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**Sex, Drugs, and Religion: A Multi-ethnic Analysis of Health Behaviors,  
Attitudes, and Perceptions of Childbearing Women**

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**Sex, Drugs, and Religion: A Multi-ethnic Analysis of Health Behaviors,  
Attitudes, and Perceptions of Childbearing Women**

**by**

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**Dissertation**

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## **Dedication**

*To Walt, for believing in me*

*To Josh and Vanessa, for giving me joy*

*To Mom and Dad, for supporting me*

*To Lisa, for seeing me through to the end*

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# **Sex, Drugs, and Religion: A Multi-ethnic Analysis of Health Behaviors, Attitudes, and Perceptions of Childbearing Women**

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Maternal health behaviors such as substance use and sexual promiscuity can put the health of mothers and their offspring at risk. Sociodemographic factors such as low socioeconomic status are also found to correlate with health risks for childbearing women.

Hispanic women – especially those less-acculturated – often have sociodemographic risk factors present, but have paradoxically positive pregnancy outcomes. Healthy behaviors in addition to religiosity have been hypothesized to contribute to such positive outcomes. Past studies offer support for the positive influence of religion on healthy behaviors.

The purpose of this study was to investigate the patterns and predictors of healthy behaviors and well-being of childbearing women, including those currently pregnant and in their first year postpartum. In addition to examining racial and ethnic differences, this study explored the role of religion and compared health behaviors and perceptions of pregnant versus postpartum women.

This study was a secondary data analysis using cycle 6 of the National Survey of Family Growth, a dataset publicly available through the National Center for Health Statistics. The sample included 1,062 childbearing women who were Hispanic, White, or Black. Regression analyses were used to determine predictors of health-risk behaviors and health perceptions.

Less-aculturated Hispanic women had the lowest rates of substance use and the highest levels of agreement with statements valuing traditional maternal roles compared to Blacks, Whites, and more-aculturated Hispanic women. White women had the highest rates of substance use, particularly smoking. Black women were the most likely to have had more than 1 sex partner or a non-monogamous partner in the previous year. There were no ethnic differences for prenatal care initiation or self-rated health. There were ethnic differences in religiosity with less-aculturated Hispanic women reporting higher importance of religion in their lives than more-aculturated Hispanics and Whites, but not Blacks. The respondents who rated religion as very important had the lowest rates of substance use and were more likely to report pregnancy happiness and agreement with traditional maternal roles.

Future research is needed to further our understanding of ethnic disparities and the role of religiosity as a predictor for healthy outcomes among childbearing women.

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## **CHAPTER 1: Introduction**

While much attention is given to the health of the woman during pregnancy, after she delivers her baby that attention is often shifted to the health and well-being of the infant. Typically after childbirth the woman schedules an appointment with her health care provider at 6 weeks postpartum. During that visit, the health care provider's focus is on involution, or the physiologic return of the woman's reproductive organs to their "pre-pregnant" state, and issues around contraception. However, evidence shows that changes in women's health status during pregnancy extend beyond the 6-week postpartum period (Haas et al., 2004). A number of authors have described the postpartum period, for both primiparous and multiparous women, as a time of transition. The formation of a maternal identity and psychological transition to motherhood is described in depth by Reva Rubin in her well-known book, *Maternal Identity and the Maternal Experience* (1984). Other authors have described the postpartum phase as a health transition (Walker & Wilging, 2000), characterized by vulnerability to risk behaviors and self-care neglect.

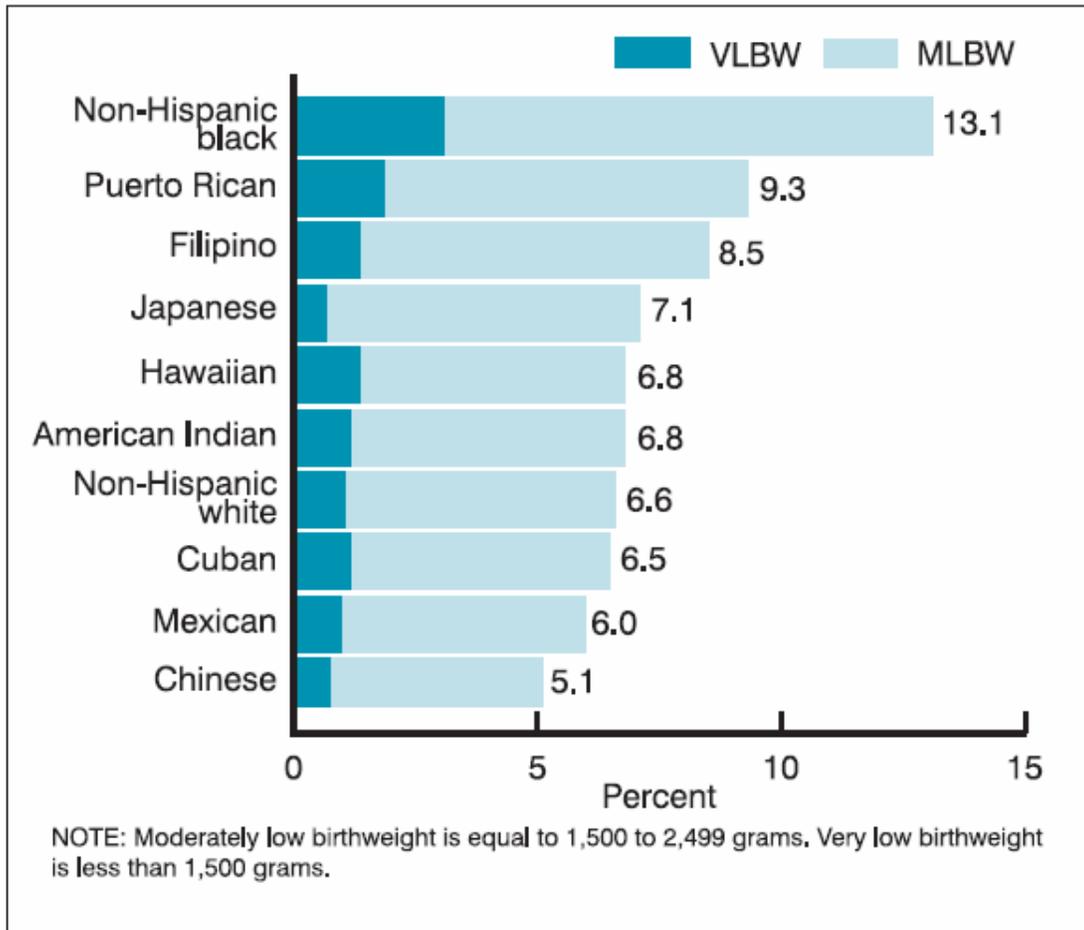
*Healthy People 2010* (U.S. Department of Health and Human Services, 2000) acknowledges that "pregnancy and delivery can lead to serious physical and mental health problems for women" (p. 16.26) and that outcomes of interest should include postpartum complications, in addition to prenatal illness and complications. However, no specific goals are delineated to address such postpartum complications that may have long-term sequelae for the health and well-being of women. Indeed, the majority of the *Healthy People 2010* goals for maternal health are related to maternal complications during hospitalized labor and delivery as well as care during pregnancy and birth outcomes.

Health disparities amongst women who are ethnic minorities are also addressed in *Healthy People 2010* (U.S. Department of Health and Human Services, 2000). Such disparities are well-documented with regard to pregnancy and birth outcomes such as preterm and low birthweight infants (Buekens & Klebanoff, 2001; Kramer et al., 2001; Lu & Halfon, 2003). For example, Black women have nearly double the rate of low birth weight infants when compared with White women (Martin, Hamilton, Ventura, Menacker, & Park, 2002) (see Figure 1.1). Additionally, Black women suffer from an alarming four-fold increase in maternal mortality compared to White women (U. S. Department of Health and Human Services, Health Resources and Services Administration, & Maternal and Child Health Bureau, 2002).

Paradoxically, Hispanic women – in particular, women of Mexican descent – have better than expected pregnancy and birth outcomes (Buekens, Notzon, Kotelchuck, & Wilcox, 2000; Jones & Bond, 1999). Their rate of delivering low birthweight and preterm infants is slightly lower than that of White women (Martin et al., 2002), despite high poverty rates and low educational attainment (Therrien & Ramirez, 2001). This is often referred to as the “Hispanic paradox,” and although the subject of a number of studies, is still poorly understood (Franzini, Ribble, & Keddie, 2001).

A number of factors are hypothesized in the literature to serve as “protective” factors for the pregnancies of Mexican-origin women. Such factors include social support, centrality of motherhood to women’s self-identity, healthy nutritional intake, minimal substance use, and religiosity (Page, 2004). Magana and Clark (1995) suggest that religiosity may translate into health behaviors that are proscribed by a particular religious faith and influence behavioral norms. This, the authors posit, may be a key factor for Mexican American women and their positive pregnancy outcomes. Other

Figure 1.1. Percent low birthweight by race and Hispanic origin of mother, 2000



(from Martin, J. A., Hamilton, B. E., Ventura, S. J., Menacker, F., & Park, M. M. (2002). *Births: Final data for 2000*. Hyattsville, Maryland: National Center for Health Statistics. Retrieved from [http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50\\_05.pdf](http://www.cdc.gov/nchs/data/nvsr/nvsr50/nvsr50_05.pdf))

researchers have also noted an inverse relationship between religious involvement and substance use as well as risky sexual behaviors (Ellison & Levin, 1998).

*Healthy People 2010* (U.S. Department of Health and Human Services, 2000) states encouraging evidence exists that increases in women's use of health practices can help their own health and that of their infants. The report goes on to describe attending prenatal care, consumption of recommended levels of folic acid among childbearing aged women, and choosing to breastfeed as examples of positive health practices of childbearing women. However, negative health practices such as smoking relapse and resumption of substance use are also prevalent among women who had given birth in the past year (Gennaro & Fehder, 2000).

While researchers have examined ethnic health disparities in the context of pregnancy outcomes, there is a paucity of literature on how such disparities impact the health of women during the first year postpartum. It is not known, for example, if Mexican American women extend the superior health status they enjoy during pregnancy into the postpartum phase. The role of religiosity in the health behaviors of pregnant and postpartum women has also been understudied.

## **PURPOSE**

The overall goal of this study was to expand our knowledge of the predictors of healthy behaviors and well-being of childbearing women across ethnicities. This goal was achieved by exploring the prevalence of health-risk and health-protective behaviors as well as the general health status of women during pregnancy and the first 12 months after giving birth. To assess maternal health disparities, this study made comparisons across a tri-ethnic sample composed of non-Hispanic Whites, non-Hispanic Blacks, and Hispanics (for brevity, non-Hispanic White and non-Hispanic Black women are hereafter

referred to as White and Black). Health risk factors such as substance use and sexual promiscuity were examined as well as the role of religiosity and pregnancy happiness as potential protective factors for health behaviors and health status.

To accomplish the purpose of this study, the investigator made use of a recently released public-use data set, the National Survey of Family Growth (NSFG). Cycle 6 of the NSFG was conducted in 2002 and 2003 (Department of Health and Human Services & National Center for Health Statistics, 2004) and was released for public use in December 2004. Congruent with the overall purpose of this study, one of the main goals of the NSFG was to provide reliable national data on the health of women and infants in the United States. The surveys were conducted by personal interviews in English and Spanish in the homes of a nationally representative sample of men and women ages 15 to 44 and included questions on education, income, marital history, pregnancy and childbirth history, pregnancy desirability, parenting attitudes, sexual behaviors, substance use and religiosity. The Appendix contains a description of the survey and information for accessing the survey online. The dataset for this study included responses from 1,062 Black, Hispanic and White women who were either currently pregnant or had given birth in the past 12 months.

By comparing health behaviors and the health status of childbearing women of different racial and ethnic backgrounds, this study addressed the ongoing problem of racial and ethnic disparities in maternal health. Additionally, by expanding the focus of health risk behaviors and protective factors to encompass both pregnancy and the first year beyond pregnancy, this study brings attention to the crucial phase of transitioning health status of new mothers. As stated in the *Healthy People 2010* objectives, maternal health is the central link to improving the overall health and well-being of women,

infants, children, and their families for this generation and the next (U.S. Department of Health and Human Services, 2000).

## **BACKGROUND AND SIGNIFICANCE**

### **Women's Health Overview**

The health of women and their children are intimately connected. A woman's health before and during pregnancy has a profound impact on the health of her newborn (Misra, Guyer, & Allston, 2003). However, the impact of maternal health on children and families does not end with childbirth (Kahn, Zuckerman, Bauchner, Homer, & Wise, 2002). As mothers, women continue to be the main providers for their children's health and well-being as well as their link to the health care system (Helstrom & Blechman, 1998). In a nationally representative survey by the Kaiser Family Foundation of women in the U.S. ages 18 and older with children in their household, 26% of them were single parents, often shouldering childcare responsibilities without support. Single women with children also often have limited financial resources. Although more than 60% of mothers work outside the home, 40% of them report family incomes below 200% of poverty (Salganicoff, Ranji, & Wyn, 2005).

In addition to financial concerns, women often report health care issues as a source of stress (Salganicoff et al., 2005). Thirteen percent of all women in a nationally representative sample report that managing their own health care needs as very stressful while only 9 % of men report managing their own health care needs was very stressful. Such stressors are magnified for women who report themselves as being in fair or poor health. Thirty-six percent of women in fair or poor health report that managing their own health needs is very stressful compared to 7% of women with good to excellent health.

Career and financial concerns are also reported as more stressful for women with poorer health status (Salganicoff et al.).

Affordability of health care is also a common concern for women, ages 18 to 64. Twenty-seven percent of women stated they either delayed or did not get health care they thought they needed because they could not afford it. In conjunction, the rate of women who report that they have had preventive screenings such as pap smears in the past two years is declining. Women who are in poor health are even more likely to report that they delayed seeking care due to problems with access and affordability (Salganicoff et al., 2005).

### **Ethnic Minority Women and Health**

Other groups of women who are likely to report obstacles to receiving adequate health care are those who are members of racial and ethnic minorities (Woodward, 1998). Aside from financial barriers they also face logistical issues such as lack of transportation, childcare, and time (Salganicoff et al., 2005). Women with limited English proficiency are particularly susceptible to a lack of health care services as well as health care complications (Solis, Marks, Garcia, & Shelton, 1990). Even when such women access the health care system, the health care providers they interact with are often ill-equipped to adequately address their health care concerns due to language and cultural differences (Pope, 2005).

In terms of general health status, Black and Hispanic women self-rate their health status lower than do White women (U. S. Department of Health and Human Services, 2005). Ninety-two percent of White working women reported good or excellent health compared to 84% of Black and Hispanic women (National Institutes of Health, 2002). Despite White women rating their health status as higher than Black and Hispanic

women, they smoke more when compared to these ethnic minority women (U. S. Department of Health and Human Services, 2005). This difference is especially notable when White women are compared to Mexican American women who have the lowest smoking rates among Hispanic women (Guendelman & Abrams, 1994). White women of childbearing age are also more likely to consume alcohol, including frequent and heavy consumption, compared to Black and Hispanic women (U. S. Department of Health and Human Services, 2005). Amongst Hispanic subgroups of women, again Mexican American women are the least likely to drink alcohol. The differences in smoking and alcohol consumption rates are even more pronounced when foreign-born Mexican American women are compared to U. S.- born White and Black women. These immigrant women show lower rates of substance use even when compared to non-immigrant Hispanic women (Guendelman, Gould, Hudes, & Eskenazi, 1990). Thus, smoking and alcohol rates in Hispanic women increase with acculturation with more recent immigrants having lower rates than immigrants who have resided longer in the U.S. (National Institutes of Health).

### **Risk Behaviors and Reproductive Health**

Tobacco and alcohol use during pregnancy are well-documented to have a negative impact on reproductive outcomes, specifically low infant birthweight (Hellerstedt, Himes, Story, Alton, & Edwards, 1997; Kleinman & Madans, 1985; Moore & Zaccaro, 2000; Sampson, Bookstein, Barr, & Streissguth, 1994; Sprauve, Lindsay, Drews-Botsch, & Graves, 1999; Strobino, 1999). Low rates of substance use among Mexican American women, particularly immigrants, have been postulated as a factor in their low rates of low birthweight and premature infants (Callister & Birkhead, 2002;

Crump, Lipsky, & Mueller, 1999; Guendelman & Abrams, 1994; Zambrana, Scrimshaw, Collins, & Dunkel-Schetter, 1997).

Vaginal infections such as sexually transmitted infections are another source of poor reproductive health. Rates of sexually transmitted infections are highest among poor and minority women and are higher in the United States compared to other developed countries (Misra, Cassady, Rothert, & Poole, 1999). Vaginal infections can be a source of pregnancy complications such as preterm birth, the most common cause of low birthweight infants (Varney, 1997c). Neonates can also acquire such infections from their mothers with either local or systemic effects leading to blindness, sepsis, and death. Infections such as active genital herpes can also contribute to higher rates of cesarean deliveries, which carry increased morbidity and mortality risks for maternal health. In addition to the risks of vaginal infections during pregnancy, women with such infections can also suffer more long-term sequelae. Cervical cancer, infertility, pelvic inflammatory disease and ectopic pregnancy are some of the risks of sexually transmitted infections (Misra et al.). Healthy sexual behaviors such as limiting the number of sexual partners and consistent condom use are essential to the prevention of this epidemic of sexually transmitted infections (Misra et al.).

### **Protective Health Factors and Reproductive Outcomes**

Aside from limiting substance use and practicing healthy sexual behaviors, there are other practices that may have beneficial effects on reproductive health. Participation in prenatal care and health screenings such as pap smears for cervical cancer are also examples of health-promoting behaviors. Nonetheless, access to and the quality of health care may be insufficient to reach women from diverse cultural, ethnic, and economic backgrounds. For example, Mexican immigrant women underutilize preventive health

care services such as Pap smear screenings. This has been proposed as a contributing factor to the high rates of cervical cancer among this population (Boucher & Schenker, 2002).

Social support, especially from family members, has also been posited to be a protective factor for the health of women, particularly during pregnancy (Dunkel-Schetter, Sagrestano, Feldman, & Killingsworth, 1996). This phenomenon has been studied in particular with Mexican immigrant women and proposed as a factor in explaining their low rates of low birthweight infants (Sherraden & Barrera, 1996a). The importance of nurturing and family support including both material and emotional support involving extended kin networks is evident in other studies with Mexican American families (Niska, 1999).

The role of religiosity is also proposed as an integral and potentially protective factor for healthy pregnancy outcomes among Mexican American women (Magana & Clark, 1995). Other studies with Mexican American women explored their health perceptions which revealed that spirituality was an integral part of how they perceived their health (Higgins & Learn, 1999; Mendelson, 2002). Self-rated health was also found to be positively correlated with religious institution attendance in a study by Levin and Markides (1985).

## **THEORETICAL FRAMEWORK**

The theoretical framework guiding this study is the concept of transitions as described by Meleis, Sawyer, Im, Messias, and Schumacher (2000) and is influenced by Rubin's (1984) framework for transition to motherhood. Contextual factors such as ethnicity, education, income, and acculturation are also included in the theoretical framework.

Meleis et al. (2000) describe pregnancy, childbirth, and parenthood as developmental or lifespan transitions. Several interrelated properties that are essential to the transition experience are awareness, engagement, change and difference, time span, and critical points and events. Awareness of changes that are occurring is a necessary component of the transition experience. Another property of transitions is engagement, or the degree to which a person demonstrates involvement in the transition process. Seeking out information and actively preparing for upcoming changes by attending childbirth or parenting classes are examples of engagement. Change is another property inherent in all transitions. While all transitions involve change, not all change involves transition. Similarly, the property of difference is seeing the world and others in different ways, or feeling or being perceived differently. Confronting such difference is another property of transitions. Women confront differences on a range of levels and in diverse ways. Another characteristic of transitions is time span, or flow and movement over time. Transitions can be in a state of flux over time and the intensity of the transition experience may vary within a time frame. Furthermore, most transitional experiences involve critical turning points of events. Specific marker events such as birth or diagnosis of an illness may or may not be evident, but increasing awareness of change or difference and more active engagement in the transition experience are often triggered by critical points. Such critical points often trigger periods of heightened vulnerability and feelings of uncertainty and anxiety (Meleis et al.).

A number of conditions including personal, community, and society may facilitate or inhibit the transition experience (Meleis et al., 2000). Personal factors such as the meanings an individual attributes to the circumstances of the transition may promote or impede a healthy transition. For example, in a study by Sawyer (1999) on the transition to motherhood, the women who expressed enjoyment in their roles as mothers and

described motherhood in positive terms may have experienced an easier transition based on the positive meanings they associated with their experiences surrounding motherhood. Cultural beliefs and attitudes may also affect an individual's transition experience. In cultures such as Mexican where motherhood is highly valued and closely tied to a woman's identity (Niska, 1999) such beliefs and attitudes may once again facilitate the transition to motherhood experience. Socioeconomic status is another personal factor that can impact the transition process. For a woman with financial concerns, becoming a mother may add to her financial woes by limiting her ability to work and earn income or by adding additional childcare expenses. Conversely, women with stable, well-paying jobs may have concerns about the impact of a new baby on their careers. Preparation and knowledge are other personal factors that can ease the transition experience. In Sawyer's study with Black women, information obtained from classes and books, advice from respected resources, and active involvement in the transition to motherhood process all facilitated a successful transition.

Community conditions can also inhibit or facilitate the transition process. For the transition to motherhood Sawyer (1999) identified social support from partners and families, especially from the woman's mother or other significant women in her life as facilitators of a successful transition. Community factors identified as inhibitors of the transition process are inadequate support, lack of sufficient resources (or inability to access resources such as childbirth and parenting education classes), and negativity from others. Because Sawyer's study was with Black women, racism, stereotyping, and negativity were identified as additional stressors for the women undergoing the usual strains of pregnancy and motherhood.

Meleis et al. (2000) also discuss societal conditions as potentially impacting transitions. For example gender roles and expectations could put constraints on a

woman's healthy transition to motherhood experience. In patriarchal societies, women may be expected to put their own health care needs behind those of their children and families. Many women are expected to sacrifice time and caring for themselves by giving priority to the needs of their children. Women whose actions and behaviors are guided by such societal expectations may experience a multidimensional transition to motherhood. Such a transition may involve a new self-perception that can influence health behaviors impacting her own health status and perception.

Transitions require the person to incorporate new knowledge and modify behaviors that result in an alteration in the definition and perception of self (Meleis, 1997). In her interpretive phenomenologic study on the experience of self for women who are mothers with children between the ages of 3 and 16 years, Hartrick (1996) describes a multiplicity of self which includes a nurturing or mothering self that was at times in conflict with thinking of one's own needs. Hartrick also speaks of the "relational" self who is affected by the expectations of other people, societal roles and values, and cultural norms. One mother in her study described the struggle between what she really wanted to do and what she perceived as her own parents' expectations and cultural norms defining what she should do and how she should behave as a mother.

In describing the maternal tasks of pregnancy, Rubin (1984) defines the tasks of childbearing as conserving the intactness of the self and the family in addition to accommodating the new child into the self and family systems. The maternal tasks of pregnancy according to Rubin are safe passage, acceptance by others, binding in, and giving of self. In the "safe passage" task, the woman is concerned with the physical safety of both herself and her baby throughout the pregnancy and childbirth. With the "acceptance by others" task, the woman seeks to assure acceptance of the child by the significant members of her family. Such acceptance requires an awareness of personal

sacrifices and the willingness to let go of certain ego-gratifying pleasures. In the “binding-in” task of pregnancy the woman increases her maternal protectiveness of the child and invests in making a healthy baby and providing a good home for him or her. During the “giving of oneself” task, the woman undergoes the intricate and complex task of searching and exploring the meaning of giving of self on behalf of another.

The successful completion of the tasks of pregnancy contributes to the formation of a maternal identity in which the woman incorporates a new personality dimension, that of maternal self, into her image of herself as a woman (Rubin, 1984). Such incorporation is more than a mere role that a woman steps into and out of as situations change. Rather, it is a bound-in and inseparable part of the woman’s whole personality and self system. Additionally, such an identity change does not carry over from one child to another but is relative to each pregnancy and subsequent child. The woman embraces idealized images of herself as mother of this child coherent with her self-image at her current stage in life. Rubin also notes that maternal identity is achieved before the woman “feels like herself again,” which may not happen until 8 or 9 months after childbirth.

Although Rubin (1984) describes several distinct maternal “tasks” of childbearing, she speaks of such tasks as occurring primarily during the pregnancy and does not describe such childbearing tasks as extending into the first year post-partum. Nonetheless, she does speak of the giving of one’s time, caring, attention, and concern towards the infant as some of the hallmarks of maternal behavior. Additionally, she proposes that the narcissistic pleasures of pregnancy are extended and transferred to the baby after birth, as the new mother receives pleasure in the infant’s appearance, good health, and thriving. Such attention to the baby, Rubin posits, is experienced by the woman as though it was given directly to herself. Therefore, it is reasonable to extend Rubin’s concept of maternal tasks such as safe passage and giving of self beyond the

pregnancy and into the first year post-partum. As the mother becomes more attached and increasingly protective of her baby, she will continue to assure the infant's safe passage into childhood and beyond (R. T. Mercer, personal communication, August 24, 2005). Subsequently, by lavishing most of her attention and efforts on her baby, the mother may adopt a pattern of self-neglect, or worse, may re-adopt certain health-risk behaviors that she had previously forgone to ensure safe passage when she carried her baby inside her womb.

Congruent with Rubin's concept of maternal identity, Meleis et al. (2000) describe "fluid integrative identities" as an outcome indicator of transitions. New or reformulated identities that form as a result of transition experiences are described as fluid rather than static, or dynamic as opposed to stable. Additionally, transitions are both a product of and a producer of changes in lives, relationships, environments, and health. Subsequently, multiple developmental, situational, and health-illness transitions often occur in succession or simultaneously resulting in a complex and multidimensional pattern of transition. Thus, in examining the health behavior patterns and the health status of women who are transitioning to motherhood, the researcher should be mindful of such complexity with the development of coherent and systematic research questions.

#### **STATEMENT OF PROBLEM/RESEARCH QUESTIONS**

Because of the lack of attention to maternal health status – particularly in the postpartum phase – in both research and practice, persistent ethnic disparities in maternal health, and a lack of understanding as to why such disparities exist, this paper explored some of the factors that may be associated with maternal health. These factors included both risk and potentially-protective behaviors and attitudes as well as self-rated perceptions of general health status. Because of the broad scope of factors that could

potentially influence maternal health, this study addressed these issues within the framework of three foci, or aims, addressed in separate chapters: 1) Ethnic differences in behaviors and attitudes of pregnant and postpartum women; 2) Religiosity as a potential influencing factor on positive health behaviors and attitudes among pregnant and postpartum women; and 3) Behaviors and attitudes of postpartum women compared to pregnant women. For this study, the overall aims followed by the specific research questions for each aim were:

1. To explore ethnic differences in health-risk behaviors, pregnancy and parenthood attitudes, and health perceptions of women during pregnancy and postpartum.
  - a. Do less-aculturated (based on English or Spanish language preference) Hispanic women practice fewer health risk behaviors (i.e. substance use, sexual behaviors, late or no prenatal care) during pregnancy and postpartum compared to White, Black, and more acculturated Hispanic women?
  - b. Are there acculturation and/or ethnic differences (controlling for age, partner status, parity, education, employment status and income) in pregnancy happiness and attitudes towards parenting and maternal roles?
  - c. Does the self-rated health of pregnant and postpartum women differ by acculturation and/or ethnicity?
2. To analyze if religiosity has a positive effect on health risk behaviors, pregnancy and parenthood attitudes, and health perceptions of pregnant and postpartum Black, White, and Hispanic women.

- a. Are there ethnic differences in religiosity (denomination, frequency of attendance, and importance of religion in daily life) among Black, White, and Hispanic women during pregnancy and postpartum?
  - b. Is religiosity a determinant of protective health behaviors (i.e. lack of substance use, lack of sexual promiscuity, seeking prenatal care) and self-rated health in pregnant and postpartum women?
  - c. Is there a positive relationship between religiosity and pregnancy happiness or attitude towards parenthood?
3. To determine if postpartum women exhibit more negative health risk behaviors and lower self-rated health than women who are pregnant.
- a. Are there differences in self-rated health and health behaviors (i.e. substance use, sexual behaviors) between women who are currently pregnant and those who have given birth in the past 12 months? Does the trimester of pregnancy or, for postpartum women, the quarter postpartum have an impact on health perceptions?
  - b. Are there differences in health behaviors (i.e. substance use, sexual behaviors, and seeking prenatal care) and self-rated health among women with first pregnancies versus women with subsequent pregnancies?
  - c. Do pregnancy happiness and attitudes towards parenthood, as well as the sociodemographic variables of age, race, income, education, employment, and marital status, predict health behaviors and self-rated health during pregnancy and postpartum?

## **DEFINITIONS**

The definitions of the variables in this study are categorized by health-risk behaviors, health-protective factors, self-rated health status, and contextual factors.

### **Health –Risk Behaviors**

*Smoking:* assessed by asking if participant has smoked at least 100 cigarettes in her lifetime and if so, how often she has smoked in the last 12 months. Participant is also asked if she smoked at all during the pregnancy after she found out she was pregnant.

*Alcohol consumption:* participant is asked how often she has had beer, wine, hard liquor, or other alcoholic beverage in the last 12 months.

*Marijuana use:* participant is asked how often she has smoked marijuana during the last 12 months.

*Cocaine use:* participant is asked how often she has used cocaine during the last 12 months.

*Crack use:* participant is asked how often she has used crack during the last 12 months.

*Injectable drugs:* participant is asked how often she has used non-prescription drugs with a needle to experience the feeling it caused during the last 12 months.

*Number of sex partners:* participant is asked how many male sexual partners she has had in the past 12 months.

*Non-monogamous relationships:* the participant is asked if she has had sex with any males who were also having sex with other people around the same time in the last 12 months.

*Sexually transmitted infections (STIs) history:* participant is asked if she has been treated for STIs such as gonorrhea, chlamydia, herpes, or syphilis in the last 12 months.

## **Health-Protective Factors**

*Pregnancy happiness:* participant is asked to rate on a scale of 1 (very unhappy) to 10 (very happy) how happy she felt when she found out she was pregnant.

*Health care services utilization:* participant is asked the number of weeks pregnant she was when she first sought prenatal care.

*Insurance coverage:* participant is asked if there was any time in the past 12 months that she did not have any health insurance or coverage.

*Religiosity:* participant is asked what religion she is now (if any), how often she attends religious services, and how important religion is in her daily life (very, somewhat, or not important).

*Attitude towards parenthood:* participant is asked if she strongly agrees, agrees, disagrees, or strongly disagrees with the statement that the rewards of being a parent are worth it, despite the cost and the work it takes.

*Maternal roles related to working:* the woman is asked on a scale of 1 to 4 if she agrees or disagrees with the following statements about gender roles: “A working mother can establish just as warm and secure a relationship with her children as a mother who does not work,” and “It is much better for everyone if the man earns the main living and the woman takes care of the home and family.”

## **Self-rated Health Status**

*General health:* the participant is asked how she would rate her health, in general (excellent, very good, good, fair, or poor).

## **Contextual/Sociodemographic Factors**

*Ethnicity:* defined as Hispanic women, non-Hispanic White (White) women, non-Hispanic Black (Black) women.

*Acculturation status:* language preference (English or Spanish) as determined by the interviewer.

*Income:* percent of poverty level income based on total, before tax family income from all sources in the year 2001 and family size (2001 poverty levels as defined by U.S. Census Bureau)

*Employment:* participant was asked if she was employed (part-time or full-time), on vacation, strike, sick leave, or maternity leave, or unemployed, in school, keeping house, or caring for her family in the past week..

*Age:* participant's age in years at time of interview.

*Marital status:* participant is asked if she is currently married, not married but living with partner of opposite sex, widowed, divorced, separated because she and spouse are not getting along, or never been married.

*Education:* participant is asked what is the highest grade or year of school she has attended, if she has any college or university degrees and if so, what is the highest degree she has earned.

## **ASSUMPTIONS**

The assumptions for this study are the following:

1. Pregnancy and childbirth are major life transitions for women that have an impact on their health status as women.
2. Such transitions do not end with the birth of the baby, but rather continue well into the first year after the baby is born.
3. The NSFG is a valid, reliable, nationally representative source of data

## **LIMITATIONS**

The limitations for this study are the following:

1. Data from the NSFG are cross-sectional and therefore offer the researcher only a summary of behaviors at a particular time and place. Subsequently, the data cannot directly address the continuity of associations from pregnancy to post-partum, or between behaviors during pregnancy and subsequent birth outcomes.
2. The acculturation measure is based on language preference alone and does not account for other factors that may influence acculturation such as place of nativity, length of time in the U.S., and cultural identity.

## **SUMMARY**

This chapter presented an introduction to the study including its purpose and pertinent background studies supporting its importance. In addition it presented the theoretical framework within which the study of health-risk and health-protective behaviors among a multiethnic sample of pregnant and postpartum women was conducted. The specific research questions were presented within the structure of three general aims with each aim containing a different set of variables. As such, chapters 2, 3, and 4 each address a specific set of research questions, as identified within the three aims delineated in this chapter. In this context, chapters 2, 3, and 4 each contain the background and significance, methodology, data analysis, results, and discussion sections pertinent to its particular aim. Chapter 5 includes the overall conclusions and the implications for nursing practice, education and research.

## **CHAPTER 2:**

### **Differences in Health Behaviors and Health Perceptions of Hispanic, White, and Black Pregnant and Postpartum Women: Focus on the Hispanic Paradox**

Ethnic disparities in leading health indicators such as preterm and low birthweight infants are an important public health issue. *Healthy People 2010*, in discussing the goal of improving the health and well-being of women, infants, children, and families, highlights the importance of maternal and infant health as a predictor of the health of the next generation (U.S. Department of Health and Human Services, 2000). Infant mortality, or death within the first 12 months of life, is considered an important marker of a nation's health and a global indicator of health status and social well-being. In 2000, the United States ranked 27<sup>th</sup> among industrialized nations in infant mortality rates (National Center for Health Statistics, 2004). Preterm and low birthweight infants, accounting for 20% of all neonatal deaths, are one of the leading causes of infant mortality (U.S. Department of Health and Human Services, 2000).

Previous studies have identified a number of risk factors for low birth weight, preterm, and other compromised infants such as those with developmental and neurologic abnormalities. Among the most well-documented factors attributable to adverse fetal outcomes is maternal substance use such as cigarettes, alcohol, and illicit drugs during pregnancy (Cone-Wesson, 2005; Hellerstedt et al., 1997; Moore & Zaccaro, 2000). Poor maternal health and physical functioning prior to pregnancy have also been suggested as increasing the risk of preterm labor (Haas, Meneses, & McCormick, 1999). Psychosocial factors such as education, income, marital status, neighborhood characteristics, perceived discrimination, stress, and negative life events are also associated with preterm and/or low birthweight infants (Ahern, Pickett, Selvin, & Abrams, 2003; Badr, Abdallah, &

Mahmoud, 2005; Dole et al., 2004; Peacock, Bland, & Anderson, 1995). One of the most glaring factors associated with preterm and low birthweight infants is ethnicity, with Blacks suffering at more than twice the rate of Whites and Hispanics (Martin et al., 2002).

Although a number of factors are known to be associated with preterm delivery and low birthweight infants, the etiological pathways that lead to shortened gestation and low birthweight are poorly understood (Kramer et al., 2001). Some researchers have hypothesized that socioeconomic disadvantage is not likely to be a direct determinant of preterm birth but, rather, a correlate of unhealthy behaviors, exposure to stress, and psychological reactions to exposure to stress (Kramer et al.). Furthermore, the presence of certain psychosocial and behavioral risk factors is known to be more prevalent among the socially disadvantaged and the incidence of preterm birth is greatly increased among this vulnerable group (Kramer et al.).

Unexpectedly, Mexican American women, who generally fall into the socially disadvantaged classification based on education and income, have significantly lower rates of low birthweight and preterm infants when compared to other ethnic minority and socially disadvantaged women, in particular Blacks (Martin et al., 2002). Among Mexican American women, those who are first generation immigrants have the best pregnancy outcomes with the lowest rates of preterm and low birthweight infants. Immigrant women from Mexico are even more socially disadvantaged than U.S.-born women of Mexican origin and have the lowest educational attainment and highest poverty rates among the foreign-born population in the U.S. (Lollock, 2001). This phenomenon, often referred to as the Hispanic paradox, is poorly understood although its existence related to birth outcomes is well-documented throughout the literature (Balcazar & Krull, 1999; Collins & David, 2004; Guendelman et al., 1990).

A number of factors are hypothesized to contribute to the unexpectedly good pregnancy outcomes among Mexican American women. Traditional Mexican cultural values that guide health behaviors such as abstaining from substance use and eating a healthy diet and psychosocial factors such as family support and pregnancy happiness have been explored by researchers (Guendelman & Abrams, 1994; Jones & Bond, 1999; Page, 2004; Sherraden & Barrera, 1996a). The purpose of this study was to further examine if there are acculturation and ethnic differences among Hispanic, White, and Black women in health behaviors and attitudes during childbearing, which can affect the incidence of preterm and low birthweight infants. Specifically, the behavioral factors assessed included smoking, alcohol, and drug use, sexual risk-taking such as number of sex partners, non-monogamous relationships, and sexually transmitted infection (STI) treatment, as well as health care services utilization. Attitudinal factors examined were pregnancy happiness, feelings towards parenthood, and maternal and gender roles. Self-rated health, which reflects positive and negative psychological and physical functioning from the respondent's viewpoint (Benyamini, Idler, Leventhal, & Leventhal, 2000), was also examined. Sociodemographic factors such as insurance coverage, number of family members in household, income, employment, age, marital status, education, and parity were also included in the analysis.

## **BACKGROUND AND SIGNIFICANCE**

### **Acculturation**

Acculturation is a complex, multidimensional concept that is difficult to measure with a single variable. In order to more fully understand how acculturation affects a person's adaptation and behaviors, proxy measures such as language spoken at home and nativity should be supplemented with contextual measures and qualitative analyses

(Cabassa, 2003). Some researchers point out that many studies on health in the Hispanic population have operated on the presumption of a distinct Hispanic culture (Ponce & Comer, 2003). However, because of the many cultural and socioeconomic differences that exist within the Hispanic population, using a numeric value as an indicator of acculturation may fail to accurately represent this complex concept. Nonetheless, demographers, social scientists, and public health researchers have produced important studies examining acculturation, as measured by primary language spoken, and its relationship to health behaviors and attitudes (Acevedo, 2000; Angel & Cleary, 1984; Unger & Molina, 1997). Other studies of acculturation measures among Hispanics have supported that primary language spoken (Spanish or English) is a strong correlate of acculturation level (Arcia, Skinner, Bailey, & Correa, 2001; Deyo, Diehl, Hazuda, & Stern, 1985; Wallen, Feldman, & Anliker, 2002).

Researchers have found that the positive pregnancy outcomes enjoyed by Mexican immigrant women in the U.S. are not as apparent in subsequent generations of Mexican-American women who are more acculturated (Balcazar & Krull, 1999; Guendelman et al., 1990). Specifically, nativity, or whether the woman was born in Mexico or the United States, seems to be a strong determinant of birthweight status (Collins & David, 2004). Collins and David note that Mexican-born women seem to resist the effects of certain risk factors for low birthweight such as low educational attainment and limited prenatal care. Nonetheless, Lagana (2003), in an ethnographic study with both Mexican-born and U.S.-born women of Mexican origin, found that even the U.S.-born women valued the traditional Mexican approach to pregnancy and often attempted to rediscover their cultural roots. In another study by Jones and Bond (1999), the authors found a low percentage of low birthweight infants born to their sample of women who showed low acculturation levels and adhered to traditional Mexican cultural

beliefs and values. The women reported a low incidence of negative lifestyle practices, which the authors relate to the women's reverence for pregnancy and childbirth. Another study examining the role of acculturation and prenatal health behaviors in women of Mexican origin found that higher acculturation was significantly associated with psychosocial behavioral risk factors such as drug and alcohol use, prenatal stress, and less positive attitudes towards pregnancy (Zambrana et al., 1997).

### **Substance Use**

*Healthy People 2010* has established specific objectives regarding substance use during pregnancy to reduce low birthweight. For smoking, the target is that 99% or more of women will abstain from smoking during pregnancy, and for alcohol the target is that more than 94% of women will refrain from drinking alcoholic beverages during pregnancy (U.S. Department of Health and Human Services, 2000). Several studies have found that Hispanic women have the lowest rates of alcohol, cigarette, and drug use during pregnancy when compared to White women and Black women (Guendelman & Abrams, 1994; Martin et al., 2002; Phares et al., 2004). The highest rates for smoking during pregnancy are found among White women and for alcohol consumption the highest rates are among Black women (U.S. Department of Health and Human Services, 2000). However, rates of alcohol consumption during pregnancy are often difficult to determine, especially when based on birth certificate data, which are not very sensitive to the measurement of light alcohol use during pregnancy, and may result in underreporting (Martin et al.).

### **Sexual Behaviors and Infections**

Infections of the reproductive tract that are acquired through or associated with sexual activity are known to be linked to preterm birth (Goldenberg, Andrews, Yuan,

MacKay, & St. Louis, 1997). Gonorrhea, chlamydia, and syphilis are associated with a two to three-fold increased risk of preterm birth. However, pregnant women infected with these organisms often have other organisms such as those causing bacterial vaginosis also present. Thus, there are a number of potentially confounding variables to consider when assessing the relationship between sexually transmitted infections and preterm birth (Goldenberg et al.).

Bacterial vaginosis, which can be described as a variation in the normal vaginal microbial flora, is one of the most well-documented infections of the reproductive tract that is associated with preterm birth (Goldenberg et al., 1997). Although not considered strictly sexually transmitted, it occurs more frequently in sexually active women and is often seen in conjunction with other sexually transmitted diseases. It is very common, especially in Black women with 25% to 40% or more having the disease compared to approximately 10% to 15% of White women. Goldenberg et al. conclude that as many as 40% of early spontaneous preterm births, especially in Black women, may be a result of bacterial vaginosis infections.

Sexually transmitted infections (STIs) disproportionately affect Black women when compared to Hispanic and White women (National Institutes of Health, 2002). For gonorrhea, the rate reported for Black women is 15 times the rate for White women and 9 times the rate for Hispanic women. Similarly, Black women suffer from more than 12 times the rate of syphilis than both White and Hispanic women (Centers for Disease Control and Prevention, 2000).

The factors that lead to higher rates of sexually transmitted infections among Black women are poorly understood (Fiscella, 1996). Some researchers have noted that reported sexual behaviors do not account for the racial differences in STIs. Black women report similar numbers of lifetime sexual partners and rates of sexual activity as do White

women. Although Black men report slightly higher numbers of lifetime partners when compared to White men, they also report more consistent condom use (Fiscella). Some factors hypothesized in the literature as contributing to higher STI rates among Black women are poor access to health care, endemic infections in segregated communities, and public health neglect of endemic infections (Fiscella). In viewing preterm birth from a biobehavioral perspective, maternal stress - in addition to urogenital tract infections - has also been suggested as increasing the risk of preterm birth. Researchers posit that stress and infections may produce a multiplicative effect. Exposure to high levels of chronic stress during pregnancy may alter susceptibility to infectious pathogens and trigger the release of corticotropin-releasing hormone, thus promoting early delivery (Wadhwa et al., 2001).

### **Health Services Utilization**

Health services utilization is a marker for a population's health status as well as its access to health care services. Access to care is particularly a problem for ethnic minority populations due to lack of providers in minority communities, language barriers, and lack of culturally appropriate services (Lillie-Blanton, Martinez, Taylor, & Robinson, 1993). Financial barriers and lack of insurance also hinder health services utilization. One-third of Hispanic women are uninsured, compared to 17% of Black women and 13% of White women (National Institutes of Health, 2002). Public policy changes during the 1990s including welfare reform reduced eligibility for many low-income recipients of public insurance (Minkhoff, Bauer, & Joyce, 1997).

The initiation of early prenatal care is widely believed to be an aspect of promoting optimal birth outcomes. Prenatal care providers can offer health behavior advice, manage preexisting and pregnancy-related medical conditions, and screen for risk

factors that may contribute to poor outcomes (Martin et al., 2002). The *Healthy People 2010* target for early (first trimester) and adequate (minimum number of visits) prenatal care is 90% of live births (U.S. Department of Health and Human Services, 2000). The number of women receiving prenatal care during the first trimester of pregnancy has increased dramatically since 1990, with over 83% of all women receiving early care in the year 2000 (Martin et al.).

Despite this dramatic increase, particularly among Black women, the rate of low birthweight infants has not declined (Fiscella, 1995). In reviewing the data on the effectiveness of prenatal care in reducing low birthweight infants, Fiscella found that most studies comparing adequate versus inadequate prenatal care fail to adjust for the effects of confounding variables such as smoking and substance use. Thus, he concluded that there is not sufficient evidence to establish that prenatal care categorically improves birth outcomes.

Ethnic differences in initiating prenatal care provide further evidence that the current model for the delivery of prenatal care in the United States is not effective at improving the rate of low birthweight infants. Mexican immigrant women, who have the lowest rates of low birthweight infants, also have the lowest rates of beginning prenatal care in the first trimester compared to Black and White women (Martin et al., 2002). Women who do not seek prenatal care are also more likely to be poor and have less than 12 years of education (National Institutes of Health, 2002). Subsequently, the evaluation of the effects of prenatal care on infant birthweight is difficult to determine because there may be other unmeasured differences between women who do and do not receive comprehensive care (Strobino, Nicholson, Misra, Hawkins, & Cassady, 1999).

In a qualitative study on Hispanic women's views of pregnancy and prenatal care, the concept of seeking a healthy baby was at the core of the women's beliefs (Pearce,

1998). The ways in which the women sought a healthy baby was by caring for themselves through avoidance of bad habits and having a positive attitude, receiving support – especially from a female relative, and accepting care from others including both Western and folk medicine. Although the women in this study sought prenatal care, it was not always done in a timely fashion. Pearce discussed a number of barriers to prenatal care for Hispanic women including lack of insurance, lack of transportation, long waits in the clinic, lack of child care, and the perception of pregnancy as a natural, healthy state, thus there being no need for medical care during pregnancy. Other studies have highlighted the importance of Mexican immigrant women receiving advice and support from female family members as a means to ensure a healthy pregnancy (Sherraden & Barrera, 1996a).

Parallel to Pearce's (1998) qualitative study on pregnancy and prenatal care with Hispanic women, Sawyer's (1999) study focused on the experiences of pregnancy and motherhood for Black first-time mothers. Similar to the study with Hispanic women, Sawyer found that the Black women in her study engaged actively in the process of caring for themselves during pregnancy to ensure the best possible outcome for their babies. This engagement involved the transition to motherhood in many aspects of the women's lives and included interactions with the baby, their partners, parents, family, friends, coworkers, and the community. However, for the Black women the process was colored by negativity and stereotyping of them by the healthcare system, including many providers of care. Such negativity, in conjunction with lack of sufficient resources and inadequate support, inhibited the process of a healthy transition to motherhood. Nonetheless, Sawyer found the women highly committed to being mothers who focused on promoting the health and well-being of their babies.

## **Pregnancy Happiness and Maternal Roles**

Several studies have examined the relationship between pregnancy happiness and behaviors such as seeking early care, alcohol and tobacco use during pregnancy (Altfeld, Handler, Burton, & Berman, 1997; Marsiglio & Mott, 1988; Weller, Eberstein, & Bailey, 1987). In a study by Altfeld et al., the researchers suggested that positive health behaviors such as abstaining from alcohol and tobacco during pregnancy are influenced by “wantedness” of the pregnancy as well as sociodemographic factors. Other studies have found similar results with women who reported their pregnancies as wanted initiating earlier prenatal care and stopping smoking during pregnancy (Weller et al.).

Pregnancy happiness and placing value on the maternal role have been presented in the literature as possible factors to help explain better than expected pregnancy outcomes among women of Mexican origin. Jones and Bond (1999) describe home and family as central values for the traditional Mexican women in their study. Children are considered a gift and bearing and raising children exemplify the essence of womanhood. Subsequently, the women in their study reported a low incidence of deleterious behaviors during pregnancy. Other studies have linked traditional beliefs about women’s roles within the family and a low prevalence of abortion use among young Mexican immigrants (Kaplan, Erickson, Stewart, & Crane, 2001). After controlling for demographic factors, women who participated in alternative roles to motherhood such as work or school and those who were born in the U.S. and more acculturated were more likely to have had an abortion in the past.

Ethnographic studies have also documented the importance of family and parenting in traditional Mexican values (Higgins & Learn, 1999; Mendelson, 2005; Niska, 1999). Mendelson’s study with moderately to highly acculturated Mexican American women found that as women struggled to break free from some traditional

aspects of Mexican culture such as a perceived subordinate role of women, they also sought to hold on to the cultural values of family and parenting. In a study on the health practices of Hispanic women living in New Mexico, Higgins and Learn found that although women directed their families toward good health behaviors, they did not always follow their own advice for healthy living. By placing a priority on the health of their children and families, the women reported taking better care of their families than themselves.

### **Self-rated Health**

Self-reported health ratings among women of childbearing age are generally high, with one study reporting over 85% of Swedish women who had given birth in the past year as rating their health as very good or good (Schytt, Lindmark, & Waldenstrom, 2004). Among the women who had low scores for self-rated health, factors that affected their general physical functioning and well-being such as fatigue, sleep difficulties, and low back pain were more commonly found. Studies with socially disadvantaged pregnant women about their perceived health status also show a positive relationship between physical functioning and general health status (Haas et al., 1999). These researchers reported that women experience significant declines during pregnancy in their physical functioning and overall health. Haas et al. also suggested that when maternal health is perceived as being poor, this perception may predispose a woman to an increased risk of preterm labor.

Sociodemographic factors are closely tied to self-rated health. Social problems such as homelessness were significantly associated with poorer overall health status in a group of socially disadvantaged women of childbearing age (Haas et al., 1999). A similar study found that household income was a significant predictor of self-rated health

for Hispanic, White, and Black women (Ostrove, Adler, Kuppermann, & Washington, 2000). Pregnant Hispanic women had significantly lower health ratings when compared to pregnant Black women, whose ratings were significantly lower than those of the pregnant White women in the study. Hispanic and Black women also had significantly lower incomes compared to the White women. More Black women rated their health as fair or poor (16%) as compared with 12% for Hispanic women and 11% for White women (National Institutes of Health, 2002).

Some researchers have raised questions about the validity of using self-rated health as a measure of mortality risk among the Hispanic population. In a study by Finch, Hummer, and Vega (2002), the investigators found that poor self-rated health was less predictive of subsequent mortality risk in less acculturated Hispanics. The authors offer the explanation that immigrant Hispanics may rate themselves in poorer health based on personal or social problems which they represent as physical health ailments. Subsequently, the researchers conclude that it is important to consider acculturation levels when using self-rated health measures in survey samples that include foreign-born respondents.

This review of the pertinent literature suggests that there are many potential ethnic differences in health behaviors and perceptions that may affect maternal health status during pregnancy and postpartum. In light of evidence that supports the existence of a Hispanic paradox - particularly among first generation Mexican immigrant women - related to positive pregnancy outcomes, a better understanding of their health practices and attitudes towards motherhood may expand our knowledge about ethnic disparities in infant and maternal health. Thus, this study will address the following specific research questions: 1) Do less-acculturated (based on English or Spanish language preference) Hispanic women practice fewer health risk behaviors (i.e. substance use, sexual

behaviors, late or no prenatal care) during pregnancy and postpartum compared to White, Black, and more acculturated Hispanic women? 2) Are there acculturation and/or ethnic differences (controlling for age, partner status, parity, education, employment status and income) in pregnancy happiness and attitudes towards parenting and maternal roles? 3) Does the self-rated health of pregnant and postpartum women differ by acculturation and/or ethnicity?

## **METHODOLOGY**

### **Study Design and Sample**

This study utilized selected data previously collected as part of the National Survey of Family Growth (NSFG), cycle 6. The NSFG was conducted by the National Center for Health Statistics in 1973, 1976, 1988, 1995, and again in 2002 and 2003. Trained female interviewers from the Survey Research Center of the University of Michigan, the contractor for the survey, conducted the in-person interviews in English or Spanish. The interviews took place between March 2002 and February 2003 and lasted an average of 80 minutes for the female participants. A Computer-Assisted Personal Interviewing (CAPI) technique, in which the interviewer entered the respondent's answers into a laptop computer, was used to conduct the interviews. The final section of the interview included information of a more personal nature and was conducted with the use of an Audio Computer-Assisted Self-Interviewing (ACASI) technique in which the participant entered her own answers directly into the computer. Participants received \$40 as compensation for their time. A detailed explanation of the questionnaire development and sampling techniques is published elsewhere (Groves, Benson, & Mosher, 2005).

The sample for the NSFG is a cross-section of Black, White, and Hispanic women ages 15-44, with Blacks and Hispanics sampled at higher rates. A total of 7,643 women

based on an area probability sample of 120 primary sampling units completed interviews. The respondents represent a national sample of the civilian, non-institutionalized population of the United States. Because the research questions for this study concern women who are either currently pregnant or have given birth in the past 12 months, the sample for analysis was restricted to the 1,062 women who met that criteria. Of those women, 31% reported that they were currently pregnant. The ethnic distribution of the sample is 27% Hispanic, 51% White, and 22% Black. Of the Hispanic women in the sample, 67% of them self-identified as Mexican or Mexican-American, and the remaining Hispanic women were classified as “other Hispanic group,” including Puerto Rican and Cuban.

## **Variables Assessed and Definitions**

### ***Dependent variables***

*Substance use* including marijuana, cocaine, crack, and non-prescription injectable drugs, alcohol and tobacco was measured by asking how often the respondent had used the substance during the last 12 months (1=never, 2=once or twice during the year, 3=several times during the year, 4=about once a month, 5=about once a week, 6=about once a day). For smoking behavior, respondents were asked if they continued to smoke at all (and the amount) once they found out they were pregnant. Cocaine, crack, and non-prescription injectable drug use were eliminated from the analysis in this paper because the rates of use were extremely low ( $\leq 3.0\%$ ) among the sample. The variables regarding alcohol, tobacco, and marijuana use were recoded into dichotomous variables. For alcohol, 0 represented no use or use once or twice during the year, and 1 represented use several times during the year or more. The smoking and marijuana variables were recoded similarly, with no use represented as 0 and any use at all in the past year

represented as 1. For example, for the smoking and marijuana variables, never used (=1) was recoded as 0 and categories 2 (used once or twice during the year) through 6 (used once a day) were recoded as 1. For drinking, the first two usage categories (never and once or twice during the year) were coded as 0 and categories 3 (several times during the year) through 6 (about once a day) were recoded as 1.

*Sexual behaviors* were assessed through a series of questions, including the number of male sex partners in the last 12 months (0=nn=number of partners), sexual involvement with a non-monogamous partner (1=yes, 5=no), and treatment for sexually transmitted infections such as gonorrhea, chlamydia, herpes, or syphilis in the last 12 months (1=yes, 5=no). These variables were also recoded with 0 representing only one sex partner in past 12 months, or a negative response to the non-monogamous partner and sexually transmitted infections questions and 1 representing more than one sex partner or a positive response to the other questions.

*Health services utilization* was measured by asking the respondent if she visited a health care provider during her pregnancy for prenatal care and if so, how many weeks pregnant she was at the time of her first prenatal care visit (00-44=number of weeks pregnant). This variable was recoded to reflect whether or not the respondent had initiated prenatal care in the first trimester with 0=no (prenatal care after 12 weeks or not at all) and 1=yes (prenatal care during first 12 weeks) to represent early prenatal care.

*Pregnancy happiness* was assessed by asking the respondents to rate how happy they felt when they first found out they were pregnant, using a scale of 1 (very unhappy) to 10 (very happy).

*Attitude towards parenthood* was measured by asking respondents to rate their level of agreement (1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 5=neither agree nor disagree) with the statement that “the rewards of being a parent are

worth it despite the cost and the work it takes.” This was recoded so that the higher numbers would reflect a higher level of agreement with the statement, and the value of 3 representing the neutral category.

*Maternal/gender roles* were assessed by asking the respondents their level of agreement (1=strongly agree, 2=agree, 3=disagree, 4=strong disagree, 5=neither agree nor disagree) with the statements 1) that “working mothers can establish just as warm and secure relationships with their children as mothers who do not work,” and 2) that “it is much better for everyone if the man earns the main living and the woman takes care of the home and family.” These variables were also recoded so that higher numbers would reflect higher levels of agreement with these statements.

*Self-rated health* was assessed by asking respondents to rate their health, in general, as excellent (=1), very good (=2), good (=3), fair (=4), or poor (=5). This variable was also recoded so that the higher numbers would reflect higher self-health ratings.

### ***Independent variables***

*Ethnicity* was represented with 1= Hispanic, 2= White, and 3= Black. The Hispanic group was then recoded according to language use with 1=English-speaking Hispanics and 5= Spanish-speaking Hispanics. For the regression analyses, this variable was specified as nominal, with Spanish-speaking Hispanics as the reference group.

*Acculturation* was determined by language use as a proxy measure. To determine language preference, the interviewer was asked if the self-administered (ACASI) portion of the survey should be conducted for the respondent in English (=1) or Spanish (=2).

*Age* was measured in years.

*Marital status* was indicated with 1=currenty married, 2=not married but living with partner of opposite sex, 3=widowed, 4=divorced, 5=separated (for reasons of marital discord), and 6=never been married. This variable was recoded to reflect whether or not the respondent was currently married or living with their partner (categories 1 and 2) =1 (yes) and categories 3 through 6 =0 (no).

*Education* was labeled with 9=9<sup>th</sup> grade or less, 10-12=10<sup>th</sup>-12<sup>th</sup> grade, 13-18=1-6 years of college/grad school, and 19=7 or more years of college and/or grad school.

*Employment status* was represented by 1=working full-time, 2=working part-time, 3=working, but on vacation, strike, or had temporary illness, 4=working, but on maternity or family leave, 5=unemployed, laid off, looking for work, 6=in school, 7=keeping house, 8=caring for family, and 9=other. For ease of interpretation, it was recoded as a dichotomous variable with the first four categories representing employed (=1) and categories 5 through 9 representing unemployed (=0).

*Health insurance* was assessed by asking the respondent if at any time during the past 12 months she did not have any health insurance or coverage with 1=yes and 5=no. This variable was dummy coded with 1=yes and 0=no.

*Income* was assessed in terms of percent of poverty level based on 2001 U.S. Census Bureau definitions. This included adjustments for total household income for 2001 and household size. The variable is represented as a continuous measure where numbers from 0 to 499 represented that percent of poverty and 500 represented 500% of poverty or more. Due to the wide range of responses within this variable, some regression analyses required that the value of the variable be divided by 100, to represent proportion, rather than percent, of poverty.

*Parity* was measured by asking the respondent the total number of times she had given birth.

## **Data Analysis**

Data were analyzed using SPSS, version 13.0. The complex samples module was used for all analyses to incorporate a weighting variable to adjust for disproportionate sampling. Descriptive statistics such as means and standard errors (for continuous variables) and frequencies (for categorical variables) were computed to describe the demographic characteristics for each ethnic group (see Table 2.1). Each group was then compared to the Spanish-speaking Hispanic group to determine statistically significant sociodemographic differences using linear regression or *t*-tests (for continuous variables) and logistic regression (for categorical variables).

## **RESULTS**

For the sociodemographic variables, the Spanish-speaking Hispanic women had significantly fewer years of education, were less likely to be employed and had lower incomes compared to the other 3 groups. The Spanish-speakers also had higher rates of being without health insurance at some point in the previous 12 months than the English-speaking Hispanic and White women. Spanish-speaking Hispanic women were more likely to be married or living with their partner than English-speaking Hispanic women or Black women and had a higher parity compared to all 3 groups. Although age differences reached statistical significance for the English-speaking Hispanics and Whites compared to Spanish-speaking Hispanics, the differences (1 to 1 ½ years for the means) are not deemed to be of clinical or meaningful significance (see Table 2.1).

The first research question was: “Do less-aculturated (based on English or Spanish language preference) Hispanic women practice fewer health risk behaviors (i.e. substance use, sexual behaviors, late or no prenatal care) during pregnancy and postpartum compared to White, Black, and more acculturated Hispanic women?” To answer this research question, a series of logistic regression analyses were used.

Table 2.1 Differences in Demographic Characteristics by Ethnicity

Characteristics	Spanish-speaking Hispanics <sup>b</sup> (n = 126)	English-speaking Hispanics (n = 165)	Blacks (n = 230)	Whites (n = 541)
Age (years) <sup>a</sup>	27.39±.418	25.81±.619 <i>p</i> =0.021	26.49±.620 <i>p</i> =0.215	28.46±.341 <i>p</i> =0.045
Education (years) <sup>a</sup>	10.13±.159	12.20±.214 <i>p</i> <0.001	12.78±.217 <i>p</i> <0.001	13.81±.153 <i>p</i> <0.001
Married/living with partner (n/%)	108 (86.8)	108 (68.0) <i>p</i> =0.010	99 (43.3) <i>p</i> <0.001	429 (81.9) <i>p</i> =0.383
Lacked health insurance anytime past 12 months (n/%)	64 (47.8)	39 (20.4) <i>p</i> =0.001	59 (31.3) <i>p</i> =0.057	121 (21.3) <i>p</i> <0.001
Percent of poverty level income <sup>a</sup>	107.08±8.783	202.00±14.498 <i>p</i> <0.001	189.93±13.973 <i>p</i> <0.001	288.23±8.777 <i>p</i> <0.001
Employed (n/%)	43 (31.8)	88 (50.9) <i>p</i> =0.001	135 (60.9) <i>p</i> <0.001	323 (60.2) <i>p</i> <0.001
Parity (# of live births)	1.92±.106	1.56±.096 <i>p</i> =0.014	1.41±.097 <i>p</i> =0.001	1.47±.062 <i>p</i> <0.001

Key: Numbers represent unweighted frequencies (weighted percentages in parentheses)

<sup>a</sup>Numbers represent weighted means ± standard errors

<sup>b</sup>Spanish-speaking Hispanic women used as reference group

Spanish-speaking Hispanic women were designated as the reference group. Sociodemographic variables including age, years of education, marital status, poverty-level income and whether or not the respondent lacked health insurance in the past year were entered simultaneously into the regression models to control for their effects on health-risk behaviors. Odds ratios and 95% confidence intervals are presented in Table 2.2. The only variables that did not show statistically significant differences between the Spanish-speaking Hispanic group and the other 3 groups were sexually transmitted infection treatment and lack of early prenatal care. The English-speaking Hispanic, Black, and White groups were significantly more likely to report alcohol, cigarette, and marijuana use with the White group being the most likely to use all measures of substances. For the measures of sexual behaviors there were statistically significant differences between the Spanish-speaking Hispanics compared to Blacks and Whites who were more likely to have had more than one sex partner but not compared to English-speaking Hispanics. The only odds ratio that reached statistical significance compared to Spanish-speaking women for having a non-monogamous partner was the Black women.

The second research question was: “Are there acculturation and/or ethnic differences (controlling for age, partner status, parity, education, employment status and income) in pregnancy happiness and attitudes towards parenting and maternal roles?” To answer this research question, linear regression models were used since these are ordinal scale dependent variables (see Table 2.3). This allowed the researcher to estimate the net effects of acculturation/ethnicity while controlling for sociodemographic variables (age, education, marital status, parity, poverty-level income and employment status) on pregnancy happiness and parenthood and maternal role attitudes. The regression coefficients are also presented for each covariate.

Table 2.2 Adjusted Odds Ratios for Health Risk Behaviors by Ethnicity<sup>a</sup>

<b>Adjusted Odds Ratios (95% Confidence Intervals)</b>				
	<b>English-speaking Hispanics</b>	<b>Blacks</b>	<b>Whites</b>	<b>Nagelkerke</b>
Drank alcohol more than once or twice in past 12 months	2.50 (1.36-4.58)*	2.21 (1.16-4.20)*	3.48 (1.88-6.42)*	.13
Smoked any cigarettes past 12 months	9.40 (3.25-27.32)*	5.89 (1.87-18.55)*	39.38 (14.77-104.96)*	.31
Smoked any cigarettes during pregnancy	9.65 (2.27-41.08)*	12.41 (2.03-76.08)*	59.97 (12.49-287.85)*	.27
Marijuana used in past 12 months	15.41 (1.79-132.73)*	16.35 (2.11-126.95)*	27.97 (3.43-227.99)*	.18
>1 sex partner in past 12 months	5.81 (0.96-35.22)	8.48 (1.83-39.22)*	6.85 (1.25-37.50)*	.29
Non-monogamous partner in past 12 months	1.98 (0.56-6.96)	3.69 (1.11-12.25)*	3.49 (0.95-12.83)	.21
STI treatment in past 12 months	0.88 (0.30-2.56)	1.06 (0.44-2.56)	0.58 (0.27-1.25)	.12
Lack of 1 <sup>st</sup> trimester prenatal care	1.03 (0.38-2.85)	2.03 (0.86-4.82)	1.23 (0.60-2.52)	.13

*Note:* Covariates included in each model above are age, education, marital status, lack of health insurance, and poverty-level income

<sup>a</sup>Spanish-speaking Hispanic women used as reference group

\* $p < 0.05$

Table 2.3 Unstandardized Regression Coefficients for Ethnicity and Covariates in Multiple Regression Models for Pregnancy Happiness, Parenting, and Gender Role Attitudes

	<i>Dependent Variables</i>			
	Happy to Be Pregnant <sup>a</sup>	Rewards of Parenthood Worth it <sup>a</sup>	Working Mothers Establish Warm Relationships with Children <sup>a</sup>	Man Should Earn Living, Woman Stay Home <sup>a</sup>
<i>Predictor Variables</i>	Estimate <sup>b</sup> (SE)			
English-speaking Hispanics vs Spanish-speaking Hispanics <sup>c</sup>	-0.863 (0.988) <i>p</i> =0.386	-0.289 (0.087) <i>p</i> =0.001	0.302 (0.157) <i>p</i> =0.059	-0.663 (0.155) <i>p</i> <0.001
Blacks vs Spanish-speaking Hispanics <sup>c</sup>	-1.760 (1.115) <i>p</i> =0.119	-0.228 (0.091) <i>p</i> =0.014	0.588 (0.158) <i>p</i> <0.001	-0.761 (0.156) <i>p</i> <0.001
Whites vs Spanish-speaking Hispanics <sup>c</sup>	-1.046 (0.936) <i>p</i> =0.267	-0.112 (0.075) <i>p</i> =0.141	0.496 (0.169) <i>p</i> =0.005	-0.875 (0.143) <i>p</i> <0.001
<i>Covariates</i>				
Age	0.081 (0.036) <i>p</i> =0.028	0.000 (0.005) <i>p</i> =0.962	-0.022 (0.008) <i>p</i> =0.013	0.013 (0.009) <i>p</i> =0.156
Education	0.054 (0.079) <i>p</i> =0.498	0.039 (0.009) <i>p</i> <0.001	0.023 (0.026) <i>p</i> =0.388	-0.028 (0.027) <i>p</i> =0.304
Marital Status	1.903 (0.567) <i>p</i> =0.001	0.130 (0.062) <i>p</i> =0.040	0.028 (0.110) <i>p</i> =0.800	0.277 (0.130) <i>p</i> =0.036
Parity	-0.187 (0.233) <i>p</i> =0.424	0.069 (0.018) <i>p</i> <0.001	0.098 (0.028) <i>p</i> =0.001	-0.035 (0.045) <i>p</i> =0.441
Poverty-level Income	0.013 (0.086) <i>p</i> =0.878	0.000 (0.016) <i>p</i> =0.987	0.011 (0.046) <i>p</i> =0.817	-0.100 (0.050) <i>p</i> =0.048
Employment Status	-0.297 (0.212) <i>p</i> =0.166	-0.016 (0.042) <i>p</i> =0.699	0.414 (0.084) <i>p</i> <0.001	-0.509 (0.102) <i>p</i> <0.001
<i>R</i> <sup>2</sup> for full model	.081	.096	.076	.147

<sup>a</sup> Higher values represent higher levels of agreement or endorsement of the belief

<sup>b</sup> Estimates represent unstandardized regression coefficients

<sup>c</sup> Covariates included in these results

For the pregnancy happiness variable, although the Spanish-speaking women had the highest unadjusted mean (9.03) compared to the English-speaking Hispanic (7.79), Black (6.51), and White (8.15) women, when controlling for age, education, marital status, parity, poverty-level income and employment status in the multiple linear regression model, the differences were not significant ( $p>.05$ ). The regression coefficients for only two covariates reached statistical significance in the model for pregnancy happiness: age and marital status (0=not married or living with partner; 1=married/living with partner) with both variables showing a positive association with the happiness to be pregnant scale. Marital status was the strongest predictor in the model for happiness to be pregnant with a significance level of .001. The full model including the covariates accounted for 8.1% of the overall variance in the happiness to be pregnant scale.

The maternal role and parenting attitude variables showed statistically significant differences when the Spanish-speaking Hispanic group was compared to the other three ethnic groups. For the variable asking whether or not the respondent agreed that parenthood was worth it despite the cost and work it takes, both the English-speaking Hispanic group and the Black group were significantly less likely to agree compared to the Spanish-speaking Hispanic. The covariates that contributed significantly to the model were education ( $p<.001$ ), marital status ( $p=.040$ ) and parity ( $p<.001$ ) with all three covariates having a positive relationship with agreeing that the rewards of parenthood are worth it. The variance accounted for by the full model was 9.6%. For the gender role variable assessing level of agreement that working mothers can establish just as warm and secure a relationship with their children as mothers who do not work, the Black and White groups were more likely to agree than the Spanish-speaking group. Covariates that had a statistically significant effect on the model were age ( $p=.013$ ), parity ( $p=.001$ ), and

employment status ( $p < .001$ ). Ethnicity in conjunction with the covariates accounted for 7.6% of the variance in the model for the working mothers variable. The most significant differences among the groups were with the gender role variable on endorsement of the belief that it is much better for everyone if the man earns the main living and the woman takes care of the home and family. On this measure, all 3 comparison groups were much less likely to agree than did the Spanish-speaking Hispanic group. Of the covariates included in this model, three of them had significant ( $< .05$ )  $p$  values: marital status ( $p = .036$ ), poverty-level income ( $p = .048$ ), and employment status ( $p < .001$ ). For this model, ethnicity and covariates accounted for 14.7% of the variance.

The third research question was: “Does the self-rated health of pregnant and postpartum women differ by acculturation and/or ethnicity?” To answer this research question, multiple linear regression analysis was used. The covariates, which included age, education, marital status, parity, employment status, and poverty-level income, were included in the regression model to estimate the net effects of ethnicity/acculturation on the self-rated health of English-speaking Hispanics, Spanish-speaking Hispanics, Whites and Blacks. As noted in Table 2.4, the overall model accounted for 10.7% of the variance in self-rated health although ethnicity was not a significant factor in the model. Three of the covariates – education ( $p < .001$ ), marital status ( $p = .019$ ), and employment status ( $p = .012$ ) – were the only factors that reached statistical significance in the model with all three covariates showing a positive association with self-rated health.

## **DISCUSSION AND CONCLUSIONS**

This study tested a wide variety of maternal health behaviors and attitudes that impact childbearing women and their children. These variables were approached within an ethnic disparity framework, with particular emphasis on less-acculturated Hispanic

Table 2.4 Unstandardized Regression Coefficients for Ethnicity and Covariates in Multiple Regression Model of Self-Rated Health

<i>Predictor Variable (Ethnicity)</i>	Estimate <sup>a</sup> (SE)
English-speaking Hispanics vs. Spanish-speaking Hispanics <sup>b</sup>	-0.116 (0.136) <i>p</i> =0.395
Blacks vs. Spanish-speaking Hispanics <sup>b</sup>	-0.108 (0.118) <i>p</i> =0.364
Whites vs. Spanish-speaking Hispanics <sup>b</sup>	-0.161 (0.113) <i>p</i> =0.158
<i>Covariates</i>	
Age	-0.006 (0.007) <i>p</i> =0.412
Education	0.098 (0.014) <i>p</i> <0.001
Marital Status	0.214 (0.090) <i>p</i> =0.019
Parity	0.063 (0.035) <i>p</i> =0.072
Poverty-level Income	-0.017 (0.026) <i>p</i> =0.528
Employment Status	0.179 (0.069) <i>p</i> =0.012
<i>R</i> <sup>2</sup> for full model	.107

<sup>a</sup>Estimates represent unstandardized regression coefficients

<sup>b</sup>Covariates included in these results

women. These women were chosen as the comparison or “model” group because the literature supports that as a group they have paradoxically positive pregnancy outcomes. Although a number of studies have addressed the Hispanic paradox in relation to birth outcomes, the reasons for this phenomenon are difficult to fully understand. By including variables on sexual behaviors, maternal role attitudes, and self-perceptions of health in addition to substance use behaviors, this study expands the knowledge of factors that potentially contribute to positive pregnancy outcomes among less-acculturated Hispanic women.

The findings on substance use in this study are consistent with findings of other studies that show fewer substance-use behaviors in less-acculturated Hispanic-origin women during their childbearing years (Callister & Birkhead, 2002; Crump et al., 1999; Guendelman & Abrams, 1994; Zambrana et al., 1997). Notably, when compared to the Spanish-speaking Hispanic women, the White women were 60 times more likely to have smoked cigarettes during pregnancy, 39 times more likely to have smoked at all during the past 12 months, and 28 times more likely to have used marijuana in the past 12 months. These findings are similar to findings in other studies that reported dramatically higher rates of smoking and alcohol use among Whites when compared to Hispanics (Guendelman & Abrams; Perez-Stable, Marin, & VanOss Marin, 1994). However, the confidence intervals in Table 2.2 were very wide, particularly for the smoking and marijuana use variables. This is likely due to the low numbers of Spanish-speakers who reported these behaviors which may have led to unstable estimates of the odds ratios for the other ethnicities with whom they were compared.

The findings in this study demonstrate that the Spanish-speaking women also reported less risky sexual behaviors than did the other ethnic groups. Few studies have reported data using a multiethnic comparison of numbers of sexual partners and

involvement in non-monogamous relationships among pregnant and postpartum women. Thus, this study contributes to the literature by adding another dimension, that of sexual behaviors, to the evaluation of health-risk behaviors among childbearing women. As discussed in the background section of this paper, certain sexual behaviors may increase the likelihood of acquiring genital tract infections which could impact pregnancy gestational length (Goldenberg et al., 1997). Although the Black women had the highest odds ratios for having more than 1 sex partner (8.5) and non-monogamous partners (3.7), the odds ratios for having been treated for an STI in the past 12 months did not reach statistical significance after adjusting for covariates when compared to the Spanish-speaking women. One possible explanation for this is that the actual total number of women in the sample who were treated for STIs was low (n =76), with a positive response rate of 6% overall. While nearly 20% of the Black women had more than 1 sex partner and/or a non-monogamous partner in the past 12 months, only 11% said that they had been treated for an STI in the past 12 months. One of the most common STIs, chlamydia, is often present without symptoms (Misra et al., 1999), potentially explaining the low rates of STI treatment. Another potential explanation is underreporting by respondents of sexually transmitted infections due to the stigma associated with these types of infections (Misra et al.).

Regarding parenthood, maternal, and gender role attitudes, there were dramatic differences between the Spanish-speaking Hispanics and the other groups. The less-aculturated women evidenced more traditional values by being significantly more likely to agree with the items “parenthood is worth it” and “the man should earn the living while the woman cares for the home and family,” and more likely to disagree with the item “a working mother can establish just as warm and secure a relationship as those who don’t work,” when compared to English-speaking Hispanics and Blacks. These more

traditional “family-centered” values have been described in other studies as well (Callister & Birkhead, 2002; Jones & Bond, 1999; Lagana, 2003; Sherraden & Barrera, 1996b; Zambrana et al., 1997). The Spanish-speaking women had the highest mean score (9.03) on the “happy to be pregnant” item of all the groups, although the difference was not significant when controlling for age, education, marital status, parity, employment status and poverty-level income. Nonetheless, some researchers argue that traditional Hispanic cultures highly value bearing children and the subsequent role of motherhood, which may serve as a protective factor for pregnancy outcomes (Jones & Bond, 1999; Lagana, 2003; Zambrana et al., 1997).

Self-rated health differences did not reach statistical significance when Spanish-speaking Hispanics were compared to the other three ethnic groups. Although some studies have shown that less-aculturated individuals tend to rate themselves in poorer health compared to those who are more-aculturated (Finch et al., 2002), in this sample of childbearing women aged 15-44, the overall mean for self-rated health was relatively high (4.00=very good). This finding is consistent with results from other studies that childbearing women self-rate their health as high, despite declines in physical functioning related to the childbearing process (Haas et al., 2004; Schytt et al., 2004). As Schytt et al. note, this may be because women perceive pregnancy and childbirth as a health-promoting event that occurs in the presence of good health. The covariates that were significant predictors in the model for self-rated health were education ( $p<.001$ ), marital status ( $p=.019$ ), and employment status ( $p=.012$ ).

The findings of this study are limited by several factors. Although these data strongly support an association between positive maternal health behaviors and attitudes and Spanish-speaking childbearing women, the data are cross-sectional and therefore cannot infer causality. Additionally, although there are a number of studies that provide

evidence of superior birth outcomes among less-acculturated Hispanic women, this study does not include such outcomes and therefore cannot directly address such linkages. Furthermore, acculturation is a complex concept and is difficult to thoroughly assess via language usage alone. Finally, because the sample was limited to women residing in the U.S., the findings may not be applicable in other settings.

There is a clear need for prospective, longitudinal studies to allow for more direct assessment of the relationship between behaviors and attitudes during pregnancy and birth outcomes. To account for the multifaceted influence of acculturation on personal health, childbearing, and birth outcomes of Spanish-speaking Hispanic women, qualitative studies involving ethnographic methods should be conducted. Perhaps with a more comprehensive understanding of the ethnic differences in behaviors and attitudes during childbearing, future researchers will suggest targeted interventions that will contribute to the reduction of ethnic disparities and overall improvements in maternal and child health.

### **CHAPTER 3:**

## **Does Religiosity Affect Health Risk Behaviors, Health Perceptions, and Maternal Role Perspectives in Childbearing Women?**

The health of pregnant women is considered in most cultures as being of utmost importance, as it is recognized that the pregnant woman's state of well-being can directly influence the health of her unborn child. Furthermore, the health of mothers and infants is a marker of the current health status of a large segment of the population and a predictor of the health of future generations (U.S. Department of Health and Human Services, 2000). As such, many cultures practice ritualistic beliefs and behaviors to protect the pregnant woman and her infant from harm (Helman, 2001). While maternal behaviors during pregnancy cannot improve the inherent genetic design of the fetus, some deleterious practices can prevent the achievement of the optimal growth and development of the fetus (Varney, 1997b).

Infants who are born with low birth weight are of major public health concern in the United States (U.S. Department of Health and Human Services, 2000). The risk of early death increases as birth weight decreases (Martin et al., 2002) and the emotional and financial costs of this loss of human life are staggering. Babies born too small often spend several weeks or months in neonatal intensive care units, at an average cost of more than \$1,000 per day. Low birth weight is responsible for 10% of all health care costs for children (March of Dimes, 2004). Additionally, over the past decade the rate of low birth weight infants has increased (Mattison, Damus, Fiore, Petrini, & Alter, 2001). *Healthy People 2010* addresses this issue and has set a goal to reduce the incidence of low birth weight infants (<2500g) to 5% and very low birth weight infants (<1500g) to less than 1% of those born in the U.S. (U.S. Department of Health and Human Services, 2000).

Despite a lack of progress in improving rates of preterm and low birthweight infants, certain health-risk behaviors during pregnancy are presented in the literature as contributing to poor pregnancy outcomes. One of the most well-documented behavioral effects on low birth weight is smoking (Shiono et al., 1995; Sprauve et al., 1999). Other maternal behaviors during pregnancy, such as alcohol and drug use, have also been shown to adversely affect gestational length and birth weight (Sampson et al., 1994; Sprauve, Lindsay, Herbert, & Graves, 1997). Other factors during pregnancy that can adversely affect gestational length involve sexual behaviors. Infections of the reproductive tract, commonly sexually transmitted, can lead to premature rupture of membranes and/or premature labor, resulting in low birth weight infants and potentially life-threatening or debilitating infections in newborns (Winter, 2004).

Some factors explored in the maternal-child health literature are viewed as promoting positive health behaviors during pregnancy. Pregnancy happiness was found to positively influence smoking cessation and decreased alcohol consumption during pregnancy (Altfeld et al., 1997) as well as early initiation of prenatal care (Marsiglio & Mott, 1988). Religiosity has also been suggested as a potential factor that promotes positive health behaviors, such as limiting substance use and risky sexual behavior, during pregnancy (Jesse & Reed, 2004; Magana & Clark, 1995). However, few studies have analyzed the effect of religiosity on health risk behaviors of pregnant and postpartum women.

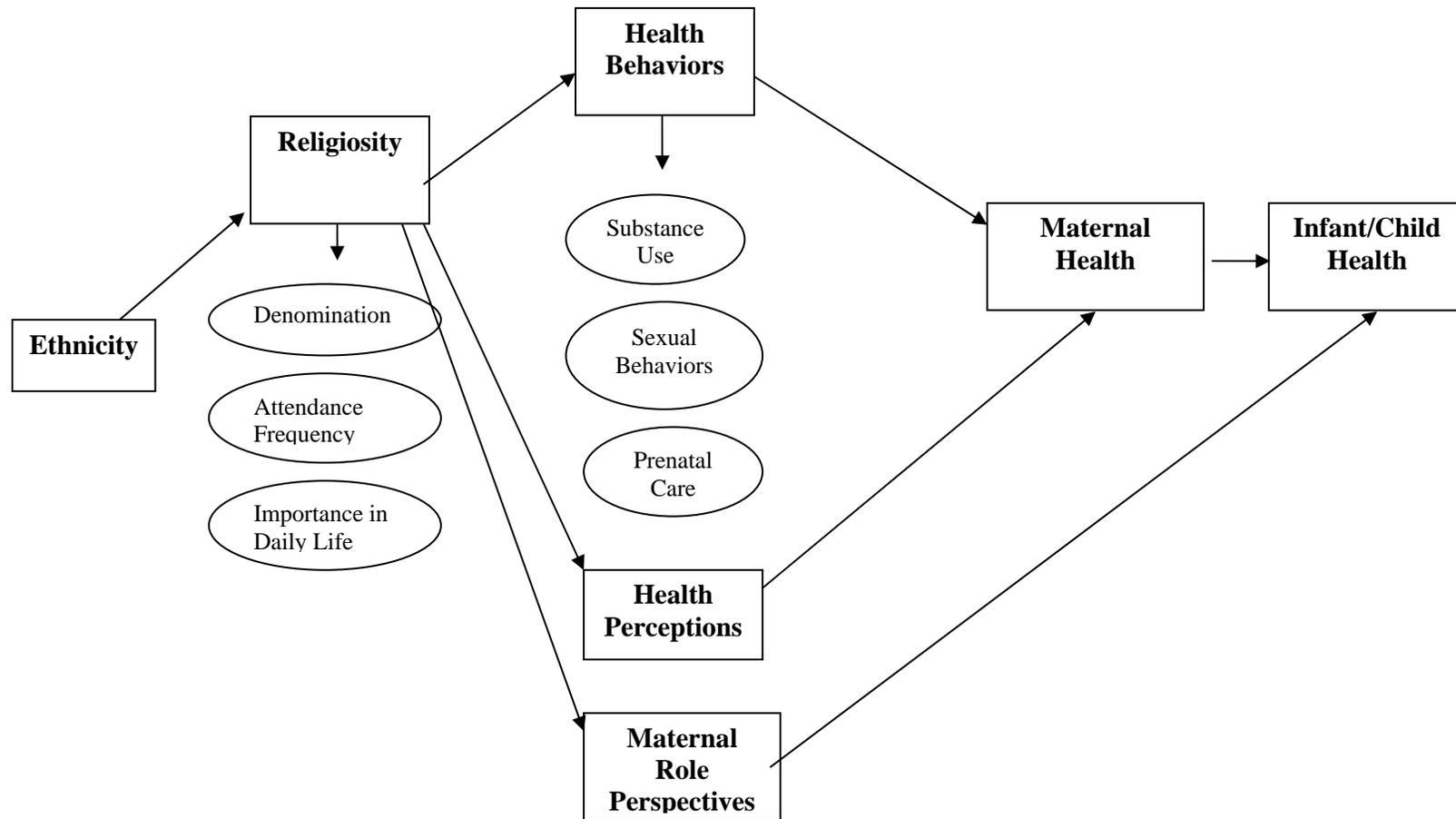
Ethnic disparities in the rates of preterm and low birthweight infants are well-documented, with Black women having more than twice the rate of Hispanic and White women (Martin et al., 2002). While a number of factors such as genetics, infections, and stress have been explored in the literature to address this disparity, no progress has been made in decreasing the rates of preterm and low birthweight infants in the United States

(Mattison et al., 2001). Some researchers have proposed a life-course perspective including detrimental exposures early in life and cumulative damage to the body's reproductive systems that may account for ethnic disparities (Lu & Halfon, 2003).

Hispanic women, particularly Mexican immigrants in the U.S. and those who are less acculturated, have surprisingly low rates of premature and low birthweight infants when compared to other members of ethnic minority groups (Balcazar & Krull, 1999; Crump et al., 1999). While rates are generally higher among socially disadvantaged women (Kramer et al., 2001), this does not hold true for Mexican immigrant women who often lag other ethnic groups on socioeconomic measures (Ramirez & de la Cruz, 2003). Although the phenomenon of the "Hispanic paradox" in relation to birth outcomes is not fully understood, a number of factors have been hypothesized by researchers as protecting these often-disadvantaged women during their pregnancies. For example, social support – especially from one's mother, – stress-reduction, and valuing the work of motherhood, were described as important to healthy birth outcomes in an ethnographic study with Mexican American women (Lagana, 2003). Others have proposed religiosity as a protective mechanism for Mexican American pregnant women (Magana & Clark, 1995). A theoretical model depicting religiosity in relation to health behaviors, perceptions, and maternal role perspectives and their effects on maternal and infant health is presented in Figure 3.1. Although infant and child health outcomes are included in the model, this study did not include measures of such outcomes.

This study adds to the research literature by assessing the impact of religiosity on health risk behaviors and health perceptions among childbearing women. First, a literature review is presented as the theoretical basis for the study linking religiosity and health-protective behaviors, health perceptions, maternal role perspectives, and

Figure 3.1 Theoretical Framework for Religiosity and Maternal and Child Health



racial/ethnic differences. This culminates in a series of specific research questions addressed using data from 1,062 pregnant and postpartum women from cycle 6 of the National Survey of Family Growth (NSFG). After presenting the results of the data analyses, a discussion of the implications of the findings and directions for future research on religious involvement among pregnant and postpartum women is offered.

## **THEORETICAL BACKGROUND AND SIGNIFICANCE**

### **Religion and Health Behaviors**

“Do not be wise in your own eyes; fear the Lord and shun evil. This will bring health to your body and nourishment to your bones” (Proverbs ch 3, v 7-8, New International Version). Religious rituals and beliefs have been a part of the human experience for as long as humans have existed. Scholars of religion and its health effects note that there is a renewed interest in this area of research in part because despite advances in education, technology, medicine, and psychology, religion continues to play a large role in people’s lives (Koenig, McCullough, & Larson, 2001c). It might seem as though with such scientific progress that society would become more secularized, but data support that in the United States, people are more religious than ever. Public and private religious practices are the norm, with over 40% of Americans reporting that they attended a religious service in the past week and 90% reporting that they prayed (Koenig et al.). There is also ample evidence supporting that women have higher rates of religious involvement than men (A. S. Miller & Hoffman, 1995; Sherkat & Ellison, 1999).

While there is a dearth of studies that examine the effect of religiosity on health behaviors during pregnancy, there is increasing interest among researchers to examine the relationship between religion and behaviors related to other health outcomes. Studies on the influence of religion on morbidity and health are well-summarized by Levin (1996).

There is evidence supporting the conclusion that religious involvement is a protective factor in healthy populations and that it may have a preventive effect against morbidity. Some of the pathways hypothesized to contribute to salutogenic effects of religiosity are social support from friends and family, hope, optimism, love, contentment, positive expectations, and empowerment (Levin). In addition, religiosity – via adherence to specific doctrinal beliefs – is often influential in lifestyle practices, such as dietary intake, alcohol, tobacco and other substance use (Krause, 2004). Other researchers have also found that frequent religious attendance facilitates the adoption of health-promoting behaviors such as decreased cigarette smoking and alcohol consumption (Strawbridge, Cohen, Shema, & Kaplan, 1997). Healthy behaviors among frequent and regular attendees at religious activities may be a result of internalization of religious norms and values. Some researchers have suggested that religion acts as a sanctioning system for behaviors that deviate from the norm resulting in “self-imposed shame and socially-imposed embarrassment” (Grasmick, Bursik, & Cochran, 1991, p. 251). Although these studies on religiosity have not been conducted within the context of childbearing women, there is solid evidence of the detrimental effects of cigarette and alcohol use during pregnancy (Ahern et al., 2003; Peacock et al., 1995; Sprauve et al., 1999; Strobino, 1999).

The relationship between religiosity and preventive health care utilization has also been studied (Benjamins & Brown, 2004). Benjamins and Brown found support for the idea that increased levels of religious involvement is associated with increased use of preventive health care services. The authors offer several possible explanations for their findings including that religious beliefs may motivate individuals to lead healthier lives and that via religious involvement, individuals may receive information and instrumental support for accessing these services. While no studies could be found that specifically

looked at religiosity and prenatal care initiation, findings from other studies (Benjamins & Brown, 2004; Koenig, McCullough, & Larson, 2001a) support the theoretical basis for the argument that higher religious involvement will predict higher prenatal care utilization.

### **Religious Involvement and Health Perceptions**

Health perceptions are a reflection of social and psychological functioning such as social support, affect, and mood (Benyamini et al., 2000). In their examination of religious effects on well-being Koenig, McCullough, and Larson (2001e), noted that religious involvement may promote certain behaviors or attitudes that increase satisfaction and well-being. In a related study on the meanings of self-ratings of health, researchers found that health ratings which included criteria other than biomedical – such as relationships, emotional, and spiritual characteristics – facilitated more positive self-ratings of health (Idler, Hudson, & Leventhal, 1999).

Similarly, Mendelson (2002) found in an ethnographic study with Mexican American women that spirituality permeated the participants' perceptions of their health. A spiritually satisfying life was essential to the women's perceptions of good health. Most of the women identified prayer and conversations with God as providing a stable source of emotional support that helped them restore emotional balance and deal with stressors in their lives. Mendelson concluded by stating that because of the importance of spirituality expressed by the women in the study, a definition of health for them that did not include a spiritual dimension would be incomplete.

A recent longitudinal study found positive correlations between religious involvement and self-rated health across the adult life-course in women (McCullough & Laurenceau, 2005). These authors also noted that many people, women in particular,

may consider psychological, social, and spiritual well-being when evaluating their health. Subsequently, religious women may perceive themselves to be in good health despite the presence of physical ailments. While some scholars have posited that religion's effects on health behaviors and outcomes are a result of selection effects (i.e. certain underlying personality traits make a person more likely to be religious and less likely to engage in risky health behaviors or have higher health perceptions), a recent carefully crafted article by Regnerus and Smith (2005) dispels that argument. The authors provide evidence that religious attendance and salience have effects on a variety of behaviors and outcomes independent of selection effects.

### **Religiosity and Maternal Role Perspectives**

Researchers have noted the close association between religious involvement and life-course events such as family formation and childrearing (Sherkat & Ellison, 1999). Marriage and childrearing generally increase religious participation (Stolzenberg, Blair-Loy, & Waite, 1995). Researchers also support the conclusion that religious involvement promotes stable marital and family relationships, perhaps by increased personal commitment and religious teachings against divorce and sexual activity outside of marriage (Koenig, McCullough, & Larson, 2001d). Studies also support that religious involvement is positively associated with less permissive attitudes toward extramarital sex and with fewer sexual partners (Koenig, McCullough, & Larson, 2001b). Women involved in non-monogamous relationships are at higher risk for acquiring sexually transmitted infections, which could negatively influence pregnancy outcomes (Goldenberg et al., 1997). Subsequently, studies on religious involvement and its relationship to marriage and sexual behaviors provide additional support for the argument of religiosity as a protective factor for pregnancy outcomes.

Furthermore, some authors have pointed out the common teachings of some denominations such as Mormonism and Catholicism that promote favorable attitudes towards childbearing. For example, in their study on the contraceptive practices of Hispanic women, Romo, Berenson, and Segars (2004) found that both religion and culture influenced women's desired family size. Women who were Catholic and Spanish-speaking tended to have the largest families, although they did not have the lowest rates of contraceptive use. As such, childbearing and motherhood are often seen as a means to personal and spiritual fulfillment for religious women (M. A. Miller, 1995). Jones and Bond (1999) described bearing and rearing children as the essence of womanhood for less-acculturated Mexican women and the view that children are considered a gift [from God]. Another study with Hispanic women aged 14-24 found that those with more traditional beliefs about women's roles within the family were less likely to have had an abortion in the past (Kaplan et al., 2001). An ethnographic study with Mexican-American childbearing women also revealed the importance of motherhood in the lives of the participants (Lagana, 2003). Motherhood was seen as a respectable and desirable role and viewed as something very special. One Mexican-American woman in Lagana's study remarked that motherhood was the greatest thing that could have happened to her. Magana and Clark (1995) tied Mexican-American women's positive attitudes towards pregnancy to the religious image of the Virgin of Guadalupe, who represents the ideal of motherhood. Pregnancy happiness is associated with positive health behaviors during pregnancy such as initiating early prenatal care, stopping smoking, and abstaining from alcohol (Altfeld et al., 1997; Marsiglio & Mott, 1988; Weller et al., 1987). Thus, religious involvement may have an interactive effect when examining the relationship between pregnancy happiness and positive pregnancy outcomes.

## **Religion and Ethnicity**

Among racial groups, Blacks show the highest rates of religiosity. In a study comparing Black and White college students, Black students scored higher on religious participation and religious belief salience (the prominence of religion in everyday thoughts and feelings such as the extent to which one's religious beliefs influence other areas of their life) measures compared to White students (Blaine & Crocker, 1995). Additionally, religious beliefs were found to be more predictive of psychological well-being for Black students than for White students. The authors proposed as one possible explanation of this finding that Black students, as members of a minority group, may face more disadvantages and discrimination compared to White students. Subsequently, stronger religious beliefs may prompt greater identification with a community of similar believers, thus providing protection from some of the disadvantages they face, and promoting psychological well-being.

In a study on religious involvement and depression among residents of the Southeastern U.S., Ellison (1995) similarly found that Blacks who lack ties to any religious organization report higher rates of depression compared to Blacks who have religious affiliations. The strong historical and cultural role of the church for Blacks is central to many Southern Black communities and played an important part in the civil rights and political consciousness movements. Subsequently, for many Southern Blacks the church is a source of personal legitimacy and very few reject their religious identity altogether (Ellison).

Faith and prayer are also commonly practiced by Hispanics in relation to their health (Zapata & Shippee-Rice, 1999). In a study on coping and health comparing Mexican immigrants with Mexican-Americans and Whites, researchers found that Whites were likely to engage in substance abuse as a coping strategy with Mexican immigrants

the least likely to abuse substances as a coping strategy (Farley, Galves, Dickinson, & Perez, 2005). Mexican immigrants were the most likely to use religion as a coping mechanism followed by Mexican-Americans. Other authors have reported gender differences, with Mexican American women reporting more frequent church attendance than Mexican American men (Gillum, 2005).

Magana and Clark (1995) posit that religious involvement is a central aspect of Mexican American culture that may be particularly important to successful pregnancy outcomes. The authors further their argument by describing the important influence of the Virgin of Guadalupe as a role model for healthy behaviors during pregnancy. By following her religious example pregnant women may be less likely to smoke, drink alcohol, and engage in risky sexual behaviors resulting in positive birth outcomes. Another ethnographic study among Mexican American women affirmed the influential role of the Virgin of Guadalupe in the lives of these women. This research portrays the Virgin of Guadalupe as a model of feminine strength and empowerment who offers a sense of connectedness for Mexican American women (Rodriguez, 1994).

There are a number of confounding variables that make the study of the influence of religion complex. In addition to ethnic differences in religiosity in the U.S., other factors such as age, income, education, acculturation and denominational affiliation may also affect religious involvement and health behaviors. This study expands the knowledge about religiosity and its relationship with health perceptions, health-risk behaviors, and maternal role perspectives for childbearing women. Specifically, this study explored the following research questions: 1) Are there ethnic differences in religiosity (denomination, frequency of attendance, and importance of religion in daily life) among Black, White and Hispanic women during pregnancy and postpartum? 2) Is religiosity a determinant of protective health behaviors (i.e. lack of substance use, lack of

sexual promiscuity, seeking prenatal care) and self-rated health in pregnant and postpartum women? 3) Is there a positive relationship between religiosity and pregnancy happiness or attitude towards parenthood?

## **METHODOLOGY**

### **Study Design and Sample**

The data for this study was collected from the National Survey of Family Growth (NSFG), cycle 6, 2002 female questionnaire ("National Survey of Family Growth"). The NSFG was conducted in five previous cycles by the National Center for Health Statistics in 1973, 1976, 1982, 1988, and 1995. The NSFG was conducted again in 2002/2003 by trained female interviewers from the Survey Research Center of the University of Michigan. Surveys were based on personal interviews conducted in the homes of a national sample of women ages 15-44 in the civilian non-institutionalized population of the United States. More than 7,000 Hispanic, Black and White female respondents between the ages of 15 and 44 completed the survey, with an over-sampling of Blacks and Hispanics. Of the women who self-identified as Hispanic, White or Black, 1,062 indicated that they were pregnant or had given birth at some point during the past 12 months at the time of the survey. The ethnic distribution of the sample was 27% Hispanic, 51% White, and 22% Black. In-person interviews were conducted between March 2002 and February 2003. The female interviews averaged 80 minutes and answers were entered directly into a laptop computer. Interview questions pertinent to this analysis provided data on demographics, current pregnancy or postpartum status, pregnancy happiness, attitudes towards parenthood and maternal roles, prenatal care utilization, smoking, alcohol and drug use, sexual promiscuity, self-rated health and religious behaviors.

## **Variables Assessed and Definitions**

### ***Dependent variables***

*Self-rated health* was assessed by asking respondents to rate their health, in general, as excellent, very good, good, fair, or poor. This variable was recoded so that higher numbers would reflect higher perceptions of one's health, using a scale of 1 (poor) to 5 (excellent).

*Substance use* including tobacco, alcohol, marijuana, cocaine, crack, and non-prescription injectable drugs was measured by asking how often the respondent had used the substance during the last 12 months (1=never, 2=once or twice during the year, 3=several times during the year, 4=about once a month, 5=about once a week, 6=about once a day). Additionally for smoking behavior, respondents were asked if they smoked once they found out they were pregnant. The alcohol, smoking, and marijuana items were recoded into dichotomous variables. For alcohol, response categories 1 and 2 were recoded as 0 to represent no or rare usage and categories 3 through 6 were recoded as 1 to represent "drinkers." For smoking and marijuana variables, only the first category (never) was recoded as 0 (no use) and categories 2 through 6 were recoded as 1 (used in past year). Due to the low usage rates of cocaine, crack, and injectable drugs in the sample, these variables were dropped from the analysis.

*Sexual behaviors* were assessed through a series of questions, including the number of male sex partners in the last 12 months, whether or not they had sexual involvement with a non-monogamous partner in the last 12 months, and treatment for any sexually transmitted infections such as chlamydia, gonorrhea, syphilis, or herpes in the last 12 months. These variables were recoded into dichotomous factors such that 0 represented only 1 partner, no treatment for sexually transmitted infections, and no involvement with non-monogamous partners in the past 12 months. The value 1

represented more than 1 partner, or a positive response to the sexually transmitted infections or non-monogamous partner questions.

*Prenatal care* was measured by asking the respondent if she had attended one or more visits to a healthcare provider for prenatal care, and if so how many weeks pregnant she was at the time of her first visit. This variable was then dichotomously coded to reflect whether or not the respondent had initiated prenatal care during the first trimester (0=no; 1=yes).

*Pregnancy happiness* was assessed by asking the respondent to describe how she felt (1=very unhappy to 10=very happy) when she found out she was pregnant.

*Feelings towards parenthood* were measured by asking respondents to rate their level of agreement (1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree, 5=neither agree nor disagree) with the statement that “the rewards of being a parent are worth it despite the cost and the work it takes.” This variable was recoded so that higher numbers indicated stronger endorsement of the belief (1= strongly disagree, 2=disagree, 3=neither agree nor disagree, 4= agree, 5= strongly agree).

*Maternal role attitudes* were assessed similarly by asking respondents to rate how much they agreed or disagreed with the following statements: “A working mother can establish just as warm and secure a relationship with her children as a mother who does not work,” and “It is much better for everyone if the man earns the main living and the woman takes care of the home and family.” These variables were recoded in the same manner described previously so that higher numbers reflected higher levels of agreement with the statements.

### ***Independent variables***

*Religiosity* variables are denominational affiliation (if any), frequency of attendance at religious services using a scale of 1 (more than once a week) to 5 (never), and importance of religion in one's daily life (1=very important, 2=somewhat important, 3=not important). The denomination variable used 1=no religion, 2=Catholic, 3=Protestant, and 4=other religion. The attendance and importance variables were recoded so that the higher numbers represented more frequent attendance or higher importance of religion in daily life.

*Acculturation* was assessed based on primary language spoken (1=English, 2=Spanish), as determined by the interviewer. This variable was incorporated into the ethnicity variable, as described below.

*Ethnicity* was represented by 1= Hispanic, 2= White, and 3= Black. The Hispanic group was then divided into 2 groups, based on language spoken, to allow differentiation based on acculturation. As such, English-speaking Hispanics were represented as 1 and Spanish-speaking Hispanics were represented as 5. This variable was treated as a nominal variable for the analyses.

### ***Sociodemographic covariates***

*Age* was measured in years.

*Education* was denoted by 9=9<sup>th</sup> grade or less, 10-12=10<sup>th</sup>-12<sup>th</sup> grade, 13-18=1-6 years of college/grad school, and 19=7 or more years of college and/or grad school.

*Household income* was measured in terms of percent of poverty level based on 2001 U.S. Census Bureau definitions. This included adjustments for total household income and household size. The variable is represented as a continuous measure where numbers from 0 to 499 represented that percent of poverty and 500 represented 500% of poverty or more. Due to the wide range of responses within this variable, some

regression analyses required that the value of the variable be divided by 100, to represent proportion, rather than percent, of poverty.

*Marital status* was indicated by 1=currenty married, 2=not married but living with partner of opposite sex, 3=widowed, 4=divorced, 5=separated (for reasons of marital discord), and 6=never been married. This was recoded so that 0=not married or living with partner and 1=married or living with partner.

*Parity* was based on the respondent's total number of live births where 0=total number of live births.

*Employment status* was assessed by asking the respondent if during the past week she was: 1=working full-time, 2=working part-time, 3=working, but on vacation, strike, or had temporary illness, 4=working, but on maternity or family leave, 5=unemployed, laid off, looking for work, 6=in school, 7=keeping house, 8=caring for family, and 9=other. To allow for ease of interpretation, this variable was recoded into a dichotomous variable with the first four categories recoded as 1 (employed) and categories 5 through 9 as 0 (unemployed).

## **Data Analysis**

Data was analyzed using SPSS 13.0, including the Complex Samples option, which allowed the analyzer to compute standard errors using a weighting variable for complex samples such as the NSFG. Because the SPSS Complex Samples option includes the sample design (i.e. cluster, stratum, and weight variables) into the data analysis, it helped compensate for sampling error and allowed for more statistically valid results. Descriptive statistics were computed for the demographic covariates (age, education, and income) and *t*-tests were used to compare the English-speaking Hispanic, White, and Black subsamples with the Spanish-speaking Hispanics for the demographic

variables. Frequencies are reported for each religious denomination by ethnicity. Logistic regression analyses were used to predict the probabilities of the various responses based on ethnicity of the “frequency of attendance” and “importance of religion in daily life” variables while controlling for differences in other sociodemographic (age, education, and income) factors. To test the relationship between the two religiosity variables (i.e. frequency of attendance and importance of religion) and health-risk behaviors (i.e. substance use, sexual behaviors, and lack of prenatal care) logistic regression was also used. For self-rated health, a multiple linear regression model was used to assess the relationship of the religion variables with self-rated health while controlling for the sociodemographic covariates. Linear regression was also used to determine if religious attendance and importance of religion are predictors of pregnancy happiness, feelings towards parenthood, and gender role attitudes while controlling for sociodemographic differences.

## **RESULTS**

For the demographic variables, the Spanish-speaking Hispanic women had significantly fewer years of education and lower incomes compared to the other groups. Age differences reached statistical significance when Spanish-speaking Hispanics were compared to English-speaking Hispanics and Whites, although the differences are not of practical importance for purposes of this analysis. These data are presented in Table 3.1.

The first research question was an exploration of ethnic differences in religiosity (denomination, frequency of church attendance, and importance of religion in daily life) among Black, White and Hispanic women during pregnancy and postpartum. The Hispanic women were overwhelmingly Catholic, with 87% of the Spanish-speaking and 66% of the English-speaking Hispanics identifying Catholicism as their current religion.

Table 3.1 Differences in Demographic Characteristics by Ethnicity

Characteristics	Spanish-speaking Hispanics <sup>a</sup> (n=126)	English-speaking Hispanics (n=165)	Blacks (n=230)	Whites (n=541)
Age (years)	27.39±.42	25.81±.62 <i>p</i> =0.013	26.49±.62 <i>p</i> =0.152	28.46±.34 <i>p</i> =0.003
Education (years)	10.13±.16	12.20±.24 <i>p</i> <0.001	12.78±.22 <i>p</i> <0.001	13.81±.15 <i>p</i> <0.001
Poverty-level Income (%)	107.08±8.78	202.00±14.50 <i>p</i> <0.001	189.93±13.97 <i>p</i> <0.001	288.23±8.78 <i>p</i> <0.001

*Note.* Numbers represent weighted means ± standard errors.

<sup>a</sup>Spanish-speaking Hispanic women used as reference group.

Conversely, both the Black (76%) and White (60%) women predominately identified themselves as Protestant. The highest percentage of those who identified “no religion” was for the White group (14.3), while the lowest percentage of “no religion” was found in the Spanish-speaking Hispanic group (6.7). The frequency of those who reported “other” as their religion was low, with less than 5% of the total sample. These results are presented in Table 3.2.

For the religious attendance and religious importance measures, Whites were almost 4 times more likely to report “never” attending and 5 times more likely to report religion as “not important” in their everyday lives than the Spanish-speaking Hispanics. The English-speaking Hispanic group was also significantly more likely to rate religion in their daily lives as “not” important. Thus, the Spanish-speaking Hispanic group rated the importance of religion significantly higher than did the White and English-speaking Hispanic groups, but when compared to the group of Black women, the differences were not significant (see Table 3.3).

The second research question was an inquiry as to whether religiosity is a determinant of protective health behaviors (i.e. lack of substance use, lack of sexual promiscuity, seeking prenatal care) and self-rated health in pregnant and postpartum women. Odds ratios and pseudo  $R^2$ s (Nagelkerke) for health risk behaviors are presented in Table 3.4. Odds ratios for all substance use behaviors were higher for those who attended religious services less than once per month or never. Women who reported that they “never” attended religious services were 5 times more likely to report alcohol use, 12 times more likely for tobacco use, 14 times more likely to have smoked during pregnancy and 6 times more likely to report marijuana use. An unexpected finding is that women who reported religion as “very important” in their daily lives were significantly more likely to also report that they smoked during pregnancy when compared to those

Table 3.2 Frequency of Religious Denomination by Ethnicity

	Spanish-speaking Hispanics ( <i>n</i> =126)	English-speaking Hispanics ( <i>n</i> =165)	Blacks ( <i>n</i> =230)	Whites ( <i>n</i> =541)
Catholic	86.5 (3.7)	65.5 (4.2)	6.6 (1.9)	19.8 (2.0)
Protestant	6.8 (1.8)	22.7 (3.9)	76.0 (3.3)	60.1 (2.9)
Other religion	0	1.7 (1.0)	4.7 (1.7)	5.9 (1.1)
No religion	6.7 (3.3)	10.2 (2.7)	12.7 (2.1)	14.3 (1.9)

*Note.* Numbers represent weighted frequencies with standard errors in parentheses.

Table 3.3 Adjusted Odds Ratios for Religious Attendance and Importance by Ethnicity

Predictor Variable	Dependent Variables					
	Adjusted Odds Ratios (95% Confidence Intervals)					
Ethnicity <sup>a</sup>	Religious Attendance <sup>b</sup>				Religious Importance <sup>c</sup>	
	Never	<1x/mo	1-3x/mo	1x/wk	Not	Somewhat
English-speaking Hispanics	2.93 (0.74-11.64)	2.67 (0.71-9.99)	0.91 (0.25-3.31)	0.83 (0.23-3.03)	3.31 (1.25-8.76)	3.72 (2.06-6.73)
Whites	3.92 (1.19-12.99)	2.45 (0.84-7.18)	1.18 (0.36-3.87)	0.81 (0.30-2.16)	5.15 (2.01-13.22)	3.72 (1.95-7.12)
Blacks	0.85 (0.22-3.32)	0.98 (0.33-2.92)	1.05 (0.32-3.42)	0.47 (0.16-1.37)	2.07 (0.87-4.93)	1.36 (0.71-2.62)
<b>Nagelkerke</b>	0.15				0.12	

Note: Covariates included in the models above are age, education, and poverty-level income

<sup>a</sup> Spanish-speaking Hispanics used as reference group

<sup>b</sup> Attendance more than once a week used as reference group

<sup>c</sup> Religion very important used as reference group

Table 3.4 Adjusted Odds Ratios for Health-Risk Behaviors by Religious Attendance, Religious Importance, and Ethnicity

Dependent Variables	Predictor Variables									
	Adjusted Odds Ratios (95% Confidence Intervals)									
	Religious Attendance <sup>a</sup>				Religious Importance <sup>b</sup>		Ethnicity <sup>c</sup>			Nagelkerke
Never	<1x/mo	1-3x/mo	1x/wk	Not	Somewhat	English-speaking Hispanics	Whites	Blacks		
Drank alcohol more than once or twice in past 12 months	4.83 (2.08-11.25)*	5.45 (2.45-12.15)*	5.20 (2.37-11.40)*	2.28 (1.19-4.38)*	1.72 (0.95-3.13)	1.28 (0.79-2.05)	2.28 (1.28-4.06)*	2.98 (1.62-5.47)*	2.62 (1.38-4.98)*	0.22
Smoked any cigarettes past 12 months	11.67 (3.87-35.17)*	11.66 (3.75-36.24)*	6.92 (2.02-23.62)*	3.04 (1.01-9.12)*	0.86 (0.49-1.49)	0.81 (0.47-1.38)	8.03 (2.97-21.66)*	36.71 (14.32-94.10)*	8.41 (2.96-23.91)*	0.34
Smoked any cigarettes during pregnancy	14.06 (4.57-43.31)*	10.68 (3.43-33.27)*	5.52 (1.59-19.11)*	d	0.44 (0.22-0.88)*	0.49 (0.25-0.97)*	6.64 (1.32-33.33)*	59.64 (10.02-355.19)*	10.32 (1.58-67.30)*	0.33
Marijuana used in past 12 months	5.62 (1.76-17.90)*	4.52 (1.39-14.76)*	1.40 (0.38-5.11)	1.51 (0.44-5.15)	2.05 (1.19-3.54)*	2.11 (1.17-3.81)*	12.67 (1.29-124.17)*	20.83 (2.41-179.98)*	28.73 (3.58-230.83)*	0.25
>1 sex partner in past 12 months	4.23 (1.17-15.26)*	6.50 (2.03-20.89)*	2.13 (0.50-9.05)	1.59 (0.49-5.19)	1.04 (0.51-2.14)	0.88 (0.48-1.62)	7.04 (1.28-38.62)*	8.08 (1.58-41.31)*	23.68 (6.03-92.97)*	0.18
Non-monogamous partner in past 12 months	1.78 (0.72-4.38)	3.40 (1.54-7.51)*	1.59 (0.56-4.52)	1.60 (0.73-3.48)	1.51 (0.78-2.93)	1.05 (0.59-1.85)	2.85 (0.96-8.39)	4.51 (1.36-14.89)*	9.88 (3.57-27.29)*	0.13
STI treatment in past 12 months	1.65 (0.46-6.01)	1.27 (0.36-4.48)	1.37 (0.34-5.54)	2.47 (0.80-7.66)	1.05 (0.44-2.50)	1.30 (0.66-2.56)	1.27 (0.49-3.28)	0.76 (0.30-1.95)	2.02 (0.84-4.82)	0.11
Lack of 1 <sup>st</sup> trimester prenatal care	1.29 (0.47-3.52)	1.37 (0.52-3.61)	1.31 (0.45-3.82)	0.76 (0.30-1.90)	1.22 (0.58-2.59)	0.88 (0.48-1.61)	0.86 (0.33-2.21)	1.21 (0.59-2.45)	2.04 (0.99-4.21)	0.13

<sup>a</sup>Attendance more than once per week used as reference group.

<sup>b</sup>Religion “very important” used as reference group.

<sup>c</sup>Spanish-speaking Hispanic women used as reference group.

<sup>d</sup>Category combined with more than once per week (reference group) due to zero cell size for more than once per week group.

Covariates included in each model above are age, education, and poverty-level income.

\* $p < 0.05$ .

who reported religion as “somewhat important” or “not important.” However, the question pertaining to smoking during pregnancy was only asked of women for their completed (not current) pregnancies. Since some of the women were currently pregnant for the first time, they were not asked this question, resulting in a smaller  $n$  ( $n=93$ ) for this variable. This resulted in small ( $n \leq 38$ ) cell sizes for the religious importance categories, and subsequently leads the researcher to question the generalizability of these unexpected findings.

Post-hoc analyses were done to test the interaction effects of the two religion variables (attendance and importance) and ethnicity for each of the health risk behaviors in Table 3.4. Two-way interaction effects were tested and showed significant findings for only two of the dependent variables. A significant interaction effect was found between ethnicity and religious attendance for drinking alcohol ( $p < .001$ ), with the Spanish-speaking Hispanics having lower rates. A significant interaction effect was found between ethnicity and religious importance for having had more than one sex partner in the past year ( $p < .001$ ), with Blacks having much higher rates. There were no other significant interaction effects found between the religion variables and ethnicity for the other health risk behavior variables.

Women who reported attendance less than once per month were 7 times more likely to have had more than 1 sex partner and 3 times more likely to have had a non-monogamous partner when compared to women who attended more than once a week. There were no significant differences in odds ratios for STI treatment or lacking first trimester prenatal care across the levels of religious attendance or importance. However for marijuana use, religious importance was a significant predictor, with those rating religion as “very” important being much less likely to use marijuana compared to those who said that religion was “not important” or “somewhat important” in their daily lives.

Ethnicity was also a significant predictor in the model with Spanish-speaking Hispanics reporting significantly lower usage rates for alcohol, tobacco, and marijuana when compared to English-speaking Hispanics, Whites, and Blacks. The 3 comparison groups also showed higher odds ratios for having more than 1 sex partner in the past 12 months, and Whites and Blacks were also more likely to have had a non-monogamous partner. Despite this finding, ethnicity was not a predictor for STI treatment or lack of first trimester prenatal care.

For self-rated health the respondents who reported religion as “very” important had marginally significant ( $p=0.056$ ) higher ratings of health compared to those who reported that religion was “not” important in their daily lives. Religious attendance (never compared to more than once a week) was also a marginally significant ( $p=0.088$ ) predictor of self-rated health when controlling for age, education, income, and ethnicity. Education was the strongest predictor of self-rated health ( $p<0.001$ ) and age, income, and ethnicity were not significant in the model. These data are presented in Table 3.5.

The third research question asked if there was a positive association between religiosity and pregnancy happiness, feelings towards parenthood, and gender role attitudes. These data are presented in Table 3.6. For the “happy to be pregnant” item, importance of religion was a significant predictor of higher ratings on the happiness scale, when the 2 extremes – “very important” and “not important” – were compared. Religious attendance was also significant with those who reported attendance more than once a week with higher pregnancy happiness ratings compared to those who attended 1 to 3 times a month. Age and marital status were also positively associated with pregnancy happiness, while parity was negatively associated. Education, income, employment, and ethnicity were not significant predictors of pregnancy happiness.

Table 3.5 Unstandardized Regression Coefficients for Religiosity and Covariates in Multiple Linear Regression Model of Self-Rated Health

	<b>Dependent Variable</b> <i>Self-Rated Health</i>
<b>Predictor Variables</b>	Estimate (SE)
<i>Religiosity</i>	
<i>Religious Attendance</i> <sup>a</sup>	
Never	-0.251 (0.145) <i>p</i> =0.088
<1x/mo	-0.141 (0.140) <i>p</i> =0.316
1-3x/mo	-0.100 (0.148) <i>p</i> =0.502
1x/wk	-0.057 (0.117) <i>p</i> =0.629
<i>Religious Importance</i> <sup>b</sup>	
Not	-0.216 (0.111) <i>p</i> =0.056
Somewhat	-0.016 (0.072) <i>p</i> =0.821
<i>Covariates</i>	
Age	0.003 (0.007) <i>p</i> =0.676
Education	0.083 (0.016) <i>p</i> <0.001
Poverty-level Income <sup>c</sup>	-0.002 (0.023) <i>p</i> =0.929
Ethnicity	0.012 (0.030) <i>p</i> =0.703
<i>R</i> <sup>2</sup> for full model	0.106 <i>p</i> <0.001

<sup>a</sup> Attendance more than once per week used as reference group.

<sup>b</sup> Religion “very important” used as reference group.

<sup>c</sup> Represented as proportion of federal poverty-level income.

Table 3.6 Unstandardized Regression Coefficients for Religiosity and Covariates in Multiple Linear Regression Models for Pregnancy Happiness, Parenting, and Gender Role Attitudes

<i>Predictor Variables (Religiosity)</i>	<i>Dependent Variables</i>			
	Happy to Be Pregnant <sup>a</sup>	Rewards of Parenthood Worth it <sup>a</sup>	Working Mothers Establish Warm Relationships with Children <sup>a</sup>	Man Should Earn Living, Woman Stay Home <sup>a</sup>
<i>Religious Attendance<sup>cd</sup></i>	Estimate <sup>b</sup> (SE)			
Never	-0.305 (0.491) <i>p</i> =0.536	-0.161 (0.094) <i>p</i> =0.090	0.264 (0.154) <i>p</i> =0.091	-0.704 (0.213) <i>p</i> =0.001
<1x/mo	-0.528 (0.423) <i>p</i> =0.216	-0.149 (0.074) <i>p</i> =0.047	0.267 (0.164) <i>p</i> =0.109	-0.594 (0.188) <i>p</i> =0.002
1-3x/mo	-0.849 (0.385) <i>p</i> =0.030	-0.144 (0.072) <i>p</i> =0.050	0.315 (0.170) <i>p</i> =0.069	-0.698 (0.196) <i>p</i> =0.001
1x/wk	-0.557 (0.382) <i>p</i> =0.148	-0.170 (0.054) <i>p</i> =0.003	0.139 (0.139) <i>p</i> =0.316	-0.225 (0.164) <i>p</i> =0.173
<i>Religious Importance<sup>ce</sup></i>				
Not	-0.726 (0.298) <i>p</i> =0.017	-0.13 (0.080) <i>p</i> =0.872	0.080 (0.107) <i>p</i> =0.460	-0.138 (0.165) <i>p</i> =0.405
Somewhat	-0.170 (0.238) <i>p</i> =0.478	0.039 (0.061) <i>p</i> =0.530	0.045 (0.103) <i>p</i> =0.663	-0.107 (0.121) <i>p</i> =0.382
<i>Covariates</i>				
Age	0.062 (0.023) <i>p</i> =0.009	0.000 (0.005) <i>p</i> =0.950	-0.021 (0.009) <i>p</i> =0.018	0.013 (0.009) <i>p</i> =0.165
Education	-0.010 (0.051) <i>p</i> =0.848	0.036 (0.009) <i>p</i> <0.001	0.043 (0.024) <i>p</i> =0.074	-0.069 (0.023) <i>p</i> =0.004
Marital Status	2.614 (0.296) <i>p</i> <0.001	0.177 (0.054) <i>p</i> =0.002	-0.028 (0.103) <i>p</i> =0.785	0.302 (0.120) <i>p</i> =0.014
Parity	-0.301 (0.103) <i>p</i> =0.005	0.072 (0.018) <i>p</i> <0.001	0.096 (0.029) <i>p</i> =0.002	-0.039 (0.047) <i>p</i> =0.405
Poverty-level Income	0.061 (0.082) <i>p</i> =0.457	0.009 (0.016) <i>p</i> =0.561	0.004 (0.038) <i>p</i> =0.927	-0.080 (0.043) <i>p</i> =0.066
Employment Status	-0.132 (0.202) <i>p</i> =0.517	-0.028 (0.043) <i>p</i> =0.521	0.415 (0.088) <i>p</i> <0.001	-0.491 (0.100) <i>p</i> <0.001
Ethnicity	-0.021 (0.111) <i>p</i> =0.848	0.043 (0.018) <i>p</i> =0.021	-0.060 (0.044) <i>p</i> =0.184	0.140 (0.040) <i>p</i> =0.001
<b>R<sup>2</sup> for full model</b>	0.191	0.094	0.071	0.179

<sup>a</sup> Higher values represent higher levels of agreement or endorsement of the belief.

<sup>b</sup> Estimates represent unstandardized regression coefficients. <sup>c</sup> Covariates included in these results.

<sup>d</sup> Attendance more than once per week used as reference group.

<sup>e</sup> Religion “very important” used as reference group.

Religious attendance was also a significant predictor of a positive attitude towards parenthood and agreement that the man should earn the living and the woman should stay home to care for the children. Education, marital status, and parity were all positively associated with higher levels of agreement with the “rewards of parenthood” statement. Ethnicity was also a significant covariate for the attitude towards parenthood measure. For the gender roles variables, religious attendance was highly significant ( $p \leq 0.002$ ) for predicting agreement with the statement that “the man should earn the main living and the woman should care for the home and family.” Education, marital status, employment, and ethnicity also significantly contributed to the model for the “man should earn the living” statement. For the statement that “a working mother can establish just as warm and secure a relationship with her children as a mother who does not work,” the only significant predictors of agreement were age (negatively associated), parity (positively associated), and employment (positively associated). The religious importance variable was not a significant predictor of agreement with either of the gender role statements, or the parenthood attitude statement.

## **DISCUSSION AND CONCLUSIONS**

This study examined religiosity and its relationship to a number of factors that can influence the health of childbearing women. While past studies have demonstrated ethnic differences in pregnancy outcomes (Shiono, Rauh, Park, Lederman, & Zuskar, 1997), this study concluded that there are ethnic differences in religiosity. Furthermore, whereas other studies have documented the effect of certain health-risk behaviors on maternal and infant health (Sprauve et al., 1999; Weller et al., 1987), this study documented the influence of religiosity on health risk behaviors that impact maternal and infant health. It

is interesting to note that the significant findings for religiosity and its impact on health behaviors, perceptions, and attitudes are present, even when controlling for ethnicity.

The results are consistent with other studies (Koenig et al., 2001c) in the finding that 50% of the women reported themselves as regular attendees at religious services. Furthermore, 95% of the sample reported that religion is “somewhat” or “very” important in their daily lives. The finding that religious attendance was associated with less frequent substance use and more conservative sexual behaviors is also similar to results from other studies (Krause, 2004; Strawbridge et al., 1997). However, unlike the findings from Benjamins and Brown (2004) who found religious involvement associated with the use of preventive health care services, there were no significant differences in prenatal care initiation based on the religiosity measures while controlling for ethnicity, age, education, and income in this study.

Regarding health perceptions, the findings are aligned with other research that found a positive relationship between religiosity and well-being (Koenig et al., 2001e). In this study, those who reported religion as very important in their lives had marginally significant higher ratings of self-health than those who said it was not important. Concerning maternal role perspectives, importance of religion was positively associated with happiness to be pregnant, although few other studies have been done with similar variables to confirm this finding. One of the most significant findings for maternal role perspectives was for frequent religious services attendees who were much more likely to agree with the statement describing the traditional maternal role of “staying home and caring for the home and family.”

Some of the most significant findings of this study were found in the analyses for ethnic differences in religiosity. Strikingly, Spanish-speaking Hispanic women reported much higher attendance rates (except when compared to Blacks) and rated the importance

of religion in their daily lives higher than all three of the comparison groups. These findings support the notion proposed by other researchers (Magana & Clark, 1995) that religiosity is a central aspect of Hispanic (in particular, Mexican American) culture. Furthermore, by promoting positive health behaviors and esteeming traditional roles of motherhood religiosity may help to support positive maternal health in this population. Through further study of the role of religiosity in relation to maternal health, researchers may begin to uncover a better understanding of the factors that promote the health of mothers and their children.

This study is limited because it does not include longitudinal data that allow the researcher to track specific behaviors during the childbearing phase with subsequent maternal and infant health outcomes. Such longitudinal data would be necessary to fully test the theoretical model proposed in Figure 3.1. However with a better understanding of the pathways that link religiosity to improved maternal and infant health, future researchers can use structural equation modeling or path analysis to further document this relationship. Thus, the link between religiosity and childbearing women is an important one that merits further study.

## **CHAPTER 4: A Comparison of Health Behaviors and Perceptions during Pregnancy and Postpartum**

Over thirty years ago, well-known maternity nursing researcher Reva Rubin called attention to the vulnerability of women during the postpartum period. “The American myth of motherhood is that once the baby is born, everyone lives happily ever afterward, as in all fairy tales....but that postpartum period is unbelievably cruel” (Rubin, 1975, p. 1684). Rubin goes on to describe some of the profound physiologic changes in conjunction with the unanticipated stressors of the postpartal period such as sleep deprivation as contributors to the complex and demanding processes that occur in the days and weeks after a woman gives birth.

Other researchers have discussed the postpartum phase as a “life redefining transition” (Walker & Wilging, 2000, p. 229). These authors note that there are numerous changes, some favorable such, as parenting rewards, and others unfavorable, such as time and role conflicts, physical illness, and decreased self-care. These changes often follow a period during which the woman has taken especially good care of herself, as is commonly seen during pregnancy. Many pregnant women make regular visits to their health care provider, take vitamins, eat a nutritious diet, avoid exposure to environmental toxins, and abstain from cigarettes and alcohol from the time they are aware of their pregnancies until they deliver.

While maternal health during pregnancy and its impact on neonatal outcomes is addressed extensively in the literature, less is known about how role transitions and physiologic changes affect the experience and function of women after childbirth (Haas et al., 2004). Additionally, while women commonly visit their obstetrical care provider one time after delivery, at 6 weeks postpartum, such care is usually limited to assessment

of the return of the reproductive organs to their non-pregnant state, contraception, and breastfeeding issues. As noted by Rubin (1975), tissue recovery in postpartum women is fairly straightforward, while recovery of the whole person is much more complex.

A number of researchers have suggested the need for maternal health care to extend beyond the traditional six week mark (Gennaro & Fehder, 2000; Schytt et al., 2004; Tulman, Fawcett, Groblewski, & Silverman, 1990; Walker & Tinkle, 1996). Such care would allow health care providers the opportunity to implement health promotion strategies and interventions to improve women's overall health and address continuing morbidities (World Health Organization, 1999).

To better understand the needs of this population of women and to develop effective health-promoting interventions, it is important to examine factors that may influence their health behaviors and health perceptions. In order to enhance our understanding of the specific needs of postpartum women, this study compared health behaviors and self-rated health status of those who had given birth in the past twelve months with those who were currently pregnant. This study then analyzed parity, pregnancy happiness, and attitude towards parenthood and their influence on self-rated health and risk behaviors such as substance use and risky sexual behaviors for pregnant and postpartum women. The number of months currently pregnant or the number of months postpartum was also analyzed in relation to self-rated health. Additionally, the influence of a number of demographic covariates such as income, race, marital status, education, and employment were considered.

## **THEORETICAL FRAMEWORK**

Rubin's (1984) theory of transition to motherhood within a lifespan transition framework as offered by Meleis, Sawyer, Im, Messias, and Schumacher (2000) was the

guiding conceptual framework for this study. This model, described in more depth in Chapter 1, allowed for a broader developmental transition framework to be applied to this particular population of pregnant and postpartum women. Because transitions are both a product of and a producer of changes in lives, relationships, health, and environments (Meleis et al., 2000), its application to this study of health behavior and perception differences in pregnant and postpartum women was deemed appropriate.

In describing the transition to motherhood, Rubin (1984) discussed pregnant women's concerns for the physical safety of themselves and their babies, a willingness to make personal sacrifices, maternal protectiveness, and investment in creating a healthy baby and home in which to raise the infant. Although Rubin's studies were limited to women during the first 6 weeks postpartum, she proposed that this was a time in which the narcissistic pleasures of pregnancy were transferred to the baby by receiving pleasure as the infant thrived. Attention given to the baby, posited Rubin, was experienced by the woman as attention given to herself. As women continued the demanding task of mothering the infant throughout the first year, it was reasonable to apply Rubin's concepts of "safe passage" (during the first year of life) and "giving of self" to mothers beyond pregnancy and 6 weeks postpartum (R. T. Mercer, personal communication, August 24, 2005). Subsequently, the mother may focus intently on her baby's well-being to the extent that she neglects her own well-being. Behaviors such as alcohol and tobacco use may re-emerge once the woman no longer carries the infant inside her womb, thus minimizing the perceived danger to her child.

## **BACKGROUND AND SIGNIFICANCE**

### **Health-risk Behaviors**

The deleterious effects of cigarette, alcohol, and drug use during pregnancy on neonatal outcomes are widely published. Maternal smoking during pregnancy is associated with miscarriage, low birth weight and infant mortality (U. S. Department of Health and Human Services, 2005). In a study using logistic regression analysis to determine predictors of low infant birth weight, researchers found that women who were HIV seropositive, those who were Black, women who did not live with their partner, and those that smoked were two to three times more likely to deliver low birth weight infants (Ickovics et al., 2000).

Alcohol consumption during pregnancy is a key factor in the development of fetal alcohol syndrome, developmental delays in children, and low birth weight (U. S. Department of Health and Human Services, 2005). It is also one of the leading causes of mental retardation (Cone-Wesson, 2005). Cocaine use during pregnancy can contribute to spontaneous abortion, placental abruption, stillbirth, fetal distress, and preterm delivery (Cone-Wesson). Neonatal effects of maternal cocaine use include low birth weight and small head circumference, as well as hypertonia and irritability. Prenatal exposure to cocaine can result in cognitive disabilities, including delays in speech and language development in children (Cone-Wesson).

Perhaps as a result of such widespread publication of the ill-effects on infant outcomes, many women abstain from or decrease substance use during pregnancy (Dunn, Pirie, & Hellerstedt, 2004). In a study with 105 low-income pregnant women who smoked prior to pregnancy, over half abstained from smoking 1 or more months during their pregnancies. Among the same respondents, 70% consumed alcohol prior to pregnancy while only 11% reported drinking alcohol during their pregnancies. For those

who did continue to drink, they reported lower consumption while pregnant (Dunn et al.). Data from the 2004 National Survey on Drug Use and Health (Substance Abuse and Mental Health Services Administration, 2005) also show significantly lower rates of alcohol and tobacco use among pregnant women. Among pregnant women ages 15-44, 11% reported alcohol use in the past month, while 53% of nonpregnant women in the same age group reported use in the past month. Cigarette smoking in the past month was reported by 18% of the pregnant women and 30% of the nonpregnant women ages 15-44. In a study on smoking relapse in postpartum women, researchers found that 94% of women who quit smoking during pregnancy reported that concern for the health of their unborn baby was their primary reason for quitting (Johnson, Ratner, Bottorff, Hall, & Dahinten, 2000). Furthermore, 91% stated that they intended to abstain from smoking after the baby was born, although by 6 months postpartum only 30% of them were still non-smokers.

The infants of women who continue, or resume, substance use during the postnatal period are also at increased risk for poor outcomes. Maternal alcohol use, both during and after pregnancy, is associated with increased rates of family violence and abuse, physical and emotional neglect, and economic instability (Cone-Wesson, 2005). Inadequate parenting skills may be more common among substance-using women, thus their children are at increased risk of being placed in foster care (Strobino, 1999). Alcohol abuse in women is also associated with mental health problems, such as depression and anxiety (Strobino). Infants of women who smoke and are exposed to environmental tobacco smoke are at increased risk of sudden infant death syndrome (SIDS). Environmental exposure to cigarette smoke is also associated with asthma and respiratory diseases in young children (Strobino).

Substance use among all women – whether pregnant or not – also varies according to demographic factors. According to a 2002 National Vital Statistics Report (Martin et al., 2002), smoking rates during pregnancy are higher among White women than Black women. Women of Mexican origin reported the lowest rates of smoking and alcohol consumption during pregnancy (Guendelman & Abrams, 1994). Mexican immigrant women, when compared to Mexican American women, report even lower alcohol and drug use (Zambrana et al., 1997). Higher educational attainment is also associated with a reduction in smoking during pregnancy (National Institutes of Health, 2002). The exception is Mexican immigrant women, who report lower rates of alcohol and substance use than Mexican American women who have higher mean education levels. This finding could be due to the effects of acculturation as shown in the study by Zambrana et al. Black women also report lower rates of cigarette and alcohol use during pregnancy than do White women, although their rates of drug use are higher (National Institutes of Health). Data from the CDC’s Pregnancy Risk Assessment Monitoring System (Phares et al., 2004) corroborate these findings. These data, collected from a multi-state sample, show that women reported a prevalence of 3% to 10% for alcohol use during the last 3 months of pregnancy. The highest rates were reported by older (>35 years), non-Hispanic women with more than a high school education and with higher incomes. This contrasts with women’s reported smoking during the last 3 months of pregnancy. The overall prevalence ranged from 9% to 17% with the highest rates among younger, White women with < 12 years of education and low incomes (Phares et al.).

Another risk behavior in pregnant women that can affect pregnancy and neonatal outcomes is sexual risk-taking which can lead to infection of the reproductive tract. Sexually transmitted infections acquired by the infant during the birth process can lead to debilitating, and sometimes life-threatening illnesses in newborns. Chlamydia, the most

common bacterial sexually transmitted infection (STI), can cause eye infections and pneumonia in neonates (Winter, 2004). Newborns of women infected with gonorrhea can suffer from blindness or meningitis, and women may experience premature rupture of membranes and premature labor (Winter). Bacterial vaginosis is also strongly associated with preterm labor and although not considered sexually transmitted, it is more commonly found in sexually active women and often in conjunction with other STIs (Goldenberg et al., 1997). Herpes simplex virus is the most common STI among pregnant women, and is present in approximately 20% of all pregnant women (Goldenberg et al.). Active herpes infection often requires delivery by cesarean section to prevent its transmission to the infant, which could lead to neurologic sequelae and death for infected infants. Other STIs, such as syphilis and HIV can cross the placenta during pregnancy and infect the fetus in utero (Goldenberg et al.). HIV can also be transmitted to infants via breast milk (Centers for Disease Control and Prevention, 2004). Hepatitis B can lead to acute or chronic liver disease and cirrhosis, and without immunoprophylaxis, develops in approximately one third of offspring of women who are infected (Goldenberg et al.). Postpartum women who are infected with STIs are at higher risk for uterine infections, pelvic inflammatory disease, and cervical cancer (Centers for Disease Control and Prevention).

In an African study of HIV sexual risk behaviors comparing pregnant, lactating, and non-pregnant, non-lactating women, Gray et al. (2005) found that pregnant women were significantly less likely to report multiple sexual partners when compared to non-pregnant and non-lactating women. The husbands of pregnant women also reported significantly fewer sexual partners than the husbands of non-pregnant and non-lactating women. Condom use and symptoms of genital ulcer disease within the past 6 months were also less common in pregnant women than in breastfeeding or non-pregnant and

non-lactating women. Nonetheless, the incidence rate of HIV acquisition was significantly higher during pregnancy compared to breastfeeding and non-pregnant, non-lactating women. This finding led the researchers to postulate that there are potential biological factors during pregnancy, such as changes in the genital tract mucosa or immunologic response as a result of increased hormonal levels, that make pregnant women more susceptible to HIV acquisition (Gray et al.).

Failure to receive prenatal care is another health-risk behavior that could negatively impact pregnancy outcomes. The components of prenatal care, including risk assessment, treatment of medical conditions, and education, can contribute to reductions in maternal morbidity and mortality (U.S. Department of Health and Human Services, 2000). Although over 83% of women initiate prenatal care in the first trimester of pregnancy, there are sociodemographic disparities such as age and ethnicity so that younger and Black and Hispanic women are more likely to receive late or no prenatal care (Martin et al., 2002). Subsequently, *Healthy People 2010* has set an objective to increase the proportion of all pregnant women who receive early and adequate prenatal care to 90%.

### **Health Perceptions**

Physical, psychological, and lifestyle changes during the pregnancy and postpartum period may be reflected in health perceptions. A number of studies indicate that pregnant women perceive significant declines in physical functioning and overall health during pregnancy (Haas et al., 2004; Hueston & Kasik-Miller, 1998; Otchet, Carey, & Adam, 1999). Otchet et al. found that pregnant women reported higher levels of psychological distress when compared to nonpregnant women. When these same women were asked during the first 6 weeks of the postpartum phase about their

psychological distress, there were no differences when compared to the control group of nonpregnant women. Women in the puerperium also reported significantly higher scores on their overall general health when compared with community controls. This finding was surprising because these same women who reported positive general health also reported limitations in their physical, social, and emotional functioning. The authors hypothesize that this finding may be due to positive health perceptions after successfully giving birth, which may be viewed as evidence of good health. Haas et al. reported similar findings that physical functioning and depressive symptoms improved during the first 8-12 weeks of the postpartum phase, when compared to pregnant women at 32 to 36 weeks gestation.

Other researchers have looked beyond the first 12 weeks postpartum by questioning women 1 year after they have given birth (Schytt et al., 2004). In this Swedish study, the authors found that women up to 1 year postpartum reported higher self-ratings of overall health when compared to a national sample of women of corresponding age. Nonetheless, their self-reported health ratings declined from 2 months to 1 year postpartum. The authors posit that maternal reactions to successfully giving birth to a healthy baby may fuel more positive feelings of self-rated health shortly after the delivery, as opposed to 1 year later. Additionally, physical symptoms viewed as a normal consequence of pregnancy, labor, and delivery may be viewed as natural occurrences and thus more tolerated closer to the delivery than 1 year later. Another finding of this study is that physical symptoms such as tiredness, headache, sleeping problems, and back, neck, and shoulder pain increased for women throughout the first year postpartum. The authors note that these symptoms may be associated with childcare activities, adjustment to motherhood, and limited time to care for one's self.

Another study followed women for the first 6 months postpartum and looked at their functional status, including self-care activities, after childbirth (Tulman et al., 1990). In their study of 87 postpartum women, over 80% of them had not resumed usual self-care activities such as physical activity and walking at 6 months postpartum. Additionally, 30% had not yet resumed usual levels of social and community activities and 20% had not resumed usual household activities. These findings suggest that pregnancy, childbirth, and subsequent motherhood affect women's functioning well beyond 6 weeks postpartum.

One study examined women during the first 4 months postpartum and found that the women had minimal exercise, consumed high fat diets, and increased cigarette smoking during this time (Gennaro & Fehder, 2000). Another ethnographic study with pregnant and postpartum women described the struggles many postpartum women felt about getting back in shape and "getting the body back" (p. 671) after pregnancy (Upton & Han, 2003). A study with Taiwanese women during the first 6 weeks postpartum found that postpartum stress and depression were significant factors that had a detrimental effect on the women's health (Hung, 2004).

Self-reported health ratings among women vary according to ethnicity. White women have the highest self-health ratings with 67% reporting their health as excellent or very good. This compares with 60% of Hispanic or Latino women and 56% of non-Hispanic Black women who report their health as excellent or very good. Similarly, Black women also report higher rates of fair or poor health with 16%, compared to 12% for Hispanic and 11% for White women (National Institutes of Health, 2002). Educational attainment is also associated with self-reported health status, with higher education positively correlated to self-rated health. Sixty seven percent of women with 12 or more years of education perceived their health as excellent or very good, while only

40% of women with less than 12 years of education did so (U. S. Department of Health and Human Services, 2005). Employment status is another factor associated with self-rated health, with unemployed women reporting higher rates of fair or poor health (National Institutes of Health). Haas et al. (2004) reported similar findings that pregnant and postpartum women who had insufficient money for food or housing at some point were more likely to perceive themselves as having fair or poor health. Thus, it is evident that self-rated health is a multidimensional, complex concept with more factors influencing it besides physical symptoms and conditions (Schytt et al., 2004). Studies on self-ratings of health have documented the influence of functional ability, depression, anxiety, and fatigue on health perceptions (Benyamini et al., 2000), thus it is reasonable to hypothesize that such conditions commonly found among postpartum women may adversely affect their self-rated health.

### **Attitudes towards Pregnancy and Parenthood**

Pregnancy happiness is another factor researchers have explored for its potential impact on prenatal health behaviors. In a survey of 380 postpartum women who were questioned during their hospital stays after giving birth, “wantedness of pregnancy” (p. 29) was a protective factor against cigarette and alcohol use during pregnancy (Altfeld et al., 1997). This effect was present even after the researchers controlled for sociodemographic variations. Factors such as age, race, income, education, and marital status showed significant variations in terms of pregnancy wantedness. For age, it was the youngest women (ages 15-19) who reported the lowest rates of pregnancy wantedness. Racial differences showed that Black women reported the lowest rates of pregnancy wantedness, with only 15% reporting that they wanted to get pregnant at the time of conception, compared to 67% White women and 49% Hispanic women. As

income and educational levels increased, the number of women reporting that they wanted to become pregnant also increased. The lowest levels of pregnancy wantedness were reported among women who were widowed, divorced, or separated. Women with three or more living children (including the newborn) reported lower levels of pregnancy wantedness than women with only one or two children.

In another study on pregnancy “wantedness” and maternal behaviors, researchers surveyed a large nationally-representative cross-section of women ages 18-26 years who had given birth to their first child (Marsiglio & Mott, 1988). In this study, the researchers did not find a statistically significant association between wantedness and tobacco or alcohol use. The authors noted that ethnicity and maternal age at childbearing were stronger predictor variables of certain maternal behaviors such as initiating early prenatal care. Pertaining to the influence of ethnicity on pregnancy wantedness, 61% of Hispanic, 59% of White, and 37% of Black women wanted to become pregnant. The pregnancy wantedness rates from this study are somewhat higher for Black women than those reported in the study by Altfeld et al. (1997). A possible explanation is that the study by Marsiglio and Mott only included first-time mothers, who showed the highest rates of wantedness in Altfeld et al.’s study. Additionally, wanted pregnancies in the study by Marsiglio and Mott included women who stated that it “didn’t matter” if they became pregnant when they did, while Altfeld et al. only included women who stated they “wanted to get pregnant at that time” as wanted pregnancies.

This review of the pertinent literature suggests that there are numerous factors, including demographics, parity, and pregnancy happiness (assessed as “wantedness” in some studies) that may influence health risk behaviors and health perceptions of pregnant and postpartum women. Furthermore, recognizing that pregnancy and motherhood are major life transitions, health behaviors and perceptions may change during this

vulnerable time. Thus, this study addressed the following specific research questions: 1) Are there differences in self-rated health and health behaviors (i.e. substance use, sexual behaviors) between women who are currently pregnant and those who have given birth in the past 12 months? Does the trimester of pregnancy or, for postpartum women, the quarter postpartum have an impact on health perceptions? 2) Are there differences in health behaviors (i.e. substance use, sexual behaviors, and seeking prenatal care) and self-rated health among women with first pregnancies versus women with subsequent pregnancies? 3) Do pregnancy happiness and attitudes towards parenthood, as well as the sociodemographic variables of age, race, income, education, employment, and marital status, predict health behaviors and self-rated health during pregnancy and postpartum?

## **METHODOLOGY**

### **Study Design and Sample**

This study utilizes selected data previously collected as part of the National Survey of Family Growth (NSFG), cycle 6. The NSFG was conducted by the National Center for Health Statistics in 1973, 1976, 1988, 1995, and again in 2002 and 2003. In-person interviews, conducted by trained female interviewers from the Survey Research Center of the University of Michigan, took place between March, 2002 and February, 2003. The interviews with female respondents averaged 80 minutes in length and were conducted with a Computer-Assisted Personal Interviewing (CAPI) technique in which the interviewer enters the respondent's answers into a laptop computer. The last part of the interview included questions of a more sensitive nature and was conducted with the use of an Audio Computer-Assisted Self-Interviewing (ACASI) technique in which the participant enters her own answers into the computer. Respondents received \$40 as

compensation for their time. A detailed description of the sampling techniques and questionnaire development is published elsewhere (Groves et al., 2005).

The sample is a cross-section of Black, White, and Hispanic women ages 15-44, and represents a national sample of the civilian, non-institutionalized population of the United States. A total of 7,643 women based on an area probability sample of 120 primary sampling units completed interviews. Because the research questions for this study concern women who are either currently pregnant or have given birth in the past 12 months, data analysis was limited to the 1,062 women who met this criteria. Of those women, 31% reported that they were currently pregnant. The ethnic distribution of the sample women is 27% Hispanic, 51% White, and 22% Black.

## **Variables Assessed and Definitions**

### ***Dependent variables***

*Self-rated health* was assessed by asking respondents to rate their health, in general, as excellent, very good, good, fair, or poor. This variable was recoded so that higher numbers (on a scale of 1 to 5) reflected higher health perceptions.

*Substance use* including tobacco, alcohol, and marijuana was measured by asking how often the respondent had used the substance during the last 12 months (1=never, 2=once or twice during the year, 3=several times during the year, 4=about once a month, 5=about once a week, 6=about once a day). For smoking behavior, respondents were also asked if they smoked once they found out they were pregnant. The smoking and marijuana use variables were recoded into dichotomous variables with 0 representing no use and 1 representing use in the past 12 months. For the drinking variable, response categories 1 and 2 were recoded as 0 to represent never/rarely drank in the past 12 months and 3 and higher were recoded as 1 to represent “drinkers.”

*Sexual behaviors* were assessed through a series of questions, including the number of male sex partners in the last 12 months, sexual involvement with a non-monogamous partner, and treatment for any sexually transmitted infections (such as gonorrhea, chlamydia, herpes, or syphilis) in the last 12 months. These variables were recoded into dichotomous variables so that 0=no more than 1 sex partner, no involvement with a non-monogamous partner, and no treatment for STIs in the past year.

*Prenatal care* was measured by asking the respondent if she had attended one or more visits to a medical care provider for prenatal care, and if so how many weeks pregnant she was at the time of her first visit. This was recoded into a new variable to reflect whether or not the respondent had received prenatal care during the first trimester (first 12 weeks of pregnancy).

### ***Independent variables***

*Current pregnancy status* was determined by asking the respondent if she was currently pregnant and if so, the number of weeks or months. This variable was recoded to group respondents according to trimester of pregnancy (1<sup>st</sup> trimester=1-12 weeks, 2<sup>nd</sup> trimester=13-27 weeks, and 3<sup>rd</sup> trimester=28-40 or more weeks).

*Parity* was measured by asking the respondent the total number of live births she had. This variable was then grouped according to number with nulliparous=0 live births, para 1=1 live birth, para 2=2 live births, para 3 or more=3 or more live births. For analyses comparing nulliparous women with parous women, parous=1 or more live births.

*Quarter postpartum* was determined by calculating from interview date and last pregnancy end date. The number of months was then categorized according to quarters:

1<sup>st</sup> quarter=0-3 months, 2<sup>nd</sup> quarter=4-6 months, 3<sup>rd</sup> quarter=7-9 months, and 4<sup>th</sup> quarter=10-12 months.

*Pregnancy happiness* was assessed by asking the respondent to rate how she felt when she found out she was pregnant, using a scale of 1 (*very unhappy*) to 10 (*very happy*).

*Attitude towards parenthood* was measured by asking respondents to rate their level of agreement (1=*strongly agree*, 2=*agree*, 3=*disagree*, 4=*strongly disagree*) with the statement that “the rewards of being a parent are worth it despite the cost and the work it takes.” This variable was recoded so that the higher numbers would reflect a higher level of agreement with the statement (i.e., 1=5: *strongly agree*, 2=4: *agree*, 3=2: *disagree*, 4=1: *strongly disagree*, and 5=3: *neither agree nor disagree*).

### ***Sociodemographic covariates***

*Age* was measured in years.

*Ethnicity* was represented as a nominal variable with 1= Hispanic, 2= White, and 3= Black.

*Marital status* was assessed with 1=currenty married, 2=not married but living with partner of opposite sex, 3=widowed, 4=divorced, 5=separated (for reasons of marital discord), and 5=never been married. This variable was recoded with 0=not married or living with partner and 1=married/living with partner.

*Education* was represented by 9=9<sup>th</sup> grade or less, 10-12=10<sup>th</sup>-12<sup>th</sup> grade, 13-18-1-6 years of college/grad school, and 19=7 or more years of college and/or grad school.

*Employment status* was assessed with 1=working full-time, 2=working part-time, 3=working, but on vacation, strike, or had temporary illness, 4=working, but on maternity or family leave, 5=unemployed, laid off, looking for work, 6=in school, 7=keeping

house, 8=caring for family, and 9=other. To facilitate interpretation, it was recoded as a dichotomous variable with the first four categories representing employed (=1) and categories 5 through 9 representing unemployed (=0).

*Household income* was measured in terms of 0 to 500 percent of poverty level income (in 2001 dollars) per U.S. Census Bureau definitions. Because this is a continuous variable with a wide range of possible values (0 to 500) some regression analyses were easier to interpret when the value was divided by 100, thus representing proportion, rather than percent, of poverty.

### **Data Analysis**

Data was analyzed using SPSS 13.0, including the Complex Samples option, which takes into account the sample design and weighting variables and allows the analyzer to accurately compute standard errors for complex samples such as the NSFG.

*Research question 1: Are there differences in self-rated health and health behaviors (i.e. substance use, sexual behaviors) between women who are currently pregnant and those who have given birth in the past 12 months? Does the trimester of pregnancy or, for postpartum women, the quarter postpartum have an impact on health perceptions?* Multiple linear regression analyses were used to answer this first research question. This test allowed for the assessment of the statistical significance of the differences between the groups, while controlling for the effects of the covariates (sociodemographic variables). Additionally, the effect of each of the sociodemographic variables in the regression model was examined to determine the strength of its association with self-rated health.

*Research question 2: Are there differences in health behaviors (i.e. substance use, sexual behaviors, and seeking prenatal care) and self-rated health among women with*

*first pregnancies versus women with subsequent pregnancies?* Logistic regression was utilized to answer that portion of the research question concerning the health behaviors, which are dichotomous variables. For self-rated health – a continuous variable – linear regression was used. Regression analysis allowed for the comparison of women with first pregnancies to women with second or later pregnancies for the variables of interest, while controlling for the sociodemographic covariates (i.e. age, education, marital status, income, and employment status).

*Research question 3: Do pregnancy happiness and attitudes towards parenthood, as well as the sociodemographic variables of age, race, income, education, employment, and marital status, predict health behaviors and self-rated health during pregnancy and postpartum?* Multiple logistic regression models are presented for the dichotomous variables (health-risk behaviors) that allowed for the analysis of odds ratios for the variables of interest while holding constant the effects of the covariates. For self-rated health, a multiple linear regression model was used to estimate the net effects of pregnancy happiness and parenthood attitude on health ratings among pregnant and postpartum women.

## **RESULTS**

Demographic statistics for the sample are presented in Table 4.1. The women who were currently pregnant had significantly higher education and income levels and were more likely to be married or living with their partners. The first research question was to assess if there were differences between women who were currently pregnant and women who had recently (within the past 12 months) given birth in their self-rated health. Although the mean for health ratings was slightly higher for the currently pregnant women (4.05) compared to the postpartum women (3.98), this difference did not

reach statistical significance when controlling for marital status, income, and education, employment, and ethnicity. Of the covariates, education and marital status were significantly associated with self-rated health, with being married or partnered and having a higher level of education being associated with increased self-ratings of health. This data is presented in Table 4.2.

The follow-up inquiry to the first question asked whether the trimester of pregnancy or quarter postpartum were associated with self health ratings. For trimester of pregnancy, the data are presented in Table 4.3. There were no significant differences in self-health ratings when women in their first and third trimesters were compared to second trimester women. Women in their second trimester were selected as the reference

Table 4.1 Differences in Sociodemographic Variables for Pregnant and Postpartum Women

	Pregnant Women (n=333)	Postpartum Women (n=729)
Age (years)	27.46	27.87
Education (years)	13.47	12.96*
Income (% of poverty level)	266.86	236.01*
Ethnicity (%):		
Spanish-speaking Hispanics	7.5	10.0
English-speaking Hispanics	12.8	11.0
Blacks	16.5	15.8
Whites	63.2	63.1
Married/living with partner (%)	79.6	72.2*
Employed (%)	58.0	56.0

\*p<0.05

Table 4.2 Unstandardized Regression Coefficients for Childbearing Status in Multiple Linear Regression Model of Self-Rated Health

	<b>Dependent Variable</b> Self-Rated Health
<b>Predictor Variable</b>	Estimate <sup>a</sup> (SE)
Pregnant vs. Postpartum <sup>b</sup>	0.082 (0.058) <i>p</i> =0.159
<b>Covariates</b>	
Education	0.089 (0.012) <i>p</i> <0.001
Marital Status	0.221 (0.076) <i>p</i> =0.005
Poverty-level Income <sup>c</sup>	-0.040 (0.025) <i>p</i> =0.116
Employment Status	0.169 (0.070) <i>p</i> =0.017
Ethnicity	-0.024 (0.044) <i>p</i> =0.581
<b>R<sup>2</sup> for full model</b>	0.102 <i>p</i> <0.001

<sup>a</sup> Estimates represent unstandardized regression coefficients.

<sup>b</sup> Covariates included in these results.

<sup>c</sup> Represented as proportion of federal poverty-level income

Table 4.3 Unstandardized Regression Coefficients for Trimester of Pregnancy in Linear Regression Model of Self-Rated Health

	<b>Dependent Variable</b> Self-Rated Health
<b>Predictor Variable</b> Trimester Currently Pregnant: (2 <sup>nd</sup> trimester [n=104] used as reference group)	Estimate <sup>a</sup> (SE)
1 <sup>st</sup> trimester <sup>b</sup> (n=130)	-0.052 (0.103) <i>p</i> =0.617
3 <sup>rd</sup> trimester <sup>b</sup> (n=99)	0.163 (0.117) <i>p</i> =0.169
<b>Covariates</b>	
Education	0.091 (0.019) <i>p</i> <0.001
Marital Status	0.278 (0.137) <i>p</i> =0.048
Poverty-level Income <sup>c</sup>	0.024 (0.028) <i>p</i> =0.410
Employment Status	-0.031 (0.084) <i>p</i> =0.712
Ethnicity	0.014 (0.072) <i>p</i> =0.848
<b>R<sup>2</sup> for full model</b>	0.166 <i>p</i> <0.001

<sup>a</sup> Estimates represent unstandardized regression coefficients.

<sup>b</sup> Covariates included in these results.

<sup>c</sup> Represented as proportion of federal poverty-level income

group for the regression model because the second trimester is generally thought of as the period of radiant health, when the woman feels well and is often free from many of the common discomforts of pregnancy (Varney, 1997a). For this group of pregnant women, the statistically significant predictors for self-rated health were education and marital status, consistent with the analysis described above (see Table 4.2). For the postpartum women, although the first quarter women had the lowest mean for self-rated health, there were no statistically significant differences between women in their second, third, or fourth quarters postpartum compared to women in their first quarter postpartum (see Table 4.4). However, all of the covariates, except race, were significant predictors for self-rated self-rated health in this group of new mothers and included education, marital status, income, and employment status.

The second research question addressed whether or not parity was a predictor for health-risk behaviors in addition to self-rated health. Odds ratios for the health-risk behaviors comparing parous women with nulliparous women are presented in Table 4.5. For substance use and sexual behaviors, the only measure that showed a statistically significant difference was marijuana use, with parous women almost twice as likely *not* to have used marijuana in the past 12 months. For self-rated health, nulliparous women had the lowest mean (3.91) when compared to women with 1, 2, or 3 or more deliveries, although this difference did not reach statistical significance when controlling for marital status, income, race, employment status, and education. These data are presented in Table 4.6.

The third research question assessed pregnancy happiness and attitude toward parenthood as predictors for health-risk behaviors and self-rated health, while controlling for age, education, income, employment status, marital status, ethnicity, and parity. Odds ratios

Table 4.4 Unstandardized Regression Coefficients for Quarter Postpartum in Linear Regression Model of Self-Rated Health

<b>Predictor Variable</b> Quarter Postpartum 1 <sup>st</sup> quarter [ <i>n</i> =248] used as reference group)	<b>Dependent Variable</b> Self-Rated Health
	Estimate <sup>a</sup> ( <i>SE</i> )
2 <sup>nd</sup> quarter <sup>b</sup> <i>n</i> =183	0.158 (0.120) <i>p</i> =0.191
3 <sup>rd</sup> quarter <sup>b</sup> <i>n</i> =159	0.215 (0.126) <i>p</i> =0.092
4 <sup>th</sup> quarter <i>n</i> =139	0.128 (0.148) <i>p</i> =0.392
<b>Covariates</b>	
Education	0.089 (0.016) <i>p</i> <0.001
Marital Status	0.210 (0.089) <i>p</i> =0.021
Poverty-level Income <sup>c</sup>	-0.067 (0.031) <i>p</i> =0.036
Employment Status	0.243 (0.083) <i>p</i> =0.005
Ethnicity	-0.041 (0.056) <i>p</i> =0.465
<b><i>R</i><sup>2</sup> for full model</b>	0.096 <i>p</i> <0.001

<sup>a</sup> Estimates represent unstandardized regression coefficients.

<sup>b</sup> Covariates included in these results.

<sup>c</sup> Represented as proportion of federal poverty-level income

Table 4.5 Adjusted Odds Ratios for Health Risk Behaviors of Nulliparous Women vs. Parous Women in Logistic Regression Model

	Adjusted Odds Ratios (95% Confidence Intervals)						
	<b>Dependent Variables (Health Risk Behaviors)</b>						
<b>Predictor Variable</b>	Never or rarely drank alcohol in past 12 months	Didn't smoke any cigarettes past 12 months	Didn't smoke any cigarettes during pregnancy	Didn't use marijuana in past 12 months	Only 1 sex partner in past 12 months	Monogamous partner in past 12 months	No STI treatment in past 12 months
Parous vs. Nulliparous <sup>a</sup>	1.10 (0.72-1.68)	0.89 (0.53-1.48)	2.14 (0.87-5.25)	1.97 (1.16-3.336)*	1.19 (0.61-2.32)	0.95 (0.49-1.88)	1.02 (0.45-2.34)
Nagelkerke	0.13	0.13	0.10	0.15	0.27	0.20	0.11

<sup>a</sup> Covariates included in the model are age, income, education, employment status, marital status, and ethnicity.

\* $p < 0.05$

Table 4.6 Unstandardized Regression Coefficients for Parity in Multiple Linear Regression Model of Self-Rated Health

	<b>Dependent Variable</b> Self-Rated Health
<b>Predictor Variable</b>	Estimate <sup>a</sup> (SE)
Nulliparous vs. Para 1 <sup>b</sup>	0.046 (0.102) <i>p</i> =0.652
Nulliparous vs. Para 2 <sup>b</sup>	0.201 (0.110) <i>p</i> =0.073
Nulliparous vs. Para 3 or more <sup>b</sup>	0.127 (0.138) <i>p</i> =0.358
<b>Covariates</b>	
Education	0.088 (0.012) <i>p</i> <0.001
Marital Status	0.195 (0.084) <i>p</i> =0.024
Poverty-level Income <sup>c</sup>	-0.026 (0.028) <i>p</i> =0.353
Employment Status	0.180 (0.070) <i>p</i> =0.012
Ethnicity	-0.017 (0.043) <i>p</i> =0.698
<b>R<sup>2</sup> for full model</b>	0.106 <i>p</i> <0.001

<sup>a</sup> Estimates represent unstandardized regression coefficients.

<sup>b</sup> Covariates included in these results.

<sup>c</sup> Represented as proportion of federal poverty-level income

for the health risk behaviors are presented in Table 4.7. The pregnancy happiness variable was a significant predictor for not having drunk alcohol, smoked cigarettes, or used marijuana in the past 12 months. It also predicted being in a mutually monogamous sexual relationship during the previous 12 months, with women who were happier to be pregnant (per 3 units of change on the 1-10 scale) 1.5 times more likely to be in such a relationship. Women who were happier to be pregnant were also more likely (odds ratio 1.50) to have received first trimester prenatal care. The attitude towards parenthood variable did not reach statistical significance for any of the health risk behaviors assessed.

The third research question also addressed pregnancy happiness and attitude towards parenthood as predictors of self-rated health. Both of these variables were statistically significant with pregnancy happiness resulting in  $p < 0.001$  and parenthood attitude with  $p = 0.049$  (see Table 4.8). The covariates of age, income, education, employment status, race, and marital status were held constant in the linear regression model. Of the covariates, education and employment status were the only significant measures.

## **DISCUSSION AND CONCLUSIONS**

This study examined childbearing women in various phases of pregnancy and postpartum as well as pregnancy happiness and parenthood attitude as predictors for health-risk behaviors and self-rated health. While past studies have shown mixed results for self-rated health differences between pregnant and postpartum women, this study showed no statistically significant differences in health perceptions between these two groups of women. Education, marital status and employment status were significant predictors for self-rated health, which is consistent with other studies (National Institutes of Health, 2002; U. S. Department of Health and Human Services, 2005). It is likely that

Table 4.7 Adjusted Odds Ratios for Health Risk Behaviors by Pregnancy Happiness and Parenthood Attitude in Multiple Logistic Regression Models

	Adjusted Odds Ratios (95% Confidence Intervals)							
	<b>Dependent Variables</b> ( <i>Health Risk Behaviors</i> )							
<b>Predictor Variables<sup>a</sup></b>	Never or rarely drank alcohol in past 12 months	Didn't smoke any cigarettes past 12 months	Didn't smoke any cigarettes during pregnancy	Didn't use marijuana in past 12 months	Only 1 sex partner in past 12 months	Monogamous partner in past 12 months	No STI treatment in past 12 months	Received 1 <sup>st</sup> trimester prenatal care
Happy to Be Pregnant <sup>b</sup>	1.20 (1.04-1.39)*	1.25 (1.03-1.51)*	1.17 (0.92-1.50)	1.23 (1.02-1.45)*	1.45 (1.14-1.85)*	1.54 (1.21-1.96)*	0.91 (0.70-1.19)	1.57 (1.30-1.90)*
Rewards of Parenthood Worth It <sup>c</sup>	1.16 (0.87-1.53)	0.96 (0.68-1.36)	1.43 (0.81-2.50)	1.11 (0.82-1.51)	1.08 (0.70-1.65)	1.00 (0.68-1.47)	1.01 (0.55-1.84)	1.07 (0.74-1.55)
Nagelkerke	0.14	0.14	0.11	0.15	0.29	0.23	0.12	0.17

<sup>a</sup>Covariates included in the models above are age, income, education, employment status, marital status, ethnicity, and parity.

<sup>b</sup> per 3 units of change on a scale of 1-10

<sup>c</sup> per 1 unit of change on a scale of 1-4

\* $p < 0.05$

Table 4.8 Unstandardized Regression Coefficients for Pregnancy Happiness and Parenthood Attitude in Multiple Linear Regression Model for Self-Rated Health

<b>Predictor Variables</b>	Estimate ( <i>SE</i> )
Happy to Be Pregnant <sup>a</sup>	0.043 (0.010) <i>p</i> <0.001
Rewards of Parenthood Worth It <sup>a</sup>	0.123 (0.062) <i>p</i> =0.049
<b>Covariates</b>	
Poverty income <sup>b</sup>	-0.043 (0.025) <i>p</i> =0.088
Education	0.081 (0.012) <i>p</i> <0.001
Employment	0.168 (0.068) <i>p</i> =0.016
Marital status	0.99 (0.085) <i>p</i> =0.250
Ethnicity	0.001 (0.042) <i>p</i> =0.983
<i>R</i> <sup>2</sup> for full model	0.123 <i>p</i> <0.001

<sup>a</sup>Covariates included in these results.

<sup>b</sup>Represented as proportion of federal poverty-level income.

there were no differences between pregnant and postpartum women because the majority of childbearing women are free of severe and chronic, debilitating diseases which could affect one's ability to conceive and carry a pregnancy. Additionally, the mean health ratings for both groups of women were near 4.0 (very good), which is consistent with previous findings that found that women up to 1 year postpartum had higher self-ratings of health compared to non-childbearing women of corresponding age (Schytt et al., 2004).

Ratings were similarly high among pregnant women when comparing women who were in different trimesters of pregnancy.. Once again, education and marital status were significant predictors for the group of pregnant women while income and employment were also significant for the group of postpartum women, likely indicating that pregnant women may have paid maternity leave or may not be seeking employment during their pregnancies.

When comparing parous women with nulliparous women on their health risk behaviors, the women with previous deliveries were more likely *not* to have used marijuana. This is possibly because as women engage in the process of mothering and rearing children, they are less likely to engage in illicit behaviors that could jeopardize their legal rights with their children. Furthermore, although it could be argued that alcohol can also impair one's mothering ability, alcohol consumption is considered more socially acceptable because it is not an illegal substance for mothers over 21 years of age.

The most significant findings of this study were the effects of pregnancy and parenting attitudes on health behaviors and perceptions. Pregnancy happiness was predictive of less-risky health behaviors, which is consistent with findings from other studies (Altfeld et al., 1997). The attitude towards parenthood statement did not yield statistically significant results for predicting health-risk behaviors, although it was a

significant predictor of self-rated health, as was the pregnancy happiness variable. All of the women in this sample were either currently pregnant or had recently been pregnant, and pregnancy and motherhood are profound life transitions. Therefore, it stands to reason that if a woman was happy about her pregnancy and/or felt that parenthood was worth the required effort, this could positively affect psychological functioning, which could favorably impact self-rated health. For some women, pregnancy and motherhood are an integral part of their identities (Jones & Bond, 1999) and the fulfillment of their roles as mothers is an important aspect of how they view their physical ability to bear a child and their emotional capacity to nurture an infant (Sawyer, 1999).

The limitations of this study are that the data are cross-sectional and although the respondents are asked to assess their health-risk behaviors over the previous 12 months, all of the women were pregnant at some point during that time frame. As evidenced by previous studies, women commonly alter their health risk behaviors during pregnancy. Of the variables assessed, only the smoking variable included questions designed to yield data on the behavior during pregnancy, and it was only assessed of women with completed pregnancies and therefore did not include women who were currently pregnant for the first time. Thus, due to the lack of data in this dataset on health-risk behaviors engaged in specifically during pregnancy, it was not possible to compare health-risk behaviors between women who were currently pregnant and those that were postpartum.

The conclusions that emerge from this study are that there are multiple psychosocial factors that predict health behaviors and health perceptions in childbearing women. Parity and attitudes towards pregnancy and parenthood can also play a role in women's choices about whether or not they engage in risky health behaviors. Furthermore, although childbearing women's self-perceptions of health are generally

high, their attitudes towards their roles as mothers can affect how they feel about their own state of health.

It is important for healthcare providers working with this population of childbearing women to acknowledge pregnancy and childbirth as major life-transitions. Health-promoting interventions such as individualized care from a personable healthcare provider and support groups to address lifestyle and parenting issues targeted towards vulnerable groups of women such as single mothers and those with low educational levels should be offered. It is perhaps through this refocusing on maternal needs -in addition to the needs of the infant - that researchers as well as healthcare providers will have a positive impact on the health of new mothers (Walker & Wilging, 2000).

## **CHAPTER 5: Summary and Conclusions**

The purpose of this chapter is to summarize the results from the analyses that were run to answer the research questions and clarify how the findings are related to the theoretical framework of transitions in childbearing women that was used to guide this study. The final section suggests how these findings relate to the broader scope of health behaviors and perceptions of childbearing women. Implications for nursing practice, education, and research, limitations of the study and recommendations for future research are presented.

### **RESEARCH QUESTIONS**

This study addressed three broad areas of concern for the health and well-being of childbearing women using the National Survey of Family Growth (NSFG) data base. While the overall goal was to expand our knowledge of health behaviors and health perceptions of pregnant and postpartum women, this study concentrated on 3 specific points: ethnic differences with a focus on the Hispanic paradox, religiosity as a protective factor for health behaviors and perceptions of health, and lastly, a comparison between pregnant and postpartum women. Each of the three areas addressed were included as a separate chapter in this dissertation report.

### **Ethnic Differences and the Hispanic Paradox**

The literature review supported that pregnancy outcomes are surprisingly good in Hispanic women, particularly those less-aculturated, despite poor socioeconomic standings and poor access to healthcare. Traditional Hispanic cultural values that discourage substance use – particularly among women – and promote family support and traditional maternal roles are believed to serve as protective factors for women who

would otherwise be considered at-risk for poor pregnancy outcomes (Guendelman & Abrams, 1994; Jones & Bond, 1999; Sherraden & Barrera, 1996a).

The purpose of Chapter 2 was to assess if there were ethnic differences in the health-risk behaviors, attitudes, and health perceptions of women during pregnancy and postpartum. The analysis involved Whites, Blacks, and Hispanics with Hispanics divided into two groups on the basis of their primary spoken language that served as a proxy measure of acculturation (Arcia et al., 2001; Marin, Sabogal, VanOss, Otero-Sabogal, & Perez-Stable, 1987; Wallen et al., 2002). The findings in this analysis were consistent with findings reported in other studies and showed the Spanish-speaking Hispanic women to have the lowest education, employment, income levels, and were most likely to lack health insurance (Acevedo, 2000; Angel & Cleary, 1984). Despite having fewer economic resources, the Spanish-speaking Hispanic women had the highest rates of being married or partnered and had the highest birth rate. As anticipated, the less-accultured Hispanic women also had the lowest rates of substance use and expressed the highest levels of agreement with valuing traditional maternal roles (Kaplan et al., 2001; Zambrana et al., 1997). In contrast to other studies, there were no significant differences in the self-rated health measure between the ethnic groups (Lara, Gamboa, Kahramanian, Morales, & Bautista, 2005; Lopez, 2004).

The substance use health risk behaviors assessed in this study were alcohol consumption, cigarette smoking, and marijuana use. On all of the substance use variables, the Spanish-speaking Hispanic women reported the lowest usage rates, and White women report the highest rates. The sexual health-risk behaviors assessed in this study were having more than one sex partner, having a non-monogamous partner, and being treated for an STI in the previous 12 months. Only Black women and White women reported significantly higher rates for having more than one sex partner and only

Black women reported significantly higher rates of involvement with non-monogamous partners. Late or no prenatal care was the final health risk behavior assessed and there were no significant differences between ethnicities.

The pregnancy, parenthood, and gender-role attitudes measured were pregnancy happiness, and level of agreement with the following statements: the rewards of parenthood are worth the cost and time it takes, working mothers can establish warm relationships with their children, and the man should earn the living and the woman should stay home to care for the children. Significant ethnic differences were found with all of these variables, except for pregnancy happiness. For parenthood and gender-role attitudes, the Spanish-speaking women were the most likely to strongly endorse parenthood and traditional gender roles. Health perceptions were assessed by asking respondents to rate their general health ranging from excellent to poor. There were no significant ethnic differences on this measure.

When these findings are examined within the context of transition in childbearing women – the guiding framework for this study – the conclusions made by Sawyer (1999) and Niska (1999) can be applied. The transition to motherhood can be enhanced by supporting a viewpoint of motherhood as a positive, valuable, and life-defining experience. Although this study did not measure the actual experience of transition to motherhood among the respondents, the women were asked their level of agreement with statements that provided an indication of their perception of motherhood as valuable and desirable. Based on the responses to these items, the high percentage of less-accultured Hispanic women expressing their endorsement of beliefs in traditional motherhood roles may indicate their acceptance – and even reverence – for their roles as mothers. This may lead these women to adopt health-protective behaviors and reject health-risk behaviors during the childbearing phase, as they seek the most optimal environment for

bearing and rearing their children. This is similar to the “binding-in” task of pregnancy described by Rubin (1984) in which the woman invests in making a healthy baby and providing a good home in which to raise the child.

### **The Role of Religiosity**

Religious involvement and salience is another potentially important facet of the Hispanic paradox. The overarching research question in Chapter 3 was “Does religiosity have a positive effect on health-risk behaviors and health perceptions of pregnant and postpartum women?” Religiosity was assessed as frequency of attendance at religious services and respondents’ ratings of how important religion was in their daily lives (very important, somewhat important, or not important). The Spanish-speaking Hispanic women had the highest ratings of religion’s importance in their everyday lives. Overall, the group of women who reported religion as “very important” in their lives were less likely to report alcohol, tobacco, and marijuana use and had higher ratings on the pregnancy happiness scale. Women who reported the most frequent attendance at religious services were more likely to have a positive attitude toward parenthood and to endorse traditional maternal behaviors of staying home and caring for the children. For self-rated health, the respondents who reported that religion was “not important” in their everyday lives had lower health ratings. The findings on substance use are consistent with those from chapter 2 that showed less substance use among Spanish-speaking Hispanic women, but indicate that religiosity may serve as a key protective element against engaging in health-risk behaviors. The role of religiosity in the health of childbearing women has been suggested (Magana & Clark, 1995), but not systematically explored in the literature on the Hispanic paradox.

When religiosity is applied within the theoretical framework of transitions in childbearing women for this study, it fits within the framework as a condition/factor that could potentially impact the transition to motherhood. In describing developmental and lifespan transitions such as pregnancy, childbirth, and motherhood, Meleis et al. (2000) suggested that clients may become vulnerable to unhealthy coping and adjustment behaviors. Additionally, gender role norms and societal expectations are described as being possible facilitators or inhibitors of transitions. The findings in chapter 3 indicate that religious involvement and salience, as assessed by attendance at religious services and ratings of religion's importance in one's daily life, could serve as facilitators to a successful transition to motherhood by supporting and honoring the role of women as mothers. For example, Magana and Clark (1995) posit that the favorable attitudes towards pregnancy of many Mexican American women are strongly tied to the religious image of the Virgin of Guadalupe, who for them symbolizes the role of the mother. Furthermore, the literature review supports that religious attendance and salience are closely linked to the internalization of behavioral norms that are well regarded or highly valued by society as well as socially imposed sanctions for deviant behavior (Grasmick et al., 1991), thus serving as a protective factor against health-risk behaviors such as substance use and sexual promiscuity.

### **Pregnant and Postpartum Differences**

The focus in Chapter 4 was on postpartum women as an especially vulnerable group to unhealthy coping and adjustment behaviors that is often overlooked by healthcare providers and researchers. The purpose of this chapter was to compare the health-risk behaviors and self-rated health of postpartum women in the sample with the women who were currently pregnant. The research question was "Do postpartum women

exhibit more negative health-risk behaviors and lower self-rated health than women who are pregnant?” The study also examined other factors potentially affecting health-risk behaviors and self-rated health such as parity (the number of births), the trimester of the pregnancy at the time of data collection (trimester pregnant), the quartile postpartum period at the time of data collection (quartile postpartum), self-rated pregnancy happiness and parenthood attitude. Being currently pregnant versus postpartum, trimester pregnant, quartile postpartum, and parity were not predictors of self-rated health. However pregnancy happiness was positively associated with self-rated health and fewer risky health behaviors. Positive attitude towards parenthood was a predictor of higher self-rated health, although it did not predict the health-risk behavior variables. Parity was associated with one of the health-risk behaviors. Marijuana use in the previous 12 months was the only health-risk behavior that showed significant findings for women pregnant for the first time compared to women who had previously given birth. The women pregnant for the first time were twice as likely to report marijuana use in the previous 12 months. However, these findings for the health-risk behaviors are limited by the data collection instrument that had items about frequency of use for the previous 12 months, not current use. This retrospective approach makes it difficult to assess pregnant and postpartum differences because it does not accommodate behavioral changes that may have been made during pregnancy only. Nonetheless, the self-rated health assessment appears to offer a valid comparison, since the item asks the respondents to rate their health “in general,” which likely would be influenced by one’s current perception of their health state.

The findings in this study comparing pregnant and postpartum women do not offer support for other studies that showed that health behaviors and perceptions deteriorate during the postpartum phase (Gennaro & Fehder, 2000; Schytt et al., 2004).

However, these findings should be viewed in light of the data limitations, as described above. Even so, the findings that pregnancy happiness and positive parenthood attitude are significant predictors of higher self-rated health and decreased likelihood to engage in risky health behaviors (for pregnancy happiness) offer support for Rubin's transition to motherhood (1984) and Meleis et al.'s (2000) developmental transition theories. Theorists and researchers (Niska, 1999; Sawyer, 1999) have found that positive feelings towards the maternal role facilitate maternal role attainment as described by Rubin (1984).

### **IMPLICATIONS OF THE STUDY**

By expanding our knowledge of health-risk behaviors and health perceptions in childbearing women across ethnicities, we can help to enhance their successful transition to motherhood and subsequently improve their overall health. Implications and suggestions are proposed based on the findings in this study for nursing practice, education, and research.

#### **Nursing Practice**

This study has several implications for nursing practice related to the care of childbearing women. The findings on ethnic differences indicate the importance of nurses' awareness of cultural influences on health-risk behaviors and attitudes towards pregnancy, motherhood, and gender roles. While all childbearing women should be screened during pregnancy and postpartum for potentially risky health behaviors, nurses' awareness that White women, despite having the highest income, education, employment level, and insurance coverage, may be at higher risk for substance use, specifically when compared to Spanish-speaking Hispanic women. Ethnic differences in motherhood and gender-role attitudes may also have implications for maternal role transition. Nurses

should identify factors such as pregnancy happiness, parenthood attitudes, and gender-role attitudes within the context of the woman's sociodemographics such as ethnicity, age, marital status, education, parity, income, and employment status that may either impede or facilitate the transition to motherhood.

Nurses in practice should also recognize potential protective factors that may influence women's participation (or lack thereof) in health risk behaviors. This study concluded that religiosity is one such protective factor. Nurses can assess the presence of protective factors and help childbearing women to increase their awareness of and mobilize potentially beneficial resources. For example, a nurse may offer a statement such as "sometimes women find helpful support and resources through community organizations such as local churches to help them through difficult behavior or life adjustments."

Finally, although the findings of this study did not offer support for the health behavior and perception differences between pregnant and postpartum women, there were maternal attitudinal factors (e.g. pregnancy happiness and parenthood attitude) that yielded significant results for health behaviors and perceptions. Nurses should be aware that although these factors may be identified during pregnancy, they could have more long-term implications for the health behaviors and self-rated health of women beyond pregnancy. For example, women who were happiest to be pregnant or most strongly agreed that parenthood is worth the cost and work it takes, had the highest self-rated health. Therefore, nurses should continue to assess maternal coping and adjustment long after the pregnancy has ended.

## **Nursing Education**

Nursing educators need to expand students' awareness of cultural differences and influences on the health behaviors and attitudes of childbearing women. Nursing students should be educated to conduct a thorough assessment of healthy adaptation and coping in childbearing women that also considers the sociodemographic context of the woman, such as her age, education, income, and marital status. It is important that nursing students be aware of transition theories such as that proposed by Meleis et al. (2000) as well as maternal role attainment theory posited by Rubin (1984). The findings of this study highlighted that positive parenthood attitudes, pregnancy happiness, and valuing the maternal role can serve as potential facilitators to a successful transition to motherhood. This will help students gain a firm foundation to practice nursing within the context of childbearing women. Furthermore, nursing students need to be aware of important research on health behaviors and attitudes of childbearing women that has already been conducted and the need for further research particularly in addressing ethnic disparities in pregnancy outcomes and extending the focus of research with childbearing women beyond pregnancy and into the oft-neglected stage of motherhood.

## **Nursing Research**

This study has significant implications for nursing research. This research involved a secondary data analysis using a large, nationally representative database conducted by the Centers for Disease Control and Prevention, National Center for Health Statistics. The National Survey of Family Growth (NSFG) is just one of many such large, high-quality datasets that are available for public use. Other examples are the National Health Interview Survey (NHIS), the National Health and Nutrition Examination Survey (NHANES), the Pregnancy Risk Assessment Monitoring System (PRAMS), and the Fragile Families Survey. These types of datasets offer many

advantages for nurse researchers such as easy access to data, large, nationally-representative samples, a wide range of variables, and general acceptance within the scientific community of the integrity of the data collection methods. Other advantages include relatively low cost, inclusion of minority and immigrant populations (due to large sample sizes), and user-support offered through user conferences, websites, and extensive users' guides (Hummer, 2006). Despite the many advantages offered by such large datasets, there are few published reports of data analyses using such data by nurse researchers. These datasets are commonly used by researchers in sociology and other social sciences such as public policy and health, and populationists. Since many of the variables from these large datasets are health-related, nurse researchers have much to offer to interdisciplinary research teams.

The findings of this study also have other implications for nursing research. The gaps in the dataset could lead to other types of study designs such as a qualitative exploration of what other factors may promote positive pregnancy outcomes in Spanish-speaking (less acculturated) Hispanic women.

#### **LIMITATIONS OF THE STUDY**

Despite the many benefits of working with a large dataset such as the NSFG, this study also had some limitations related to the data. The data in this survey are cross-sectional, representing a "snapshot" view of the respondents' circumstances at the time the survey was conducted. Although many of the variables, particularly those pertaining to health-risk behaviors, asked the respondents about frequency of the behavior over the past 12 months, their responses were limited by the respondents' ability to accurately recall that particular behavior/circumstance (e.g. how often they drank alcohol in the past 12 months and how happy they felt when they found out they were pregnant).

Additionally, because all of the women in the sample were either currently pregnant and had been pregnant at some point in the past year, it is impossible to determine if the behavior changed during the pregnancy. Some of the questions such as prenatal care utilization and smoking during pregnancy were asked of completed pregnancies only, meaning if the woman was currently pregnant for the first time the question was not asked. Although studies support that deleterious health behaviors during pregnancy can lead to adverse outcomes in the newborn, this study does not include health outcomes of newborns, therefore the relationship between health behaviors and pregnancy outcomes cannot be directly assessed.

Furthermore, although the more sensitive questions on substance use and sexual behaviors were conducted using a self-interview technique (ACASI) to assure privacy and confidentiality and although the interviewers were well-trained, some responses may be subject to social desirability bias. For example, the questions on parenthood and maternal role attitudes (e.g. the rewards of parenthood are worth it and men should earn the living and women stay home) could make respondents want to answer in such a way that they think is socially acceptable to the interviewer rather than their true feelings.

The findings related to ethnicity and acculturation in this study are limited by the fact that acculturation was measured by language-use alone. As discussed in Chapter 2, acculturation is a complex concept that is difficult to capture with a proxy variable such as language. Although language has been widely used by researchers to assess acculturation levels, it may not fully represent the intricacies of the concept (Page, in press). Similarly, ethnicity is a complex variable and findings on ethnic differences can contribute to ethnic stereotyping that could ultimately compound ethnic and racial discrimination.

## **FUTURE RESEARCH DIRECTIONS**

Although the Hispanic paradox was first described in 1986 by Markides and Coreil, researchers continue to attempt to fully describe the factors responsible for it, particularly in relation to the health of childbearing women. The findings of this study suggest that religiosity may be a protective factor for childbearing women and this is an area that has not been extensively explored in relation to the Hispanic paradox (Magana & Clark, 1995; Padilla & Reichman, 2001). This is a significant area for future research and could lead to important findings with implications for the health behaviors and outcomes of childbearing women and their offspring.

Additionally, it is evident that there are a number of worthy resources available for nurse researchers who are interested in exploring factors pertinent to the health of women and children. This researcher intends to expand her knowledge of working with large datasets and to explore other rich sources of data for the purpose of conducting future secondary data analyses.

Finally, the value of interdisciplinary research efforts should not be overlooked. Researchers from a variety of other social sciences can each bring their strengths to a research team and work together to achieve a common goal. Through mutual respect for others' work we can enhance the strength and validity of our research efforts. Just as nurses see the value of interdisciplinary efforts in patient care, this practice should also be carried over to nursing research.

The next step is to further work with less-aculturated Hispanic women by exploring the role of religiosity during childbearing. In order to further our understanding of whether religiosity has a protective effect during the childbearing years, a life-course study that examines religious involvement and salience before, during, and after childbearing may be most fitting. This could involve exploring other datasets that

include religious behavior measures during pregnancy and postpartum. However, due to the limited amount of past research in this specific area, it may require the design of an original study to explore the role of religion in the lives of childbearing women.

## **CONCLUSION**

*Healthy People 2010* (U.S. Department of Health and Human Services, 2000) describes maternal health as the central link to improving the overall health and well-being of women, infants, children, and their families for future generations. Using a large, nationally-representative dataset this study expands our knowledge of health perceptions, health risk behaviors such as substance use and sexual promiscuity, and health-protective factors such as religiosity among childbearing women. It also addresses ethnic differences in response to ethnic disparities in the health of women and newborns. This research was conducted within a theoretical framework that depicted pregnancy and postpartum as vulnerable times of transition in women's lives that highlights the need for specialized care and support of childbearing women. Expanding our knowledge of their health behaviors and perceptions is a vital component of enhancing the health and well-being of pregnant women, new mothers, and their infants across ethnicities.

## **APPENDIX: NSFG, Cycle 6 Survey Description**

Cycle 6 of the National Survey of Family Growth (NSFG) was conducted by the National Center for Health Statistics (NCHS), with the participation and funding support of nine other programs of the U.S. Department of Health and Human Services. Cycle 6 was based on an area probability sample. The sample represents the household population of the United States, 15-44 years of age. The survey sample is designed to produce national data, not estimates for individual States. The contractor for the survey, the Survey Research Center of the University of Michigan, hired and trained over 200 female interviewers for the NSFG. In-person interviews were completed with 12,571 respondents 15-44 years of age--7,643 females and 4,928 males. The interviews were voluntary and confidential. The response rate was 79 percent overall--80 percent for females and 78 percent for males. The questionnaire for males averaged about 60 minutes in length, while the female interview averaged about 80 minutes.

Source: <http://www.cdc.gov/nchs/about/major/nsfg/nsfgback.htm>

The full questionnaires in addition to reports, news releases and data files can be accessed through the following website:

<http://www.cdc.gov/nchs/nsfg.htm#Surveyquest>

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