4) Agree; or (5) Strongly Agree and circle that number.

*Please indicate how much you agree with each of the following statements about your community.*

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. If I had an emergency, even people I do not know in this community would be willing to help.	0	1	2	3	4
2. I feel good about myself when I sacrifice and give time and energy to members of my family.	0	1	2	3	4
3. The things I do for members of my family and they do for me make me feel part of this very important group.	0	1	2	3	4
4. People here know they can get help from the community if they are in trouble.	0	1	2	3	4
5. I have friends who let me know they value who I am and what I can do.	0	1	2	3	4
6. People can depend on each other in this community	0	1	2	3	4
7. Members of my family seldom listen to my problems or concerns; I usually feel criticized	0	1	2	3	4
8. My friends in this community are a part of my everyday activities.	0	1	2	3	4
9. There are times when family members do things that make other members unhappy.	0	1	2	3	4
10. I need to be very careful how much I do for my friends because they take advantage of me.	0	1	2	3	4

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
11. Living in this community gives me a secure feeling	0	1	2	3	4
12. The members of my family make an effort to show their love and affection for me.	0	1	2	3	4
13. There is a feeling in this community that people should not get too friendly with each other.	0	1	2	3	4
14. This is not a very good community to bring children up in.	0	1	2	3	4
15. I feel secure that I am as important to my friends as they are to me.	0	1	2	3	4
16. I have some very close friends outside the family who I know really care for me and love me.	0	1	2	3	4
17. Member(s) of my family do not seem to understand me; I feel taken for granted.	0	1	2	3	4

## Appendix V:

### THE LEDERMAN POSTPARTUM SELF-EVALUATION QUESTIONNAIRE

Directions: The statements below have been made by mothers of young infants. Read each statement and decide which statement best describes your feelings. Then circle the appropriate letter next to each statement.

	(4) Very Much So	(3) Moder- ately So	(2) Some- what So	(1) Not at All
1. I know what my baby likes and dislikes.	A	B	C	D
2. My husband/partner participates in the care of the baby.	A	B	C	D
3. It bothers me to get up for the baby at night.	A	B	C	D
4. My husband/partner is understanding when I get upset.	A	B	C	D
5. This baby is a financial burden for us now.	A	B	C	D
6. Childbirth gave me a feeling of accomplishment.	A	B	C	D
7. My husband/partner feels that caring for the baby is not his responsibilities .	A	B	C	D
8. We need more things than we can afford to buy	A	B	C	D
9. My recent delivery made me proud of myself	A	B	C	D
10. I feel close to my husband/partner	A	B	C	D
11. It is boring for me to care for the baby and do the same things over and over	A	B	C	D
12. I am uncertain about whether I can make the right decisions for my baby .	A	B	C	D
13. My husband/partner helps as little as possible with child care.	A	B	C	D
14. When the baby cries, I can tell what she/he wants.	A	B	C	D

	(4) Very Much So	(3) Moder- ately So	(2) Some- what So	(1) Not at All
15. I have friends or relatives who reassure me as a mother.	A	B	C	D
16. My husband/partner spends time with the baby.	A	B	C	D
17. My patience with the baby is limited.	A	B	C	D
18. I am concerned about raising children in the neighborhood we live in.	A	B	C	D
19. My parents criticize me as a mother.	A	B	C	D
20. I am unhappy with the amount of time I have for activities other than child care .	A	B	C	D
21. My husband/partner gets annoyed when I ask him to help with the care of the baby.	A	B	C	D
22. I enjoy taking care of the baby.	A	B	C	D
23. I am upset about having too many responsibilities as a mother.	A	B	C	D
24. It is hard to talk to my husband/partner about problems I have.	A	B	C	D
25. When bathing or diapering the baby, I would like to be doing something else.	A	B	C	D
26. I have doubts about whether I am a good mother.	A	B	C	D
27. I would like to be a better mother than I am.	A	B	C	D
28. I remember labor as unpleasant and frightening.	A	B	C	D
29. I can talk with some of my friends or relatives about questions I have concerning motherhood.	A	B	C	D
30. My budget allows me to get the help I need with housework and other tasks.	A	B	C	D
31. My husband/partner criticizes me as a wife/partner.	A	B	C	D

	(4) Very Much So	(3) Moder- ately So	(2) Some- what So	(1) Not at All
32. My husband/partner wants to share in the care of the baby.	A	B	C	D
33. I am glad I had this baby now.	A	B	C	D
34. I get annoyed if the baby frequently interrupts my activities .	A	B	C	D
35. I am concerned about having a steady income for my family.	A	B	C	D
36. I feel that I know my baby and what to do for him/her.	A	B	C	D
37. My husband/partner would rather spend time at work or a hobby than be with me.	A	B	C	D
38. My husband/partner cares about how I feel.	A	B	C	D
39. My husband/partner makes me feel I am a burden to him.	A	B	C	D
40. I have friends or relative who encourage me to care for the baby in my own way.	A	B	C	D
41. I am able to hire a babysitter when I need one.	A	B	C	D
42. I enjoy being a mother.	A	B	C	D
43. When I am down or depressed, my husband/partner reassures me.	A	B	C	D
44. Feeding the baby gives me a feeling of satisfaction.	A	B	C	D
45. My husband/partner and I are having problem with our relationship.	A	B	C	D
46. My parent(s) are interested in the baby.	A	B	C	D
47. I feel joyful when I remember the birth of the baby.	A	B	C	D
48. I feel I reacted badly to the pain of labor.	A	B	C	D
49. I can share my thoughts and feelings with my husband/partner. .	A	B	C	D

	(4) Very Much So	(3) Moderately So	(2) Some- what So	(1) Not at All
50. I am concerned about being able to meet the baby's needs.	A	B	C	D
51. There is enough money for all my family's basic needs.	A	B	C	D
52. I don't know how to care for the baby as well as I should.	A	B	C	D
53. I play with the baby between feedings when she/he is awake and quiet.	A	B	C	D
54. My husband/partner shows an interest in the baby.	A	B	C	D
55. Discussions I have with my husband/partner end in arguments	A	B	C	D
56. My husband/partner lets me down when I need him.	A	B	C	D
57. When the baby cries, my husband/partner ignores it.	A	B	C	D
58. I have regrets about how I coped with labor.	A	B	C	D
59. I trust my own judgement in deciding how to care for the baby.	A	B	C	D
60. Our home is too small for all of us.	A	B	C	D
61. I know what my baby wants most of the time.	A	B	C	D
62. I can rely on friends or relatives to help me with the baby when necessary.	A	B	C	D
63. I am unsure about whether I give enough attention to the baby.	A	B	C	D
64. I feel burdened with the many demands made on me as a mother.	A	B	C	D
65. My husband/partner dislikes caring for the baby.	A	B	C	D
66. My parents(s) make me feel like there is little I can do right.	A	B	C	D

	(4) Very Much So	(3) Moder- ately So	(2) Some- what So	(1) Not at All
67. Overall, my labor and delivery was a good experience.	A	B	C	D
68. I feel disappointed in the delivery experience I had.	A	B	C	D
69. I have friends or relatives who are interested in the baby.	A	B	C	D
70. I worry about how we will manage on our present income.	A	B	C	D
71. My husband/partner enjoys holding the baby.	A	B	C	D
72. My parent(s) think I should take better care of the baby.	A	B	C	D
73. Giving birth was gratifying to me.	A	B	C	D
74. My husband/partner avoids helping me with child care.	A	B	C	D
75. I would prefer to go to work or classes and have someone else care for the baby.	A	B	C	D
76. I am unsure of what to do for the baby when she/he cries.	A	B	C	D
77. My parent(s) seem to like the way I care for the baby.	A	B	C	D
78. I have friends or relatives who think I am a good mother.	A	B	C	D
79. I feel good about how I handled myself during labor and delivery.	A	B	C	D
80. My parent(s) show little interest in the baby.	A	B	C	D
81. I feel secure about my future financial situation.	A	B	C	D
82. I have confidence in my ability to care for the baby.	A	B	C	D



## Appendix VII:

### ICD for Prenatal Portion of Study

#### **FWH20020114H**

#### **BROOKE ARMY MEDICAL CENTER/WILFORD HALL MEDICAL CENTER INFORMED CONSENT DOCUMENT (ICD Template Version 4. Feb 02)**

#### **MILITARY FAMILIES: PSYCHOSOCIAL ADAPTATION TO PREGNANCY**

#### **PRINCIPAL INVESTIGATOR – Major Karen L. Weis**

If you choose not to participate in this research study, your decision will not affect your eligibility for care or any other benefits to which you are entitled.

#### ***DESCRIPTION/PURPOSE OF RESEARCH***

You are being asked to consider participation in this research study. The purpose of this study is to investigate relationships of prenatal psychosocial adaptation, family functioning, and community support to the incidence of low birth weight, and other maternal and newborn complications within a military population. Prenatal psychosocial adaptation to pregnancy refers to the mental and social changes that an expectant mother experiences and expects during her pregnancy.

This study will enroll approximately 350 subjects at Wilford Hall Medical Center and Keesler Medical Center, over a period of 14 months.

You have been selected to participate in this study because you are between the age of 18-35, receive your prenatal care at Wilford Hall Medical Center, and have a single uterine pregnancy (one unborn child, not twins, etc.), are not more than 20 weeks pregnant upon entry into the study, have no preexisting medical conditions (such as high blood pressures, diabetes, cardiac disease, renal disease, collagen disease or chronic anemia), and are either active duty or a dependent wife of a military member.

#### **PROCEDURES:**

During your participation in this study, you will be asked to complete a demographic data sheet, the FACES II scale, a Prenatal Evaluation Questionnaire and the Social Support Index scale at your initial obstetrical appointment. The FACES II, the Prenatal Evaluation Questionnaire and the Social Support Index scale will also be completed at a visit between 13-25 weeks and again at an appointment between 26-38 weeks. The questionnaires will be given to you upon arrival at the particular OB appointment. The items can be completed during your appointment and returned to the research nurse or clinic staff member trained in the program. Completion of the questionnaires will take 15-20 minutes. A postcard will be sent to your home reminding you about the project and the need to complete the questionnaires at some point during your next

obstetric appointment. In addition, information about your previous medical history will be collected from your medical records.

**RISKS OR DISCOMFORTS:**

There is a possibility that you may feel uncomfortable or experience feelings of distress as a result of answering some of the items in the questionnaires. The researcher has made arrangements to provide counselors to you should you decide you would like to talk to someone about your feelings. Nurses from the New Parent program, an affiliate program of Family Advocacy, have agreed to meet with you if you feel distressed or have questions as a result of the study. These counselors can make the appropriate referrals to other outpatient or inpatient programs as necessary.

The study requires the completion of questionnaires only. The only inconvenience is the time spent completing the questionnaires.

**BENEFITS:**

The potential benefit of your participation in this study would be to improve military families' adaptation to pregnancy and the support systems available to pregnant women and their families. This study may also benefit others (civilian families) by helping to find out whether current adaptation and support techniques offered are beneficial to pregnancy outcomes. There is no guarantee you will receive any benefit from this study other than knowing that the information may help future patients.

**PAYMENT (COMPENSATION)**

You will not receive any compensation (payment) for participating in this study.

**ALTERNATIVES TO PARTICIPATION:**

You understand that if you choose not to participate in this study no data will be collected from you or your family members. Choosing not to participate in this study is your alternative to volunteering for this study.

**CONFIDENTIALITY OF RECORDS OF STUDY PARTICIPATION:**

Records of your participation in this study may only be disclosed in accordance with federal law, including the Federal Privacy Act, 5 U.S.C. 552a, and its implementing regulations. DD Form 2005, Privacy Act Statement- Military Health Records, contains the Privacy Act Statement for the records.

By signing this consent document, you give your permission for information gained from your participation in this study to be published in medical literature, discussed for educational purposes, and used generally to further medical science. You will not be personally identified; all information will be presented as anonymous data.

Your records may be reviewed by the U.S. Food & Drug Administration (FDA), other government agencies, the WHMC and Uniformed Services University Institutional Review Boards, and by Triservice Nursing Research Program.

Complete confidentiality cannot be promised, particularly for military personnel, because information regarding your health may be required to be reported to appropriate medical or command authorities.

**ENTITLEMENT TO CARE:**

In the event of injury resulting from this study, the extent of medical care provided is limited and will be within the scope authorized for Department of Defense (DoD) health care beneficiaries.

Your entitlement to medical and dental care and/or compensation in the event of injury is governed by federal laws and regulations, and if you have questions about your rights as a research subject or if you believe you have received a research-related injury, you may contact the

Wilford Hall Clinical Research Squadron Commander, (210) 292-7069 or Wilford Hall Medical Center Risk Manager, 210-292-6004.

**VOLUNTARY PARTICIPATION:**

The decision to participate in this study is completely voluntary on your part. No one has coerced or intimidated you into participating in this project. You are participating because you want to. The Principal Investigator or one of his/her associates has adequately answered any and all questions you have about this study, your participation, and the procedures involved. If significant new findings develop during the course of this study that may relate to your decision to continue participation, you will be informed.

You may withdraw this consent at any time and discontinue further participation in this study without affecting your eligibility for care or any other benefits to which you are entitled.

**CONTACT INFORMATION:**

**Principal Investigator (PI)**

The principal investigator or a member of the WHMC Obstetrical nursing staff will be available to answer any questions concerning procedures throughout this study.

Principal Investigator: Major Karen Weis      Phone: (210) 292-6951

The Point of Contact for BAMC will be Capt Linda Denny, the Perinatal Clinical Nurse Specialist.

**Institutional Review Board (IRB)**

If you have any comments, questions, concerns or complaints, you may also contact the Chairperson of the WHMC Institutional Review Board (IRB), at (210) 292-7141. Or mail to: 59th Medical Wing/CM, 2200 Bergquist Drive, Lackland Air Force Base, Texas 78230.

The IRB is the hospital committee responsible for safeguarding your rights as a research subject.

Your consent to participate in this study is given on a voluntary basis. All oral and written information and discussions about this study have been in English, a language in which you are fluent.

A copy of this form has been given to you.

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**VOLUNTEER'S SIGNATURE**      **VOLUNTEER'S SSN**      **DATE**

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**VOLUNTEER'S PRINTED NAME**      **FMP**      **SPONSOR'S SSN**  
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**VOLUNTEER'S ADDRESS (street, city, state, zip)**

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**ADVISING INVESTIGATOR'S SIGNATURE**      **DATE**      **(PHONE**  
**NUMBER)**

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**PRINTED NAME OF ADVISING INVESTIGATOR**

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**WITNESS' SIGNATURE**      **DATE**  
(Must witness ALL signatures)

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**PRINTED NAME OF WITNESS**

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Subject's Stamp Plate

PRIVACY ACT OF 1974 APPLIES.

DD FORM 2005 FILED IN MILITARY HEALTH RECORDS

Appendix VIII:

ICD for Prenatal and Postpartum Portions of the Study

**FWH20020114H**

BROOKE ARMY MEDICAL CENTER/WILFORD HALL MEDICAL CENTER  
INFORMED CONSENT DOCUMENT  
(ICD Template Version 4. Feb 02)

MILITARY FAMILIES: PSYCHOSOCIAL ADAPTATION TO PREGNANCY

**PRINCIPAL INVESTIGATOR** – Captain Linda Denny

If you choose not to participate in this research study, your decision will not affect your eligibility for care or any other benefits to which you are entitled.

*DESCRIPTION/PURPOSE OF RESEARCH*

You are being asked to consider participation in this research study. The purpose of this study is to investigate relationships of prenatal psychosocial adaptation, family functioning, and community support to the incidence of low birth weight, and other maternal and newborn complications within a military population. Prenatal psychosocial adaptation to pregnancy refers to the mental and social changes that an expectant mother experiences and expects during her pregnancy. The purpose of the postpartum phase of this study is to identify if, after you deliver your baby, the way your family has adapted to the new baby or how much support you have from family and friends is related to things like the way you are able to bond with your child, feelings of sadness or depression that might occur after pregnancy and even your weight loss that is required by the military after pregnancy for military moms.

This study will enroll approximately 425 subjects at Wilford Hall Medical Center and Keesler Medical Center, over a period of 14 months.

You have been selected to participate in this study because you are between the age of 18-35, receive your prenatal care at Wilford Hall Medical Center, and have a single uterine pregnancy (one unborn child, not twins, etc.), are not more than 20 weeks pregnant upon entry into the study, have no preexisting medical conditions (such as high blood pressures, diabetes, cardiac disease, renal disease, collagen disease or chronic anemia), and are either active duty or a dependent wife of a military member. You have been selected to participate in the postpartum phase of this study because you completed the Military Families: Psychosocial Adaptation to Pregnancy study.

**PROCEDURES:**

During your participation in the pregnancy phase of this study, you will be asked to complete a demographic data sheet, the FACES II scale, a Prenatal Evaluation Questionnaire and the Social Support Index scale at your initial obstetrical appointment. The FACES II, the Prenatal

Evaluation Questionnaire and the Social Support Index scale will also be completed at a visit between 13-25 weeks and again at an appointment between 26-38 weeks. The questionnaires will be given to you upon arrival at the particular OB appointment. The items can be completed during your appointment and returned to the research nurse or clinic staff member trained in the program. Completion of the questionnaires will take 15-20 minutes. A postcard will be sent to your home reminding you about the project and the need to complete the questionnaires at some point during your next obstetric appointment. In addition, information about your previous medical history will be collected from your medical records. As a participant in the postpartum phase of this study, you will be asked to complete several forms to include: an information sheet on yourself, a form with 30 questions that review how well a family can adapt and pull together (Family Adaptability and Cohesion, FACES II for Couples scale), a seven-question evaluation for postpartum depression (Edinburgh Depression Scale), a 17-question review of how much support you feel like you are receiving from your family and friends (Social Support Index) and an 82-item questionnaire which covers many areas about how you have been able to adapt to motherhood (Postpartum Self-Evaluation Scale). Additionally, you will be asked to step on a scale for a weight check. The questionnaires and weight check will be completed at your infant's six-month appointment. The questionnaires will be given to you when you arrive at the appointment and your weight will be checked. The questionnaires can be completed during your child's appointment and returned to the research nurse or clinic staff member trained in the program. Completing the questionnaires will take approximately 20-30 minutes.

#### **RISKS OR DISCOMFORTS:**

There is a possibility that you may feel uncomfortable or experience feelings of distress as a result of answering some of the items in the questionnaires. The researcher has made arrangements to provide counselors to you should you decide you would like to talk to someone about your feelings. Nurses from the New Parent program, an affiliate program of Family Advocacy, have agreed to meet with you if you feel distressed or have questions as a result of the study. These counselors can make the appropriate referrals to other outpatient or inpatient programs as necessary.

Arrangements have been made for the Healthcare Integrator, a Registered Nurse, to notify your Primary Care Manager for referrals if deemed necessary if you mark anything other than "never" for the question referring to "thoughts of harming oneself" (item #10 on the Edinburgh Postnatal Depression Scale). The Healthcare Integrator will also follow-up with you to ensure you have received the necessary support and care. If you are in urgent need of care or are having thoughts of hurting yourself or someone else, you will be escorted to either the Emergency Department or the Life Skills Office for immediate care.

#### **BENEFITS:**

There is no direct benefit other than to help gather valuable data regarding a woman's transition to motherhood and the support needed during this transition. This information may be used to improve support systems available to mothers and families in the military. Current weight requirements for military women may be evaluated and assessed relative to information obtained from the study. This study does not include any treatments or interventions. This study may also benefit others (civilian families) by helping to find out whether current adaptation and support techniques offered are beneficial to pregnancy.

outcomes. There is no guarantee you will receive any benefit from this study other than knowing that the information may help future patients.

**PAYMENT (COMPENSATION)**

You will not receive any compensation (payment) for participating in this study.

**ALTERNATIVES TO PARTICIPATION:**

You understand that if you choose not to participate in this study no data will be collected from you or your family members. Choosing not to participate in this study is your alternative to volunteering for this study.

**CONFIDENTIALITY OF RECORDS OF STUDY PARTICIPATION:**

Records of your participation in this study may only be disclosed in accordance with federal law, including the Federal Privacy Act, 5 U.S.C. 552a, and its implementing regulations. DD Form 2005, Privacy Act Statement- Military Health Records, contains the Privacy Act Statement for the records.

By signing this consent document, you give your permission for information gained from your participation in this study to be published in medical literature, discussed for educational purposes, and used generally to further medical science. You will not be personally identified; all information will be presented as anonymous data.

Your records may be reviewed by the U.S. Food & Drug Administration (FDA), other government agencies, the WHMC and Uniformed Services University Institutional Review Boards, and by Triservice Nursing Research Program.

Complete confidentiality cannot be promised, particularly for military personnel, because information regarding your health may be required to be reported to appropriate medical or command authorities.

**ENTITLEMENT TO CARE:**

In the event of injury resulting from this study, the extent of medical care provided is limited and will be within the scope authorized for Department of Defense (DoD) health care beneficiaries.

Your entitlement to medical and dental care and/or compensation in the event of injury is governed by federal laws and regulations, and if you have questions about your rights as a research subject or if you believe you have received a research-related injury, you may contact the

Wilford Hall Clinical Research Squadron Commander, (210) 292-7069 or Wilford Hall Medical Center Risk Manager, 210-292-6004.

**VOLUNTARY PARTICIPATION:**

The decision to participate in this study is completely voluntary on your part. No one has coerced or intimidated you into participating in this project. You are participating because you



want to. The Principal Investigator or one of his/her associates has adequately answered any and all questions you have about this study, your participation, and the procedures involved. If significant new findings develop during the course of this study that may relate to your decision to continue participation, you will be informed.

You may withdraw this consent at any time and discontinue further participation in this study without affecting your eligibility for care or any other benefits to which you are entitled.

**CONTACT INFORMATION:**

Principal Investigator (PI)

The principal investigator or a member of the WHMC Obstetrical nursing staff will be available to answer any questions concerning procedures throughout this study.

Principal Investigator: Captain Linda Denny

Phone: (210) 292-4798

The Point of Contact for BAMC will be Capt Linda Denny, the Perinatal Clinical Nurse Specialist.

Institutional Review Board (IRB)

If you have any comments, questions, concerns or complaints, you may also contact the Chairperson of the WHMC Institutional Review Board (IRB), at (210) 292-7558. Or mail to: 59th Medical Wing/CM, 2200 Bergquist Drive, Lackland Air Force Base, Texas 78236.

The IRB is the hospital committee responsible for safeguarding your rights as a research subject.

Your consent to participate in this study is given on a voluntary basis. All oral and written information and discussions about this study have been in English, a language in which you are fluent.

A copy of this form has been given to you.

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**WITNESS' SIGNATURE**  
(Must witness ALL signatures)

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**DATE**

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**PRINTED NAME OF WITNESS**

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PRIVACY ACT OF 1974 APPLIES.  
DD FORM 2005 FILED IN MILITARY HEALTH RECORDS

## References

- Abell, T. D., Baker, L. C., Clover, R. D., & Ramsey, C. N., Jr. (1991). The effects of family functioning on infant birthweight. *Journal of Family Practice*, 32, 37-44.
- Acitelli, L. K. (1996). The neglected links between marital support and marital satisfaction. In G. R. Pierce, B. R. Sarason & I. G. Sarason (Eds.), *Handbook of social support and the family* (pp. 83-103). New York: Plenum Press.
- Adams, M. M., Harlass, F. E., Sarno, A. P., Read, J. A., & Rawlings, J. S. (1994). Antenatal hospitalization among enlisted servicewomen, 1987-1990. *Obstetrics and Gynecology*, 84, 35-39.
- Alexander, G. R., Baruffi, G., Mor, J. M., Kieffer, E. C., & Hulsey, T. C. (1993). Multiethnic variations in the pregnancy outcomes of military dependents. *American Journal of Public Health*, 83, 1721-1725.
- Alexander, G. R., Kogan, M. D., & Nabukera, S. (2002). Racial differences in prenatal care use in the United States: Are disparities decreasing? *American Journal of Public Health*, 92, 1970-1975.
- Alexander, P. C., & Lupfer, S. L. (1987). Family characteristics and long-term consequences associated with sexual abuse. *Archives of Sexual Behavior*, 16, 235-245.
- Anderson, S. A., & Gavazzi, S. M. (1990). A test of the Olson Circumplex Model: Examining its curvilinear assumption and the presence of extreme types. *Family Process*, 29, 309-324.
- Arizmendi, T. G., & Affonso, D. D. (1987). Stressful events related to pregnancy and postpartum. *Journal of Psychosomatic Research*, 31, 743-756.
- Armstrong, K. L., Fraser, J. A., Dadds, M. R., & Morris, J. (2000). Promoting secure attachment, maternal mood and child health in a vulnerable population: A randomized controlled trial. *Journal of Paediatric Child Health*, 36, 555-562.
- Atkinson, L., Goldberg, S., Raval, V., Pederson, D., Benoit, D., Moran, G., et al. (2005). On the relation between maternal state of mind and sensitivity in the prediction of infant attachment security. *Developmental Psychology*, 41, 42-53.

- Atkinson, L., Paglia, A., Coolbear, J., Niccols, A., Parker, K. C., & Guger, S. (2000). Attachment security: A meta-analysis of maternal mental health correlates. *Clinical Psychology Review, 20*, 1019-1040.
- Augustyn, M., & Maiman, L. A. (1994). Psychological and sociological barriers to prenatal care. *Women's Health Issues, 4*, 20-28.
- Austin, M. P., & Priest, S. R. (2005). Clinical issues in perinatal mental health: New developments in the detection and treatment of perinatal mood and anxiety disorders. *Acta Psychiatrica Scandinavica, 112*, 97-104.
- Barbee, A. P., Cunningham, M. R., Winstead, B. A., Derlega, V. J., Gullery, M. R., Yankeelov, P. A., et al. (1993). Effects of gender role expectations on the social support process. *Journal of Social Issues, 49*, 175-190.
- Barfield, W. D., Wise, P. H., Rust, F. P., Rust, K. J., Gould, J. B., & Gortmaker, S. L. (1996). Racial disparities in outcomes of military and civilian births in California. *Archives of Pediatrics & Adolescent Medicine, 150*, 1062-1067.
- Barnard, K., Eyres, S., Lobo, M., & Snyder, C. (1983). *An ecological paradigm for assessment and intervention*. Paper presented at the New approaches to developmental screening of infants: Proceedings of the Fifth Johnson & Johnson Pediatric Roundtable, New York.
- Barnett, B., & Parker, G. (1985). Professional and non-professional intervention for highly anxious primiparous mothers. *The British Journal of Psychiatry, 146*, 287-293.
- Barnett, R. C. (2004). Women and multiple roles: Myths and reality. *Harvard Review of Psychiatry, 12*, 158-164.
- Beck, C. T. (1995). The effects of postpartum depression on maternal-infant interaction: A meta-analysis. *Nursing Research, 44*, 298-304.
- Beck, C. T. (1996). A meta-analysis of predictors of postpartum depression. *Nursing Research, 45*, 297-303.
- Beck, C. T. (2001). Predictors of postpartum depression: An update. *Nursing Research, 50*, 275-285.

- Beck, C. T. (2002). Theoretical perspectives of postpartum depression and their treatment implications. *MCN: The American Journal of Maternal Child Nursing*, 27, 282-287.
- Berryman, J. C., & Windridge, K. C. (1994). Pregnancy after 35 and attachment to the fetus. *Journal of Reproductive & Infant Psychology*, 14, 133-143.
- Berthiaume, M., Saucier, D. H., & Borgeat, F. (1998). Correlates of pre-partum depressive symptomatology: A multivariate analysis. *Journal of Reproductive & Infant Psychology*, 16, 45-56.
- Bloom, K. C. (1995). The development of attachment behaviors in pregnant adolescents. *Nursing Research*, 44, 284-289.
- Bloom, K. C. (1998). Perceived relationship with the father of the baby and maternal attachment in adolescents. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 27, 420-430.
- Bowen, G. L. (2000). Foreword. In J. A. Martin, L. N. Rosen & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers* (pp. xi-xii). Westport, CT: Praeger.
- Bowen, G. L., & Martin, J. A. (1998). Community capacity: A core component of the 21st century military community. *Military Family Issues: The Research Digest*, 2(3), 1-4.
- Bowen, G. L., Martin, J. A., & Mancini, J. A. (1999). *Communities in Blue for the 21st Century*. Fairfax, VA: Caliber Associates.
- Bowlby, J. (1969). *Attachment and loss*. New York,: Basic Books.
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. New York: Basic Books.
- Boyer, D. B. (1990). Prediction of postpartum depression. *NAACOG'S Clinical Issues in Perinatal and Women's Health Nursing*, 1, 359-368.
- Brazelton, T. B. (1963). The Early Mother-Infant Adjustment. *Pediatrics*, 32, 931-937.

- Breslau, N., Chilcoat, H. D., Peterson, E. L., & Shultz, L. R. (2000). Gender differences in major depression: The role of anxiety. In E. Frank (Ed.), *Gender and its effects on psychopathology*. (pp. 131-150). Washington, D.C.: American Psychiatric Press.
- Britton, H. L., Gronwaldt, V., & Britton, J. R. (2001). Maternal postpartum behaviors and mother-infant relationship during the first year of life. *The Journal of Pediatrics*, 138, 905-909.
- Brown, M. A. (1986). Social support, stress, and health: A comparison of expectant mothers and fathers. *Nursing Research*, 35, 72-76.
- Brownell, A., & Shumaker, S. A. (1984). Social Support: An introduction to a complex phenomenon. *Journal of Social Issues*, 40, 1-9.
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Newbury Park, CA: Sage Publications.
- Buka, S. L., Brennan, R. T., Rich-Edwards, J. W., Raudenbush, S. W., & Earls, F. (2003). Neighborhood support and the birth weight of urban infants. *American Journal of Epidemiology*, 157, 1-8.
- Bureika, R., Reiser, M., Salvucci, S., Maxfield, B., & Simmons, R. (1999). *Effective strategies to assist spouses of junior enlisted members with employment* (No. DMDC No. 99-007). Arlington, VA: Defense Manpower Data Center.
- Caccia, N., Johnson, J. M., Robinson, G. E., & Barna, T. (1991). Impact of prenatal testing on maternal-fetal bonding: Chorionic villus sampling versus amniocentesis. *American Journal of Obstetrics and Gynecology*, 165, 1122-1125.
- Cairns, R. B., & Rodkin, P. C. (1998). Phenomena regained. In R. B. Cairns, L. R. Bergman & J. Kagan (Eds.), *Methods and models for studying the individual: Essays in honor of Marian Radke-Yarrow* (pp. 245-265). Thousand Oaks, CA: Sage Publications.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56, 81-105.

- Casey, P. H. (1989). The family system and failure to thrive. In J. C. N. Ramsey (Ed.), *Family systems in medicine* (pp. 348-358). New York: The Guilford Press.
- Cassel, J. (1976). The contribution of the social environment to host resistance: The Fourth Wade Hampton Frost Lecture. *American Journal of Epidemiology*, 104, 107-123.
- Cluff, R. B., Hicks, M. W., & Madsen, C. H., Jr. (1994). Beyond the Circumplex model: A moratorium on curvilinearity. *Family Process*, 33, 455-470.
- Cobb, S. (1979). Social support and health through the life course. In M. W. Riley (Ed.), *Aging from birth to death: Interdisciplinary perspectives* (pp. 93-106). Boulder, CO: Westview Press.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed. ed.). Mahwah, NJ: Lawrence Erlbaum Associates Inc.
- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample in the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health* (pp. 31-67). Newbury Park, CA: Sage.
- Collins, N. L., Dunkel-Schetter, C., Lobel, M., & Scrimshaw, S. (1993). Social support in pregnancy: Psychosocial correlates of birth outcomes and postpartum depression. *Journal of Personality and Social Psychology*, 65, 1243-1258.
- Colman, A. D., & Colman, L. L. (1971). *Pregnancy: The psychological experience*. New York: Herder and Herder.
- Condon, J. T. (1993). The assessment of antenatal emotional attachment: Developments of a questionnaire instrument. *British Journal of Medical Psychology*, 66, 167-183.
- Condon, J. T., & Corkindale, C. (1997). The correlates of antenatal attachment in pregnant women. *The British Journal of Medical Psychology*, 70, 359-372.
- Conn, V. S., Rantz, M. J., Wipke-Tevis, D. D., & Maas, M. L. (2001). Designing effective nursing interventions. *Research in Nursing & Health*, 24, 433-442.

- Copper, R. L., Goldenberg, R. L., Das, A., Elder, N., Swain, M., Norman, G., et al. (1996). The preterm prediction study: Maternal stress is associated with spontaneous preterm birth at less than thirty-five weeks' gestation. National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. *American Journal of Obstetrics and Gynecology*, 175, 1286-1292.
- Coyne, J. C., & DeLongis, A. (1986). Going beyond social support: The role of social relationships in adaptation. *Journal of Consulting and Clinical Psychology*, 54, 454-460.
- Cranley, M. S. (1981a). Development of a tool for the measurement of maternal attachment during pregnancy. *Nursing Research*, 30, 281-284.
- Cranley, M. S. (1981b). Roots of attachment: The relationship of parents with their unborn. *Birth Defects Original Article Series*, 17, 59-83.
- Cranley, M. S. (1984). Social support as a factor in the development of parents' attachment to their unborn. *Birth Defects Original Article Series*, 20, 99-124.
- Crnic, K. A., Greenberg, M. T., Ragozin, A. S., Robinson, N. M., & Basham, R. B. (1983). Effects of stress and social support on mothers and premature and full-term infants. *Child Development*, 54, 209-217.
- Crnic, K. A., Greenberg, M. T., Robinson, N. M., & Ragozin, A. S. (1984). Maternal stress and social support: Effects on the mother-infant relationship from birth to eighteen months. *The American Journal of Orthopsychiatry*, 54, 224-235.
- Cronenwett, L. R. (1985). Network structure, social support, and psychological outcomes of pregnancy. *Nursing Research*, 34, 93-99.
- Curran, P. J. (2006). *OLStraj SAS macro*. Retrieved January 01, 2006, from <http://www.unc.edu/~curran/OLStraj.htm>
- Curry, M. A. (1981). Critique of findings reported in "Postpartum self-evaluation questionnaire: Measures of maternal adaptation *Birth Defects Original Article Series*, 17, 223-227.



- Curtiss, G., Klemz, S., & Vanderploeg, R. D. (2000). Acute impact of severe traumatic brain injury on family structure and coping responses. *The Journal of Head Trauma Rehabilitation, 15*, 1113-1122.
- Cutrona, C. E. (1986). Behavioral manifestations of social support: A microanalytic investigation. *Journal of Personality and Social Psychology, 51*, 201-208.
- Da Costa, D., Dritsa, M., Larouche, J., & Brender, W. (2000). Psychosocial predictors of labor/delivery complications and infant birth weight: A prospective multivariate study. *Journal of Psychosomatic Obstetrics and Gynaecology, 21*, 137-148.
- Da Costa, D., Larouche, J., Dritsa, M., & Brender, W. (1999). Variations in stress levels over the course of pregnancy: Factors associated with elevated hassles, state anxiety and pregnancy-specific stress. *Journal of Psychosomatic Research, 47*, 609-621.
- Depner, C. E., Wethington, E., & Ingersoll-Dayton, B. (1984). Social support: Methodological issues in design and measurement. *Journal of Social Issues, 40*, 37-54.
- Derogatis, L. R., & Melisaratos, N. (1983). The Brief Symptom Inventory: An introductory report. *Psychological Medicine, 13*, 595-605.
- Deutsch, F. M., Ruble, D. N., Fleming, A., Brooks-Gunn, J., & Stangor, C. (1988). Information-seeking and maternal self-definition during the transition to motherhood. *Journal of Personality and Social Psychology, 55*, 420-431.
- Di Martile Bolla, C., De Joseph, J., Norbeck, J., & Smith, R. (1996). Social support as road map and vehicle: An analysis of data from focus group interviews with a group of African American women. *Public Health Nursing, 13*, 331-336.
- Directorate for Information Operations and Reports. (2005). *Active Duty, Reserve, and National Guard Military Personnel Strengths by Regional Area and Country*. Retrieved September 6, 2005, 2005, from <http://web1.whs.ods.mil/mmids/military/miltop.htm>
- Duckworth, J. (2003). The military culture. *Family Therapy, 2*, 13-17.

- Dunkel-Schetter, C., & Bennett, T. L. (1990). Differentiating the cognitive and behavioral aspects of social support. In B. R. Sarason, I. G. Sarason & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 267-296). New York: John Wiley & Sons.
- Dunkel-Schetter, C., Gurung, R., Lobel, M., & Wadhwa, P. (2001). Stress processes in pregnancy and birth: Psychological, biological, and sociocultural influences. In A. Baum, T. A. Revenson & J. E. Singer (Eds.), *Handbook of Health Psychology* (pp. 495-518). Mahwah, NJ: Lawrence Erlbaum Associates, Publishers.
- Dunkel-Schetter, C., Sagrestano, L. M., Feldman, P., & Killingsworth, C. (1996). Social support and pregnancy. In G. R. Pierce, B. R. Sarason & I. G. Sarason (Eds.), *Handbook of social support and the family* (pp. 375-412). New York: Plenum Press.
- Duvall, E. (1977). *Family development*. Philadelphia: Lippincott.
- Dyson, D. C., Danbe, K. H., Bamber, J. A., Crites, Y. M., Field, D. R., Maier, J. A., et al. (1998). Monitoring women at risk for preterm labor. *New England Journal of Medicine*, 338, 15-19.
- Elder, G. H. J. (1996). Human lives in changing societies: Life course and developmental insights. In R. B. Cairns, J. G. H. Elder & E. J. Costello (Eds.), *Developmental science* (pp. 31-62). New York: Cambridge University Press.
- Engelbrechtsen, S. L. C. (1996). *Birthweight of infants related to psychosocial profiles of military mothers*. Unpublished Doctoral Dissertation, The University of Utah.
- Evans, M. A., & Rosen, L. N. (1996). *Women in the military: Pregnancy, command climate, organizational behavior, and outcomes* (No. HR 96-001). Washington, D. C.: Defense Women's Health Research Program.
- Evans, M. A., & Rosen, L. N. (2000). Demographic and psychosocial risk factors for preterm delivery in an active duty pregnant population. *Military Medicine*, 165, 49-53.
- Feldman, P. J., Dunkel-Schetter, C., Sandman, C. A., & Wadhwa, P. D. (2000). Maternal social support predicts birth weight and fetal growth in human pregnancy. *Psychosomatic Medicine*, 62, 715-725.

- Fenell, D. L., & Fenell, R. A. (2003). Separated again: Professional and personal reflections of mobilization, deployment and well-being of military families. *Family Therapy*, 2, 18-23.
- Ferguson, M. E. (2005). Families process deployment emotions. *Sustainer, Fall edition*, 7.
- Ferketich, S. L., Figueredo, A. J., & Knapp, T. R. (1991). The multitrait-multimethod approach to construct validity. *Research in Nursing & Health*, 14, 315-320.
- Ferraro, K. F., & Wan, T. T. H. (1986). Marital contributions to well-being in later life: An examination of Bernard's thesis. *American Behavioral Scientist*, 29, 423-437.
- Finello, K. M., Litton, K. M., deLemos, R., & Chan, L. S. (1998). Very low birth weight infants and their families during the first year of life: Comparisons of psychosocial outcomes based on after-care services. *Journal of Perinatology*, 18, 266-271.
- Finney, J. W., Mitchell, R. E., Cronkite, R. C., & Moos, R. H. (1984). Methodological issues in estimating main and interactive effects: Examples from coping/social support and stress field. *Journal of Health and Social Behavior*, 25, 85-98.
- Fiscella, K. (1995). Does prenatal care improve birth outcomes? A critical review. *Obstetrics and Gynecology*, 85, 468-479.
- Flagler, S. (1990). Relationships between stated feelings and measures of maternal adjustment. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 19, 411-416.
- Flagler, S., & Nicoll, L. (1990). A framework for the psychological aspects of pregnancy. *NAACOG'S Clinical Issues of Perinatal Women's Health Nursing*, 1, 267-278.
- Fonagy, P., Steele, H., & Steele, M. (1991). Maternal representations of attachment during pregnancy predict the organization of infant-mother attachment at one year of age. *Child Development*, 62, 891-905.
- Fowles, E. R. (1996). Relationships among prenatal maternal attachment, presence of postnatal depressive symptoms, and maternal role attainment. *Journal of the Society of Pediatric Nurses*, 1, 75-82.

- Fowles, E. R. (1998). The relationship between maternal role attainment and postpartum depression. *Health Care for Women International*, 19, 83-94.
- Fox, M. E., Harris, R. E., & Brekken, A. L. (1977). The active-duty military pregnancy: A new high-risk category. *American Journal of Obstetrics and Gynecology*, 129, 705-707.
- Friedman, A. S., Utada, A., & Morrissey, M. R. (1987). Families of adolescent drug abusers are "rigid": are these families either "disengaged" or "enmeshed," or both? *Family Process*, 26, 131-148.
- Fuller, J. R. (1990). Early patterns of maternal attachment. *Health Care for Women International*, 11, 433-446.
- Fuller, S. G., Moore, L. R., & Lester, J. W. (1993). Influence of family functioning on maternal-fetal attachment. *Journal of Perinatology*, 13, 453-460.
- Fulton, A. M., Murphy, K. R., & Anderson, S. L. (1991). Increasing adolescent mothers' knowledge of child development: an intervention program. *Adolescence*, 26, 73-81.
- Giblin, P. T., Poland, M. L., & Ager, J. W. (1990). Effects of social supports on attitudes, health behaviors and obtaining prenatal care. *Journal of Community Health*, 15, 357-368.
- Gjerdingen, D. K., Froberg, D. G., & Fontaine, P. (1991). The effects of social support on women's health during pregnancy, labor and delivery, and the postpartum period. *Family Medicine*, 23, 370-375.
- Glynn, L. M., Dunkel-Schetter, C., Wadhwa, P. D., & Sandman, C. A. (2004). Pregnancy affects appraisal of negative life events. *Journal of Psychosomatic Research*, 56, 47-52.
- Goldstein, L. H., Diener, M. L., & Mangelsdorf, S. C. (1996). Maternal characteristics and social support across that transition to motherhood: Associations with maternal behavior. *Journal of Family Psychology*, 10, 60-71.

- Gottesman, M. M. (1992). Maternal adaptation during pregnancy among adult early, middle, and late childbearers: Similarities and differences. *Maternal-Child Nursing Journal*, 20, 93-110.
- Gottlieb, B. H. (1996). Theories and practices of mobilizing support in stressful circumstances. In C. L. Cooper (Ed.), *Handbook of stress, medicine, and health* (pp. 339-357). Boca Raton, FL: CRC Press.
- Grace, J. T. (1989). Development of maternal-fetal attachment during pregnancy. *Nursing Research*, 38, 228-232.
- Grace, J. T. (1993). Mothers' self-reports of parenthood across the first 6 months postpartum. *Research in Nursing & Health*, 16, 431-439.
- Greenberg, D. N., Yoder, B. A., Clark, R. H., Butzin, C. A., & Null, D. M., Jr. (1993). Effect of maternal race on outcome of preterm infants in the military. *Pediatrics*, 91, 572-577.
- Halman, L. J., Oakley, D., & Lederman, R. (1995). Adaptation to pregnancy and motherhood among subfecund and fecund primiparous women. *Maternal Child Nursing Journal*, 23, 90-100.
- Hamburg, D. A., Coelho, G. V., & Adams, J. E. (1974). Coping and adaptation: Steps toward a synthesis of biological and social perspectives. In G. V. Coelho, D. A. Hamburg & J. E. Adams (Eds.), *Coping and adaptation* (pp. 403-440). New York: Basic Books, Inc.
- Hammen, C., & Mazure, C. M. (2003). Symposium: Understanding the interaction of stress and gender in the prediction of major depression. *Archives of Women's Mental Health*, 6, 3-4.
- Heaney, C. A., & Israel, B. A. (2002). Social networks and social support. In K. Glanz, B. K. Rimer & F. M. Lewis (Eds.), *Health behavior and health education* (3rd ed., pp. 185-209). San Francisco: Jossey-Bass.
- Heller, K., Swindle, R. W., Jr., & Dusenbury, L. (1986). Component social support processes: Comments and integration. *Journal of Consulting and Clinical Psychology*, 54, 466-470.

- Hendrick, V., Altshuler, L., Strouse, T., & Grosser, S. (2000). Postpartum and nonpostpartum depression: Differences in presentation and response to pharmacologic treatment. *Depression and Anxiety*, 11, 66-72.
- Hiser, P. L. (1987). Concerns of multiparas during the second postpartum week. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 16, 195-203.
- Hobfoll, S. E., & Lerman, M. (1988). Personal relationships, personal attributes, and stress resistance: Mothers' reactions to their child's illness. *American Journal of Community Psychology*, 16, 565-589.
- Hobfoll, S. E., & Stephens, M. P. (1990). Social support during extreme stress: Consequences and intervention. In B. R. Sarason, I. G. Sarason & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 454-481). New York: John Wiley and Sons.
- Hoffman, S., & Hatch, M. C. (1996). Stress, social support and pregnancy outcome: A reassessment based on recent research. *Paediatric and Perinatal Epidemiology*, 10, 380-405.
- Horowitz, J. A., & Goodman, J. (2004). A longitudinal study of maternal postpartum depression symptoms. *Research and Theory for Nursing Practice*, 18, 149-163.
- Horrell, E. (2003). Serving the Naval community. *Family Therapy*, 2, 32-34.
- Huizink, A. C., de Medina, P. G., Mulder, E. J., Visser, G. H., & Buitelaar, J. K. (2002). Coping in normal pregnancy. *Annals of Behavioral Medicine*, 24, 132-140.
- Ingoldsby, B. B., Smith, S. R., & Miller, J. E. (2004). *Exploring family theories*. Los Angeles: Roxbury Publishing Company.
- Jacobson, D. E. (1986). Types and timing of social support. *Journal of Health and Social Behavior*, 27, 250-264.
- Joyce, K., Diffenbacher, G., Greene, J., & Sorokin, Y. (1983). Internal and external barriers to obtaining prenatal care. *Social Work in Health Care*, 9, 89-96.

- Kalil, K. M., Gruber, J. E., Conley, J., & Sytniac, M. (1993). Social and family pressures on anxiety and stress during pregnancy. *Pre- and Perinatal Psychology Journal*, 8, 113-118.
- Kaplan, R. M., & Toshima, M. T. (1990). The functional effects of social relationships on chronic illnesses and disability. In B. R. Sarason, I. G. Sarason & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 427-455). New York: John Wiley & Sons.
- Keil, B. M., Hilburn, M., Baily, L., Crawley, V., Hafemeister, R., Brinkley, C. M., et al. (2004, March 22). Iraq by the numbers. *Air Force Times*, 65, 28-29.
- Kemp, V. H., & Page, C. K. (1987). Maternal prenatal attachment in normal and high-risk pregnancies. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 16, 179-184.
- Killien, M. G. (1990). Working during pregnancy: Psychological stressor or asset? *NAACOG'S Clinical Issues in Perinatal Women's Health Nursing*, 1, 325-332.
- Kimmel, J. (1995). *U.S. Navy Seabees since Pearl Harbor*. Portland, OR: Curey/Stevens Publishing Inc.
- Klaus, M. H., & Kennell, J. (1976). *Maternal-infant bonding: The impact of early separation or loss on family development*. St. Louis, MO: CV Mosby.
- Koniak-Griffin, D. (1988). The relationship between social support, self-esteem, and maternal-fetal attachment in adolescents. *Research in Nursing & Health*, 11, 269-278.
- Koniak-Griffin, D. (1993). Maternal role attainment. *Image: Journal of Nursing Scholarship*, 25, 257-262.
- Koniak-Griffin, D., Lominska, S., & Brecht, M. L. (1993). Social support during adolescent pregnancy: A comparison of three ethnic groups. *Journal of Adolescence*, 16, 43-56.
- Koniak-Griffin, D., & Verzemnieks, I. (1991). Effects of nursing intervention on adolescents' maternal role attainment. *Issues in Comprehensive Pediatric Nursing*, 14, 121-138.

- Kugler, J. P., Yeash, J., & Rumbaugh, P. C. (1993). The impact of sociodemographic, health care system, and family function variables on prenatal care utilization in a military setting. *Journal of Family Practice*, 37, 143-147.
- Kutzner, S. K. (1984). *Adaptation to motherhood from postpartum to early childhood*. Unpublished doctoral dissertation, University of Michigan, Ann Arbor.
- LaRossa, R., & LaRossa, M. M. (1981). *Transition to parenthood: How infants change families*. Beverly Hills: Sage Publications.
- Laxton-Kane, M., & Slade, P. (2002). The role of maternal prenatal attachment in a women's experience of pregnancy and implications for the process of care. *Journal of Reproductive and Infant Psychology*, 20, 253-266.
- Lederman, R. P. (1984). Anxiety and conflict in pregnancy: Relationship to maternal health status. *Annual Review of Nursing Research*, 2, 27-61.
- Lederman, R. P. (1990). Anxiety and stress in pregnancy: Significance and nursing assessment. *NAACOG'S Clinical Issues in Perinatal Women's Health Nursing*, 1, 279-288.
- Lederman, R. P. (1995). Relationship of anxiety, stress, and psychosocial development to reproductive health. *Behavioral Medicine*, 21, 101-112.
- Lederman, R. P. (1996). *Psychosocial adaptation in pregnancy : assessment of seven dimensions of maternal development* (2nd ed.). New York: Springer Pub. Co.
- Lederman, R. P., Harrison, J. A., & Worsham, S. (1993). *Psychosocial predictors of pregnancy adaptation and outcome in a multicultural, low-income population*. Paper presented at the National NAACOG Conference, Minneapolis, MN.
- Lederman, R. P., & Lederman, E. (1987). Dimensions of post-partum adaptation: Comparisons of multiparas 3 days and 6 weeks after delivery. *Journal of Psychosomatic Obstetrics and Gynaecology*, 7, 193-203.
- Lederman, R. P., Lederman, E., Work, B., Jr., & McCann, D. S. (1985). Anxiety and epinephrine in multiparous women in labor: Relationship to duration of labor and fetal heart rate pattern. *American Journal of Obstetrics and Gynecology*, 153, 870-877.



- Lederman, R. P., Weingarten, C. G., & Lederman, E. (1981). *Postpartum self-evaluation questionnaire: Measures of maternal adaptation*. Paper presented at the Perinatal parental behavior: Nursing research and implications for newborn health.
- Lederman, R. P., Weis, K. L., Brandon, J., & Mian, T. S. (2001, November 12). *Prediction of pregnancy outcomes from measures of adaptation to pregnancy and family functioning*. Poster presented at the Sigma Theta Tau International's 36th Biennial Convention, Indianapolis, IN.
- Lee, C. (1988). Theories of family adaptability: Toward a synthesis of Olson's Circumplex and the Beavers systems models. *Family Process*, 27, 73-96.
- Leifer, M. (1977). Psychological changes accompanying pregnancy and motherhood. *Genetic Psychology Monographs*, 95, 55-96.
- Leifer, M. (1980). *Psychological effects of motherhood*. New York: Praeger Publishers.
- Lewis, J. M. (1976). *No single thread: Psychological health in family systems*. New York: Brunner/Mazel.
- Liese, L. H., Snowden, L. R., & Ford, L. K. (1989). Partner status, social support, and psychological adjustment during pregnancy. *Family Relations*, 38, 311-316.
- Lipsey, M. W. (1990). *Design sensitivity: Statistical power for experimental research*. Newbury Park, CA: SAGE Publications.
- Littell, R. C., Milliken, G. A., Stroup, W. W., & Wolfinger, R. D. (1996). *SAS system for mixed models*. Cary, N.C.: SAS Institute Inc.
- Lobel, M., DeVincent, C. J., Kaminer, A., & Meyer, B. A. (2000). The impact of prenatal maternal stress and optimistic disposition on birth outcomes in medically high-risk women. *Health Psychology*, 19, 544-553.
- Logsdon, M. C., Birkimer, J. C., Simpson, T., & Looney, S. (2005). Postpartum depression and social support in adolescents. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 34, 46-54.

- Lozoff, B., Brittenham, G. M., Trause, M. A., Kennell, J. H., & Klaus, M. H. (1977). The mother-newborn relationship: Limits of adaptability. *Journal of Pediatrics*, 91, 1-12.
- Lutenbacher, M., & Hall, L. A. (1998). The effects of maternal psychosocial factors on parenting attitudes of low-income, single mothers with young children. *Nursing Research*, 47, 25-34.
- Magann, E. F., & Nolan, T. E. (1991). Pregnancy outcome in an active-duty population. *Obstetrics and Gynecology*, 78, 391-393.
- Magann, E. F., Winchester, M. I., Carter, D. P., Martin, J. N., Jr., Bass, J. D., & Morrison, J. C. (1995). Factors adversely affecting pregnancy outcome in the military. *American Journal of Perinatology*, 12, 462-466.
- Magann, E. F., Winchester, M. I., Chauhan, S. P., Nolan, T. E., Morrison, J. C., & Martin, J. N., Jr. (1995). Martial status and military occupational specialty: Neither factor has a selective adverse effect on pregnancy outcome. *Journal of Perinatology*, 15, 372-374.
- Magnusson, D., & Cairns, R. B. (1996). Developmental science: Toward a unified framework. In R. B. Cairns, J. G. H. Elder & E. J. Costello (Eds.), *Developmental science* (pp. 7-30). New York: Cambridge University Press.
- Mancuso, R. A., Schetter, C. D., Rini, C. M., Roesch, S. C., & Hobel, C. J. (2004). Maternal prenatal anxiety and corticotropin-releasing hormone associated with timing of delivery. *Psychosomatic Medicine*, 66, 762-769.
- Marcenko, M. O., & Spence, M. (1994). Home visitation services for at-risk pregnant and postpartum women: A randomized trial. *American Journal of Orthopsychiatry*, 64, 468-478.
- Martin, J. A. (2000). Afterword: The changing nature of military service and military family life. In J. A. Martin, L. N. Rosen & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers*. Westport, CN: Praeger.
- Martin, J. A., Mancini, D. L., Bowen, G. L., Mancini, J. A., & Orthner, D. (2004). *Building strong communities for military families*. Minneapolis, MN: National Council on Family Relations.

- Martin, J. A., & McClure, P. (2000). Today's active duty military family: The evolving challenges of military family life. In J. A. Martin, L. N. Rosen & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers* (pp. 5-23). Westport, CN: Praeger.
- Martin, J. A., Rosen, L. N., & Sparacino, L. R. (2000). Introduction. In J. A. Martin, L. N. Rosen & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers* (pp. xv - xix). Westport, CN: Praeger.
- Matthey, S., Kavanagh, D. J., Howie, P., Barnett, B., & Charles, M. (2004). Prevention of postnatal distress or depression: An evaluation of an intervention at preparation for parenthood classes. *Journal of Affective Disorders*, 79, 113-126.
- McCubbin, H. I., Patterson, J., & Glynn, T. (1982). Social support index (SSI). In H. I. McCubbin, A. I. Thompson & M. A. McCubbin (Eds.), *Family assessment: Resiliency, coping and adaptation - inventories for research and practice*. (pp. 357-389). Madison, WI: University of Wisconsin System.
- McCubbin, M. A. (1999). Normative family transitions and health outcomes. In A. S. Hinshaw, S. L. Feetham & J. L. F. Shaver (Eds.), *Handbook of clinical nursing research* (pp. 201-230). Thousand Oaks, CA: Sage Publications.
- McNeary, A. M., & Lomenick, T. S. (2000). Military duty: Risk factor for preterm labor? A review. *Military Medicine*, 165, 612-615.
- McVeigh, C. A. (1997). Motherhood experiences from the perspective of first-time mothers. *Clinical Nursing Research*, 6, 335-348.
- McVeigh, C. A. (2000). Investigating the relationship between satisfaction with social support and functional status after childbirth. *MCN American Journal of Maternal Child Nursing*, 25, 25-30.
- Mead, G. H., & Morris, C. W. (1934). *Mind, self & society from the standpoint of a social behaviorist*. Chicago, Ill.: The University of Chicago Press.
- Mehuron, T., A. (2005). The Air Force in facts and figures. *Air Force Magazine*, 88, 44-77.

- Meleis, A. I. (1975). Role insufficiency and role supplementation: A conceptual framework. *Nursing Research*, 24, 264-271.
- Mercer, R. T. (1979). Having another child: "She's a multip - she knows the ropes." *MCN American Journal of Maternal Child Nursing*, 4, 301-304.
- Mercer, R. T. (1981). A theoretical framework for studying factors that impact on the maternal role. *Nursing Research*, 30, 73-77.
- Mercer, R. T. (1985a). The process of maternal role attainment over the first year. *Nursing Research*, 34, 198-204.
- Mercer, R. T. (1985b). The relationship of age and other variables to gratification in mothering. *Health Care for Women International*, 6, 295-307.
- Mercer, R. T. (1986a). *First-time motherhood: Experiences from teens to forties*. New York: Springer Publishing Co.
- Mercer, R. T. (1986b). Predictors of maternal role attainment at one year postbirth. *Western Journal of Nursing Research*, 8, 9-32.
- Mercer, R. T. (1986c). The relationship of developmental variables to maternal behavior. *Research in Nursing and Health*, 9, 25-33.
- Mercer, R. T. (2004). Becoming a mother versus maternal role attainment. *Journal of Nursing Scholarship*, 36, 226-232.
- Mercer, R. T., Ferketich, S., May, K., DeJoseph, J., & Sollid, D. (1988). Further exploration of maternal and paternal fetal attachment. *Research in Nursing & Health*, 11, 83-95.
- Mercer, R. T., & Ferketich, S. L. (1994a). Maternal-infant attachment of experienced and inexperienced mothers during infancy. *Nursing Research*, 43, 344-351.
- Mercer, R. T., & Ferketich, S. L. (1994b). Predictors of maternal role competence by risk status. *Nursing Research*, 43, 38-43.

- Mercer, R. T., & Ferketich, S. L. (1995). Experienced and inexperienced mothers' maternal competence during infancy. *Research in Nursing & Health*, 18, 333-343.
- Messersmith-Heroman, K., Heroman, W. M., & Moore, T. R. (1994). Pregnancy outcome in military and civilian women. *Military Medicine*, 159, 577-579.
- Muller, M. E. (1990). Binding-in: still a relevant concept? *NAACOG'S Clinical Issues in Perinatal Women's Health Nursing*, 1, 297-302.
- Muller, M. E. (1993). Development of the Prenatal Attachment Inventory. *Western Journal of Nursing Research*, 15, 199-211.
- Najman, J. M., Morrison, J., Williams, G., Andersen, M., & Keeping, J. D. (1991). The mental health of women 6 months after they give birth to an unwanted baby: A longitudinal study. *Social Science Medicine*, 32, 241-247.
- Nelson, A. M. (2003). Transition to motherhood. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 32, 465-477.
- Norbeck, J. S. (1981). Social support: A model for clinical research and application. *ANS Advances in Nursing Science*, 3, 43-59.
- Norbeck, J. S., & Anderson, N. J. (1989). Life stress, social support, and anxiety in mid- and late-pregnancy among low income women. *Research in Nursing & Health*, 12, 281-287.
- Norbeck, J. S., DeJoseph, J. F., & Smith, R. T. (1996). A randomized trial of an empirically-derived social support intervention to prevent low birthweight among African American women. *Social Science Medicine*, 43, 947-954.
- Norbeck, J. S., & Tilden, V. P. (1983). Life stress, social support, and emotional disequilibrium in complications of pregnancy: A prospective, multivariate study. *Journal of Health and Social Behavior*, 24, 30-46.
- Novicoff, W. M., Wagner, D. P., Knaus, W. A., Kane, E. K., Cecere, F., Draper, E., et al. (2000). Initial development of a system-wide maternal-fetal outcomes assessment program. *American Journal of Obstetrics and Gynecology*, 183, 291-300.

- Nuckolls, K. B., Kaplan, B. H., & Cassel, J. (1972). Psychosocial assets, life crisis and the prognosis of pregnancy. *American Journal of Epidemiology*, 95, 431-441.
- Oakley, A. (1980). *Women confined: Towards a sociology of childbirth*. New York: Schocken Books.
- Oakley, A., Rajan, L., & Grant, A. (1990). Social support and pregnancy outcome. *British Journal of Obstetrics and Gynaecology*, 97, 155-162.
- O'Hara, M. W. (1985). Depression and marital adjustment during pregnancy and after delivery. *The American Journal of Family Therapy*, 13, 49-55.
- Olds, D. L., Eckenrode, J., Henderson, C. R., Jr., Kitzman, H., Powers, J., Cole, R., et al. (1997). Long-term effects of home visitation on maternal life course and child abuse and neglect. Fifteen-year follow-up of a randomized trial. *Journal of the American Medical Association*, 278, 637-643.
- Olds, D. L., Henderson, C. R., Jr., & Kitzman, H. (1994). Does prenatal and infancy nurse home visitation have enduring effects on qualities of parental caregiving and child health at 25 to 50 months of life? *Pediatrics*, 93, 89-98.
- Olds, D. L., Henderson, C. R., Jr., Tatelbaum, R., & Chamberlin, R. (1986). Improving the delivery of prenatal care and outcomes of pregnancy: A randomized trial of nurse home visitation. *Pediatrics*, 77, 16-28.
- Olson, D. H. (1995). Family systems: Understanding your roots. In R. D. Day, K. R. Gilbert, B. H. Settles & W. R. Burr (Eds.), *Research and theory in family science* (pp. 131-153). Pacific Grove, CA: Brooks/Cole Publishing Company.
- Olson, D. H. (2000). Circumplex model of marital and family systems. *The Association for Family Therapy and Systemic Practice*, 22, 144-167.
- Olson, D. H., Bell, R., & Portner, J. (1992). *FACES II*. Minneapolis, MN: Life Innovations.
- Olson, D. H., Russell, C. S., & Sprenkle, D. H. (1983). Circumplex model of marital and family systems: VI. Theoretical update. *Family Process*, 22, 69-83.

- Olson, D. H., Sprenkle, D. H., & Russell, C. S. (1979). Circumplex model of marital and family system: I. Cohesion and adaptability dimensions, family types, and clinical applications. *Family Process*, 18, 3-28.
- Orr, S. T. (2004). Social support and pregnancy outcome: A review of the literature. *Clinical Obstetrics and Gynecology*, 47, 842-855.
- Peacock, N. R., Kelley, M. A., Carpenter, C., Davis, M., Burnett, G., Chavez, N., et al. (2001). Pregnancy discovery and acceptance among low-income primiparous women: A multicultural exploration. *Maternal Child Health Journal*, 5, 109-118.
- Phenix, P. H. (1964). *Realms of meaning: A philosophy of the curriculum of general education*. New York: McGraw-Hill.
- Pierce, G. R., Sarason, B. R., Sarason, I. G., Joseph, H. J., & Henderson, C. A. (1996). Conceptualizing and assessing social support in the context of family. In G. R. Pierce, B. R. Sarason & I. G. Sarason (Eds.), *Handbook of social support and the family* (pp. 3-23). New York: Plenum Press.
- Preacher, K. J., Curran, P. J., & Bauer, D. J. (2003, September 1, 2005). *Probing interactions in mutiple linear regression, latent curve analysis, and heirarchical linear modeling*. Retrieved January 24, 2006, from <http://www.unc.edu/~preacher/interact/>
- Pridham, K. F., & Chang, A. S. (1985). Parents' beliefs about themselves as parents of a new infant: Instrument development. *Research in Nursing & Health*, 8, 19-29.
- Pridham, K. F., Chang, A. S., & Chiu, Y. M. (1994). Mothers' parenting self-appraisals: The contribution of perceived infant temperament. *Reseach in Nursing and Health*, 17, 381-392.
- Priel, B., & Besser, A. (1999). Vulnerability to postpartum depressive symptomatology: Dependency, self-criticism and the moderation role of ante-natal attachment. *Journal of Social & Clinical Psychology*, 18, 240-153.
- Procidano, M. E., & Heller, K. (1983). Measures of perceived social support from friends and from family: Three validation studies. *American Journal of Community Psychology*, 11, 1-24.

- Pryor, J. E., Thompson, J. M., Robinson, E., Clark, P. M., Becroft, D. M., Pattison, N. S., et al. (2003). Stress and lack of social support as risk factors for small-for-gestational-age birth. *Acta Paediatrica*, 92, 62-64.
- Raines, T. G. (1991). Family-focused primary prevention of adolescent pregnancy. *Birth Defects Original Article Series*, 27, 87-103.
- Ramirez, G., Grimes, R. M., Annegers, J. F., Davis, B. R., & Slater, C. H. (1990). Occupational physical activity and other risk factors for preterm birth among US Army primigravidas. *American Journal of Public Health*, 80, 728-730.
- Ramsey, C. N., Jr. (1989a). The family system's influence on reproduction. In J. C. N. Ramsey (Ed.), *Family systems in medicine* (pp. 334-347). New York: The Guilford Press.
- Ramsey, C. N., Jr. (1989b). The science of family medicine. In J. C. N. Ramsey (Ed.), *Family systems in medicine* (pp. 3-17). New York: The Guilford Press.
- Ramsey, C. N., Jr., Abell, T. D., & Baker, L. C. (1986). The relationship between family functioning, life events, family structure, and the outcome of pregnancy. *Journal of Family Practice*, 22, 521-527.
- Reeb, K. G., Graham, A. V., Zyzanski, S. J., & Kitson, G. C. (1987). Predicting low birthweight and complicated labor in urban black women: A biopsychosocial perspective. *Social Science Medicine*, 25, 1321-1327.
- Reece, S. M. (1993). Social support and the early maternal experience of primiparas over 35. *Maternal Child Nursing Journal*, 21, 91-98.
- Reece, S. M. (1995). Stress and maternal adaptation in first-time mothers more than 35 years old. *Applied Nursing Research*, 8, 61-66.
- Reid, M., Glazener, C., Murray, G. D., & Taylor, G. S. (2002). A two-centered pragmatic randomized controlled trial of two interventions of postnatal support. *Bjog*, 109, 1164-1170.
- Rich, R. M. (1993). *General pregnancy attitudes, ambivalence, and psychological symptom distress during pregnancy*. Unpublished Doctoral Dissertation in Nursing Science (DNSC), The Catholic University of America, Washington, D.C.



- Rini, C. K., Dunkel-Schetter, C., Wadhwa, P. D., & Sandman, C. A. (1999). Psychological adaptation and birth outcomes: The role of personal resources, stress, and sociocultural context in pregnancy. *Health Psychology, 18*, 333-345.
- Ritter, C., Hobfoll, S. E., Lavin, J., Cameron, R. P., & Hulsizer, M. R. (2000). Stress, psychosocial resources, and depressive symptomatology during pregnancy in low-income, inner-city women. *Health Psychology, 19*, 576-585.
- Robertson, E., Grace, S., Wallington, T., & Stewart, D. E. (2004). Antenatal risk factors for postpartum depression: A synthesis of recent literature. *General Hospital Psychiatry, 26*, 289-295.
- Robson, K. M. (1982). Depression: An anxious time. *Nursing Mirror, 154*, 14-17.
- Rondo, P. H., Ferreira, R. F., Nogueira, F., Ribeiro, M. C., Lobert, H., & Artes, R. (2003). Maternal psychological stress and distress as predictors of low birth weight, prematurity and intrauterine growth retardation. *European Journal of Clinical Nutrition, 57*, 266-272.
- Rook, K. S., & Dooley, D. (1985). Applying social support research: Theoretical problems and future directions. *Journal of Social Issues, 41*, 5-28.
- Rosen, L. N., & Durand, D. B. (2000). Coping with unique demands of military life. In J. A. Martin, L. N. Rosen & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers* (pp. 55-72). Westport, CT: Pradger.
- Rosen, L. N., & Moghadam, L. Z. (1988). Social support, family separation, and well-being among military wives. *Behavioral Medicine, 14*, 64-70.
- Ross, L. E., Gilbert Evans, S. E., Sellers, E. M., & Romach, M. K. (2003). Measurement issues in postpartum depression part 1: Anxiety as a feature of postpartum depression. *Archives of Women's Mental Health, 6*, 51-57.
- Rubin, R. (1967a). Attainment of the maternal role. 2. Models and referents. *Nursing Research, 16*, 342-346.
- Rubin, R. (1967b). Attainment of the maternal role: Part 1. Processes. *Nursing Research, 16*, 237-245.

- Rubin, R. (1975). Maternal tasks in pregnancy. *Maternal-Child Nursing Journal*, 4, 143-153.
- Rubin, R. (1977). Binding-in in the postpartum period. *Maternal-Child Nursing Journal*, 6, 67-75.
- Rubin, R. (1984). *Maternal identity and the maternal experience*. New York: Springer.
- Ruiz, R. J., Fullerton, J., Brown, C. E., & Dudley, D. J. (2002). Predicting risk of preterm birth: The roles of stress, clinical risk factors, and corticotropin-releasing hormone. *Biological Research for Nursing*, 4, 54-64.
- Russell, C. S. (1974). Transition to parenthood: Problems and gratifications. *Journal of Marriage and the Family*, 36, 294-301.
- Ryan, D. (2003). *Navy researchers keep eye on 90,000 babies a year*. Retrieved February 15, 2003, 2004 from [www.nhrc.navy.mil](http://www.nhrc.navy.mil).
- Sameroff, A. J. (2000). Developmental systems and psychopathology. *Development and Psychopathology*, 12, 297-312.
- Sammons, L. N. (1990). Psychological aspects of second pregnancy. *NAACOG'S Clinical Issues in Perinatal Women's Health Nursing*, 1, 317-324.
- Sarason, B. R., Pierce, G. R., & Sarason, I. G. (1990). Social support: The sense of acceptance and the role of relationships. In B. R. Sarason, I. G. Sarason & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 97-128). New York: John Wiley & Sons, Inc.
- Sarbin, T. R. (1954). Role theory. In G. Lindzey (Ed.), *Handbook of social psychology* (pp. 223-258). Reading, MA: Addison-Wesley Publishing Co.
- Schachman, K. A., Lee, R. K., & Lederman, R. P. (2004). Baby boot camp: Facilitating maternal role adaptation among military wives. *Nursing Research*, 53, 107-115.
- Schmied, V., & Lupton, D. (2001). The externality of the inside: Body images of pregnancy. *Nursing Inquiry*, 8, 32-40.

- Scott, A. G., & Sechrest, L. (1989). Strength of theory and theory of strength. *Evaluation and program planning*, 12, 329-336.
- Scott, K. D., Klaus, P. H., & Klaus, M. H. (1999). The obstetrical and postpartum benefits of continuous support during childbirth. *Journal of Women's Health Gender Based Medicine*, 8, 1257-1264.
- Shereshefsky, P. M., & Yarrow, L. J. (1973). *Psychological aspects of a first pregnancy and early postnatal adaptation*. New York: Raven Press.
- Sherman, J. (2004, September 20). DoD looks to send 4th wave of troops to Iraq next year. *Air Force Times*, p. 22.
- Shumaker, S. A., & Brownell, A. (1984). Toward a theory of social support: Closing conceptual gaps. *Journal of Social Issues*, 40, 11-36.
- Sidani, S., & Braden, C. (1998). *Evaluating nursing interventions: A theory-driven approach*. Thousand Oaks, Calif.: Sage Publications.
- Singer, J. D. (1998). Using SAS PROC MIXED to fit multilevel models, hierarchical models, and individual growth models. *Journal of Educational and Behavioral Statistics*, 24, 323-355.
- Sleutel, M. R. (2003). Intrapartum nursing: Integrating Rubin's framework with social support theory. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 32, 76-82.
- Smith, P. B., & Pederson, D. R. (1988). Maternal sensitivity and patterns of infant-mother attachment. *Child Development*, 59, 1097-1101.
- Sorenson, D. L. (1990). Uncertainty in pregnancy. *NAACOG'S Clinical Issues in Perinatal Women's Health Nursing*, 1, 289-296.
- Splonskowski, J. M., & Twiss, J. J. (1995). Maternal coping adaptations, social support, and transition difficulties to parenthood of first-time civilian and military mothers. *Military Medicine*, 160, 28-32.

- Stark, M. A. (1997). Psychosocial adjustment during pregnancy: The experience of mature gravidas. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 26, 206-211.
- Stinson, J. C., & Lee, K. A. (2003). Premature labor and birth: influence of rank and perception of fatigue in active duty military women. *Military Medicine*, 168, 385-390.
- Swann, W. B., & Brown, J. D. (1990). From self to health: Self-verification and identity disruption. In B. R. Sarason, I. G. Sarason & G. R. Pierce (Eds.), *Social support: An interactional view* (pp. 150-172). New York: John Wiley & Sons, Inc.
- Sylvia, B. M., McMullen, P., Schmelz, J., Runzel, A., Stevens, V., & Jackson, H. L. (2000). Exploration of facilitators and barriers to prenatal care among military women. *Nurse Practice Forum*, 11, 171-177.
- Tammentie, T., Tarkka, M. T., Astedt-Kurki, P., Paavilainen, E., & Laippala, P. (2004). Family dynamics and postnatal depression. *Journal of Psychiatric and Mental Health Nursing*, 11, 141-149.
- Tarkka, M. T. (2003). Predictors of maternal competence by first-time mothers when the child is 8 months old. *Journal of Advanced Nursing*, 41, 233-240.
- Tarkka, M. T., Paunonen, M., & Laippala, P. (1999). Social support provided by public health nurses and the coping of first-time mothers with child care. *Public Health Nursing*, 16, 114-119.
- Thoits, P. A. (1991). On merging identity theory and stress research. *Social Psychology Quarterly*, 54, 101-112.
- Trad, P. V. (1991). Adaptation to developmental transformations during the various phases of motherhood. *The Journal of the American Academy of Psychoanalysis*, 19, 403-421.
- Tronick, E. D., Als, H., & Brazelton, T. B. (1977). Mutuality in mother-infant interaction. *Journal of Communication*, 27, 74-79.
- Tulman, L. (1981). Theories of maternal attachment. *ANS Advances in Nursing Science*, 3, 7-14.

- Tulman, L., & Fawcett, J. (2003). *Women's Health During and After Pregnancy*. New York: Springer Publishing Company.
- U.S. Army Medical Department Office of the Surgeon General. (2006). *Army Medical Department - AMEDD*. Retrieved February, 6, 2006, from <http://www.armymedicine.army.mil/index.html>
- United States Air Force. (2005). *Air Force Handbook 1*. Washington, D. C.: Air Force Publishing.
- Vega, W. A., Patterson, T., Sallis, J., Nader, P., Atkins, C., & Abramson, I. (1986). Cohesion and adaptability in Mexican-American and Anglo families. *Journal of Marriage and the Family*, 48, 857-867.
- Vintzileos, A. M., Ananth, C. V., Smulian, J. C., Scorza, W. E., & Knuppel, R. A. (2002). Prenatal care and black-white fetal death disparity in the United States: Heterogeneity by high-risk conditions. *Obstetrics and Gynecology*, 99, 483-489.
- Wadhwa, P. D., Sandman, C. A., Porto, M., Dunkel-Schetter, C., & Garite, T. J. (1993). The association between prenatal stress and infant birth weight and gestational age at birth: A prospective investigation. *American Journal of Obstetrics and Gynecology*, 169, 858-865.
- Walker, L. O. (1982). *Toward models of mother-infant dyadic development*. Austin, TX: University of Texas.
- Walker, L. O., Crain, H., & Thompson, E. (1986a). Maternal role attainment and identity in the postpartum period: Stability and change. *Nursing Research*, 35, 68-71.
- Walker, L. O., Crain, H., & Thompson, E. (1986b). Mothering behavior and maternal role attainment during the postpartum period. *Nursing Research*, 35, 352-355.
- Walker, L. O., & Montgomery, E. (1994). Maternal identity and role attainment: Long-term relations to children's development. *Nursing Research*, 43, 105-110.
- Ward, A. J. (1991). Prenatal stress and childhood psychopathology. *Child Psychiatry and Human Development*, 22, 97-110.

- Ward, R. (1996). Marital happiness and household equity in later life. *Journal of Marriage and the Family*, 55, 427-438.
- Weis, K. L. (2005a, February). *Acceptance of pregnancy with military-imposed family separations*. Paper presented at the 19th Annual Southern Nursing Research Society Conference, Atlanta, GA.
- Weis, K. L. (2005b). *Military Families: Psychosocial adaptation to pregnancy* (No. MDA-905-02-1-TS08). Bethesda, MD: TriService Nursing Research Program.
- Weis, K. L., & Lederman, R. P. (2006). *Impact of prenatal maternal role identification, family adaptability, and perceived support network on infant birth weight in a military sample*. Paper presented at the Southern Nursing Research Society 20th Annual Conference, Memphis, TN.
- Weis, K. L., Lederman, R. P., & Lilly, A. (2004, November 13). *Factors influencing differences in acceptance of pregnancy: Military deployment and community support*. Poster presented at the 110th Annual Meeting of the Association of Military Surgeons of the United States, Denver, CO.
- Weis, K. L., Lederman, R. P., Lilly, A., & Bush, A. (2003, November 17). *Military deployment: Differences in pregnancy adaptation and family function*. Poster presented at the 109th Annual Meeting of the Association of Military Surgeons of the United States, San Antonio, TX.
- Weiss, S. J., & Chen, J. L. (2002). Factors influencing maternal mental health and family functioning during the low birthweight infant's first year of life. *Journal of Pediatric Nursing*, 17, 114-125.
- Whitchurch, G., & Constantine, L. (1993). System theory. In P. G. Boss, W. J. Doherty, R. LaRossa, W. Schumm & S. Steinmetz (Eds.), *Sourcebook of family theories and methods: A contextual approach* (pp. 325-352). New York: Plenum.
- White, R. W. (1974). Strategies of adaptation: An attempt at systematic description. In G. V. Coelho, D. A. Hamburg & J. E. Adams (Eds.), *Coping and adaptation* (pp. 47-68). New York: Basic Books, Inc.

- Wolpert, D. S., Martin, J. A., Dougherty, L. M., Rudin, B. J., & Kerner-Hoeg, S. (2000). The special case of the young enlisted family. In J. A. Martin, L. N. Rosen & L. R. Sparacino (Eds.), *The military family: A practice guide for human service providers* (pp. 43-51). Westport, CT: Praeger.
- Wood, D. (2004, April 19). Going it alone. *Air Force Times*, 64, 26.
- Woodgate, R. L. (1999). Conceptual understanding of resilience in the adolescent with cancer: Part I. *Journal of Pediatric Oncology Nursing*, 16, 35-43.
- Yeaton, W. H., & Sechrest, L. (1981). Critical dimensions in the choice and maintenance of successful treatments: Strength, integrity, and effectiveness. *Journal of Consulting and Clinical Psychology*, 49, 156-167.
- Zachariah, R. (1994). Mother-daughter and husband-wife attachment as predictors of psychological well-being during pregnancy. *Clinical Nursing Research*, 3, 371-392.
- Zeanah, C. H., Benoit, D., Barton, M., Regan, C., Hirshberg, L. M., & Lipsitt, L. P. (1993). Representations of attachment in mothers and their one-year-old infants. *Journal of the American Academy of Child and Adolescent Psychiatry*, 32, 278-286.
- Zeanah, C. H., Carr, S., & Wolk, S. (1990). Fetal movements and the imagined baby of pregnancy: Are they related? *Journal of Reproductive & Infant Psychology*, 8, 23-26.
- Zimmer-Gembeck, M. J., & Helfand, M. (1996). Low birthweight in a public prenatal care program: Behavioral and psychosocial risk factors and psychosocial intervention. *Social Science Medicine*, 43, 187-197.
- Zimmermann-Tansella, C., Bertagni, P., Siani, R., & Micciolo, R. (1994). Marital relationships and somatic and psychological symptoms in pregnancy. *Social Science Medicine*, 38, 559-564.