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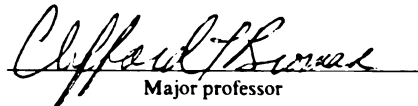
THE INTERSECTION OF MENTAL HEALTH, PREGNANCY AND RACE:
A CONTEXTUAL INVESTIGATION OF THE RELATIONSHIPS BETWEEN
SOCIAL FACTORS AND
MATERNAL PSYCHOLOGICAL DISTRESS

presented by

Renee Branch Canady

has been accepted towards fulfillment
of the requirements for

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Major professor

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**THE INTERSECTION OF MENTAL HEALTH, PREGNANCY AND RACE:
A CONTEXTUAL INVESTIGATION OF THE RELATIONSHIPS BETWEEN
SOCIAL FACTORS AND
MATERNAL PSYCHOLOGICAL DISTRESS**

By

Renée Branch Canady

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ABSTRACT

THE INTERSECTION OF MENTAL HEALTH, PREGNANCY AND RACE: A CONTEXTUAL INVESTIGATION OF THE RELATIONSHIPS BETWEEN SOCIAL FACTORS AND MATERNAL PSYCHOLOGICAL DISTRESS

By

Renée Branch Canady

The birth of a baby. A time of rejoicing and gladness, usually. The impetus for this study is another, still too frequent pregnancy outcome, infant death. Infant mortality rates among African American babies are double that of Whites and have shown minimal improvement over the last decade. Data collected from 1980-1990, show that black infant mortality decreased by only 19% during that time while white infants experienced an improvement of 30%. Consequently, black babies remained twice as likely as whites to die and the black-white gap in infant mortality persisted.

This quantitative study utilizes a subsample of 5200 cases from the National Maternal and Infant Health Survey (NMIHS), a nationally representative study conducted by the National Center for Health Statistics. Analyses focus on respondents to the pregnancy status measure who were between the ages of 19 and 43 years.

Research in the field of pregnancy outcomes has historically emphasized biomedical and clinical measures. The more recent research agenda in pregnancy outcomes has

emphasized the role of "social factors" in poor pregnancy outcomes. While genetic and biological factors are important in disease etiology, many race and health researchers have argued that social factors may be more important. This study investigates the relationships between key social measures (race, socioeconomic status, and marital status) and psychological distress. In particular, this study investigates maternal psychological distress as a potentially vital factor in the experience of pregnant women. Considerable work has been done on depression *after* pregnancy, however the work which addresses depressive symptoms and maternal psychological distress prior to delivery is comparatively less. In addition, analyses focus on the disparate experiences of African American women.

This investigation provides empirical evidence that black women experience significantly greater psychological distress than women of other races. In addition, the psychological state of women is predicted more by the social contexts of their lives than by the immediate experience of pregnancy. Furthermore, this study confirms the importance of the role of marriage in the psychological well-being of women who are pregnant. Lastly, it is the experience of prior pregnancies, rather than the current pregnancy, which effectively predicts psychological distress in women.

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For walking with me through this journey, pushing me when I was weary and loving me in spite of myself- I love you, Mark Canady, my best friend. For understanding and waiting patiently and loving me just the same - you are my joy, Marcus, Alexander and Wesley.

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For strength sufficient for the task; for peace that
PASSED all understanding; for being my keeper and provider -
I give you praise, Jesus Christ, my Lord and Savior.

In Memoriam

For Mark Howard Canady, II, whose brief life of seven
months, escorted me into the world of motherhood. My memory
of him underscores the drive for this study. His life
frames the heart of who I am now and remains an integral
part of the heart of our family.

For Bernice White Branch, who compressed a life time of
mothering me into 23 short years and who epitomized the
privilege of motherhood in action and deed. Her blend of
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emulate her perfection of these roles.

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INTRODUCTION

The birth of a baby. A time of rejoicing and gladness, usually. The impetus for this study is another, still too frequent pregnancy outcome, infant death. The United States (U.S.) is a country of comparative wealth and privilege yet, Black women are twice as likely to experience a poor pregnancy outcome than their White counter-parts (David, 1991). Infant mortality rates among African American babies are double that of Whites and have shown minimal improvement over the last decade (Carmichael, 1998; Hogue, 1993). Data collected from 1980-1990, show that Black infant mortality decreased by only 19% during that time. However, during that same time period, Whites infants experienced an improvement of 30%. Consequently, Black babies remained twice as likely as Whites to die and the Black-White gap in infant mortality has persisted (Flack, 1995). Overall U.S. infant mortality rates reached an all time low of 9.8 deaths per 1000 births in 1989, yet the infant death rate among African Americans looms precariously above that all time low at 12.8 deaths per 1000 (Hummer, 1993).

Much of the motivation for recent work in this field springs not only from a recognition of poor outcomes overall, but also from persistent differences in birth outcomes among racially diverse populations. In the late 1800's, Black babies were twice as likely to die as White

infants and incredulously, over a century later, Black babies remain twice as likely to die as White infants (Hogue, 1993). The U.S. Surgeon General has mandated the reversal of racial and ethnic disparities in disease outcomes, including infant mortality, by 2010 (Arno, 1998; House, 1998). Not only are health professionals and researchers now charged with continuing to improve prenatal outcomes among all Americans, but also with abolishing the gap between Black and White health status measures.

Research in the field of pregnancy outcomes has historically emphasized biomedical and clinical measures. The lack of consistency and resultant confusion in measuring pregnancy outcomes is openly acknowledged in the field (Bramwell, 1997). Outcomes such as pre-term delivery, intra-uterine growth retardation, low birth weight, and other clinical indices have been studied in relation to factors such as access to prenatal care and health behaviors such as smoking, alcohol consumption, and diet. The more recent research agenda in pregnancy outcomes has emphasized the role of "social factors" in poor pregnancy outcomes. While genetic and biological factors are important in disease etiology, many race and health researchers, such as David Williams (1992a), have argued that social factors may be more important. The production of disease and illness clearly results from the convergence of multiple social dynamics upon biological factors. It is increasingly

apparent that the disparity of pregnancy outcomes among Blacks and Whites will not be effectively mediated without evaluating the underlying problems of social structure and status and their contributions to the health and illness experience.

As a mental health researcher, sociologist and the survivor of a seven month old, pre-term son, I have chosen to narrow the focus in this very large problem to the question of maternal psychological distress and race and their contribution to the pregnancy experience. This study investigates the relationships between key social measures (race, socioeconomic status, and marital status) and psychological distress in a sample of pregnant women. In order to expand the understanding of this multi-factorial problem, this study will investigate maternal psychological distress as a potentially vital factor in the experience of pregnant women. Considerable work has been done on depression after pregnancy (post-partum depression), however the work which addresses depressive symptoms and maternal psychological distress prior to delivery is comparatively less (DaCosta, 2000; Séguin, 1999; Kitamura, 1996). The preponderance of work on depression and pregnancy is also clinically focused, concentrating on various medical diagnoses of mental illness and pregnancy related mood disorders (Steinberg, 1999). Little work in this field has gone the additional step of investigating maternal

psychological distress as a factor in the pregnancy outcome (Benedict, 1999; Schmeelk, 1999). Furthermore, the attention to race in the present study attends to an additional factor which has frequently been overlooked, despite disparate trends in the African American community as previously noted. Much of the recent work on race and mental health during pregnancy has taken a transcultural approach or focused on international populations (Dragonas, 1997; Séguin, 1999; Zachariah, 1996; Aberbigbe, 1995; Kitamura, 1996; Thorpe, 1992; Wijma, 1992), and describes experiences which may not be applicable to the lives of African American women. Finally, social support is a common theme in this evolving body of work which endeavors to address psychosocial risk factors in pregnancy. The social support literature actually comprises a separate and distinct area of sociological research. It is the goal of the present work to integrate these sparse and eclectic bodies of work in a manner which will frame relevant but as yet unaddressed questions, and thereby advance the current state of research on pregnancy and psychological distress.

CHAPTER 1:

RATIONALE AND CONCEPTUAL FRAMEWORK

Why study psychological distress as a variable in pregnancy? Furthermore, why study race as a factor in psychological well-being and pregnancy outcome? In addition to the previously presented demographic trends, consider the following: 1) Maternal depression has been related to low birth weight and pre-term delivery (Dunkel-Schetter, 1998; Steer, 1992); 2) African American women are more likely to experience poor pregnancy outcomes than women in other racial groups (Rowley, 1993; David, 1991); 3) the population of women at risk for poor pregnancy outcomes tends to also be the same population at risk for increased depression (i.e., low-income women) (Orr, 1995); 4) depression and excessive stress have been associated with diminished participation in prenatal care (Sword, 1999), a factor demonstrated to impact pregnancy outcomes (Rowley, 1995); and 5) maternal depression has been associated with general maternal health following childbirth (Schmeelk, 1999). Maternal depression is also a significant factor in important outcomes such as marital and family satisfaction, and child development. In spite of these associations, little attention has been given to the role of maternal psychological distress, including depression, in studies of pregnancy outcomes. Calls within the literature for

increased studies of mental health in African American women speak to a gap in the current research and acknowledge the limited understanding of the forces at work in the mental health outcomes of Black women (Dunston, 1990).

The present study integrates several bodies of literature. First, the focus on psychological distress is informed by the general mental health research, by some components of the clinical research on depression and depressive symptoms, and by the sociological study of stress. Second, the attention to race is informed by emergent work on race and health (including mental health) and the evolving research on the health consequences of discrimination and racism. Lastly, the pregnancy research which addresses pregnancy outcomes, pregnancy and stress, and pregnancy and depression, attend to the specific questions of pregnancy considered in this study. The preponderance of the comparatively small number of existing studies on pregnancy and mental health tend to be focused on lower socioeconomic samples, a disappointing fact in light of the trend of poor pregnancy outcomes among African American women across all economic segments (Schoendorf, 1992). The present study draws heavily on a nascent body of work which strongly suggests the existence of a relationship between maternal depression and poor pregnancy outcomes. This body of literature further suggests that depression is

a likely part of the pregnancy experience of women (Orr, 1995; Hobfoll, 1995; O'Hara, 1986).

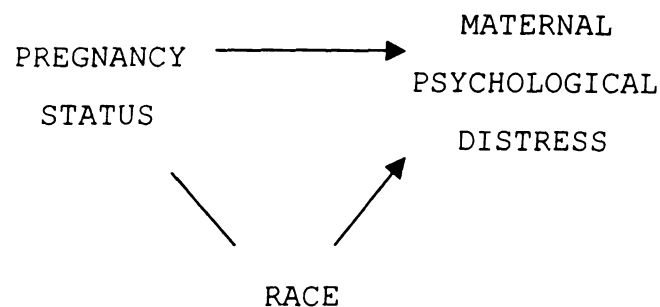
Another important theoretical orientation of this study is derived from the sociology of mental health (Pearlin, 1981; Pearlin, 1999; Aneshensel, 1999; Aneshensel, 1992). Notwithstanding the diverse disciplinary interests in mental illness and mental health, the sociology of mental health provides an important contribution in this field of study. Social characteristics have been strongly correlated with the causes and consequences of mental illness (Aneshensel, 1999). As a result, sociological inquiry in this area has been distinguished by investigations of social characteristics which delineate social status and social roles. Aneshensel (1999) describes two goals of the sociological study of mental health which are particularly applicable to the sociological study of pregnancy and pregnancy outcomes: 1) the identification of social strata who are at-risk; and 2) the explanation of why differentials exist. Social strata refer to those systems and characteristics which stratify and divide individuals in this society such as socioeconomic status, gender, age, and race. The second major characterization of individuals in sociology addresses the social roles they occupy, including marriage, parenthood, and employment (Pearlin, 1989). Furthermore, within the sociology of mental health, the sub-speciality of stress research also informs the present work.

Aneshensel (1999) further posits that the unique sociological contribution to the explanation of which differentials exist and why, lies in the articulation of issues of context. Contextual analysis facilitates the meaningful incorporation of multiple structural and descriptive factors. Simon (1999) defines context as the social circumstances in which events occur. This is not to imply that context revolves only around episodic events, rather it envelopes multiple aspects of one's life experiences and the manner with which they interrelate. Context shapes the personal and social meaning attributed to events and relationships. Context facilitates the consideration of phenomenon such as racism and discrimination (as opposed to 'race'). Context recognizes the dynamics poverty and wealth (as opposed to socioeconomic status); it validates the influence of roles and socialization (as opposed to gender and age). Context views the insidiousness of identity within ethnicity, of inequality within class, and of oppression within nation. It is the integrated nature of context and its representation of subtleties which yields its greatest strengths. Context shapes the manner in which variables of interest are measured; however, its greatest influence emanates from the interpretation of findings from those measures. The sociologically imaginative perspective of context will be applied in this study and its analyses.

The conceptual model guiding the analysis in this study is illustrated in Figure 1. The model consists of the following major components: 1) Maternal Psychological Distress, which serves as the dependent variable of the study; 2) Pregnancy status, which frames the fundamental focus of the study; and 3) Race, which defines the research questions posed. The framework of the model presented also incorporates social domains in order to contextually situate the lives of the women surveyed. The conceptual model of this study is purposefully limited to three social factors (education, income, and marital status) which have been empirically shown to affect mental health. Many of the models presented in the literature are multi-factorial and superficially review numerous potential influences (Lobel, 1992; Paarlberg, 1995). Others have acknowledged relationships among the variables of interest here, but lack a thorough interpretation of those relationships. Narrowing the focus in this study to measures of socioeconomic status and marital status facilitates a more thorough analysis of these particular measures of interest.

FIGURE 1

Proposed Model of Mental Health, Pregnancy, and Race



Socioeconomic status (measured by education and household income) and marital status are hypothesized as external factors which characterize the contextual effects at work in the pregnancy experience and provide a key orientation for the study. Fueled by the discourse of outcome disparities previously noted, considerations of intra-racial and inter-racial variation will be integral parts of the analyses of this study. Pregnancy is viewed as an extrinsic variable in that it is not affected by the model proposed, but rather, as with race, represents a more immutable characteristic of the sample population.

The relationships between socioeconomic status and mental health, as well as between marital status and mental health, have been fairly well established. However, the frequency with which contradictory findings result in these works also found suggest the need for further deliberation (Steinberg, 1999; Orr, 1984; Gotlib, 1989). Furthermore, the health benefits of marital status tend to accrue more readily to men (Umberson, 1992), a point of critical consideration in light of the gender orientation of pregnancy.

The debate over disparate health and pregnancy outcomes has recently polarized along race and wealth perspectives. The discourse of the socioeconomic influences on health have framed a dialectic which has tended to de-emphasize the role of race in favor of economic explanations (Pappa, 1994;

Syme, 1998). Notwithstanding the demographic trends which place African Americans disproportionately among the poor, the persistence of racial disparities even when controlling for education or income is documented (Krieger, 1993) and sobering. Similarly, marital status is an important consideration not merely because of its demographic categorization, nor even because of its great influence upon the financial well-being of women (Christensen, 1992), but moreover because of its correlation to physical and mental well-being (Hu, 1990; Kitson, 1990; Broman, 1993). The relationship between marital status and health has also been found to be gender dependent (Bruce, 1992), a characterization which holds potential relevance in considerations of pregnancy, given its gender-defined occurrence. Marital status is also noted as a key factor in post-partum depression research as well as transition to parenthood literature (Steinberg, 1999), thus further justifying its consideration in this case. In addition, this study is distinguished by including both married and single women. Many studies to date have focused exclusively on either singled or married women, thus minimizing the ability to consider the role marriage plays in psychological well-being (Dragonas, 1997; Kitamura, 1996; Turner, 1990).

Acknowledging the clinical and biomedical nature of the current literature, an additional critical goal of this study is the introduction of a sociological perspective into

the current discourse of pregnancy and pregnancy outcomes. Consequently, in an effort to avoid the weakness of the current literature in the over-inclusion of variables, this study addresses the relationships among two frequently described factors, in order to facilitate a more thorough analysis of the dynamics and relationships at work.

The linear causal model presented in figure one describes three relationships which affect maternal psychological distress, two of which are direct relationships and one indirect relationship. In the first direct relationship, it is believed that pregnancy will affect psychological distress. Pregnancy, having been categorized as both a well and sick state (Oakley, 1980; Myers, 1990), defines a woman's status, influences her perceptions of self, her relationships with others and likely, her psychological well-being. The second direct relationship suggests that race, as socially defined, directly affects psychological distress. Substantiated by the growing evidence of a relationship between race and physical health, the projection that a comparable relationship exists between race and mental health is justified. The indirect relationship portrayed in the model, implies that race has a likely influence on the pregnancy experience and as a result, indirectly impacts psychological well-being.

The current state of the literature warrants the investigation of fundamental relationships and the contextual analysis which will be applied in this study adds an additional richness and depth. Consequently, this study is purposefully exploratory and descriptive in nature. As described earlier, race and pregnancy remain an encompassing framework within each of the hypotheses. Thus differential outcomes in each research question between women who are or are not pregnant and women who are Black versus those of other races are fundamental to all analyses. The study will test the following hypotheses: 1) Measures of psychological distress in women who are pregnant will significantly differ from psychological distress in women who are not pregnant (Hypothesis 1); 2) Maternal psychological distress will vary by race, socioeconomic, and marital status (Hypothesis 2); and 3) Current psychological distress will be significantly related to previous pregnancy outcomes (Hypothesis 3).

CHAPTER 2:

LITERATURE REVIEW

Mental Health and Pregnancy

Pregnancy is a gendered experience (Umberson, 1996) and as such it can not be divorced from the general experiences of women. In many ways, the pregnant woman is objectified in much of the pregnancy literature. The woman either becomes defined by her internal organs (uterus) and physiological processes (labor) (Martin, 1997), or is minimized by the unbalanced emphasis on the infant's health (Goldenberg, 1998). In many cases the pregnancy becomes reified, serving as an entity in and of itself (Mirowsky, 1989). Much of the impetus for this study emanates from the research findings which describe poor pregnancy outcomes. However, the focus of this field of research would be strengthened by the re-conceptualization of pregnancy outcomes as measures more closely allied with the mother as opposed to her child, born or unborn. For example, concern for the woman's mental health and depressive symptoms (Kennerly, 1989; Aneshensel, 1981), issues of maternal self-esteem and self-illusion (Smith, 1997; Mamelle, 1989), or attention to the principal relationships of a woman who is pregnant (Henly, 1997; Tiedje, 1990; Aneshensel, 1991; Tietjen, 1985) are additional constructs which can be investigated as "pregnancy outcomes" and which portend

greater sociological relevance. The pregnancy experience as characterized by the above features, initiates the transition to parenthood and correlates not only to psychological distress in women but subsequently to the well-being of the infant and family (Lederman, 1998). This shift in focus to maternal psychological distress as the pregnancy outcome of interest frames the distinct contribution of this study in particular and of sociology in general to the current field of research. The investigation of psychological distress in women who are pregnant formulates a model which gives voice to the women as subjects *in* and not merely objects *of* the pregnancy.

The fact that pregnancy is such an expected and usually routine experience within the human experience may serve as both a benefit and a liability in its appeal as a research topic. Pregnancy has been problematized, medicalized, and even minimized as an investigative subject. The investigation of a specialized topic such as the one posed here, i.e., psychological distress in pregnant women, with particular emphasis on Black women, presents clear challenges in establishing a substantive research foundation. As a consequence, some of the literature cited throughout this chapter may be more dated than would otherwise be ideal. Nevertheless, this fact reiterates the need for additional study and highlights the timeliness of the topic.

Maternal Mental Health: The Stress and Social Support Connection

The dynamics of mental health and pregnancy have most commonly been investigated as studies of stress and social support, as investigations of pregnancy and depression along the pregnancy continuum, including antenatal and postnatal stages, or in ancillary matters such as maternal adjustment (Beck, 1999). This section will ensue with a summary of the stress and social support literature as applicable to pregnancy and conclude with a more specific critique of the pregnancy and depression literature.

Kitamura (1996) defines antenatal depression as "a type of depressive illness which appears through reaction to stressful situations, in this case pregnancy" (1996:737). Thus pregnancy is both stressful and a stressor. Within the stress and social support literature, particularly that which has addresses considerations of pregnancy, findings are either inconclusive or contradictory (Oakley, 1990; Norbeck, 1989a). The most widely accepted model of stress and social support presents social support as a buffer or mediator of stress (Cobb, 1990; Cohen, 1990). It is clear that stress and pregnancy have a relationship but contradictions in work which has attempted to clarify that relationship are obvious (Coyne, 1991; Crnic, 1983; Norbeck, 1989b). Within the biomedical literature various measures of stress and psychological distress, such as trait anxiety

are investigated as correlates to pregnancy outcome. However, these measures have shown no relationship to birth outcomes in some studies (Lobel, 1994) while other studies have demonstrated positive correlations to abnormal birth outcomes (Paarlberg, 1995; Cooper, 1996). Unfortunately, these findings are somewhat clouded by the inconsistent application and definition of measures, including the alternate use of trait anxiety as a measure of depression, as opposed to stress (Steer, 1992). Stress has been applied both as a measure of depressive symptomatology and as a cause of depression.

Life events are also applied as a common social measure of stress in the pregnancy literature (Sheehan, 1998; O'Hara, 1986; Ramsey, 1986). Summary findings on the affect of life events, in many cases show a positive association with low birth weight, pre-term delivery and gestational age (Lobel, 1994). Women face numerous stressors (e.g., structural, role-related, etc.) and the addition of role strain, another social construct of stress, which can be caused by pregnancy and motherhood may constitute an additional stressor in their life experience (Pritchard, 1994). For example, Brett et al. (1997) investigated occupation as a role strain, finding that Black women are at greater risk for job strain than White women. One might then extrapolate and conclude that pregnant African American women who hold high strain jobs face an even greater risk of

mental distress, a potential underlying cause of their disproportionate experience with poor pregnancy outcomes.

The distinctions by race are particularly important given that considerations of race in the sociological study of stress yield mixed results (Brown, 2000; Broman, 1995; Aneshensel, 1981; Dunston, 1990; Henly, 1997). Some studies reveal no racial differences in depression which results from stress and others demonstrate an attenuation of differences once race is controlled (Ulbrich, 1989). These broader trends of racial variation in stress among women are likely to be exacerbated by the inclusion of considerations of pregnancy status. Interestingly, the stress literature suggests that the role of social support as a mediator among pregnant women may vary by race (Lobel, 1994; Lobel, 1992; Bryce, 1988). Social support varies not only in importance but by source among racially and socially distinct populations (Sagrestano, 1999). The relationship between social support and psychological distress suggest the potential for similarly unique findings in psychological well-being among these diverse populations as well. In addition, the positive finding among these important variables in the sociology of mental health give rise to questions about the potential underlying effects at work in psychological distress among racially distinct women. The investigation of social correlates of psychological distress in the present study is likely to broaden the understanding

of other related concerns such as stress and social support. Moreover, because much of the work to date is inconclusive and small in scope, the establishment of empirical validation of current findings is a pressing research need.

Maternal Mental Health: The Connection to the Sociology of Mental Health

Little empirical work investigates the impact, causes, or consequences of depression in pregnant women, a point broadly acknowledged in the literature (DaCosta, 2000; Hobfoll, 1995; Séguin, 1999; Powell, 1992; Kitamura, 1996; Elliott, 1999; Zuckerman, 1989). Distinct from the clinical research on post-partum and perinatal depression, there presently exists only a small body of research which investigates psychological well-being during pregnancy. Significant contributions are found in the discipline of nursing, which has formulated studies germane to sociology such as pregnancy wantedness, maternal attachment and their roles on family and marital satisfaction (Beck, 1999; Hummer, 1995; Barber, 1999). Sociological work has most commonly concentrated on the experiences of adolescents (Turner, 2000; Turner, 1990) and historically viewed pregnancy a potential crises for both marriage and the family in general (Lips, 1985; Hobbs, 1976). Sociology has also been interested in pregnancy as the transition to parenthood, not purely in the pregnancy experience itself (Simon, 1999; Tietjen, 1985).

Regardless of the theoretical or disciplinary bent, few of the current investigations in this area have looked broadly at social antecedents to psychological distress during pregnancy. Still fewer are represented in the body of work which investigates psychological distress among women of color throughout the duration of their pregnancy. This study purposefully employs the concept of psychological distress as opposed to clinical depression, a decision which presents challenges in applying the current pregnancy and mental health literature. While there are studies of pregnancy and emotional or psychological well-being which can be found (Dragonas, 1997; Thorpe, 1992), most are focused on clinical diagnoses of mental health conditions (Aderibigbe, 1993; Gotlib, 1989; Hedegaard, 1993; Kumar, 1984). Furthermore, many of the studies use diagnostic tools for the measurement of mental state instead of the broader screening tool used in this study. Despite the fact that only 10% of pregnant women in the United States will meet diagnostic criteria for major depression, the preponderance of the literature speaks in terms of diagnosable clinical conditions (Weissman, 1995). Pregnancy studies have found higher rates of clinical depression. DaCosta et al. (2000) found that 25% of their sample experienced clinical depression, however, the depression typically resolved after the delivery.

The transitional nature of pregnancy has long gone uncontested from both a role and a status perspective (Lips, 1985; Hobbs, 1976) and an application of a broader mental health measure, i.e. psychological distress as opposed to clinical depression, suggests that thirty to 38% of pregnant women experience some level of depressive symptoms (Zuckerman, 1989) during this transitional experience. The use of the broader measure of psychological distress facilitates the evaluation of a greater number of women, all of whom are sure to have some emotional and social response to the pregnancy experience. Even clinical researchers have suggested that limiting one's focus to clinically defined post-partum depression in women increases the risk of underestimating the psychological distress associated with this phase of life (Raskin, 1990).

The commitment to a sociological orientation in the construct of psychological distress requires the consideration of other related areas of investigation within the field of sociology. One such relevant body of work is the sociology of stress and mental health. Investigations of stress, as a nondiagnostic construct, inform this study; however, its omission of comprehensive considerations of race is especially problematic for the present study. Considerations of both race and socioeconomic status (SES) could further inform the contextualization of both stress and mental health and provide relevance to the study of

mental health during pregnancy. For example, it is generally accepted that race and SES affect stress and consequently, psychological well-being. For low income women, the experience of poverty induced stressors have been shown to be stronger predictors of depression than acute stressors (Séguin, 1999). Ulbrich's (1989) finding that SES interacts with race to increase the symptoms of distress, demonstrates the contextual influences at work and holds intriguing relevance to the stress and pregnancy research.

The deficiencies in the literature are a telling assessment of the current state of work on social factors and pregnancy outcomes, and they suggest future directions for research. While many disciplines hold a vested interest in this field, including psychology, anthropology, epidemiology and others, there is indeed a great need for the renewed contributions of sociology to this critical area of study. Much of the research on pregnancy outcomes uses approaches which emphasize interpretation at the individual level, the very essence of the biomedical approach, and neglect the structural and collective influences which frame even micro-level phenomenon. In addition, the simplistic assembling of social variables found in most of the work on social factors, does not equate to sociological scrutiny. Sociological stress research looks at how the organization of people's lives can be disrupted in the stress process. Pregnancy as a stressor is experienced differently and may

be predictably influenced by issues of social stratification and social domains (Pearlin, 1989). Collins (1993) sums up the current state of affairs cogently and succinctly:

"Pregnancy is not uniformly stressful for all women" (1993:1245). Attention must be focused on identifying those at risk for stress or for the purposes of the present study, psychological distress, and understanding what differentials exist and why.

Role strain theory defines role strain as those stressors that arise within the context of institutionalized social roles (Aneshensel, 1999). This study endeavors to describe and analyze the general mental health of pregnant women in light of the socially defined roles they hold and the societal stratifications which categorize their experiences. The social circumstances in which events occur or in which strains persist constitute the social context and ultimately shape the personal meaning and emotional significance of the stressors (Simon, 1999). Women frequently find themselves in multiple roles, including those defined by marital status, parental status, and employment status (Tiedje, 1990). The literature suggests that women who experience depressive symptoms are likely to be managing a number of stressors in their lives (Warren, 1997; Neumann, 1986; Weissman, 1977). Sociological findings in these areas hold important implications for pregnancy outcomes and serve as key considerations for this work.

Maternal Mental Health: The Applicability of Depression in Pregnancy Investigations

The average age of diagnosis of clinical depression in women ranges from 20 to 30 years of age, a span which parallels the years of child-bearing age for women (Zuckerman, 1989). Many of the symptoms associated with depression, such as fatigue and loss of appetite, are also common symptoms of the first trimester of pregnancy (Orr, 1995). Thus, causal relationships between pregnancy and mental health may become clouded. Although this study avoids the application of diagnostic indices of psychological distress, the independent variable is measured with a construct which has been strongly correlated to clinical depression (Radloff, 1977). Thus, the literature which describes those pregnancy experiences which are characterized by depression and depressive episodes are important to note.

Despite the potential overlap in measuring the outcomes of pregnancy related symptoms and depressive symptoms, the potentially negative role of depression in pregnant women (Zuckerman, 1989) and the growing evidence for the association of depressive symptoms with pregnancy outcomes (Dunkel-Schetter, 1998; Steer, 1992; Orr, 1995; Orr, 1989; Levin, 1988) necessitate continued investigation in this area. Depression and pregnancy studies often present

findings which are ambiguous, and some studies have failed to find an association between depression and pregnancy (DaCosta, 2000), while others present evidence for positive associations or still, varied associations among different groups of women (Gotlib, 1989). The need for further study is clear.

As with the other work reviewed to this point, the studies of pregnancy and depression form a helpful yet enigmatic body of literature when applied to this study. Notwithstanding studies of post-partum depression, studies which have investigated depression and psychological distress during the pregnancy experience are in the minority and many suffer from methodological and theoretical challenges. More commonly, the work on depression and pregnancy defines the pregnancy experience broadly and beyond the date of delivery. Thus post-partum considerations often cloud the examination of pregnancy experience itself on the mother (Hobfoll, 1995; Gotlib, 1989; Steinberg, 1999). Even investigators of post-partum depression acknowledge the need to expand the investigation of many of the questions raised by post-partum depression to the perinatal time frame, including the pregnancy itself (Powell, 1992). Interestingly, depression during pregnancy is often used as a control variable or as a predictor of post-partum depression (Aberibigbe, 1993; DaCosta, 2000;

Pfost, 1990; Séguin, 1999). The preponderance of work views the continuum of pregnancy through the post-partum stage and fails to consider etiological causes of depression in pregnancy at the start of that continuum.

Only a few works were found which actually address studies of depression or psychological distress during the pregnancy (Kitamura, 1996; Thorpe, 1992). It is intriguing that both of these studies were completed in international contexts (Greece and Japan). Many others have investigated treatments of depression during pregnancy (Steinberg, 1999) but fail to investigate causes and correlates of depression. Nevertheless, much of the work on post-partum depression provides insight to potential mechanisms at work during the pregnancy. DaCosta's work describes a unique model for the relationships between depression and pregnancy. Her work on post-partum depression suggests that biological factors provide a greater influence than psychosocial factors for maternal depression which begins following delivery. However, for post-partum depression which represents the continuation of maternal psychological distress initiated during the pregnancy, psychosocial factors are likely of greater importance than biological risk factors (DaCosta, 1999). Furthermore, while post-partum depression has held much of the attention of mental health researchers, there appear to be distinct correlates for depression during

pregnancy as compared to depression after delivery (Gotlib, 1989). Most frequently, psychological distress, particularly as measured by non-diagnostic means, during the pregnancy is precipitated by psychosocial factors (Aderibigbe, 1993; Gotlib, 1989).

Additional review of the literature endeavored to identify current investigations which focused solely on the mental health of pregnant women as measured within the duration of the pregnancy experience. Much of the work in this area has approached the depression question within the continuum of pregnancy, including antenatal, post natal, and perinatal experiences. Most frequently, the studies identified addressed the concerns of both prenatal and post-partum observations (Raskin, 1990; DaCosta, 2000; Hobfoll, 1995; Steinberg, 1999; Gotlib, 1989; Lips, 1985). As a matter of fact, much of the work on depression during pregnancy approaches the question primarily as it informs the post-partum experience (Elliott, 1996; Najman, 2000), a perspective which is different from the interests of this investigation. Exhaustive searches of both social and clinical data bases reiterate the dearth of work which investigates psychological distress exclusively within the time frame of the woman's pregnancy.

Upon review of the small contingent of work which investigates this mental health during pregnancy, one is

struck by the dependency of these studies on relatively dated work to validate their own studies. It is notable that even among the few studies completed in the 1990's, most rely on and cite investigations from the 1980's to frame the premise of their study (Stancil, 2000; Zachariah, 1996; Kitamura, 1996; Thorpe, 1992). Eighty-four percent of the articles cited in four of the primary works which investigate psychological distress during pregnancy were published before 1989, a trend which again underscores the need for more immediate work in this area. Furthermore, once identified, it was still a greater challenge to isolate studies with comparable design and purpose to ours. Many addressed very psychological questions (Zachariah, 1996) or focused on other 'social factors' such as social support, stress and coping (Thorpe, 1992) within the framework of the investigation. Nevertheless, several intriguing trends are noted in the literature.

Kitamura et al. (1996) and their study of depression in early pregnancy is perhaps the most methodologically consistent study identified. Unlike other works (Lips, 1985; Séguin, 1999), Kitamura's work more particularly specifies the experience of depression during pregnancy, suggesting that such symptoms occur within the first trimester. Kitamura, et al. are most interested in diagnostic phenomenon; however, their decision to utilize a

nondiagnostic measure in their study (Self-rating Depression Scale (SDS) bodes well for the present work. Kitamura (1996) found no significant difference in depression measured across educational level, age (at marriage), or income among the women with high or low SDS scores. The counterintuitive nature of this finding and its contradiction of the broader literature (Gotlib, 1985), bring into question the comparability of their sample. Despite their methodological rigor, social and cultural factors distinct to their sample of Japanese women, may be the source of this unexpected outcomes and as a result, minimizes it's applicability in an American sample.

Nonetheless, the positive correlations found in Kitamura's study are worth noting. Depression during the early stage of the pregnancy is associated with the first pregnancy and with there being no prior delivery (i.e., termination or miscarriage). In addition, it is related to low partner intimacy, being remarried, being younger, and with some measure of pregnancy wantedness. Finally, a higher proportion of cases (depressed women) had been working outside the home at the time of the questionnaire, but this was not a significant predictor of depression in this study.

Additional psychosocial factors have been shown to contribute to variations in the individual pregnancy

experiences of women (Thorpe, 1992). Thorpe et al. (1992) present what is ostensibly a study of stress (particularly of life events) and social support in pregnancy, and exclude considerations of depression. Notwithstanding, the Thorpe study contributes to the understanding of psychological well-being in pregnancy and relates to other investigations which have correlated depression in pregnancy with adverse life events (Aderibigbe, 1993). Kitamura's (1996) evidence that depression is predicted by having no prior deliveries also relates to the findings of Thorpe et al. (1992). Given the dearth of race based considerations in this field, the Thorpe study is also of importance in its contextualization of the experiences of pregnant women. The study compares the psychological status of Greek women to British women; a model which may provide insight into the experiences of Black and White women in America by reconceptualizing findings as representative of the experiences of majority versus minority populations.

Only 18% of the total sample investigated by Thorpe (1992) was represented among the highest depression scores, thus psychological distress in this population was relatively low. British pregnant women also had lower depression scores than the general population, reiterating the strength of their psychological well-being. However, marked differences were found between Greek and British

women. Clear associations between psychological well-being and life events were evident. No association was found between social support and psychological well-being in the Greek sample but there was a negative association between poor psychological well-being and social support in British sample. Differences by culture were seen between British and Greek women with social support more predictive in British women and life events more predictive for Greek women.

The absence of studies which exclusively investigated depressive symptoms during pregnancy, forced a closer scrutiny of the prenatal components of studies of depression along the pregnancy continuum as well as examining the prenatal considerations in studies focused on post-partum depression and distress. Most investigators expect that pregnancy will impact the emotional or psychological state in some way (Lips, 1985; Hobfoll, 1995; Gotlib, 1989). Explanations for psychological changes during pregnancy appear to be characterized by disciplinary inclinations and offer different rationale within varying disciplines (Lips, 1985). Substantiations of depression in pregnancy also appear to fluctuate with the timing of measurement during the pregnancy. Despite Kitamura's (1996) evidence of psychological distress during early pregnancy, most studies suggest a decline in depression over the course of the

pregnancy (Hobfoll, 1995). More recent measurements of psychological distress during the third trimester remained consistently above previously published estimates of depression during pregnancy, with upwards of 23% of women demonstrating some level of distress (Hobfoll, 1995). DaCosta (1995) provides intriguing and rich findings which demonstrate that 25% of women experienced depression during the pregnancy, a percent which declined after delivery. However, the study is comprised of mostly a White, well-educated sample of very small size (n=100). The validity of applying these findings to in a study such as ours which investigated race based differences, is questionable.

Lips (1985), however, found that types of emotional symptoms manifested during pregnancy were not consistent across the three stages of pregnancy measured during their investigation. Most variability was found in feelings measured early in the pregnancy which were related to physical factors (felt fat, felt overweight, felt sick, etc.). However, measurements later in the pregnancy and immediately post-partum, suggest women were more likely to express increased negative emotions. Lips (1985) summarizes her findings by stating that pregnancy is distinctly associated with the reporting of particular symptoms (albeit physical and not emotional symptoms). The generalizability of her findings beyond the middle class, White Canadian

population are questionably acknowledged by Lips and her call for further study in other populations and cultures is heeded in the present study.

Gotlib et al. (1985) found depressed pregnant women to be younger, less educated, and to have had more children than their non-depressed peers. However, other studies have demonstrated no relationship between age and education. Furthermore, ethnicity, family income, and employment were not significant predictors of psychological distress in the literature (Hobfoll, 1995; DaCosta, 2000). DaCosta (2000) also found no relationship between the number of children and depressive symptoms. Thus, the pattern of contradiction in the body of research persists and the need for additional work to elucidate the dynamics at work are a necessity.

The role of marital status is critically discussed in the work of Hobfoll (1995) who argues for more investigation of the effects of marital status in the context of pregnancy. Steinberg's (1999) study of clinical treatment issues in a sample of depressed pregnant women found that most women in his study were in stable relationships (married or remarried), calling into question the health benefits of marital status. In addition, Steinberg asserts that poverty, and not ethnicity, is the crucial factor in depression among pregnant women. In light of the scarcity of studies which consider race and ethnicity, this

investigator is critical of Steinberg's failure to substantiate his rationale of a declining significance of race. Allowing for the epidemiological trends of poor pregnancy outcomes after controlling for education and income, this researcher remains unconvinced by Steinberg's position.

In summary, the depression and pregnancy literature is a unique blend of varied methods, theories and disciplines. Its effective application to this study is challenged by several inherent characteristics. First, the measurement of mental state is diverse, ranging from self-administered tools to professional diagnostic interviews. Secondly, considerations of pregnancy across the continuum of pre-partum to post-partum complicate the applicability of findings. While numerous publications hold titles which encompass both pregnancy and after pregnancy orientations, it is clear that the most important perspective in most of the dually titled pieces is post-partum analyses. Finally, appallingly few works have incorporated considerations of race. Among those including ethnicity and culture, international samples were utilized (Greek, British, Japanese, and Canadian). Situating the present study within the broader infant mortality puzzle of the United States is an ultimate goal, thus the international perspectives of these parallel works may be a disadvantage.

The Intersection of Mental Health, Pregnancy and Race

The intersection of mental health, pregnancy, and race culminates at a point which endeavors to integrate two rather incongruent findings. Intriguingly, the relationship between race and pregnancy is the inverse of the relationship between race and mental health. Seminal epidemiological studies suggest that race serves as a protective factor against depression, i.e., African American populations had better mental health in many measures of psychological well-being than their White peers (Robins, 1991; Sullivan, 1998). Sociological work has also documented that unlike trends found among other measures of morbidity and mortality (Villarosa, 1994; Pappas, 1993; Goldberg, 1992; Williams, 1992a; Cowie, 1992), no excess prevalence of depressive disorders exists among communities of color (Takeuchi, 1998; Somervell, 1989).

Despite its favorable contribution to mental health, being Black remains a liability in pregnancy outcomes (David, 1991; Rowley, 1993). The present study strives to merge considerations of mental health and pregnancy in light of their contradictory relationships to race, a challenge infrequently undertaken in the current literature. It is increasingly apparent that racial disparities in illness in general and in pregnancy outcomes in particular, will not be effectively mediated without evaluating fundamental features

of this intersection, namely, the underlying problems of status and social structure and their contributions to the health and illness experience. It is also this point of intersection which characterizes the contextual nature of sociological work on this subject. The theoretical intersection of race, mental health and pregnancy will be initially addressed before moving to an elucidation of the domain of context.

A complementary body of work on race and health, based in the social sciences, endeavors to move beyond the biological and slightly eugenical orientation of clinical research and holds great promise for enhancing understanding and expanding the perspective in the health care disparity discourse (Williams, 1996; Krieger, 1996; David, 1991; Broman, 1996). This shift receives support even among medical researchers (Fiscella, 1996). A Myrdalian dilemma plagues the African American pursuit of health, happiness and the American dream as evidenced by the morbidity and mortality rates of that community. Race again becomes a "moral problem" representing the inequities in outcome and opportunity for good health and well-being among Blacks in America as distinct from those of White Americans (Myrdal, 1944). These inequities beg for constant vigilance. "Health research that will advance an understanding of the role of race as a social category must seek to identify the

ways in which economic, ideological, political, and cultural forces as well as racial discrimination, shape the daily experiences of people in ways that promote illness or hinder wellness" (Jackson, 1996:132). The present study investigates the question of maternal psychological distress in light of this charge, endeavoring to present analyses which have been interpreted from a sociological orientation and which applies an understanding of the dynamics of numerous social forces.

There is little research which empirically investigates the social production of health and illness in general and even less which investigates the social etiology of pregnancy related conditions and diseases. Epidemiologic work on infant health has documented the increased risk of pre-term delivery and low birth weight among women of color (Carmichael, 1998; Hogue, 1993). However, the broader literature has tended to extrapolate findings from other general studies often applying many conclusions to pregnancy erroneously. It is presumed that if Black, Latina, and poor women are generally at-risk for poor health outcomes, then they, in all likelihood will also be at risk for poor pregnancy outcomes. These conclusions are made in spite of the dearth of definitive studies which have investigated the pregnancy experience of women in general, and African American women in particular.

Unfortunately the current body of literature most commonly utilizes race and class as control variables, rather than as definitive or predictive of pregnancy experience findings. Little attention is directed at interpreting the meaning of race and social class in pregnancy, notwithstanding the efforts of numerous authors to describe study populations ethnically, racially, and economically (Lobel, 1994). One of the few documented associations is one of increased depressive symptoms correlating to increased pre-term delivery and negative health behaviors among African American and Latina women (Hoffman, 1996; Orr, 1995; Orr, 1989). A second finding which holds relevance for women of color suggests that social support benefits appear to more readily accrue to women who are *not* categorized as high risk by obstetric criteria (Hoffman, 1996). Ironically, Black women are more frequently categorized as "high risk" and would by this finding, appear less likely to benefit from social support, a conclusion again, contradicted in other work. Additional studies which attempt to extend the discourse by focusing exclusively on the relationship between maternal psychological distress and pregnancy outcomes suggest that psychological distress is deleterious to pregnancy outcomes for African American women only and not for White women (Orr, 1995). A thorough analysis of the underlying

mechanisms of action in the experiences of African American women if done well, further enhances the understanding of the pregnancy experiences of all populations and will facilitate more completely appreciation of the macro- and micro-level consequences for pregnant women.

The current literature is also void of a recognition of the breadth and scope of social factors, and little work has clarified the relationships between social factors and general health or the variations in relationships among racial and ethnic populations. While it appears that Black women may be affected by different factors than White women (Hoffman, 1996), the scope of that variability is unclear. For example, the Black-White gap is smallest for Black women who did not complete high school and greatest for Black women with college degrees (Krieger, 1993), another counter-intuitive finding given the socioeconomic paradigms which are commonly presented as explanatory factors (Syme, 1998). The complicated nature of the relationships at work are illustrated by such paradoxical findings.

Dr. Diane Rowley, in her opening remarks at the Centers for Disease Control benchmark conference, "The Social Context of Pregnancy among African American Women" (Atlanta, GA, February 18-19, 1999) encouraged the group of invited scholars to search not only for the causes, but for the "causes of causes" of poor pregnancy outcomes. Whether

social factors have a direct effect (cause) or indirect effect (cause of causes) on health outcomes, her insistence that this predominately biomedical audience begin to consider the role of social factors is monumental. The lived experiences of many women, in concert with a expanding body of literature, suggest that not only may social factors be causes of causes, they may indeed be direct causes themselves in this bewildering trend.

Much attention has recently been directed toward the controversy over the use of race in medical and other research (Bhopal, 1998; Fullilove, 1998; Krieger, 1999). Pregnancy, as a condition plagued by race-based inequities and racially disproportionate trends, presents an important circumstance in which to consider the role of racism as well as gender discrimination. Williams (1993) describes race as a "societally constructed taxonomy that reflects the intersection of biology, culture, socio-economic, political, and legal determinants as well as racism (Williams, 1993:10). Racism and discrimination become the reasons why different groups of shared race or ethnicity may be more closely identified with certain risk factors and poor outcomes. This orientation shifts racism and discrimination into an explanatory model and away from a causal model. It also elevates the discourse above the traditional orientation of investigating racial differences in disease

or the social patterning of disease by race (Krieger, 1993). While beyond the scope of this study, a commitment to the study of race as racism will also continue to battle the residual beliefs of genetic inferiority that persist in the interpretations of disparate health outcomes (LaVeist, 1996).

Nevertheless, considerations of racism and discrimination are critical in the comprehension of dynamics at the intersection of mental health, pregnancy and race. Investigations of the relationship between racism and health are particularly germane to understanding the disproportionate number of negative pregnancy outcomes in women of color (Williams, 1996; David, 1991; Murrell, 1996a; Krieger, 1996). Landrine et al. (1995) found that the relationship between sexist discrimination and symptoms was contingent upon the age and ethnicity of the woman. Black women experienced higher levels of sexism in close relationships (Landrine, 1995) which has implications for another finding: the greater susceptibility of Black women to negative life events among members of their immediate support network (Krieger, 1993). There is little empirical validation of the stress experiences of Black women to date (Dunston, 1990) and the need for further work in this population is apparent.

Additional support for study in this area arises from the work of Murrell et al. (1996b). Her qualitative study of childbearing women identifies two relevant issues: 1) the pervasiveness of the stereotypes of pregnant African American women; and 2) the totality of the experience of racism (Murrell, 1996b). Furthermore, Thompson's (1996) work finds that those who perceive of experiences of racism are more susceptible to measurable psychological distress. Considering findings such as these is important in the interpretation of any study of mental health and pregnancy, especially those such as my own, which strive to understand the particular experiences of women of color.

Within the bounds of race and pregnancy, the role of discrimination in pregnancy outcome has received even less attention to date. One of the first, if not the only published study of discrimination and pregnancy outcome concludes that maternal perception of exposure to discrimination during pregnancy may be associated with low birth weight in their infants (Collins, 2000). This study is an important start; however its involvement of only 94 women, and its exclusive concentration on low-income women in Chicago, limit its strength. The use of low-income, urban populations (Orr, 1995; Collins, 2000) has predominated the literature, and still few have presented meaningful conceptual models which inform the experiences of

African American women who are pregnant. This is a critical oversight in light of the afore-mentioned disproportionate representation of women of color in the pregnancy morbidity and mortality statistics.

Interestingly, Orr and James (1984) found that two measures on the CES-D scale tended to have more extreme measurements. The measures in questions were, "Do you feel you are just as good as other people" and "Do you have hope for the future." While these researchers did no analysis of responses to these questions by race, these measures may be applicable proxies to common measures of discrimination (Krieger, 1990). Because this atypical application of the CES-D tool has not been validated in the literature, this technique will not be applied in the present study. However, their intriguing suggestion, that women of different races may hold concerns about different issues, is an important consideration. Furthermore, Lips (1985) found that the emotional dynamics of pregnancy tend to be represented by more individual measurements. Thus, common responses to questions such as those mentioned may indicate a shared experience which defines both the pregnancy and the mental health status of these women. Depression may serve as a risk marker of pregnancy outcomes as opposed to a risk factor, and these relationships may be more salient among specific groups of women, e.g., African American women.

The failure of the pregnancy and mental health work, especially the stress and pregnancy research, to consider issues of race is indefensible. Race is addressed demographically and descriptively, however, few investigators have addressed race analytically in their work. "There are few studies in which instruments are used in ethnic, cultural, or age groups dissimilar from those in which the instruments were originally developed" (Lobel, 1994:233). Similarly, the sociological work on stress and race is in need of further amplification. The opportunity to merge studies of race and psychological well-being in the context of pregnancy holds great promise for both bodies of literature.

The Issue of Context

In addition to the conceptual contributions of the sociology of race and the sociology of mental health, the sociological elucidation of issues of context serves to enrich the growing body of pregnancy research. The National Institutes of Mental Health (NIMH) through its Behavior Science Workgroup of the National Advisory Mental Health Council (1999) lists "understanding how social or other environmental contexts influence etiology and prevention of mental illness" as one of its three priority behavioral research areas. For the purposes of this study, the contextual and conceptual interpretations are not to be

confused with environmental assessments or even evaluations of community level measurements, as is aptly done in considerations of social capital and health (Lomas, 1998; Kawachi, 1997). Rather, social context analysis addresses 1) social stratifications, including those contained within status, 2) social institutions, including associated roles, and interpersonal relationships, especially those which evolve from roles and institutions (Pearlin, 1989).

Most contextual studies have only addressed structural aspects of context, neglecting the sociocultural aspects (Simon, 1999). A thorough sociological assessment of context is not simply, the macro- versus the micro-, but instead speaks to the interrelationship and overlap of variables and the creation of new domains of influence within the lives of these women.

Context is defined as those social circumstances in which events occur (Simon, 1999). Sociologists Upchurch and Aneshensel (1999) more succinctly describe context as the social conditions that covary within structural attributes. This is not to suggest that context evolves only around acute episodes, but rather, it includes multiple aspects of life's experiences. While it is clear that contexts are composed of the settings of one's lives, sociologists must at all costs, avoid the temptation for narrow orientations which interpret context only at the environmental level.

Race frequently characterizes context and thus shapes personal and social meaning. Context moderates, or exacerbates, the impact of life experiences, a point demonstrated in considerations of race as context. This framework, thus challenges one to look beyond race as the cause of illness, but rather to view race as the medium which constructs illness. The context of race represents a social location, as opposed to a structural location.

Aneshensel further argues that "social arrangements and processes are fundamental to understanding the causes of mental illness and its consequences" (1999:4). Social context (Thorpe, 1992) has been implicated in explanations of emotional difficulties and individual differences in emotional reactions to pregnancy. Mothers' attitudes toward pregnancy and motivations for becoming pregnant have also been shown to relate to psychological well-being during pregnancy and may very well be socially determined. Social context of pregnancy determines whether motherhood is viewed as a loss or gain, a positive or negative event (e.g., the view of pregnancy as a hindrance to productive social/economic contributions to society and other cases where relatively low value is accorded pregnancy in many modern western societies).

Contextual factors have included frameworks such as marital status and socioeconomic status (Sagrestano, 1999)

and will be applied similarly in the present study. Each level of progressive adjustment in this study controls for a contextual variable in association with a demographic characteristic (e.g., income and education paired to equate to socioeconomic status (SES) and the pairing of marital status with age). Sagrestano (1999) calls for the inclusion of more contextually relevant demographic factors in the study of psychosocial factors and birth outcomes.

The literature has failed to clearly investigate the contextual influence of the woman's environment. Identifying those potentially influential social factors which define the context for pregnancy is critical since stressors within the woman's social environment are likely to increase depression, (Zuckerman, 1989). Much of the previous work has included only married women, neglecting the important contribution of the experiences of single, and perhaps unemployed or under-employed women who are pregnant (Sanderson, 1991). Furthermore, pregnancy itself may not categorically influence the mental health state of women but rather may have varying influence over the duration of the pregnancy. For example, relationships between depression and pregnancy outcome have been identified for some stages of pregnancy and not for others (Raskin, 1990; Orr, 1995; O'Hara, 1984; Hedegaard, 1993). The critical time of

pregnancy has most consistently been reported as increasing toward the end of pregnancy (O'Hara, 1984; Hedegaard, 1993).

In addition, external variables appear to have varying influences at different stages of the pregnancy (Lips, 1985). The relationship between maternal stress and pregnancy outcomes has differed when stress exposure occurred late in pregnancy as opposed to earlier exposures (Hedegaard, 1993). Still other researchers speak to the evidence that women with high stress before they conceive tend to be at greater risk for poor outcomes (Collins, 1993). Researchers are cautioned against erroneously attributing changes in maternal psychological measures to the woman's pregnancy without critically considering other environmental and social factors which may play a greater role in maternal depression and psychological distress (Lips, 1985).

Sociologist Ann Oakley has long argued for the consideration of socio-structural and contextual influences on pregnancy (Oakley, 1980). The strength of the context model is found in its representation of the subtleties. Context allows the inclusion of phenomenon like racism and discrimination (as opposed to 'race'), it identifies poverty, wealth, and status (as opposed to more traditional measures of SES), it validates role socialization (as opposed to gender and age). Context sees the insidiousness

of identity within ethnicity, of inequality within class, and of oppression within nation. It is this integrated nature of context which yields its greatest strengths. The present study demonstrates somewhat of a methodological bridge. Limited by constraints of secondary data analysis, traditional measures are used in this investigation, however, the sociological imagination and contextual interpretation of findings promote its contribution to this broader discourse. Thus, the on-going deliberation of issues of context are not only theoretically warranted, but are encouraged by numerous research and public policy domains, including those suggested by the NIMH.

CHAPTER 3:

METHODOLOGY

The National Maternal Infant Health Survey

The present study utilizes data from the National Maternal and Infant Health Survey (NMIHS) conducted by the National Center for Health Statistics (Sanderson, 1998). The NMIHS, a nationally representative study, was conducted to investigate factors related to poor pregnancy outcome and holds a wealth of supplementary data which have yet to be analyzed. Given the breadth and magnitude of this federal survey, the present study is one of a surprisingly few which have utilized this rich data set (Covington, 1993; Deal, 1998; Kost, 1995; Visness, 1995; Yu, 1996; Lindberg, 1997; Kogan, 1994). The publication topics range from breast-feeding to maternal employment to prenatal care, thus the present study further expands the utility of this broad national study beyond its initial stated goals.

The final report for this federal survey and additional published reports of the study design and methods serve as the primary source of information about the research methods and design employed for this data source (Sanderson, 1998; Sanderson, 1991). The NMIHS is a collaborative initiative of sixteen federal agencies including the Office of Minority Health and the National Institutes of Mental Health.

Numerous other professional organizations reviewed and participated in the development of the survey. The NMIHS consists of a two-wave longitudinal survey of 21,000 women; 11,000 who experienced live births, 4,000 who experienced fetal deaths and 6,000 who experienced infant deaths. In addition, the health care providers and health institutions which delivered care to these women were also surveyed. Data were initially collected through four sources; maternal self-administered surveys, vital records reviews, hospital questionnaires, and prenatal care provider questionnaires. Information from these sources was then linked to vital records, resulting in an extensive and comprehensive source of data on maternal and infant health. Birth and death certificates from the specified time period in 1988 serve as the initial source of identifying cases. These data were then linked to other vital records, including hospital records. The combination of vital records analysis with separate questionnaires of women and their health care providers make this one of the more exhaustive sources of information on maternal and infant health to date.

The NMIHS is the recent most iteration in a series of previous surveys conducted by the federal government which addressed issues of natality, infant mortality and maternal health. The NMIHS is unique, however, from its predecessors in two important characteristics which are instrumental for

the interests of the present study: 1) unmarried women were included (prior investigations were of married women only); 2) Black infants were over-sampled for all components of the survey, an important feature because Black infants have rates of infant mortality twice that of Whites. The first wave of the survey was completed in 1988. A longitudinal follow-up of mothers initially surveyed occurred in 1991.

The 1988 survey was implemented within stratified random samples from the 1988 vital records of 48 states, the District of Columbia and New York City. The systematic samples were obtained from a sampling frame of 3,898,922 live births, 38,917 fetal death, and 15,259 infant deaths; resulting in questionnaires mailed to 13,417 mothers of live births, 4773 mothers who had late fetal deaths, and 8166 mothers who had infant deaths. Fetal deaths are defined as those occurring at 28 weeks gestation or more. Data were weighted to represent national counts as well as to account for non-response and post-stratification adjustments of particular characteristics. Response rates varied by birth category and included rates of 74.2% for the live birth category, 69.3% for the fetal death category, and 65.3% of the infant death. Sanderson et al. (1998) report that mothers were more likely to respond if they were 20-39 years of age, were White, were married, had fewer children, and had more years of education.

The NMIHS was carried out between January, 1989 and August, 1990 and assessed 1988 pregnancy experiences. The 1988 baseline survey alone serves as the source of data analyzed for the present study. The mean interval between delivery and interview was 16 to 19 months, depending upon birth category, with the infant death component having the longest interval and fetal death having the shortest interval. Questionnaires were mailed as soon as possible after the vital event in order to minimize recall problems (Sanderson, 1998). Most measures are worded to account for a retrospective assessment of experiences occurring immediately before and within 12 months prior to the delivery.

A 35-page self-administered questionnaire was mailed to selected mothers over the age of 15 years (with the exception of the infant death component which also included women under 15 years of age). In addition to the survey, mothers received information brochures, prepaid return envelopes. Mothers were also offered various participation incentives. Follow-up to non-respondents included mailing a second questionnaire, post-card reminders and telephone or personal interviews. The NMIHS interviews were completed by trained U.S. Bureau of the Census interviewers under contract with the National Center for Health Statistics, who then scheduled a phone or personal interview. The content

of the maternal survey was extensive and addressed prenatal care and health behaviors, hospitalization and delivery experiences, pregnancy history and experiences, maternal and paternal characteristics, family income and the babies health. As mentioned, this extensive survey is unique in its inclusion of unmarried mothers and also distinct in its attention collecting information specific to the father of the infant.

The Present Study: Pregnancy and Psychological Distress

The present study is driven by an interest in investigating the disparate experiences of two categories of women: 1) those who are defined by current pregnancy status; and 2) those who are defined by race, with specific attention on the experiences of African American women. This study is further driven by the investigation of a very fundamental question: What is the psychological well-being of these women and how do these above mentioned defining characteristics, as well as additional social factors, influence their psychological well-being? The National Maternal Infant Health Survey, while initially conceived for other purposes, serves as a rich source of data aptly related to the particular questions which are raised in my investigation.

Because vital records were used to identify the original sampling frame for the NMIHS, the present study may

more precisely be described as a study of births (MMWR, 1995) and then extrapolated more specifically to a study of mothers, as opposed to women in general. The maternal questionnaire for the NMIHS was an extensive survey covering a number of topics including the health of the mother and infant. The present study exclusively uses information obtained from the maternal self-administered survey and focuses only upon questions specific to the mother's characteristics and experiences for analysis. Data from the provider and hospital components of the source study are omitted. As an investigation of maternal psychological distress during pregnancy, the present study utilizes a subsample of participants in the NMIHS. The following foundational questions guided case identification: 1) A specific interest in comparing the experiences of women who are and are not pregnant, thus cases from the NMIHS who failed to respond to the question which measured current pregnancy status were deleted; and 2) A particular interest in the experiences of women who are beyond adolescence. Disparate pregnancies outcomes between Black and White women are not limited to adolescents. On the contrary, this disparity persists even among college educated women (Schoendorf, 1992). It is the experience of these women which frame the interests of this researcher and as such, are addressed in the present study. Furthermore,

the pregnancy experiences of African American adolescents is more extensively addressed in the literature (Henly, 1997; Turner, 2000; Jacobs, 1994; Steer, 1990), thus attention to other components of the population of pregnant women will enrich the current literature base.

The NMIHS uses a prospective study design, comprised of two waves of data collection; however, the survey questions collect information on a past event. The present study utilizes a retrospective design and links a present phenomenon (psychological distress) to other events occurring prior to the development of this outcome of interest. The dependent variable for the present study, as measured by CES-D, asks about emotional experiences within the past week, emphasizing the currency of the measure. While CES-D is a current measure, the independent variables are comprised of both retrospective and current measures. The survey directly assesses the pregnancy experiences of women in relation to an immediate past pregnancy, thus, many questions use the suffix "in the 12 months prior to your delivery." However, because the dependent variable measures the mental health state of women who happen to be pregnant (again) the currency to the primary measure of interest in the present study is maintained.

A study such as this would certainly have been enriched by taking advantage of the longitudinal nature of the source

study. However, the demographic distributions of the source study and the particular research questions of interest preclude this choice. As is expected in any longitudinal study design, there are notable losses to follow-up between the first and second waves of the NMIHS, with respondents decreasing from over 27,000 to just under 10,000 in the second wave. Despite the loss of cases, the demographic distribution of remaining cases is relatively consistent with those from Wave I. Respondents to Wave II had a mean age of 25.7 years had an average years of completion of school of 12.6 years, both measures which are consistent with Wave I. In addition, the Wave II respondents had a slightly higher household income \$2000 above the mean in Wave 1, 58% were married and 48.5% were African American.

The loss in absolute numbers of participants from Wave I to Wave II poses no particular difficulty for the present exploratory study. However, additional loss in sample size is experienced when evaluating the cases as related to the particular research interest in pregnancy and race. The number of women who are currently pregnant at the time of the survey is much smaller in the longitudinal follow-up data from 1991 (n=722). In addition, the African American respondents who are pregnant becomes even more smaller, with only 358 cases identified who meet those two criteria. This decrease in numbers not only prevents the effective

utilization of a prospective panel study design, but it also reverses the initial preference to use the more recent data from 1991 for the present study. In order to preserve as large a sample as possible, the 1988 component of the NMIHS was used. Thus, the larger number of pregnant respondents and their racial distributions, in the 1988 as compared to the 1991 follow-up survey provide the primary motivation in the decision to use only 1988 responses.

Sample

As mentioned, the NMIHS collected random samples and over-sampled for Blacks in all components of the study (Sanderson, 1991). The sub-sample obtained for this investigation retains the representativeness of the source study. Approximately seventy-five percent (75.3%) of the participants in the source NMIHS did not respond to the question which measured current pregnancy status, leaving 6432 cases available for the present study. Specifically, women were asked "are you pregnant now" and given the response categories of 1) Yes, 2) No, 3) Not sure. Many of the reference studies reviewed for this present work use an age range of 19-41 for adult studies (Hobfoll, 1995). An additional 12% of the sample were either younger than 19 years of age or older than 43 years of age, again limiting the sample by age and further decreasing the number of cases used in the present study. In the present study, the

percent contributed by respondents aged 42 and 43 was negligible (.00%) and in the interest of preserving sample size, these respondents were included in the study sample. Thus, the 5400 women between the ages of 19 and 43 years who responded to the survey question which assessed their pregnancy status during the time of the 1988 baseline survey of the NMIHS comprise the total sample for the present study. Selecting for cases which had no missing data for the CES-D measure, resulted in a final sample size of 5281 which was then used in the analyses of the present study.

The strength of this investigation emerges from the nature of the data itself. The current literature is plagued by studies which utilize small, geographically isolated samples; primarily urban, young, and poor. Demographic characteristics and distributions of the respondents to the pregnancy question were very consistent with the source study (see Table 1). Respondents were slightly more educated and appear more likely to have experienced a poor pregnancy outcomes (fetal or infant death) in their prior pregnancy than the total participants in the NMIHS. A small percent of African American women were lost in the sub-sample, however the numbers of women of color remained robust. Women sampled for the current study were also less likely to be married than women in the NMIHS, a point which strengthens the current analysis given the

Table 1.

Sample Demographics Comparison.

DESCRIPTIVES	NMIHS	CANADY STUDY
Race (%African American)	49%	43%
Age	25.6 years	25.9 years
Pregnancy Hx (Live Births)	50.9%	34.0%
Maternal Education	12.9 years completed	13.7 years completed
Household Income	11.3 (\$14,000-15,999)	11.7 (\$14,000-15,999)
Never Married	34.0%	27.8%
Currently Married	56.1%	63.6%
CES-D (total score)	14.82	14.89
N	26355	5281

utilization of this measure as an independent variable. The strength of the present study is also enhanced by its large sample size and by the value accrued from its nationally representative sample source. Analysis of these data will contribute greatly to the current pregnancy literature as well as the sociology of mental health literature.

Women in the NMIHS study are differentiated by prior pregnancy outcome (live birth, fetal death and infant death). The present study retains respondents from all pregnancy categories, an important decision in the effort

to preserve the broad generalizability which results from this large, national sample. The inclusion of all pregnancy categories is conceptually justified by the findings of the work of Covington (1993) which utilized data from this federal study to evaluate perinatal loss experiences. While one might expect women in the perinatal loss group to disproportionately experience negative emotional responses, the qualitative analysis of respondent remarks by Covington (1993) found a broad range of both positive and negative emotional responses to pregnancy as well as to the survey experience among women who had fetal and infant deaths. The distribution of responses as described in Covington's results suggest that inclusion of these groups is unlikely to skew the responses in the total study sample. Further, the qualitative techniques employed by Covington are particularly well suited for assessment of this sensitive question among women experiencing perinatal loss, thus adding additional confidence in the decision to include this population in the study. In addition to increasing the sample size, inclusion of all pregnancy outcome groups facilitates retrospective analyses of social factors upon which pregnancy outcomes are stratified. Finally, it is worth noting that the present study is comprised of women who have had a prior pregnancy experience. Within the small body of work which has endeavored to identify social

correlates of psychological distress during pregnancy, is the intriguing finding that women expecting their first child are more susceptible to depression (Kitamura, 1996). Despite the lack of corroborating studies, the nature of the present study offers control for this possibly confounding characteristic.

Measures

The Dependent Variable for the present study is **Maternal Psychological Distress**. The dependent variable is measured using the Center for Epidemiological Studies - Depression Scale (CES-D), a validated scale which measures depressive symptoms (Radloff, 1977). Measured on an interval scale, the CES-D score is a composite measure obtained from the following questions:

"I'm now going to read some statements about the way people sometimes act and feel. Please tell me the number of days you felt or behaved this way during the past week, that is, since the last (Day of the Week),"

- 1) I was bothered by things that usually don't bother me.
- 2) I had crying spells.
- 3) I felt hopeful about the future.
- 4) I felt depressed.
- 5) I enjoyed life.
- 6) My sleep was restless.

- 7) I could not get going.
- 8) I felt lonely.
- 9) I felt sad.
- 10) I felt fearful.
- 11) I felt that everything I did was an effort.
- 12) I felt I could not shake off the blues, even with help from family or friends.
- 13) I talked less than usual.
- 14) People were unfriendly.
- 15) I did not feel like eating; my appetite was poor
- 16) I thought my life had been a failure.
- 17) I was happy.
- 18) I felt that people disliked me.
- 19) I felt I was just as good as other people.
- 20) I had trouble keeping my mind on what I was doing.

The response categories for this measure were: 1) Less than one day, 2) 1-2 days, 3) 3-4 days, and 4) 5-7 days. The summative variable is coded such that higher scores correlate to greater depressive symptomatology or psychological distress. Among the population of the present study, the use of the CES-D scale presents relatively consistent results as evidenced by an alpha reliability of .7971 for the 20 items (see Table 2).

This dependent variable measure serves as an assessment of psychological distress, speaking more broadly to the

Table 2.

Descriptives - Total Sample

Variable Name	Range	Mean	Std. Dev.
Maternal Education (years)	0-18	13.07	1.81
Household Income	1-20	11.71	5.53
Marital Status (1=Married)	0-1	.636	.481
Race (1=Black)	0-1	.430	.495
Pregnancy Status (1=Pregnant)	0-1	.412	.492
Maternal Age (years)	19-43	25.9	4.95
Prior Pregnancy (1=Live Birth)	0-1	.342	.474
CES-D (total score)*	0-60	14.89	12.47*

$\alpha = .7871$

psychological well-being of the women in this study. The term "depression" is used categorically and not clinically and is intended to refer more particularly to the depressive symptoms experienced by women during pregnancy. As a non-clinical study, use of the CES-D measure is particularly appropriate. It is not the goal of the present study to measure rates of clinical depression or depressive illness, and the avoidance of such misinterpretation of the findings of this investigation is a goal. Although particular scores on the CES-D tend to have a strong correlation to organic

mental illness (Radloff, 1977), diagnosis is not the intent of this study, rather it is the categorization of the emotional and psychological distress in the women under investigation. Thus, maternal psychological distress as measured using the CES-D in this study provides an assessment provides a broader, nondiagnostic characterization, with higher CES-D scores suggestive of greater depressive symptoms and psychological distress. Given the broader interpretation of mental health in the present study and its implementation as a self-administered survey, use of the CES-D scale is theoretically and methodologically justified (Radloff, 1977).

As a sociological work, the dependent variable of the present study is intentionally conceptualized generally as psychological distress. Epidemiological and medical research has focused on clinical diagnoses of mental illness, e.g., depression, dysthymia, or manic depression, while sociological work has addressed mental health more broadly as psychological distress, depressive symptoms, or stress. Numerous tools have been developed to measure mental illness and psychological distress, a point which complicates the comparison of studies in this field. Much of the reference data for the present study, including those from landmark mental health studies, apply clinical definitions of mental health measured by diagnostic tools.

The Composite International Diagnostic Interview (CIDI) used in the National Comorbidity Survey (Robins, 1988) and the Diagnostic Interview Schedule (DIS) used in the Epidemiological Catchment Area Survey (Reiger, 1984) both emphasize diagnostic measures of mental illness. Reviews of the pregnancy literature reveal works which have used the above tools, as well as the CES-D, a trend which again aggravates the ease of application and comparisons of findings across the literature. In addition, the predominant focus on clinical measures often omits women who experience negative symptoms below the diagnostic threshold, yet who still have their daily lives and relationships affected (Mirowsky, 1989). The literature recommends that studies utilizing non-diagnostic tools mediate any potential methodological problems by applying large sample sizes (DaCosta, 2000), a criterion which is met in this work.

An additional measurement concern raised in the literature addresses the appropriateness of symptomatic levels as defined in the standard applications of these mental health tools (Radloff, 1977) when applied in studies of pregnant women. Although most of this discourse takes place in relation to studies which have addressed diagnostic measures of mental illness, the concerns are worth considering here. In the present study, 39% of the

respondents fell at or above the total CES-D score of 16 which is suggestive of more serious psychological distress (Radloff, 1977). Given the similarity of symptoms between pregnancy and depression, many have raised the question of whether the standard case definition level should be adjusted up in pregnant women (Hobfoll, 1995). Hobfoll et al. (1995) raise valid conceptual rationalizations for adjusting the depressive cut-point in tools when used with samples of pregnant women, however only a few researchers implement their recommendation (Raskin, 1990; Orr, 1989). Others have considered the potentially confounding effects of pregnancy and depression, but chose not to amend their analysis beyond acknowledging this methodological concern (Zuckerman, 1989; Orr, 1995). In addition to adjusting the total CES-D score used during pregnancy, a second strategy for compensating for the overlap in pregnancy and depressive symptoms, e.g., loss of appetite and changes in sleep, is to use mean CES-D scores for analyses rather than focusing on the proportion of women above a certain score (Orr, 1995).

Closer review of the literature reveals that adjusting mental health measures appears most common in studies which used diagnostic tools (Hobfoll, 1995; DaCosta, 2000) whereas those using self-assessment measures such as CES-D tend to omit score adjustment in their efforts to control for confounding between pregnancy and depressive symptoms

(Raskin, 1990; Orr, 1989). In one study of note, utilization of the CES-D cut point of 16 was supplemented by additional analysis at a higher level and included a higher score of 30 (Benedict, 2000). This decision was based upon their interest to identify those more closely correlated with major depression, a clinical goal which is not shared in this present study. In addition, while there is a obvious sharing of symptoms during pregnancy with those characteristic of depression, the individual items of the CES-D scale do not strongly emphasize those shared symptoms. For example, of the 20 items, only four appear likely to represent symptom overlap (I had crying spells, My sleep was restless, I could not get going, and I did not feel like eating). Furthermore, these symptoms are also likely to vary depending upon the stage of gestation. One might also conclude from the literature that other factors, such as depressive state prior to conception, may be a greater factor in measuring maternal depression, than the overlap of classic depressive and pregnancy symptoms (Hobfoll, 1995; DaCosta, 2000; Steinberg, 1999).

This researcher is convinced that given the mixed findings in the literature on the question of CES-D adjustment when used in samples of pregnant women and in the absence of methodological works which have specifically addressed this question, the need for adjustment is not

justified in this sample and as such will not be applied in the present study. The CES-D measure and the data analysis technique chosen for the current study are broadly validated and exceptionally robust, thereby reinforcing the confidence in the decision to withhold adjustment of the CES-D scale for pregnant women in the present study. As such, the indicator level for psychological distress in will remain consistent with the recommendations of the developers of the tool (Radloff, 1977) and stand at scores of 16 or above. The sociology of mental health facilitates a more sensitive assessment of the circumstances of women's lives in an attempt to account for more of the variance in mental health seen between diverse groups of women. This conceptual goal remains valid despite methodological questions of interpretation in mental health measures within this population of pregnant women, further justifying this cut point decision.

Sociodemographic measures serve as the independent variables in the present study. The literature shows support for the contribution of various sociodemographic factors to the mental health and pregnancy experiences of women (DaCosta, 2000; Séguin, 1999; Dragonas, 1997; Avison, 1995).

The Independent Variables for the present study are **race, maternal education, household income, and marital**

status. Descriptive data on all variables considered are presented in **Race** frames one of the fundamental premises of the present study because of the persistent trend of disparate pregnancy outcomes which are most exaggerated for African American women. For the present study, race was dummy coded 1=Black and 0=all other races, emphasizing the focus on the experiences of African American women. The sample is relatively balanced in racial distribution, with 43% of the sample comprised of Black women. **Household income** and **maternal education** are used to assess socioeconomic status in the present study. As is the standard in the literature, total household income was used as the measure of income and ranged from less than \$1000 per year to more \$60000 per year. Twenty response categories were provided for household income in the source survey, with the first category representing income less than \$1000 and the last category representing income greater than \$60,000. Intermediate categories increased in \$1,000 increments for total incomes less than \$10,000, in \$2,000 increments for total incomes from \$10,000-\$20,000 and in increments of \$5,000 for total incomes above \$20,000. Interestingly and rather inconsistent with standard measurements of income within the literature, is the decision to specify total household income during the 12 months *before* delivery. It should be noted that for the

purposes of the present study, occupational prestige has been omitted from the assessment of socioeconomic status. Within the source data set (NMIHS), the coding for occupations utilized federal guidelines, however, the large number of varying categories, in addition to a large number of missing cases contribute, prompted the decision to exclude occupation in the assessment of socioeconomic status. The mean income for this sample was \$16,000 to \$17,999 with 49.3% of the sample falling above that threshold.

The fact that some of the women were currently pregnant was of little consequence or focus in the NMIHS purpose of assessing the experiences of the prior pregnancy. Nevertheless, the atypical definition of "12 months prior to delivery" is rather astute. The measure then provides insight to the context of the pregnancy, given that the measure then covers a time period which encompasses the gestational period. While women were asked to reflect on the context of their previous pregnancy, it is plausible that the experiences of the prior pregnancy, which took place from 16 to 19 months previously, may be duplicated during the current pregnancy. Women who were likely to work more or less, as a result of the needs predicated by pregnancy are likely to repeat similar behaviors during the current pregnancy.

Education is measured in years and ranges from no education or kindergarten only, to completion of some years of graduate school. Education was presented categorically. The original education variable was recoded into the following groups: 1) 0-8 years of school completed, 2) 9-11 years of school completed, 3) 12 years of school completed (presumed equivalency to high school diploma completion), 4) 13 to 15 years of school completed (presumed some college completed), 5) 16 years of school completed (presumed equivalency to bachelors degree), and 6) 17 to 18 years completed (presumed equivalency to some graduate school or graduate degree earned). This recoding is consistent with the source data with the exception of this investigator's decision to separate the category of graduate school from bachelor's degree completion. Because the literature suggests poor pregnancy outcomes persist among African American women (Schoendorf, 1992), despite educational attainment, the close evaluation of the influences of education at a variety of post-secondary levels of education seems instrumental. The study sample is comprised of a relatively educated group of women with 60% of participants having completed high school. The mean education level was represented by those having completed approximately half a year of education beyond high school completion.

Marital status is the third independent variable applied in the present study. Numerous studies of pregnancy have controlled for marital status or included only one marital category by virtue of the study design (Turner, 1990; Kitamura, 1999). This choice is questionable in light of two solidly established research bases; one that investigates the roles of health and marital status (Kitson, 1990; Goldman, 1993; Marks, 1996), and one that investigates social support and pregnancy outcome (Hoffman, 1996; Sagrestano, 1999; Collins, 1993). The existence of gender-based variability in marital status and health findings (Hemstrom, 1996; Bruce, 1992) as well as suggestions of race-based variability in pregnancy and social support findings, warrant further consideration of these factors as put forth in the present study. My study thus evaluates the likely contextual parameters defined by the presence or absence of a spouse and the subsequent psychologically mediated roles facilitated by them.

For the purposes of the present study, the marriage variable was created from two variables ("Are you married now?" and "Are you now or have you ever been married"). In the primary survey, participants were asked "Are you now or have you ever been married?" (with response options of yes or no). Respondents answering affirmatively to this question were then asked "What is your current marital

status" (with response options of married, widowed, divorced, and separated). Negative respondents to the "are you now or have you ever been married" comprise the never married category for purposes of the present study. A new variable was created which combined the five marital categories as obtained from these two variables. For regression analysis, the recoded variable was dummy coded, with 1=married and 0=not married (i.e., either widowed, separated, divorced or never married). 63.5% of the sample were married, a distribution which is somewhat unexpected given the nationally representative sample but suggesting that as evidenced by this sample, pregnancies still occur predominately within the confines of marriage. Of the married respondents 24.4% were Black.

Other important variables for the present study include **current pregnancy status, age, and prior pregnancy outcome.** A natural consequence of the time frame for implementing the NMIHS, following identification of the cases from vital records, and the large size of this national sample of women in child bearing years, is that a large percent of the women were again pregnant at the time of the study. As a result, while the primary purpose of the source study is the evaluation of a pregnancy which has been concluded, the size and scope of the initial investigation resulted in a cohort of pregnant women and thus lends itself aptly to the goals

of the present study. Forty-one percent (41%) of the study sample were pregnant at the time of the survey. The remaining respondents were either not pregnant or were unsure of their pregnancy status. As with race and marital status, the **current pregnancy status** variable is dummy coded, with 1=pregnant and 0=not pregnant. Of the respondents who were pregnant, 38.4% are African American (n=839), a racial distribution only slightly disproportionate to the racial representation of 43% African American in the total study population.

Age serves as a control variable for the present study, with women less than 19 years of age and older than 40 years of age excluded from this study. Adolescents or women who have delayed conception are often at high risk for poor pregnancy outcomes or for pre-existing clinical diagnoses (Hobfoll, 1995). Additional supporting research justifies the selection of this age range for studies of pregnancy in non-adolescent samples (DaCosta, 2000; Hobfoll, 1995). Age in the source survey was reported as "age at time of delivery" and as such is measured similarly in the present study. The prompt implementation time lines of the NMIHS survey, discussed previously, assure that this reported age lies within 12-15 months of the current age of respondents. The mean age in this sample was 25.9 years with a standard deviation of 4.95.

The inclusion of the measure **Prior Pregnancy Outcome** indirectly situates the present study within the body of work on psychological distress and pregnancy outcomes. Participants in the National Maternal Infant Health Survey are categorized by an event history which was obtained from the vital records which identified the cases and which describes the outcome of the index pregnancy as defined by the NMIHS. This index pregnancy for NMIHS serves as the pregnancy outcome measure and is defined as the outcome of the pregnancy immediately prior to the current pregnancy. Women were grouped into the following categories, based upon information from vital records: 1) Live birth, 2) Fetal Death, and 3) Infant Death. 34.2% of the sample were from the live birth category and 65.8% were either fetal or infant death cases. This variable was also dummy coded for regression analysis, with 1=live birth and 0=other pregnancy outcomes.

It should also be noted that while the original data set held a wealth of socially defined variables which could have been considered, there were additional methodological constraints, in addition to the previously mentioned conceptual rationale, which limited inclusion of potentially useful measures. Missing data is a problem which plagued the NMIHS in general and specifically many of the other social variables which may have been included and which

would have contributed greatly to framing the context of the women's lives. Missing data is a particularly critical issue in light of the utilization of multiple regression for data analysis in this study. For example, the following variables may have offered important insight but were not feasible for inclusion because of missing data: number of own children living with the mother (presently and during the index pregnancy), employment patterns (including were you employed 12 months before the delivery), and employment categories (professional, skills trades, etc).

Data Analysis Plan

The choice of data analysis used in the present study further defines its sociological orientation. Multiple regression is commonly applied in sociological research and is particularly appropriate for the analysis of associations between mental health measures and social circumstances (Mirowsky, 1999). Multiple regression serves as the analytical technique of choice in this study primarily because of the goal of estimating the effects of more than two independent variables in a causal model (McClendon, 1994). The utilization of this particularly robust technique, in combination with the strength of a nationally representative and large sample, heightens the credibility of these findings.

The statistical testing of research questions posed in the present study utilize three levels of analysis: First, descriptive analysis of fundamental relationships, using variable descriptives, correlations, and cross-tabulations of relationships between various independent variables. Preliminary analysis of zero-order correlations suggests high inter-variable correlation, another characteristic that supports the appropriateness of the use of multiple regression in this study. Hierarchical multiple regression analysis is performed to determine the role of the chosen predictors on maternal psychological distress. Secondly, multiple regression using progressive adjustment to test for possible mediators is applied. Given the methodological goal of predicting the level of a dependent variable, maternal psychological distress, from more than one independent variable, the choice of multiple regression is again validated. Lastly, multiple regression using interaction modeling to test for moderators of the relationships previously defined is used. Multiple regression facilitates the assessment of which variables predict psychological distress and how predictors relate to each other in precipitating various effects on psychological distress.

The initial testing of this model regresses psychological distress in three steps, beginning with the

variables which define the fundamental assumptions of the study. The first regression included only race and pregnancy status in testing their roles as predictors of psychological distress. The contribution of socioeconomic factors was evaluated in the next stage of the analysis through the addition of maternal education attainment and household income measures. Finally, the role of marital status was introduced into the model as the final social predictor of psychological distress. Following the assessment of direct effects facilitated by correlational and descriptive analyses, a closer investigation of inter-variable effects, using interaction modeling was applied. The scrutiny of findings from the more simple correlation analysis to the in-depth levels of regression analysis, including confirmatory sub-set analyses by race and pregnancy status, provide interesting statistical explanations for the theoretical relationships which are posed.

Considerations of Interaction Effects

It is theoretically plausible that any results obtained through the above processes may be the result of interaction effects between race and pregnancy or between other independent variables in the present study. An interaction is present when the effects of one independent variable on psychological distress, in this case, change at differing

levels of a second independent variable (Kerlinger, 1973; Keppel, 1991). In other words, interaction models specify those variables that regulate the size of an association (Mirowsky, 1999). Tests for interaction effects between race and pregnancy are used to confirm regression predictions.

The focus of the present study strives to further expand the understanding of other theoretically sound relationships which involve the primary independent variables of this study, race and pregnancy status. Interaction variables were defined based upon statistical and conceptual rationale. Thus, those relationships identified by strong zero-order correlations were viewed as viable candidates for interaction inquiry. However, from a more conceptual framework, Mirowsky (1999) explains that "a moderator could be completely uncorrelated with the hypothetical cause, yet determine the extent or direction of its effect on the hypothetical consequence" (1999:113). This is also the case among many of the relationships of interest which involve the measure of pregnancy status. Interaction effects were tested across the full models as was methodologically sound and in accordance with procedures described for mental health research (Mirowsky, 1999). Where appropriate, interaction effects were run on race-based sub-samples.

Justification for considering interaction effects between pregnancy and race have been previously presented. In addition, although particular age categories have been selected from the sample (Turner, 1990; Steer, 1990), questions about the usefulness of age in defining the prenatal experiences of adolescents, prompts the further determination of whether age plays any role within this adult population; thus test for interaction effect between pregnancy and age are warranted. Questions concerning potential interaction effects between pregnancy and marital status are also justified and are theoretically sound. Given the work on variations in marital satisfaction by race (Broman, 1993) as well as the role of marital status in the psychological well-being of pregnant women (Hoffman, 1996; Collins, 1993), it is reasonable to expect that maternal psychological distress may vary among married or unmarried women, depending upon their pregnancy status. The present study is one of few, particularly among those utilizing federal databases, which have purposefully included both married and unmarried women. In addition, the attention on the dynamics of marital status is warranted by the varied findings on marital status by race, as well as from the important role that spouses and significant others play in providing social support. Each of these factors is likely to also influence psychological distress in pregnant women.

Much of the social support literature suggests the receipt of support and value of support varies by race (Lederman, 1998; Norbeck, 1989a).

The literature is replete with evidence for suspecting interaction effects between race measures. In addition to the previously justified basis for race and pregnancy interactions and for race and marital status, there is also cause to consider interaction effects between race and education, and race and income. One of the strongest zero-order correlations in the current model is held between race and income. The work of Krieger et al. (1993) on race inequity across income and the evidence for the lack of congruity in educational worth and salary attainment across diverse populations, warrants closer scrutiny of these measures for possible interactions. A similar rationale for considering interaction effects holds for all hypotheses tested in the present study.

CHAPTER 4:

RESULTS

Descriptive Findings

Bivariate analyses for the present study document statistically significant relationships between all sociodemographic predictors, a trend not unseen in the literature (Kitamura, 1996). Interestingly, the only relationships which were not significantly correlated involved those between the pregnancy variable and various other measures in the study. Only approximately 10% of the variance in psychological distress is explained by the strongest of the models presented. Furthermore, there were no significant relationships between pregnancy and psychological distress. Consequently, interaction analyses and subset analyses follow the regression evaluations in order to facilitate a fuller assessment of contextual interrelationships. Completed analyses control for age and for race where appropriate. Similarly, group comparisons between women who are or are not pregnant as well as within groups differences as defined by pregnancy status are considered.

The study sample is comprised of a fairly well-educated group of women who have completed a mean of one year of education beyond high school. The educational attainment of

the women ranged from no formal education or kindergarten only, up to two years of graduate school. Fifteen percent (15%) of the sample completed the equivalent of a bachelors degree or graduate school. Twenty-two percent (22%) of the sample had not earned a high school diploma and as might be expected, the correlation of income and education presented one of the stronger correlation coefficients in this study. The mean household income earned during the 12 months before the delivery falls within the range of \$16,000 to \$17,999. The sample is comprised of 49% African American women and 49% pregnant women. The ages of the women in the study range from 19 to 43 years, as defined by selection criterion, with a mean age of 25.9 years. Sixty-four percent (64%) of the sample are currently married, 28% had never married and the remaining small percentage were either divorced, separated or widowed. In terms of prior pregnancy outcomes, 34% had experienced a live birth, 26% had experienced a fetal death, and 40% had experienced an infant death. The mean score for the dependent variable, total CES-D score, was 14.89. The total CES-D scores among respondents range from 0 to 60, with 36.1% reporting scores suggestive of psychological distress, i.e., above the level of 16.

The attention to the specific concerns of African American women and pregnant women leads to the investigation

of demographic characteristics within these separate groups of women through further descriptive analysis, including cross-tabulations (Tables 3, 4). African American women in the study are less educated and poorer than the White participants. Black women are also less likely to be married and are younger. Of note as well, is their lower likelihood to be pregnant and surprisingly, given the literature, Black women are more likely to have experienced a live birth in their prior pregnancy than the White women in the study. CES-D scores suggest a much greater amount of psychological distress among the Black women in the study, with mean scores well above the symptomatic threshold of 16.

The demographic characteristics of pregnant women are notably consistent with those of women who are not pregnant with the exception of race. Only 38% of the pregnant women were African American, while 46% of the sample of women who were not pregnant were women of color. Particular attention must be drawn to the similar CES-D scores of 14.8 and 14.9 among pregnant and not pregnant women, respectively. Cross-tabulations to assess the overlap in race and pregnancy status reveal that 38% of the pregnant women are African American, while 27% of the African American women in the study are pregnant.

Table 3.

Descriptives by Race

Variable Name	Total Sample	African American Women	Women-Other Races
Maternal Education (years)	13.07	12.6	13.35
Household Income	11.71	9.23	13.59
Marital Status (1=Married)	.636	.361	.842
Pregnancy Status (1=pregnant)	.412	.369	.445
Maternal Age (years)	25.9	24.7	26.7
Prior Pregnancy (1= Live Birth)	.342	.416	.286
CES-D (Total Score)	14.89	17.64	12.8

Table 4.

Descriptives by Pregnancy Status

Variable Name	Total Sample	Pregnant Women	Not Pregnant Women
Maternal Education (years)	13.07	13.16	13.01
Household Income (Dollars)	16,000-17,999	11.97	11.53
Marital Status (1=Married)	.636	.685	.600
Race (1=Black)	.430	.384	.462
Maternal Age	25.9	25.9	25.8
Prior Pregnancy (1=Live Birth)	.342	.346	.339
CES-D Total Score	14.89	14.85	14.92

Bivariate correlations between variables are presented in Table 5. All but four of the twenty-eight correlations

were found to be significant, with the four exceptions each involving pregnancy status. The large number of significant correlations among the independent variables is expected and common within social science research as many social variables are related in some way. The correlations between the measure of pregnancy status and the other variables encompass not only those four which were not significant, but are also marked by otherwise weak correlations.

Significant correlation coefficients in this analysis ranged from .067 (for prior pregnancy correlated to CES-D) to .503

Table 5.

Bivariate Correlations

	CES-D score	Maternal Education	Household Income	Marital Status	Race	Age	Pregnancy Status
CES-D score							
Maternal Education	-- .196*						
Household Income	-- .272*	.392*					
Marital Status	-- .229*	-- .279*	.503*				
Race	.192*	-- .181*	-- .390*	-- .495*			
Age	-- .183*	.335*	.371*	.302*	-- .207*		
Pregnancy Status	-.003	.041*	.039	.087*	-- .077*	.006	
Pregnancy History	-- .067*	-- .063*	-- .096*	-- .135*	.136*	-- .084*	.007

*p <.05 (two-tailed)

with the strongest correlations occurring between marital status and income, a trend well documented in the literature (Christensen, 1992; Kitson, 1990). Correlations between income and other independent variables presented some of the strongest coefficients in this analysis. Again, the only correlations which were not significant involved pregnancy status with CES-D, income, age, and prior pregnancy history.

Bivariate correlations among the independent variables and the dependent variable results in relationships which are also consistent in the literature. Psychological distress is negatively correlated with education, income, age, marital status, and prior pregnancy outcome. Thus, distress is likely to be greater among women with lower education and income, and among younger, single women. These analyses also suggest that psychological distress increases among women who previously experienced a poor pregnancy outcome as opposed to a live birth. It is notable that current pregnancy status is not significantly correlated with psychological distress. Neither does current pregnancy status correlate significantly with age or prior pregnancy outcome.

Even at this elementary level of analyses, the present study provides additional documentation of the mental health experiences of Black women. Within this representative sample, Black women demonstrated poorer psychological well-

being than their White counterparts as evidenced by average CES-D scores above symptomatic levels (greater than 16) for Black women in this sample. In addition, the bivariate correlation between current pregnancy status and psychological distress is not statistically significant. The similarity of mean CES-D scores among women who were pregnant and those who were not pregnant, suggests findings that are clearly counter-intuitive and which contradict much of the current literature.

Additional insight into the characteristics of this sample were obtained through a second level of descriptive analyses using cross-tabulations and comparisons of means. Cross tabulations of pregnancy status with race have been presented previously and it is noteworthy that the age distributions across race are fairly balanced at the younger age categories (19 to 29 years of age). However, the percentage of African American women decreases with each increase in age category, including a mere 3 cases represented among the oldest age category. Manipulations of pregnancy status and marital status reveal that married women comprise the majority of the sample, regardless of pregnancy status. In the present study, among women who are not married, 40% are pregnant and 32% are not. The inclusion of unmarried and never married women in a study

with married women is a unique contribution within federal studies and ultimately the broader research literature.

Comparisons of means provide contextual insights into the lives of the women in the present study. Comparisons of CES-D means by educational attainment and household income were completed. Although descriptive data on the total sample suggest low levels of psychological distress in this sample, closer review of CES-D total scores by race, pregnancy status and educational attainment identify only one category of women with CES-D scores below the distress threshold. Educated White women (attained high school degrees or beyond) have CES-D scores less than 16 while under-educated women (less than high school degree) tended to demonstrate distress, regardless of race. Furthermore, educated African American women (high school degrees or beyond) had CES-D scores which were comparable to White women with no high school degree. Greater still, were the CES-D scores of educated Black women who were also pregnant (Table 6).

Income attainment for this sample reiterate trends previously noted in the literature (Krieger, 1993). African American women tended to be more greatly represented among the lowest household incomes, regardless of educational attainment and least represented among the highest household incomes, in spite of educational attainment. Among White

Table 6.

Descriptive analysis of CES-D Scores within Pregnancy Status and High School Attainment by Race [CES-D scores; (cases)]

	>=High School		<High School	
	WHITE	BLACK	WHITE	BLACK
PREGNANT	12.04 (1079)	17.52 (589)	16.48 (194)	20.55 (199)
NOT PREGNANT	11.93 (1283)	16.38 (981)	16.78 (310)	19.44 (400)

cases, 6% of the cases had household incomes from \$20,000 to above \$60,000 as opposed to only 1% among African American cases. Racial differences among the lower household incomes were slightly more modest, with those below \$10,000 seen in only 2% of the White cases and 1% of the Black cases.

Educated African American women comprise 31% of the African American sample, while educated White women comprise 47% of the White sample. Given the representativeness of African American women among the educated sub-group, one might expect a greater wealth distribution among this group of women.

Descriptive relationships of income to psychological distress also suggest race specific trends. Black women had CES-D scores indicative of distress at much higher levels of income than the White women in the present study. For example, CES-D scores at or above the cut point of 16 were

found in all income categories up to \$25,000 for Black women, while White women demonstrated symptomatic levels of CES-D only below income levels of \$10,000.

Additional CES-D mean comparisons were completed for the measures of marital status and age. The highest CES-D scores were found among single women, regardless of race. While not as high as among single women, African American women who were married also demonstrate symptomatic CES-D levels, regardless of pregnancy status (Table 7). Symptomatic levels of CES-D among White women were found in only the youngest age groups (19 and 20 years old). Black women, on the other hand, showed no such prescribed trend, with symptomatic levels found across all age spans, especially within categories from 19-28 years.

Factors Predicting Psychological Distress in Women
Measures of psychological distress in women who are pregnant will significantly differ from psychological distress in women who are not pregnant (Hypothesis 1).

Progressive Adjustment through Hierarchical Multiple Regression

Psychological distress was regressed on all sociodemographic variables in three hierarchical steps as described in Tables 8, 9, and 10. At this level of analysis, pregnancy status is not a significant predictor of psychological distress, suggesting that pregnancy status in

Table 7.

Descriptive Analysis of CES-D Scores within Marital and Pregnancy Status by Race [CES-D score (cases)]

	Married		Not Married	
	WHITE	BLACK	WHITE	BLACK
PREGNANT	11.83 (1097)	15.44 (319)	18.23 (176)	20.22 (469)
NOT PREGNANT	12.05 (1324)	14.91 (458)	16.94 (269)	18.44 (923)

Table 8.

Model 1.1-Multiple regression of Psychological Distress on Race and Pregnancy Status

Race	4.86*
Pregnancy Status	.328
R ²	.037
R	.192
N	5034

*p<.001, unstandardized coefficients presented

Table 9.

Model 1.2-Multiple regression of Psychological Distress on Race, Pregnancy Status, and Socioeconomic Status (SES) measures (maternal education and household income)

Race	2.536*
Pregnancy Status	.474
Education	-1.168*
Household Income	-.421*
R ²	.092
R	.303
N	5034

*p<.001, unstandardized coefficients presented

Table 10.

Model 1.3-Multiple regression of Psychological Distress on Race, Pregnancy Status, Socioeconomic Status (SES) and Marital Status

Race	1.75*
Pregnancy Status	.515
Education	-.917*
Household Income	-.332*
Marital Status	-1.932*
Age	-.161*
R ²	.099
R	.315
N	5034*

p<.001, unstandardized coefficients presented

this sample of women, had no direct effect on their mental health status. The measures of psychological distress in women who are pregnant do not significantly differ from psychological distress in women who are not pregnant, thus the first hypothesis of this study is *not* supported. This finding is further validated by ANOVA results and the F-test which suggest no notable difference in the CES-D means between women who are or who are not pregnant. While psychological distress does not vary by pregnancy status, these analyses demonstrate that psychological distress is predicted by race, socioeconomic status, and marital status in this sample.

The results for Model 1.1 (the first step of the progressive multiple regression) are presented in Table 8 and demonstrate that race alone accounts for only 4% of the

variance in CES-D scores in this model. The first step in testing hypothesis one of the study confirms previously established relationships between race and depression (Brown, 2000; Brown, 1995). African American women in the present study tend to have greater psychological distress and depressive symptoms than those of other races. In other words, the mental health of Black women is worse than that of women of other races. The t-value in this model ($t=13.902$) reiterates that the race variable serves as a good predictor of psychological distress. Although the empirical indicators of the analysis evidence the strength of this model, a large percentage of the variance in psychological distress remains unexplained.

As demonstrated in Model 1.2 (Table 9), education level and household incomes are both inversely related to psychological distress; thus women with lower household incomes and less education are more likely to experience greater psychological distress and diminished psychological well-being. Race remains a significant predictor of psychological distress in this model, with Black women more likely to experience poor psychological well-being than White women in this study. The inclusion of the socioeconomic variables, household income and maternal education, in the model, results in a decline in the regression coefficient for race and contributes to the

explanation of an additional 6% of the variance in CES-D score. The lack of significance of the regression coefficient for pregnancy is retained.

The relationship between race and psychological distress does not disappear when adjusting for socioeconomic status, however, the regression coefficient for race is decreased, suggesting a mediating effect among these measures (Model 1.2). Adjusting for education and income, reduces the association between race and distress by 49% ($100 \times [4.86 - 2.53] / 4.86 = 47.94$). This multiple regression, which serves as the sociological equivalent of experimental matching (Mirowsky, 1999), demonstrates that had education and income been matched, the differences in psychological distress between African American women and others would remain. In other words, if Black women attained the same educational and income levels as women of other races, the differences in distress between these two groups would be 47% smaller. While this point is notable and impressive, one must not overlook the additional 70% of the difference between these groups which is *not* explained by education and income.

The final step of this progressive regression model involves the adjustment for marital status. The relationship between race and psychological distress is maintained. Marital status is the strongest predictor of

psychological distress in this model; stronger than both education and household income. The inclusion of marital status does not appreciably change the coefficients for the other independent variables and they remain significant predictors of psychological distress. The addition of marital status in this step (Table 10), results in no appreciable change. Only an additional 1% of variance in the model is explained by the inclusion of marital status. Furthermore, at the final step of this hierarchical model, confidence in the predictive values of CES-D has increased from .19 to .31 as indicated by the coefficient of multiple correlation (R). The strength of the model appears solid, with all t values greater than +2 or less than -2, with the exception of the values for current pregnancy status.

Finally, analysis of variance (ANOVA) suggests that the null hypothesis that there is no difference in means for the dependent variable is supported. Thus, ANOVA results suggest there is no statistical difference in the mean CES-D scores between women who are and who are not pregnant, thereby further reiterating the findings as discussed. In summary, the presence of race in this model accounts for the majority of the variance in CES-D. A comparison of each step of the regression is summarized in Table 11. Although the pregnancy measure fails to gain statistical significance, the marked shift in coefficients and the

Table 11.

PROGRESSIVE ADJUSTMENT: Demonstration of measure of Psychological Distress among women categorized by race and pregnancy status, adjusting for socioeconomic status, marital status and age

REGRESSOR	MODEL 1.1	MODEL 1.2	MODEL 1.3
Pregnancy Status	.328 (.931)	.433 (1.264)	.531 (1.554)
Race	4.860* (13.902)	2.474* (6.699)	1.704* (4.286)
Education		-.697* (-6.736)	-.643* (-6.200)
Household Income		-.439* (-12.356)	-.375* (-9.961)
Marital Status			-2.254* (-5.150)
Age			-.161* (-4.301)
Constant	12.665 (45.720)	27.920 (21.297)	28.181 (21.535)
R	.192	.302	.310
R ²	.037	.091	.096

*p<.001; unstandardized coefficients reported with t values in parentheses

generally small percent of variance accounted for by the model suggest further analysis is warranted, including assessment of interaction effects.

Despite suggestions in the literature (Hobfoll, 1995; Gotlib, 1989; Hedegaard, 1993), the relationship between pregnancy and psychological distress is not statistically significant in the present study. As such, current pregnancy status is not predictive of psychological distress. The absence of significance in the relationship

between current pregnancy status and psychological distress is unchanged at all levels of the model, thus ruling out the presence of suppression effects as an explanation for the lack of relationship between the two fundamental variables in this study.

Interaction Effect and Subset Analysis by Race

It is the counter-intuitiveness of these initial findings that prompted further testing for interaction effect between race and pregnancy status as well as a subset analysis by race. Regression predictions are confirmed by testing for interaction effects between race and pregnancy and the results are found in Table 12. Secondary analysis in this investigation reveals that inclusion of the Non-additive term for race and pregnancy does not improve the fit of the full model and furthermore, is not statistically significant. This finding holds for inclusion of the interaction variable for the total model as well as for analysis of the isolated regression relationships between race and pregnancy alone. Thus, the relationships between race and psychological distress as well as pregnancy and psychological distress represent main effects and are not the result of any intervariable dependencies. Additional evidence for race-based effects are obtained from the interaction analyses.

Table 12.

Non-additive Effects of Race and Pregnancy on Psychological Distress

Variable Name	Regression Model of CES-D on Race, Pregnancy & Interaction Term
Race	4.389*
Pregnancy Status	-.164
(Race) (Pregnancy)	1.185
R ²	.038
R	.194

*p < .001

The primary interest of race in the present study, prompted further testing of this question through sub-set analysis. Among the White sub-sample, the pattern of significance and predictors remains consistent in the analysis of the sub-sample of White women in the study. Interestingly, although erroneous, regression findings within the sub-sample of African American women shift. Most notably, current pregnancy status becomes predictive of psychological distress ($p < .05$). However, upon testing for interaction effects between pregnancy and race (Table 12), the absence of significant interaction effects between these variables proves that this sub-sample finding for Black women is spurious; and pregnancy is not truly predictive of psychological distress.

Additional Findings from Interaction Effect Analysis

Tests for interaction effects among other independent variables in association with the two fundamental measures of pregnancy and race are now described, beginning with a discussion of interaction effects involving pregnancy. In addition to the interaction effect between pregnancy and race, the following effects are also conceptually warranted: 1) interaction effect between pregnancy and marital status; and 2) interaction effect between pregnancy and age.

Pregnancy interaction analyses were run on the full model and confirmed by racially defined subsets analysis where indicated.

Analysis of interaction between pregnancy and marital status confirms the existence of interaction effects between these two measures. Inclusion of the Non-additive term for pregnancy status and marital status in the model resulted in a significant interaction effect ($p < .05$) (Table 13). In addition, the inclusion of the pregnancy/marital status interaction term in the model results in the reversal of the previously insignificant relationship between current pregnancy status and psychological distress. Within the model which tests for pregnancy/marital status interaction, current pregnancy status becomes a significant predictor of psychological distress ($p < .05$). In order to identify the direction of the interaction effect, analyses of the model

Table 13.

Non-additive Effects of Pregnancy and Marital Status on Psychological Distress

Variable Name	Model with (Race) (Pregnancy) Interaction Effect	Model with Pregnancy Marital Status Interaction Effect
Race	1.25**	1.761*
Pregnancy Status	-.004	1.567**
Education	-.914*	-.917*
Income	-.332*	-.330*
Marital Status	-1.954*	-1.319**
Age	-.161*	-.163*
(Pregn) (Marital Status)	----	-1.610*
(Race) (Pregn)	1.232	----
R ²	.038	.100
R	.194	.317

**p< .05; *p < .001

were repeated selecting cases by marital status (married or unmarried/single). Among married cases, current pregnancy status was not predictive of psychological distress.

However, among single cases, current pregnant status was significant predictor of psychological distress ($p < .05$). Thus, for unmarried women who are pregnant, their pregnancy is predictive of psychological distress.

Further expansion of this questions was completed by repeating the analysis controlling for race. The pattern of significant prediction of psychological distress held with one exception (Table 14).

Applying the previous findings that race and pregnancy status do not interact, and that marital status and pregnancy do interact, one intuitively expects the pregnancy of all unmarried women to predict distress and the pregnancy of all married women not to predict distress. The one exception to this paradigm is likely a statistical residual. Among single women of other races, pregnancy status was not predictive of psychological distress. However, within this subsample, which had the smallest sample size in this subset analysis, the regression did not have a significant F statistic. Analytical problems with the model in this subset are also evidenced by the t statistics (ranging from -1.184 to -.875) and the small size of the F statistic ($F=1.752$). Thus, findings in the case of unmarried women of other races, is more likely a result of small sample size in comparison to the other sub-samples ($n=440$).

Finally, the pregnancy/marital status interaction effects in this model are only significant when applied in the full model using the total sample. Subset analyses by race which included the pregnancy/marital status interaction status fail to produce any significant evidence of

Table 14.

Regression Coefficients for Current Pregnancy Status
regressed on CES-D by Race and Marital Status

Sample	Black	Other Races	Total
Unmarried (1836)	-1.748* (1391)	-1.096 (440)	-1.567*
Married (3197)	-.319 (776)	.152 (2420)	.0028

*p<.05; (n-sample size)

interaction effects, and are likely further evidence of the spurious effects revealed in the previous analysis.

Analysis of pregnancy and age interactions are valid questions, however findings were insignificant for the total model. Thus, pregnancy and age have additive contributions to the relationships found and represent main effect relationships in this model. In addition, the inclusion of the interaction term for pregnancy and age results in no change in the relationship between current pregnancy status and psychological distress, unlike the effect described for pregnancy and marital status interaction.

The second foundational area of concern is that of race, thus in addition to testing interaction effects related to pregnancy, the evaluation of interaction effects involving race are assessed. Notably, none of the race interaction effects appear to be statistically valid, i.e.,

all Non-additive terms involving race lack significance; including race/education, race/income, and race/marital status. Thus, the race based relationships found in prior analysis represent direct effects and the relationships between race are not mediated by other variables in the model.

Psychological Distress in Pregnant Women

Maternal psychological distress will vary by race, socioeconomic, and marital status (Hypothesis 2).

Maternal psychological distress for the purposes of this research question refers specifically to the psychological state of pregnant women, thus analyses are run only on the subset of women who were pregnant at the time of the study. Closer investigation of psychological distress among this sub-sample of women in the present study suggests that race, socioeconomic status and marital status are all predictive of mental health in pregnant women, providing evidence in support of the second hypothesis of this study. Regression results are presented in Tables 15, 16 and 17, and provide evidence in support of the second hypothesis of this study. Race is a significant predictor of psychological distress at all levels of the regression, with African American women at greater risk of psychological distress than women of other races. In addition, the social correlates education, income and marital status, and the

Table 15.

Model 2.1- Multiple regression of Psychological Distress on Race among Pregnant Women

Race	5.57*
R ²	.049
R	.222
N	2060

*p<.001, unstandardized coefficients presented

Table 16.

Model 2.2-Multiple regression of Psychological Distress on Race and Socioeconomic Status (SES) measures (maternal education and household income) among Pregnant Women

Race	3.062*
Education	-1.356*
Household Income	-.438*
R ²	.116
R	.341
N	2060

*p<.001, unstandardized coefficients presented

Table 17.

Model 2.3-Multiple regression of Psychological Distress on Race, Socioeconomic Status (SES), Marital Status and Age among Pregnant Women

Race	2.12*
Education	-1.062*
Household Income	-.325*
Marital Status	-2.648*
Age	-.168**
R ²	.126
R	.356
n	2060

*p<.001, **p<.05; unstandardized coefficients presented

dependent variable, psychological distress are all inversely related and statistically significant. Thus, poorer, less educated women who are unmarried are more likely to experience greater psychological distress.

Comparative results from each progressive step of the regression analysis are presented in Table 18. The isolation of pregnant women for these analyses does not appreciably vary the findings from those obtained in the total population. The significance and direction of social factors in relationship to psychological distress are the same in Model 1.3 for the total sample (Table 11) and in Model 2.3 for pregnant women (Table 18). Thus, social correlates of psychological distress in women who are pregnant result in no differing predispositions, than women in the general population.

In an effort to again delineate the experiences of women of color distinctively in this study, additional subsample assessment of the experiences of Black women who were pregnant were completed. As with race based analyses for the first hypothesis of this study, the spurious nature of subset findings was confirmed through the testing of interaction terms. Initial differences in marital status and age predictiveness for Black women who are pregnant in relation to pregnant women of other races was not validated.

Table 18.

PROGRESSIVE ADJUSTMENT: Psychological Distress among
Pregnant women categorized by race and adjusting for age,
socioeconomic status and marital status

REGRESSOR	MODEL 2.1	MODEL 2.2	MODEL 2.3
Race	5.574* (10.330)	3.062* (5.432)	2.122* (3.532)
Education		-1.356* (-5.489)	-1.062* (-4.190)
Household Income		-.438* (-8.192)	-.325* (-5.608)
Marital Status			-2.648* (-3.880)
Age			-.168** (-2.859)
Constant	12.719* (38.118)	23.572* (24.563)	27.731* (18.202)
R	.222	.341	.356
R ²	.049	.116	.126

*p<.001, **p<.05; unstandardized coefficients reported with t values in parentheses

Finally, despite the absence of evidence for interaction effects in the first hypothesis of the study, this question is further extended by investigating interaction effects among this sub-sample of pregnant women. Interaction effects were completed for the following interactions: race and education, race and income, and race and marital status. Consistent with the previously

described analyses, none of the interactions with race are statistically significant. Thus among, pregnant women, the effects of race on psychological distress are unmediated by other variables considered in the model (as opposed to the findings from hypothesis one, that the effects of pregnancy status on psychological distress are mediated by marital status).

Contributions of Pregnancy Outcomes to Maternal Distress

Current psychological distress will be significantly related to previous pregnancy outcomes. (Hypothesis 3)

In order to test this hypothesis, the independent variable which measured past pregnancy outcome, a categorical variable with responses of 1) live birth, 2) fetal death, and 3) infant death was recoded. Dummy regression was used in this case. Each category was recoded to account for the stated response (coded as 1) and all other categories (coded as 0) resulting the creation of three dummy variables. Dummy regression analysis requires the inclusion of one fewer dummy variable in the equation ($g-1$, where g = the number of categories in the nominal variable which is dummy coded). In this case two dummy variables were included in the regression equation. Regression coefficients cannot be computed for an equation that includes all the dummy variables because there will then be perfect multicollinearity among the dummy variables

(LB dum + FD dum + ID dum = 1). The existence of perfect multicollinearity precludes the estimation of the separate effects of each independent (dummy) variable on the dependent variable, psychological distress.

The omitted variable serves as the reference category in dummy regression and is represented as the constant in the analysis. The decision of which variable to exclude is based upon theoretical support. In the case of prior pregnancy outcome, the Live Birth group serves as the reference group because that is the normative category and is the standard to which public health and social well-being perspectives aspire. Thus, Infant Deaths and Fetal Deaths are looked at in comparison to Live Births which are the preferred birth outcome and goal.

Results of the dummy regression which was completed in two progressions, are presented in Table 19, with the Live Birth dummy variable as the constant (excluded) variable. Table 20 presents results of a second regression using only the live birth variable and presented as confirmation of the initial dummy analysis presented in Table 19. The confirmatory analyses in Table 20 result in virtually identical findings as obtained in the initial dummy regression. The dummy regression results (Table 19) and confirming regression using the live birth dummy variable (Table 20) suggest that at least one of the categories of

Table 19.

Dummy regression with Progressive Adjustment of Psychological Distress on Race, Pregnancy Status and Pregnancy History

Pregnancy History:		
Fetal Death Dummy	1.403**	2.52*
Pregnancy History:		
Infant Death Dummy	1.990*	2.47*
Race	---	5.18*
Current Pregnancy Status	---	.361
R ²	.005	.046
R	.070	.214
N	5034	5034

*p<.001, p<.05; unstandardized coefficients presented; Live Birth is excluded Dummy variable and serves as constant

Table 20.

Regression of Psychological Distress on Race, Pregnancy Status and Pregnancy History

Race (Black = 1)	5.18*
Pregnancy History (Live Birth =1)	-2.49*
Current Pregnancy Status (Pregnant=1)	.363
R ²	.046
R	.214
N	5034

*p<.001; unstandardized coefficients presented

prior pregnancy outcomes has a different mean CES-D than the others. The multiple correlation of determination (R^2), however indicates that only .5% of the variance in CES-D can be accounted for by knowing the prior pregnancy outcome alone. The t values validate the strength of the model which confirms that the mothers in the infant death group have significantly worse psychological distress. There is no significant difference in the CES-D scores between the fetal death group and the live birth group.

When the dummy regression is progressively adjusted to include race and current pregnancy status, the fit of the model improves, accounting for 4.6% of the variance in CES-D scores (Table 19). The inclusion of the additional variables facilitates the evaluation of the differences between the infant death and the fetal death groups in comparison to the live birth group, while holding race and current pregnancy status constant. Thus, the results suggest that when race is held constant, infant death and fetal death remain significant predictors of psychological distress. As with prior analysis, current pregnancy status is not a significant predictor of psychological distress and has no meaningful effect on the differences found between groups based upon prior pregnancy outcome. In summary, the psychological distress in these women is predicted by the

pregnancy outcome of their previous pregnancy and hypothesis three is supported.

In order to facilitate testing of interaction effects within this research question, an additional variable was created. Because interaction analysis must include both variables as well as their Non-additive interaction term in the regression, a prior pregnancy outcome measure was created. The prior pregnancy outcome measure was recoded using the pregnancy outcome data (live birth, fetal death, and infant death) which was dummy coded such that 1= live birth and 0=all other pregnancy outcomes (fetal death or infant death). Findings from secondary testing of hypothesis 3 using this variable are consistent with those described previously (Table 21). Non-additive interaction terms were created for race and prior pregnancy outcome, race and current pregnancy, and current pregnancy and prior pregnancy outcome. Analysis was completed on the total sample, as well as subset analysis by race and pregnancy status. No evidence of interaction effect was identified in any case.

In addition, inclusion of the prior pregnancy outcome variable in the foundational model (similar to that tested in regression analysis for hypothesis 1) reiterates the previous findings, including the lack of significance of current pregnancy status, and confirming the significance of

Table 21.

Confirmatory Analysis for Role of Prior Pregnancy Outcome,
including Interaction Effects

Variable Name	Full Model	Full Model + (PriorPrg)	Full Model + (PrioPrg) (CurrPrg)
Race	2.007*	1.560*	2.007**
Education	-.984*	-.980**	-.985**
Income	-.333*	-.332**	-.332**
Marital Status	-2.140*	-2.169**	-2.147**
Age	-.171*	-.171**	-.171**
Prior Pregnancy Outcome (Live Birth=1)	-3.133*	-3.121**	-3.069**
Current Pregnancy Status	.575	.116	.628
(Race) (Pregnancy) Status Interaction	---	1.107	----
(Current Pregnancy)X (Prior Pregnancy)	---	---	-.156
R²	.113	.114	.113
R	.336	.337	.336

*p < .001; **p< .05; (spurious findings-not valid)

prior pregnancy outcome as a viable predictor in
psychological distress in the women in the present study.
Prior pregnancy outcome is negatively associated with
psychological distress, however one must pay particular

attention to the coding of the variable in the interpretation of these results. In this case, a greater value of the dummy coded prior pregnancy outcomes (live birth) correlates to lesser values (less distress) in the psychological distress measure. Thus, as expected, women who experienced a live birth in their previous pregnancy are more likely to have less psychological distress in their current pregnancy.

Finally, within this framework, the non-additive interaction term for prior pregnancy outcome and current pregnancy outcome is then included, an addition which is justified by the overarching interest in the role of the pregnancy status in general. Results suggest that any relationships demonstrated between psychological distress and current pregnancy status or psychological distress and prior pregnancy outcomes are distinct, with no evidence of interaction effects. Finally, spurious findings were again obtained when this research question is tested by race. As with hypothesis one, significant prediction of distress by current pregnancy status for Black women is not confirmed by interaction effects of race and pregnancy status. The failure to obtain significant evidence of interaction effects by race and pregnancy status refute any support for race specific findings.

Supplemental Considerations: Questions of Employment and Parental Status

The literature addresses two additional factors of note in maternal psychological well-being; the contributions to psychological status made by current parenthood and employment. Parenthood has been investigated from a number of perspectives, both quantitatively (Lederman, 1998) and qualitatively (Tietjen, 1985). Most commonly, sociological work views parenthood subjectively, as representative of one of the many stratified roles in which women are planted by society (Oakley, 1980) and from which a woman's standpoint evolves (Collins, 1991). Sociology has also contributed to the more clinical work which addresses issues of parenting and numbers of children (Lederman, 1998). The dynamics of status as associated with employment and work are also viewed as potential stressors among pregnant women (Bramwell, 1997). Questions regarding type of work, frequency of work and duration of employment are raised in the literature (Taylor, 1997; Dragonas, 1997; Bramwell, 1997).

The NMIHS contained two variables which were appropriate measures of these issues. The following survey questions were used: 1) Did you work during the 12 months before delivery of the baby named on this questionnaire? (response categories- yes/no); and 2) List the number of

your own children living with you now (continuous, numerical responses allowed). Unfortunately, the shortcomings of significant amounts of missing data in responses to measures for these issues, results in the inability to include these measures in the present study. In addition to excessive amounts of missing data for responses to each of the independent measures themselves, cross tabulations of the measures for children and employment with the CES-D measure, reveal that there is also missing data for the dependent variable among those responding to the parenting and employment measures.

Identification of applicable cases for this exploratory analysis resulted in 1722 cases who had responded to the key questions of pregnancy status and CES-D measurement, as well as having responded sufficiently to the independent variables of interest for this exploratory analysis. Findings obtained from the exploratory analysis of the roles of parenting and employment contribute very little to the understanding of mental health experiences of women and pregnant women in particular. Bivariate analyses reveal the measures for employment were not significantly correlated to any other variable in the study. In the case of parental status, zero- order correlations were significant for all other independent variables, with the exception of the newly added employment variable. In

addition, parental status was not significantly correlated with the dependent variable, psychological distress.

Demographic distributions remain surprisingly consistent with those of the original sample. CES-D total score (mean = 14.73), education, and age (mean = 25.9) are comparable to the original sample. This subset which includes employment and number of children, is comprised of a slightly poorer group with a higher percentage of women who are not pregnant or not married. Closer scrutiny of the key variables, race and pregnancy status reveal that among cases for this exploratory analysis, 44% (n=212) are pregnant women of color and 47% (n=470) being pregnant and White. However, despite the characteristic similarities, analysis of variance results suggest that there were no significant differences in psychological well-being among this subset. Furthermore, psychological distress was quite low in the sub-sample, with the vast majority of respondent categories at the non-symptomatic level. The only exception to this trend in CES-D scores was found among those respondents who had 4 children (n=110). This group presented a CES-D measure which is indicative of psychological distress, however, the score lie precisely at the threshold of symptomatology (16.55).

Nevertheless, regression analyses in this group are presented in Table 22. Repeat analyses for the fundamental

Table 22.

Exploratory Sub-sample Analysis

	Original Model	+ Work	+ Parental Status	Parental Status & Work
Race	1.45*	1.445*	1.538*	1.533*
Pregnancy	.375	.383	.277	.285
Education	-.959*	-.959*	-1.029*	-1.030*
Income	-.321**	-.320**	-.327**	-.326**
Marital Status	-.957	-.963	-.965	-.971
Age	-.167*	-.169*	-.149*	-.151*
Work		-.430		-.434
Parental Status			-.230	-.231
R	.285	.286	.286	.287
R ²	.081	.082	.082	.082
N	1379	1379	1379	1379

*p < .05; ** p < .001

model presented in hypothesis one of the present study result in relatively consistent findings, with the exception of a lack of predictive value for marital status within this sub-set. Inclusion of the two variables which characterize this exploration was completed through the independent analyses of each variable and through the inclusion of both variables simultaneously. In neither case, were employment or parental status predictive of psychological distress in women. The loss of cases which would result from further

subset analysis by race or pregnancy status precluded additional consideration at this point.

CHAPTER 5:

DISCUSSION

The present study is designed to investigate the mental health experiences of pregnant women, with specific focus on the differences defined by the race of the women participants. There are four important findings from this investigation. The first is the descriptive finding that Black women, regardless of pregnancy status, in this nationally representative sample experience significantly greater psychological distress than women of other races ($p < .001$). African American women report a mean CES-D score of 17.64, with 45.7% reporting scores above the symptomatic cut point of 16. In contrast, women of other races report a mean CES-D score of 12.81, with only 28.8% scoring above 16. Secondly, the psychological state of women is predicted more by the social contexts of their lives than by the immediate experience of pregnancy. Thirdly, the present study confirms the importance of the role of marriage in the psychological well-being of women who are pregnant. Lastly, it is the experience of prior pregnancies, rather than the current pregnancy, which effectively predicts psychological distress in women.

African American women in the present study are at greater risk for psychological distress and depressive

symptoms. Filling a distinct void in the current literature, these findings empirically demonstrate that mental health among Black women is indeed worse than among women of other races. Psychologically distressed women in this study tend to be poorer and less educated, characteristics predominated by women of color in this study and nationally. Furthermore, when considering the inverse of those characteristics, it is notable that factors which tend to enhance the psychological well-being of women of other races, fail to demonstrate comparable advantages for African American women. For example, the psychological distress of highly educated Black women is more comparable to that of uneducated and undereducated White women as opposed to their White peers who are educated. In addition, Black women remain distressed at much higher income levels than women of other races in the present study.

The second finding of the present study is perhaps the most unexpected. The absence of any effect of current pregnancy status on psychological distress is a result which was unanticipated yet is provocative. The causal effect initially hypothesized for pregnancy and distress was not confirmed, instead, the specific roles of marital status, education, income, race and age are clarified. Quite simply, psychological distress does not vary appreciably between women who are pregnant and those who are not,

regardless of the race of the pregnant women. Pregnant women who are poorer, less educated and unmarried are more likely to experience greater psychological distress. The pregnancy experiences of African American and White women, however, are for the most part, undifferentiated in the present study. Among pregnant women in this study, race, socioeconomic status and marital status remain predictive of mental health.

The only evidence of variation in the pregnancy experiences of women in the present study comes not from racially defined categories but from the evidence of interaction between the pregnancy and marital status measures. Marital status is inversely related to and predictive of psychological distress. Upon inclusion of the interaction term for pregnancy and marital status in the model, the third distinct finding of the present study becomes apparent. The interaction term is statistically significant and discloses the existence of a suppression effect in pregnancy status. Upon testing for interaction effects in this model, current pregnancy status becomes predictive of psychological distress. Thus, marriage clearly plays an important role in the mental health experiences of the women in this study. Psychological distress does vary in the present study at different levels of marital status. Women who are not married are at greater

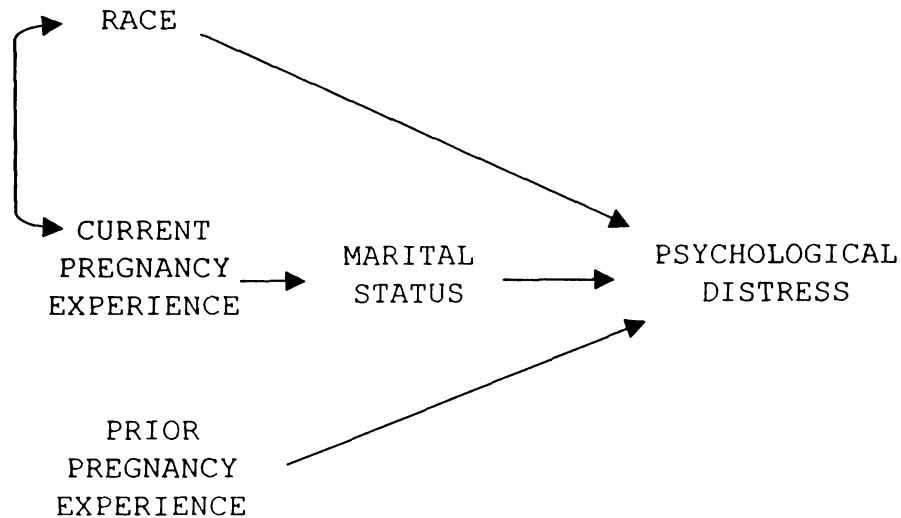
risk for psychological distress and among single women, being pregnant is predictive of distress ($p < .05$). Interaction effects are only significant when applied in the full model using the total sample. These findings are all the more intriguing given the absence of interaction between race and pregnancy or any of the independent measures tested.

The fourth finding of the present study provides for future consideration in regards to pregnancy outcomes. One might expect the proximity of a current pregnancy to supplant the effect of prior pregnancy outcomes in the mental health of women. This study confirms the opposite; rather it suggests that when race is held constant, prior infant death and fetal death become significant predictors of psychological distress and current. The experience of having a live birth in the previous pregnancy is predictive of lower CES-D scores and better psychological well-being. The effects of prior pregnancy outcomes are unmediated by the current pregnancy as confirmed by interaction testing. Subset analyses by race are also reiterative of previously described results and reveal no interaction or differentiation by race.

The empirical findings of the present study lead to the following revision in the conceptual model presented initially:

Figure 2

Revised model of Mental Health, Pregnancy, and Race



The revised model confirms and highlights the significant role of three predictors of psychological distress in women in this study, 1) race, 2) current pregnancy status, and 3) prior pregnancy outcome. The expectation of a greater role for current pregnancy as opposed to prior pregnancy was the rationale for initially excluding this term from the proposed model. Findings not only heighten the importance of the prior pregnancy but negate the original supposition about the relationship of current pregnancy on psychological distress. As a consequence, both measures are incorporated into the final model. The relationships between current pregnancy and race are exogenous, but not causal in this model. The measure of current pregnancy and prior pregnancy outcomes are not

significantly correlated in these data and thus appear unrelated. The contributions of marital status are much more meaningful than originally hypothesized, with marriage serving as a mediator of distress among pregnant women.

Race as initially hypothesized remains an important predictor of mental health in African American women. As noted, the present study is driven by a concern for the disparate experiences and health outcomes of African American women who are pregnant. The race based findings as obtained are quite unexpected. The evidence for distress which is categorized by race is irrefutable; Black women present greater rates of distress in both the descriptive data and as obtained through all regression analysis completed in the study. Despite this clear pattern, race contributed nothing to the contextual analyses and interpretations of this investigation for the various subsets considered. All research questions were evaluated across racial categories through subset analyses and interaction testing. In no case did race significantly interact with any of the other independent variables in the study.

The descriptive trends described previously in regards to race and the independent variables of the study reiterate the findings of Krieger et al. (1993) which document the varying utility of education and income for women of different races. Why are educated Black women as depressed, if not more

depressed, than White women with much less education? The findings also speak to the implications of interpreting the value or meaning of wealth and poverty in the lives of African American women. Income and educational attainment appear to have differing advantages by race. It is perhaps the "socio-" component of *socioeconomics* which portends the greatest influence in the lives of women of color, perhaps even overriding the quantitative contributions implied from the "economic" component of the term. Similarly issues of context effect the quality of life. For example, are the benefits of marriage the same for Black and White women? The absence of marriage does not negate the role of significant others in ones life, an observation which may have greater effect in Black women.

Interdisciplinary and cross-disciplinary models have all expected pregnancy to hold some level of emotional influence (Lips, 1985). Whether the hormonal/biomedical paradigms of medicine, the intrapsychic models of psychology or the family transitions exemplars of sociology, most have expected pregnancy to play some role in the psychological state of women. In addition, some researchers have found an association between parity and depression during pregnancy (O'Hara, 1986). Thus, one would expect this present sample of women who have experienced at least one pregnancy prior to the current conception, to consequently have higher rates of

depression and psychological distress. Therefore, the fundamental findings of no relationship between current pregnancy status and psychological distress is at once conceptually counterintuitive and empirically unexpected. The present study however, confirms the suspicion that for the majority of women, pregnancy is not problematic (Thorpe, 1992). These intriguing findings bring important clarification to this field of study.

The lack of support for a relationship between pregnancy status and maternal psychological distress seems to indicate that within the range of normally experienced psychological variations in pregnancy, there are no important detrimental effects that can be tied exclusively to the pregnancy itself. This finding parallels those found in Istvan's (1986) work on psychosocial factors in childbirth. In the lives of most women, the occurrence of pregnancy in and of itself, poses no harmful contribution to mental health. It is perhaps society's reification of pregnancy which has supported the misinterpretation of this life occurrence. Lips cautions researchers not to attribute characteristics of emotional symptoms in the pregnancy to the pregnancy itself rather than to 'environmental or dispositional' factors (Lips, 1985:631). This is a critically important warning in contextual considerations of the influences of pregnancy on psychological distress. The findings of the present study suggest that

attributes of a woman psychological status, may not necessarily be attributed to her pregnancy. Instead, they challenge us to investigate other conditions of her life which may more directly predict psychological status.

The findings of the present study hold some promise for shifting pregnancy from the medicalized orientation which seems to persist, to a more naturalized approach viewing pregnancy as one of many role attainments that characterize the lives of women. The findings support the "normalization" of the pregnancy experience itself (Knafl, 1986; Anderton, 1998) and remove the mystical contributions attributed to this otherwise reified condition (Mirowsky, 1989).

The state of pregnancy may not necessarily impart some atypical influence, but rather may exacerbate the effect of other conditions in the lives of women, e.g. being unmarried while pregnant. Mirowsky reminds mental health researchers that "sometimes the qualities of a situation determine the effect of being in it" (Mirowsky, 1999:117). The qualities of being pregnant while initially predicted to be characterized by race are more influenced by marital status in the present study. A greater caveat presented by Hobfoll (1995) found that marital status was only predictive of depression before delivery, with single non-cohabiting women at greater risk. Despite the small size of the Hobfoll study and its placement in an inner city setting (Hobfoll, 1995), it raises an

interesting corollary. The findings of the present study confirm those of Hobfoll (1995), reiterating that unmarried pregnant women are at greatest risk for psychological distress. Intriguingly, while pregnancy is only predictive of distress in unmarried women, this distress may resolve after the delivery, perhaps even in the absence of a spouse. Clearly the lives of women are composed of multilayered and multidimensional facets, each with its own methodological challenge for mental health researchers.

Given the additional descriptive findings that unmarried women in this study are more distressed, regardless of current pregnancy state, one must ponder the causal ordering of events at work. Sociologists often grapple with causal/selection models, a seemingly relevant line of inquiry for this situation (Mastekaasa, 1992). At question is whether women are depressed because they are single or are depressed because they are pregnant. Further still, whether depressed women are more likely to remain or become single or whether depressed women are more or less likely to become pregnant. The blending of these two selection paradigms with the causal tiers just mentioned further complicates the empirical elucidation of the contexts and events at hand.

Finally, one is struck by the final arm of the conceptual model which frames the influence of prior pregnancy outcomes on psychological distress. The separation of the prior

pregnancy measurement is further exacerbated by its lack of correlation with the measure of current pregnancy. This seems to suggest that indeed it is not the physiological occurrence of conception and gestation which characterizes the lives of women during that time but rather, the contexts and consequences which follow. The biology of pregnancy remains the same, whether measured in the present or retrospectively, thus the receipt of varying findings appears representative of events which surround the pregnancy and not necessarily the pregnancy itself. As pregnancy state has changed throughout the analyses of this study, what has remained consistent is the influence of social contexts on the psychological well-being of the women in question.

The greatest implications of this study emerge at the intersection of mental health, pregnancy and race and evolve from the absence of race based or pregnancy predicted distress. Explanations for these effects seem lacking in the current literature. Many studies recognize the numerous factors which threaten the mental health of poor people (Kessler, 1994). But as noted in the literature review, a relatively small cadre of studies have investigated the mental health of the special sub-sample of interest here, African American women who are pregnant. Undeniably, the pregnancy outcomes of African American women are deplorable in relation to White women. What is equally as certain, is that these two

trends are unrelated and offer no useful mechanism for directly intervening upon the Black/White gap.

Why is perinatal depression as important a consideration as the more renowned post-partum depression? Depression seems to increase during the third trimester and decrease after delivery for most women. Few women actually develop post-partum depression (Steer, 1992). However depression during pregnancy has been correlated to poor health behaviors (Zuckerman, 1989), and marital conflict (Kumar, 1984), yet its role in the overall well-being of the pregnant and pregnant woman remains contradictory in the literature (Kitamura, 1996). The occurrence of distress in the lives of pregnant women is important not only as a quality of life concern, but is of tantamount importance given the findings of the present study which suggest that distress in the lives of women is not necessarily a consequence of their pregnancy. Thus, while this may be an important point of intervention for matters of well-being, what is clear from the present study is that the current pregnancy status is unrelated to psychological distress and further that any clues to pregnancy outcomes may unfold more cogently from retrospective considerations of past pregnancies.

One might ponder the apparent double jeopardy found in the dynamics between Black women and mental health and potentially those between pregnancy and mental health. While

African American women may be at twice the risk for poor pregnancy outcomes as well as at greater risk of poor mental health, the two disadvantages present more as parallel problems rather than tangential. This investigation fails to substantiate any synergy in the effects of being Black and pregnant as they relate to psychological distress. This absence of findings is perhaps less a reflection of the differences in the lives of Black and White women and more a representation of what is captured in measuring 'race.' While beyond the scope of this present work, these findings push us to further consider emerging issues among race researchers which speculate upon discrimination and other qualifications in the meaning of race as it relates to health outcomes.

The starkness of these findings in relation to many of those found in the literature as well as the newness of these contributions to the literature, require close scrutiny to any weaknesses of this study. Many of the methodological concerns are mediated by the size and scope of the source study and many of the most meaningful concerns are more conceptual than procedural. Lips (1985) found that emotional symptoms increased over the time of the pregnancy (measured symptoms three times over the pregnancy). The present study does not account for stage of pregnancy but given the methodological goal of interviewing women as soon as possible after the critical event (live birth or fetal infant death) one might

assume they were relatively early in the pregnancy (certainly not third trimester).

Despite the attention in the present study to contextual interpretations of findings, the conceptualization of socioeconomic status, as limited by the source study, reinforces a monolithic interpretation of SES especially as related to race. Krieger reiterates the need to recognize the heterogeneity within groups of women categorized by race (Krieger, 2000). The descriptive analysis of these data also suggest variable worth of education and income across race and reiterate the need for creativity in this regard as described by Krieger (2000). Future research should strive to apply more meaningful and interpretative measures of socioeconomic status.

These data also prevent the controlling for other variables which may effect psychological well-being such as prior history of mental illness or any other preexisting psychological conditions (Hobfoll, 1995). However the nationally representative nature and large sample size enhances the likelihood that rates of mental illness among this sample will not exceed national norms or unduly bias the findings. This study also did not control for substance abuse or alcohol, factors which have held relevance in poor pregnancy outcomes (Parker, 2000) as well as poor health behaviors (Zuckerman, 1989).

Despite these conceptual challenges, the present study affords great confidence in the validity of its findings and provides a major contribution to this field of work. As noted previously, the current literature is plagued by small and specialized study populations, placing the applicability of most other works to date in question, despite some intriguing findings. Most authors have noted this liability in their work (Lips, 1985; DaCosta, 2000). The methodological rigor of the source survey and the data analysis applied in the present study resolve most of those concerns. In addition, many of the studies of pregnant women have been retrospective (Collins, 2000). This study not only applies a nationally represented sample of large sample size, but assesses mental health while the women remain pregnant.

The present study provides elementary explanations for very fundamental and legitimate questions about the psychological health of pregnant women. It also suggests the need for a shift in direction regarding these questions. The investigation of psychological well-being during pregnancy is indeed a valid research question. It does not appear, however, to be a critical consideration in questions of pregnancy outcome or racial differences in pregnancy experiences. Future research may elect to either investigate the general psychological health of women during pregnancy, recognizing that for most women there is little difficulty in

this regard, or to concentrate on more clinical indices and diagnoses, which again limits the impact to small population with clinical occurrences. Indeed, Black women tend to have worse mental health and greater psychological distress than their White peers and these same women also are at greater risk for poor pregnancy outcomes. However, this investigation seems to suggest that these two juxtaposed events are simply complicated by the other and not caused by interactions between them.

Future work should strive to more fully describe the social context of the lives of women which exist during their pregnancies. The National Maternal Infant Health Survey is rich in information on various social domains. Subsequent levels of analysis with these data should incorporate and expand social context considerations, such as household density (crowdedness with primary residence (Kitamura, 1996), employment type and job title (Bramwell, 1997) as well as a longitudinal analysis of depressive symptomatology, using the follow-up data in this survey. Despite its detachment from pregnancy status, additional investigation of psychological distress and depressive symptoms are warranted in light of the current literature and in consideration of the significantly greater morbidity among the African American women in the present study.

Conclusion

The familiarity with this field of research acquired through academic training and lived experience establishes in this investigator a particular affinity for this subject as well as a critical mass of knowledge and information. As such, it is a privilege to contribute to a field which is emergent and cutting edge. Certainly the specific focus of this investigation is maternal health and well-being but its connection to the well-being of infants and families is an equally important driving force. This study appears to be the first of its magnitude and scope to empirically test important questions regarding the psychological well-being of pregnancy women of color. One of the methodological challenges of research is the occasional but pertinent need to document what has *not* happened. It is perhaps in this area that the present study contributes most meaningfully, albeit inadvertently. The empirical documentation of the absence of relationships, which would seem otherwise reasonable and expected, is a vital contribution to directing the next step in the work on pregnancy and mental health.

The methodological strength of this study combined with its unanticipated findings may actually raise more questions than answers, a characteristic not uncommon in good studies (Krieger, 2000). It is with some incredulity that we secede the expectation for race-based differences in the pregnancy

experiences of women. However this findings entreats us to avoid reductionist interpretations of the experiences of women of color. Race is more than a descriptor but rather frames the nature of the experiences of certain communities of women in this society. Epidemiology and biomedical sciences are just awakening to the discovery that race is more than innate biology or genetic variation (Krieger, 2000), a point long known and established in sociology. Given the recent and emergent interest in the relationship of social contributions to health and health outcomes, sociology is conspicuously overdue in re-engaging its voice and imagination in this discourse.

Understanding and interpreting the social worlds and contexts of the lives of individuals is what we do as sociologists. Race is a social construct which has clearly delineated the pregnancy experiences and outcomes for women. It is now the charge to creatively identify the true differences which exist between women of varied races which precipitate disparate outcomes. The findings of this investigation confirm that pregnancy is not the context; women experience no differences in that domain. On the other hand, what is known from this study is that the experiences of women vary along social domains and clearly along the prior pregnancy outcome. The next aspiration becomes the clarification of particular dynamics, given the emergent

knowledge that pregnancy is less likely the culprit than suspected.

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