Impact Of Life Events, Trauma, Interpersonal Conflict And Substance Abuse On Pregnancy Outcomes Of Inner City Women

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IMPACT OF LIFE EVENTS, TRAUMA, INTERPERSONAL CONFLICT AND SUBSTANCE ABUSE ON PREGNANCY OUTCOMES OF INNER CITY WOMEN

BY

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Submitted in partial fulfillment of the Requirements of the Degree of Doctor of Philosophy
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CHAPTER I

INTRODUCTION

Introduction

“Although some families are shattered by crisis or persistent stresses, what is remarkable is that others emerge strengthened and more resourceful” (Walsh, 1998, p.3). Family life transitions, such as pregnancy, can provide opportunities for reorganization to overcome vulnerabilities and obstacles with appropriate services and resources. The identification of past traumas and opportunities to obtain valuable and targeted interventions and treatment can alter a pattern of pathology.

In particular, minority women and their families represent a disadvantaged group in our society who suffer from disproportionate risk of ill health (Lawson & Thompson, 1994; La Veist, Keith & Guiterrez, 1995). Diseases such as infant mortality rates in African-American women and AIDS in Hispanic American women are part of the health factors that place them at higher risk than other ethnic groups. African-Americans and Hispanics are disproportionately concentrated in inner-city neighborhoods, as are women who are the heads of households (Martinez & Lillie-Blanton, 1996).

Martinez and Lillie-Blanton (1996) report that evidence continues to accumulate demonstrating that race and gender reflect more about different facets of our society than genetic determinants. Pregnant, minority women living in inner-city environments experience a complex burden associated with poverty, discrimination, community and
interpersonal violence, and chronic stressors. Minority women experience higher rates of infant mortality and morbidity.

Low birth weight (weight at birth of less than 2,500 grams) is the major determinant of infant mortality, as well as a contributor to infant and childhood morbidity in the United States (Institute of Medicine, 1985; Centers for Disease Control and Prevention, 1996). Researchers hypothesize that residential pattern, in particular, inner city, contributes to the unexplained three-fold greater incidence of very-low-birth weight infants among African-Americans compared with whites (Roberts, 1997; Polek, 1991; Collins, Herman & David, 1997; La Veist, 1989). Low birth weight accounts for two-thirds of neonatal deaths (those occurring in the first 28 days of life) (Institute of Medicine, 1985).

Orr, James, Miller, Barakat, Daikoku, Pupkin, Engstrom and Huggins (1996) demonstrated a significant association between exposure to stressors and low birth weight among African-American women. Stressful life events during pregnancy are associated with an increased risk of low birth weight, preterm delivery and spontaneous abortion (Newton & Hunt, 1984; Istvan, 1986). Low birth weight occurs as a result of preterm delivery (length of gestation of less than 37 weeks) and/or growth retardation while in utero (Rosenberg, 1996).

The risk for infant mortality and low birth weight (LBW) is two times greater in African-American infants. The gap between black and white rates has increased from a ratio of 1.6 in 1950 and 1.8 in 1970 to over 2.2 in 1990 (Cramer, 1987; National Center for Health Statistics, 1993). A life-stress paradigm (McLean, Hatfield-Timajchy, Wingo & Floyd, 1993) focuses on stressors, such as life events or chronic stress, may
affect pregnancy outcomes through effects on individual behavior or physiological response. Research on stress during pregnancy suggest an association with adverse outcomes (Wadhua, Sandman, Porto, Dunkel-Schette, Garite, 1993; Istvan, 1986; McDonald, 1968). Lobel, Dunkel-Schetter and Scrimshaw (1992) observed that stress during pregnancy with socially and economically disadvantaged women contributed “significantly and independently to earlier delivery and lower birth weight” (p.37). Further, African-American families are more likely to experience stressful life events because of tenuous economic circumstances (Taylor, Roberts & Jacobson, 1997). Finally, poor pregnant women may have greater exposure to stress, and the accumulated impact requires further exploration.

In addition to general stressors, one stressor that has not been studied primarily in relation to childbirth outcomes, but is prevalent in minority populations, is violence-related trauma. Bassuk, Buckner, Perloff and Bassuk (1998) indicated that pervasive violence in the context of poverty may account for the high levels of emotional disorders, especially Posttraumatic Stress Disorder (PTSD). Approximately 35% of the low-income women had a lifetime incidence of PTSD, a rate about three times that of women of all ages in the National Comorbidity Survey completed by Kessler, Sonnega, Bromet, Hughes and Nelson (1995). This sample from Worcester, Massachusetts, compared homeless single mothers to a comparison group of single mothers receiving public assistance. A high percentage (83%) of the low-income women in this study reported having been physically or sexually assaulted during their life spans. In comparison to poverty, Lawson, Rodgers-Rose, and Rajaram (1998) study of primarily middle-class, college-aged Black women (N=323) earning between $30,000 and $39,000 having
private insurance reported 25% domestic violence incidents. Therefore, the cumulative impact of victimization experiences may provide the foundation for differential life trajectories that place inner-city women more at risk for PTSD.

There is both research and clinical evidence suggesting that PTSD may also be the most accurate diagnosis for many survivors of interpersonal and family violence (Brown, 1992; Davidson & Foa, 1991; Dutton, 1992; van der Kolk, 1987). Inner-city pregnant women are at greater risk of interpersonal and community violence than women residing in suburban communities. Consideration of the extent and range of their levels of traumatic experiences requires investigation, especially related to birth outcomes.

Inner-city community violence has been identified as having a direct link to violence within the family environment (Cicchetti & Lynch, 1993). High rates of intrafamily violence has been found in epidemiological surveys (Straus & Gelles, 1986). Research from a ecological/transactional model on child maltreatment has suggested that society supports such high levels of violence in families. Communities where violence is prevalent may contribute to the proliferation of spousal abuse and child maltreatment in the family. These neighborhood communities of poverty and unemployment commonly endure chronic stressors and traumas. Although there is no consensus on the roots of violence, Bachman and Salzman (1995) indicated that the rate of violent attacks by intimate partners, former spouses and former partners was highest (19.9 per 1,000 women in 1992-1993) among women in families with incomes less than $10,000 per year compared with a rate of 4.5 per 1,000 for women in families with annual incomes in excess of $50,000. As a public health concern, the cost of violence includes the long-term physical and mental disabilities and the adverse psychological and behavioral
consequences which occur for all family members. Many families have the capabilities and resources to overcome such violence but many do not have the resilience to surmount the adversity.

A relationship between interpersonal violence and pregnancy outcomes has been suggested by clinical experience, documented and studied (Petersen, Gazmararian, Spitz, Rowley, Goodwin, Saltzman, & Marks, 1997; Parker, McFarlane & Socken, 1994). Violence perpetrated against pregnant women has increased (Gazmararian, Lazorick, Spitz, Ballard, Salzman & Marks, 1996). Physical abuse during pregnancy has been recognized as a significant risk to the health of both the mother and infant (Peterson, Gazmararian, Spitz, Rowley, Goodwin, Saltzman & Marks, 1997). The adverse effects of domestic abuse on women have been studied and confirmed. Walker (1991) documented high rates of Posttraumatic Stress Disorder (PTSD) in women exposed to spousal or partner abuse. West, Fernandez, Hillard, Schoof and Parks (1990) found that 47% of their sample of women from a battered women’s shelter met criteria for PTSD.

Two outcomes—mean birth weight and incidence of low birth weight—have been consistently found to be statistically different between abused and non-abused women (Bullock & McFarlane, 1989; Dye, Tolo var, Lee & Kenny, 1995; Parker, McFarlane & Socken, 1994; Schei, Samuelson & Bakketeig, 1991). However, the relationship between trauma in pregnant women and pregnancy outcomes continues to remain conceptually unclear primarily because of a lack of research. Clarification of the relationship between trauma and pregnancy outcomes is especially crucial for African-American infants since their mortality rate are twice as great as for Caucasian infants.
Alcohol use during pregnancy is a serious problem, which may contribute to pregnancy outcomes. Approximately 20% of women will drink some alcohol during pregnancy (Chang, Wilkins-Haug, Berman, Goetz, Behr & Hiley, 1998). No safe established level of alcohol consumption during pregnancy has been found; risk for negative pregnancy outcomes may occur with as little as one drink per day (Mills, Graubard, Harley, Rhoads & Berendes, 1984). Both violence and substance use have been found to be prevalent in pregnant women. Campbell and Fishwick (1993) stated that, although there is no consensus concerning the causal pathways between violence victimization and substance use, one can hypothesize that some women turn to substances to alleviate the physical and mental pain associated with violence. Thompson and Kingree (1998) found in a sample of 96 low-income, substance abusing pregnant women that violent trauma was present in their life histories (72% had been sexually assaulted; 67% had experienced physical assault; and 68% had experienced an indirect violent trauma). Linkages between trauma, violence, substance use and pregnancy outcomes have begun to be identified in the research and warrant further investigation.

One aim of this study is to explore the relationship between level of traumatic events experienced by inner-city pregnant women and pregnancy outcomes. A primary goal of this study is to examine the relationship between life events and interpersonal conflict and pregnancy outcomes while evaluating symptoms of PTSD and a diagnosis of PTSD as potential mediating variables. A secondary goal is to identify the impact of substance use on the relationship between life events, interpersonal conflict and trauma on pregnancy outcomes.
Background

This study rests on the theoretical models of general systems and trauma theory for understanding pregnancy outcomes in inner-city minority women. These two frameworks are especially relevant for capturing the impact of community violence on life courses when stress is part of daily living. James (1993) has indicated that there is an under emphasis on the structural factors (socioeconomic class and ethnicity) and their likely roles in generating the behavioral and biomedical risk factors which have been the primary foci of research for disadvantaged women. Thus, the conceptual model should involve strong connections between the structural factors (both cultural and economic) and individual-level variables in determining risks such as poor pregnancy outcomes.

Open systems have reciprocal processes in which a change in one subsystem will create subsequent change in all other interlinking systems. A family is a small social system (Bowen, 1978) and therefore subject to the same laws as other open systems. According to Bentovim and Kinston (1991) "it is only truly possible to understand the phenomena of violence within family contexts by taking an approach that attempts to involve society, the individual and the family" (p.14). McLean, Hatfield-Timajchy, Wingo and Floyd (1993) suggested a paradigm in which stressors, potential modifiers such as personal disposition, psychological state and social networks, and social support, compose the conceptual framework. These researchers reported that past studies did not explore the differential exposure of inner-city women to stressors such as chronic strains, role strains, and the lasting effects of remote traumatic stressor or unique stressors specifically related to racism. These factors may be responsible for
differences in pregnancy outcomes seen in inner-city, minority women.

The present study involves exploring the impact of general life stressors as well as specific traumatic events on pregnancy outcomes in inner-city women. Green, Wilson and Lindy's (1985) conceptual model of posttraumatic stress disorder focused on the process by which particular traumatic events lead to a particular psychological process and finally to some symptomatic or functional outcome. This model accounts for both the characteristics of the particular individual and the characteristics of the environment in which the individual experiences and attempts to recover from a trauma, similar to the systemic paradigms described above. This PTSD model of an individual and the social context claims that whether the person is able to assimilate the trauma gradually and restabilize is dependent on the individual characteristics brought to bear when perceiving, understanding, and dealing with the event as one interfaces with the social environment.

Component aspects of individual characteristics are the pretrauma personality, defensive styles, appraisals, and coping behaviors. The extent of the traumatic experience, the recovery environment and the individual characteristics determine whether the individual has the capacity to process the trauma successfully or will develop pathological outcome such as PTSD (Green, Wilson & Lindy, 1985). This has been supported in the research literature on trauma in children. Research by Wind and Silvern (1992) indicated that attributional styles, coping resources, family support, and the degree of trauma will alter the course of the traumatic response. Walsh (1998) indicated that perseverance, courage, encouragement, hope, optimism and active mastery are essential in maintaining the strength to overcome an adversity. Inner-city women who have symptoms of PTSD could benefit from identification and psychosocial interventions,
thereby, possibly altering negative pregnancy outcomes.

McFarlane and Yehuda (1996) derived a conceptual framework of PTSD involving processes similar to Green, Wilson and Lindy (1985). The traumatic processes include an acute stress response, a chronic stress response to the traumatic event and an individual’s adaptation to having endured the chronic symptomatology with the positive or negative outcome (Pearlin, Lieberman, Menaghan, & Mullan, 1981). Breslau, Davis, Andreski and Peterson (1991) suggested that the type of traumatic experience may have a major impact on the long-term course of PTSD. Both conceptual models of PTSD (Green, Wilson & Lindy, 1985; McFarlane & Yehuda, 1996) provide support for this study by highlighting the importance of considering the larger-systems framework when studying high-risk populations. The present study will focus on pregnancy outcomes with particular attention to trauma, life events, interpersonal violence and substance use as potential causal links.

Significance of the Study

Inner-city, pregnant, minority women have been exposed to an array of life stressors which impact pregnancy outcomes (Orr, James, Miller, Barakat, Daikoku, Pupkin, Engstrom & Higgins, 1996). Black infants are disproportionately represented in preterm delivery and very low birth weight (National Center for Health Statistics, 1990). According to the National Center for Health Statistics, infant mortality rates were highest for infants born to black mothers (14.6%) (MacDorman & Atkinson, 1998). Rowley, Hogue, Blackmore, Ferre, Hatfield-Timajcky, Branch and Atrash (1997) indicated that the high rate of preterm delivery in African-American women is embedded in a sociobiological framework where both the social and physical environments are
impacting pregnancy outcomes along with the neurochemical factors. The physical environments of poverty, community crime, and violence may have a major impact on pregnancy outcomes. These areas have received little attention in the research literature (Rowley, Hogue, Blackmore, Ferre, Hatfield-Timajciky, Branch & Atrash, 1997; Orr, James, Miller, Brakat, Daikoku, Pupkin, Engstrom & Huggins, 1996).

Low birth weight is still the largest cause of infant mortality in the United States. National Center for Health Statistics (1992) contain estimates that 7.2% of all infants born in this country have low birth weight. In terms of ethnicity, the low birth weight incidences are 13.6% in African-American women and 6.8% in Hispanic women (National Center for Health Statistics, 1992). In 1988, 18% of black live births and 8.5% of white live births were preterm (National Center for Health Statistics, 1990). “Although preterm birth rates are higher in African-American community for certain reasons (proportionately more unwanted conceptions, poorer nutrition, less sufficient prenatal care and stress associated behavioral risk) most of the excess of preterm delivery remains unexplained” (Hague & Hargraves, 1995, p. 255).

Health, economic and psychological consequences result from adverse birth outcomes. Persistent feelings of anger, shock, guilt, helplessness, and denial are among the several indices of distress seen in families of an infant born with adverse pregnancy outcomes. In addition, feelings of distress have a negative impact on the quality of parent-infant interactions (Zeana, Boris & Larrieu, 1997). Exploration of the contextual and interpersonal conditions which impact pregnancy outcomes may result in interventions to attenuate the consequences of adverse birth outcomes.

The extent of trauma may influence not only the outcome of a pregnancy
but also impact the relationship of the new dyad. Several problems have been identified in families when a member has PTSD symptoms (Harkness, 1993): (a) constricted intimacy and expressiveness; (b) overt hostility; and (c) global maladjustment and recurrent crises. These behaviors would have profound implications for the mother-infant attachment process and thus warrant further investigation.

Statement of the Problem

In order to accomplish the developmental tasks of pregnancy and to reduce adverse pregnancy outcomes, psychosocial stressors must be identified and interventions initiated early in pregnancy (Orr, et al, 1996). A wider systems perspective may be appropriate for conceptualizing the cumulative stressors and traumatic events experienced in poverty and inner-city living which challenge a pregnant woman’s resources and strengths. Past traumas and violence may impair a pregnant woman’s ability to care for herself and her unborn child during the nine months. The capacity to cope with adversity may be linked to the extent of stress and traumas in a pregnant woman’s life course. The proposed study involves exploring the relationship between extent of traumas and pregnancy outcomes in inner-city women.

This research is an exploratory study aimed at gaining further conceptual clarity and specificity in understanding the relationship between traumas, stressors, and pregnancy outcomes for inner-city women. This study will utilize structural equation modeling in order to accomplish simultaneous analysis of the extent of trauma and co-occurring substance use on pregnancy outcomes. Research provides evidence of direct links between a pregnant woman’s experiences of both interpersonal violence and stressful life events and negative pregnancy outcomes. However, the
pathways of these associations have not been determined. Previous researchers examined pregnancy outcomes without regard to the traumas faced concurrently by the pregnant woman and her family. The present study tests three models which examines current and past traumas, life events, interpersonal violence, substance use, and their causal link to pregnancy outcomes.

Figure 1 depicts the models being tested in this study. The first model asserts that (a) extent of trauma in the inner-city woman’s lives will predict pregnancy outcomes, (b) life stress and interpersonal conflict will predict pregnancy outcomes, (c) the extent of trauma, life events and interpersonal conflict, and substance use will predict pregnancy outcomes.
Hypothesis 1

Traumatic Events \[\rightarrow\] Pregnancy Outcomes
Life Stress
Interpersonal Conflict

Hypothesis 2

Traumatic Events \[\rightarrow\] Symptoms of PTSD \[\rightarrow\] Pregnancy Outcomes
Life Stress \[\rightarrow\] (Symptom Severity Score)
Substance Use \[\rightarrow\] Interpersonal Conflict

Hypothesis 3

Traumatic Events \[\rightarrow\] Symptoms of PTSD \[\rightarrow\] Pregnancy Outcomes
Life Stress
Interpersonal Conflict \[\rightarrow\] (Symptom Severity Score)
Substance Use

Figure 1. Hypothesized Models
Hypotheses

1. There will be a direct relationship between traumatic events, life stress and interpersonal conflict and pregnancy outcomes.

2. There will be an indirect relationship between traumatic events, life stress, interpersonal conflict and substance use and pregnancy outcomes mediated by symptoms of PTSD.

3. Women with substance use will have greater traumatic events, interpersonal conflict, life stress and symptoms of PTSD and greater negative pregnancy outcomes.

Definition of Terms

Symptoms of Posttraumatic Stress Disorder (PTSD): PTSD is the development of characteristic symptoms following exposure to an extreme traumatic stressor involving direct personal experience of an event (Foa, 1995). A person’s response to the event must involve intense fear, helplessness, or horror. This stressor or event is so overwhelming and out of the ordinary compared to one’s usual experience that one’s ability to cope with it is overwhelmed. Following such an event or stressor, three types of symptoms appear: re-experiencing symptoms, avoidance and numbing of responsiveness symptoms and increased arousal symptoms (American Psychiatric Association, 1994).

Traumatic Events: Traumatic events are stressors outside the realm of the ordinary (Mcfarlane & De Girolamo, 1996). Traumatic events violates the existing ways of making sense of one’s reactions, structures one’s perceptions of other’s behaviors and changes the way an individual interacts in the world.

Inner-city pregnant women: Pregnant women, between the ages of
18 and 40, in the first, second or third trimester that reside in the city of Newark or the surrounding areas, will be selected for this study. The majority of the clinic services African-American and Latino women. The central city neighborhoods are composed of a combination of substandard housing, and in urban areas with depressed economies (Schulz, Israel, Williams, Parker, Becker & James, 2000) and revitalized areas of residential housing and employment. Parker et al., (1994) found that reporting abuse increased in the second and third trimester. Childbearing years for women ranges from 18 to 40 years of age. According to Parker, McFarlane and Soeken’s study (1994), both teenagers (13-19 years) and adults (20-42 years) experienced significant risk for abuse and negative pregnancy outcomes. Therefore, the age group for this study will be 18 to 40 years to ensure a range of developmental levels.

Interpersonal conflict: Interpersonal conflict is defined as actions and behaviors which family members might take during interactions to manage and resolve problems (Straus, 1990). Private, intimate violence occurs within a larger context of cultural and social violence (Richters & Martinez, 1993). Stress contributes to inappropriate and harmful ways of managing conflict with greater likelihood of family families (Straus, Gelles & Steinmetz, 1980; Osofsky, Wewers, Hann & Fick, 1993).

Life Stress: Life stress refers to that quality of experience, produced through a person-environment transaction, that, through either overarousal or underarousal, results in psychological or physiological stress (Aldwin, 1994). Life stress is defined as a pregnant woman’s idiosyncratic perception of events as negative at a particular time in her life course.

Alcohol Use: The initiation of alcohol intake rests with social, religious and
psychological factors (Schuckit, 1995). Alcohol use can include occasional use to
frequent intoxication and alcohol abuse. Alcohol can have deleterious effects on the
developing fetus by crossing the placenta and in high enough doses can produce fetal
death and spontaneous abortion (Schuckit, 1995).

**Drug Use:** Drug use is defined as a range of utilization of drugs from over the counter
drugs to drugs of abuse. Drugs taken by the pregnant mother can have serious effects on
the developing fetus by crossing the placenta (Lester, Boukydis & Twomey, 2000)

**Pregnancy Outcomes:** Pregnancy outcomes are classified as follows:

**Infant Condition Outcomes**

(Rosenberg, 1996)

1. Normal Pregnancy Outcome: Delivery of infant with apgar above 7, weight above
   2,500 grams, admitted to the new born nursery and gestational age of 37 weeks or
greater.

2. Negative Pregnancy Outcomes:
   a. Apgar Score: One minute and Five minutes (less than 7 constitute poorer
      outcome).
   b. Fetal distress is described as assisted ventilation/ endotracheal intubation/ cardiac
      massage.
   c. Admission to intensive care nursery:
   d. Birth weight less than 2,500 grams;
   e. Stillbirth or neonatal death within 48 hours of delivery
   f. Gestational weeks (preterm delivery less than 36 weeks at birth) (full term equals
      37 week or more weeks at birth) (marginally term is 36 weeks at birth)
g. A definition of a pregnancy that ends at spontaneously at 20 completed weeks of gestation or earlier will be considered a negative pregnancy outcome.

Limitations

The proposed study examines the relationship between extent of trauma, life events, interpersonal conflict, family coping and pregnancy outcomes among an inner-city, university hospital clinic exposed to urban poverty and high prevalence of crime and violence. The pregnant women enrolled in this study will from the urban and surrounding areas. Results, therefore, should not be generalized to distinctly different populations of pregnant women such as white, Asian, or Native American women. In addition, tools utilized for Spanish speaking women were read by a Spanish speaking research assistant and not read from a developed translated tool.

Methodological limitations of study include the nature of the sample and the design. The sample consisted of inner-city pregnant women attending a university hospital prenatal clinic in the New York metropolitan area. The design did not allow for multi-site comparisons and therefore, the study does not allow generalizations beyond the parameters of the study, nor can causality be established. Further study with different populations in different demographic characteristics will be needed.

Women who participated in this study did so on a voluntary basis. Voluntary participation may bias results because women were not randomly sampled. The lack of random sampling can lead to bias attributable to self-selection.

The design has two limitations. Since it is not experimental, causality can not be established. Lack of control for additional factors that may impact pregnancy outcomes is also a limitation. Stress may trigger a number of physiological mechanisms according
to its duration and timing, genetic variability, the individual's coping style, social support, personal control, and the nature of the stressful stimuli (Rowley, 1994). These physiological mechanisms such as disruption of the autonomic nervous system and the hypothalamic-pituitary-adrenal axis are also implicated in influencing pregnancy outcomes (Wadhwa, Sandman, Porto, Dunkel-Schetter, & Garite, 1993; Axelrod and Reising, 1984) and are not controlled as part of this study.

Role strain has not been assessed in this study. Nevertheless, several studies have found an association between work strain and adverse pregnancy outcomes (Mamelle, Laumon, & Lazar, 1984). However, Klebanoff (1990) found no association of work strain and preterm delivery.
CHAPTER II

REVIEW OF THE LITERATURE

Introduction

This chapter will review the current literature examining pregnant, inner-city women from a perspective of general systems and trauma models. General systems theory serves as a guide to the literature review focusing on the relational and contextual influences present in inner-city, pregnant women and the potential implications for pregnancy outcomes. In particular, prevailing community violence and its impact on family relationships and interpersonal violence will be explored as potentially influencing the psychological development of trauma in inner-city women. Community and relational violence compounded by the socioeconomic conditions of the inner-city are component parts of the ethnocultural stressors and demands of inner-city pregnant women. These life stressors and the resultant potential traumas will be explored as part of the causal links to pregnancy outcomes. Finally, the literature on substance abuse related to both trauma and violence and pregnancy outcomes will be discussed.

Violence involving or inflicted on pregnant inner-city women has been the focus of several research studies. In particular, Peterson, Gazmararian, Spitz, Rowley, Goodwin, Saltzman and Marks’ (1997) review of the literature on violence and pregnancy outcomes presented a focused strategy for future research efforts on violence, stress, and physical trauma together with moderators such as psychological state, personal disposition, social support and health behaviors. However, the impact of
psychological trauma has not been explored.

Orr, James, Miller, Barakat, Danikiku, Pupkin, Engstrom and Higgins (1996) suggested that research should be directed to more in depth consideration of psychosocial stessors present within the inner-city living dynamic. Pregnancy takes place within a complex cultural and social context (Zachariah, 1994) which will impact the outcomes of pregnancy. The long-term impact of inner-city living on the developmental stage of pregnancy for inner-city women needs to be examined. Since escaping poverty and leaving the inner-city may not be a viable option for most women, it is important to begin to understand the effects of repeated exposure over the lifetime.

Research studies on inner-city childhood have established that children in the inner-city are exposed to increased violence both within the community at large and within the family structure (Osofsky, Wewers, Hann & Fick, 1993). Such exposure to violence has been linked to traumatic responses in children and is thought to create later evidence of symptoms of PTSD in women (Follette, Polusny, Bechtie & Naugle, 1996). Substance use to cope with the stress and pain resulting from violence has also been identified as an important consideration in the literature but has not been studied within the context of trauma for pregnant, inner-city women (Thompson & Kingree, 1998).

In summary, the contextual variables of inner-city living, cumulative life events, and interpersonal conflict may all contribute to traumatic responses. Traumatic events and their relationships to pregnancy outcomes have not, to date, been investigated. The following review of the literature provides the foundation for studying the impact of violence and trauma on pregnancy outcomes in inner-city women.
Inner-City, Minority Women Pregnancy Outcomes and Life Stress

Pregnancy outcomes can be classified into two areas: (1) neonatal status at birth and (2) maternal health status surrounding labor, delivery and birth. The most severe pregnancy outcomes are stillbirth and neonatal death (infant death within 29 days after birth) (Pritchard, MacDonald & Gant, 1987). Additional negative pregnancy outcome indices associated with neonatal status at birth are low Apgar scores (a 5 minute score below 7) (Apgar, 1966), low birth weight (less than 2500 grams, a World Health Organization criterion), and preterm delivery (before 37 completed weeks of gestation) (Pritchard, et al., 1987). Low birth weight infants are usually either small for gestational age or preterm. Further evidence of poor outcomes include fetal distress, respiratory distress, and resuscitation after delivery.

A number of factors increase the risk of having a low birth weight infant. These factors include “socioeconomic factors such as young maternal age and low socioeconomic status, medical conditions such as diabetes and hypertension, inadequate access to prenatal care, and behavioral risk factors such as smoking and alcohol use during pregnancy” (Orr, et al., 1996, p. 460). Prior researchers have suggested that exposure to psychosocial stressors also can be a contributor of low-birth weight infants.

Pearlin, Lieberman, Menaghan and Mullan (1981) stated that “The process of social stress can be seen as combining three major conceptual domains: The sources of stress, the mediators of stress and the manifestations of stress” (p. 337). Selye (1956) characterized the natural state of an organism as one of equilibrium between many inner and outer forces that it hosts. Change impacts an organism to create disequilibrium. The struggle for homeostasis can be wearing and exhausting, and, under
these conditions, the organism becomes outstandingly vulnerable to stress and its physical and psychological consequences.

Stress is defined “as a psychosocial factor that may arise from sources such as life events or from chronic strains during pregnancy” (Petersen, et al., 1997, p. 367). Inner-city women are more likely to encounter major stressors. They are more isolated and are more likely to experience illness or death of their children or imprisonment of their partners; demeaning interactions with public welfare systems; racial discrimination and poverty (Belle, 1982; Binsacca, Ellis, Martin & Petitti, 1987; Gonzalez-Calvo, Jackson, Hansford, & Woodman, 1998; Schulz, Israel, Williams, Parker, Becker & James, 2000). In regard to poverty, for example, unemployment rates for African-American are twice that of European-Americans. Nearly one-third of African-American families and half of African-American children live below the poverty threshold (U.S. Bureau of the Census, 1995). Economic disadvantage is a significant predictor of negative life events (Dohrenwend & Dohrenwend, 1970). These contextual circumstances, violence, poverty and racism, augment the burden of inner-city, pregnant women and are likely to have deleterious outcomes on their psychological well-being.

Historically, researchers on pregnancy outcomes and stress have demonstrated conflicting results as to a significant relationship between life events and infant prematurity (Ching & Newton, 1982; Larsson, Spangberg, Theorell & Wager, 1986; Berkowitz & Kasl, 1983; Newton & Hunt, 1984). Three recent studies have supported a relationship between life events and negative pregnancy outcomes.
In the first study, Lobel, Dunkel-Schetter and Scrimshaw (1992), utilized a biopsychosocial model with a structural-equation-modeling procedure. The model tested the effects of medical risk and prenatal stress on indicators of prematurity (birth weight and gestational age) with a control on parity. One-hundred thirty women, 83 were Latino, 26 were African-American, and 16 were Anglo-American, mostly from socio-economically disadvantaged backgrounds were part of the sample. Structural equation model (SEM) was developed and tested. The results of the logistic regression analyses corroborate the results of the SEM where the stress factor significantly predicted both low birth weight (standardized logistic regression coefficient = .85, p < .01) and preterm delivery (standardized logistic regression coefficient = .30, p < .03). In summary, the stress of low income, predominately for ethnic-minority women during pregnancy, contributed significantly and independently to both preterm delivery and low birth weight, thus supporting a biopsychosocial model.

In the second research study by Orr, et al, (1996) 77% of the 2,000 pregnant women were African-American, 23% were Caucasian. Twenty-eight percent of the sample had a chronic disease such as hypertension or diabetes. Ten percent of the full sample of women had a low-birth weight children. For the entire sample, exposure to stressors was not significantly related to low birthweight. However, African-American women demonstrated statistical significance in bivariate association between exposure to stressors and low birthweight (OR = 1.4; $\chi^2$ = 3.7; df = 1; p < .05). In addition several other variables were also significant: African-American race, smoking, drug use, alcohol use, hypertension, low pre-pregnancy weight, first or second semester bleeding, and previous poor pregnancy outcomes. The significant association between exposures to stressors and
low-birth weight among African-American women gives emphasis to the importance of “...psychosocial stressors in the lives of African-American women, who often face daily the multiple stressors of poverty, crowding, violence in their neighborhoods, illness and lack of employment” (Orr, et al., 1996, p. 464).

In the third study (Collins, David, Symons, Handler, Wall & Andes, 1998) tested the relation between two independent variables: perception of residential environment and stressful life events and very low birthweight among urban African-American women. A structured questionnaire was administered to mothers of very-low-birth weight infants (<1,5000 gm; N=28) and critically ill non low-birthweight infants (>2,500 gm; N=52). The questionnaire assessed 24 stressful life events and the perception of neighborhood and family support checklist. All the tools were developed for that study with no reference to validity or reliability. Nevertheless, forty-two percent of the mothers who resided in self-perceived “unfavorable” communities experienced three or more stressful life events during pregnancy compared to 30% of mothers who lived in self-perceived “favorable” communities. In a logistic regression model, the adjusted odds ratio of very low-birth weight were 3.0 (95% CI=1.1-8.2) and 1.7(95% CI= 0.6-4.6), respectively. The quality of the tools impacts the results of this study but it certainly constitutes a beginning effort to incorporate contextual factors in research on pregnancy outcomes.

The results of the final study supported the hypothesis linking adverse pregnancy outcomes to African-American pregnant women while adjusting for stressful events, substance use, and other demographic factors. In this study (Copper, Goldenberg, Das, Elder, Swain, Norman, Ramsey, Cotroneo, Collins, Johnson, Jones, Meier & the National
Institute of Child Health and Human Development Maternal-Fetal Medicine Unit Networks, 1996) the sample of 2593 women (63% African-American; 35% White; 1%
Hispanic; <1% Asian; and 1% other) were assessed for anxiety, stress, self-esteem,
mastery, and depression using a 28-item Likert scale. The odds ratios for African-
American pregnancy outcomes from logistic regression model, after adjustment for
maternal demographics, stress and substance use, was significant for spontaneous preterm
birth (OR=1.65, 95% CI=1.01-2.69) (p=0.05) and significant for low birth weight
(OR=2.06, 95% CI=1.53-2.79) (p<0.001). Black race continues to be a significant
predictor of preterm birth and low birth weight. The outcome of this study supports the
need for continued research on other contextual variables interacting either at a
psychological or physiological level to explain the continued negative pregnancy
outcomes for African-American women.

Violence: A Developmental Context in Inner-City Communities

The developmental years of inner-city children and young adults, in
many instances, are dominated by many forms of violence. Violence manifests itself
along a spectrum from harassment to homicide. Health statistics have documented higher
bicide rates for male and female African-Americans of all ages than for other ethnic
minorities or Caucasians (Center for Disease Control (CDC), 1990; U.S. Department of
Justice (USDOJ), 1994; Cotton, Resnick, Browne, Martin, McCarraher, & Woods,
1994). The 1980 homicide rate for 15-to 19 year-old African-American males was 48.64
per 100,000; in 1992 the rate increased to 128.82 per 100,000(CDC, 1996). Interpersonal
violence, such as child or spouse/partner abuse, reinforces the impact of community
violence on victims and perpetrators alike. Child abuse and family victimization rates for
African-American children were six times higher than the overall national prevalence estimates (Richters & Martinez, 1993). A recent self-survey of children and adolescents (Finkelhor & Dziuba-Leatherman, 1994) estimated physical abuse rates for African-American as only slightly elevated above those of Caucasian families.

Phenomenological components of living in a violent community are presented by Drell, Siegel and Gaensbauer (1993) suggest that the impact of a child’s exposure to violence depends on multiple factors including age of the child, frequency and type of violence exposure, characteristics of the neighborhood, amount and quality of the caretaking, experience of previous traumas, proximity to the violent event, and the familiarity with the victim or perpetrator. Perception and memory will also affect the behavioral, psychological, and physiological outcomes of a traumatic experience.

Childhood victimization appears to be pervasive in this country. Finkelhor and Dziuba-Leatherman (1994) reported a study completed on 2000 children aged 10 to 16 years who were interviewed in a national telephone survey. One quarter of the children reported being victimized, one in eight had experienced an injury and one in a hundred required medical attention. The results of the study revealed that ethnicity, family income, region of residence, and type of metropolitan area were also associated with risk for victimization. African-American (59%) and Hispanic (54%) children generally, and those living in large cities, were more likely to experience victimization. African-American youth had particularly elevated rates for sexual assault (18.8%), kidnapping (10.4%), and family assault (16.1%). Finkelhor and Dziuba-Leatherman (1994) strongly recommended that more research should be focused on the
potential developmental and longitudinal physical and psychological sequelae of violence.

Research has documented numerous studies on the extent of youths’ exposure to violent communities over the past 10 years (Jenkins & Bell, 1997). Richters and Martinez (1993) studied 165 children and their families in a low-income moderately violent neighborhood in Washington, DC. Both younger and older children were significantly more likely to have witnessed violence directed at someone else than to be victimized themselves. As reported by their parents, nineteen percent (19%) of younger children (Grades 1 & 2) (n=77) reported being victims of violence (3=shootings; 1=stabbings; 9=muggings; 5=physical threats) versus witness to violence (9=shootings; 13=stabbings; 1=sexual assault; 25=muggings; 17=physical threats) whereas 32% of older children (Grades 5 & 6) (n=51) had been victimized by some form of violence (6=shootings; 4=stabbings; 2=sexual assault; 8=muggings; 8 physical threat) versus witness to violence (14=shootings; 4=stabbings; 4=sexual assault; 43=mugging; 18=physical threats).

In this same study, the parents’ responses on the Conflict Tactics Scales (CTS-Straus 1979) indicated that a significant number of children’s homes were characterized by relatively high levels of violence between adults. Fifty percent of the sample of parents noted minor violence compared with a 13% national rate of intrafamily violence. Parents reported severe violence (32%) compared to 6% nationally. Richters and Martinez (1993) underscored the fact that “some children in violent neighborhoods are raised in a subculture of violence beginning in the home ...” (p. 12).

Repeated and chronic exposure to violence appears to be a pattern and part of the
developmental trajectories for inner-city youth. Jenkins and Bell (1997) studied a sample of 200 inner-city, high-school students. Seventy-percent reported witnessing a shooting or stabbing of a friend or family member. Osofsky, Wewers, Hann and Fick (1993) found in a study of 53 fifth-graders in New Orleans that over one-third of these children had witnessed a shooting, stabbing, or rape.

Community violence studies have found substantially higher levels of victimization, physical fighting, routine gun carrying, self-reported and officially documented assaults on others and witnessing of violent acts for African-American youth than for Caucasian or other ethnic minority youth (Yung & Hammond, 1998). Schubiner, Scott and Tzelepis (1993) studied 246 inner-city African-American youths and young adults (14 – 23 years) regarding exposure to and participation in violent acts. Within 90 days of the survey, 58% had witnessed a physical fight, 34% had seen someone shooting a gun, and 19% had seen one fight involving knives. Forty-two percent of the respondents witnessed a shooting or knifing with 22% having seen someone killed. Nine percent had seen more than one person killed. Fourteen percent (34) of the respondents (N=246) were rated at increased risk (psychological severity rating of 4 or 5) for being a perpetrator of violence in the future. The violent quality of life for inner-city youth appears to impact their decisions on routes to school, school activities, choice of friends, and safety concerns for their family and friends.

In summary, if an assumption is made that a large number of inner-city pregnant women have lived for part of their childhood lives with the above contextual variables of community and intra-familial violence, then exploring the level of traumatic events and their relationships to pregnancy outcomes should be a consideration.
Interpersonal Conflict, Inner-City Pregnant Women and Pregnancy Outcomes

Interpersonal conflict has been conceptualized in several different ways in the literature. Social-learning theory (Dutton, 1995) involves an emphasis on violence as a learned response to stress supported by the immediate rewards of control, feelings of success, and cathartic expression of anger. Herman and van der Kolk (1987) identified intergenerational transmission of trauma as the basis for a conceptual model regarding the origins wherein spousal abuse has been linked to earlier victimization in the form of childhood abuse.

Violence also has been conceptualized as a conflict tactic. Conflict theorists assume that conflict is a normal part of all behavioral interactions and the basis of change. Feminist theory suggests that violence is inherently a tactic of coercive control to maintain power (Bograd, 1988; Jones & Schechter, 1992). Nevertheless, private, intimate violence occurs within a larger context of cultural and social violence (Richters & Martinez, 1993). A general-systems theory of violence, therefore, implies that violence is conceptualized and regulated within an individual, relational and contextual set of influences.

Poverty, discrimination, and crime create a chaotic base for inner-city family functioning. Actual structural factors such as stressors, unemployment, financial insecurity, and health problems are considered a component part of the underlying basis for violence (Gelles & Straus, 1988). The development of family violence, nonetheless, can also be partially attributable to individual personality factors, family interaction patterns, poverty, social disorganization, and acute stressors in the cultural context in which a family lives (Belsky, 1993; Cicchetti & Toth, 1995). Pregnancy and minority
status place women in a one-down position in an already eroded power base making them particularly vulnerable to the impact of interpersonal violence.

In their National Women’s Study, Resnick, Kilpatrick, Dansky, Saunders and Best (1993) estimated that 9.8 million women, 10.3% of adult American women, have been subjected to a violent physical assault at some point in their lives. McFarlane, Wilst and Watson (1998) study indicated that 32% (N=105) of pregnant Hispanic women reported sexual abuse by their male partners at least once during the past 12 months. These women also reported significantly higher levels of threats of abuse and physical abuse than women not sexually abused. Aside from the physical trauma itself, survivors of male-partner assaults evidence high levels of depression, suicide ideation, and suicide attempts (Hilberman & Munson, 1977), substance abuse (Jones & Schechter, 1992), intensified startle reactions, disturbed eating and sleeping patterns, and nightmares (Herman, 1992).

The consequences of violence during pregnancy are even more profound. On a general basis, physical abuse during pregnancy is considered a subset of overall female victimization and a significant risk to both the health of the mother and infant (American Medical Association, 1992). Prevalence rates of violence during pregnancy range from 0.9 to 20.1% as analyzed by 13 studies compiled on violence during pregnancy (Gazmaraian, Lazorick, Spitz, Ballard, Saltzman & Marks, 1996). Consistent with Herman and van der Kolb (1987), Helton, McFarlane and Anderson (1987) found that the primary predictor of battering during pregnancy was prior abuse.

Intentional physical traumas may lead to adverse pregnancy outcomes such as low
birth weight and preterm delivery attributable to placental dysfunction (Petersen, Gazmararian, Spitz, Rowley, Goodwin, Saltzman & Marks, 1997). Not surprisingly, additional effects of violence documented by Hilberman and Munson (1977) included high levels of depression, suicide ideation, and suicide attempts. This symptomatology closely parallels the psychological reactions (overwhelming sense of danger, intrusive memories or flashbacks and thoughts of suicide) of pregnant victims to traumatic events of abuse as noted by Browne (1993). Current research does not explore the psychological trauma perpetrated on pregnant women and the relationship to birth outcomes.

Unintended pregnancy is a significant predictor of subsequent violence. In a state-wide population-based sample, Gazmararian, Adams, Saltzman, Johnson, Bruce, Marks, Zahniser and the Prams Working Group (1995) found that nearly 40% of women (N=12,612) reported an unintended pregnancy (unwanted 11.6%, mistimed 31.1%).

Physical violence prevalence rates were highest for women who had unwanted pregnancy (12.1+/− 1.8%) and lowest for women who had an intended pregnancy (3.2+/− 0.4%). Unwanted (24.3%) and mistimed (43.4%) pregnancies accounted for almost 70% of women who reported physical violence. In addition to these precursors, the prevalence of physical violence increased for women less than 20 years of age with less social advantage, less than 12 years of education and who lived in socially disadvantaged and physically crowded conditions.

In particular, Parker, McFarlane and Soeken (1994) studied a three-state sample (N=1,203) of adult and teenage pregnant women and observed that teens had a significantly higher rate of abuse during pregnancy ($\chi^2=9.79$, df=2, p<.02). Even though the ethnic composition of the sample was diverse (34.4% African-American, 34.2%
Hispanic, and 31.3% white), ninety-five percent of the participants were below the poverty level. Furthermore, a higher percentage of teens (28%) reported abuse during the prior year than adults (23%). One effect common to pre-and post-teen pregnant women was a marked tendency to enter prenatal care later in pregnancy.

The Index of Spouse Abuse was utilized to measure severity of physical and nonphysical abuse. Adult women significantly scored higher than teens on both the physical scale (6.41 versus 4.32; t=2.64, df=1201, p< .01) and the nonphysical scale (11.89 versus 8.72; t=3.11, df=1201, p< .01). Even though the incidence for teens was higher, adult women reported more severe emotional and physical abuse. The consequence of violence resulted in 9.5 % of the women delivering an infant weighing less than 2500 grams which is indicative of a low birth weight infant. Hierarchical multiple regression examined the correlation between abuse status and birth weight. A significant proportion of the variability in birth weight was explained by abuse during pregnancy ($R^2=0.096, F=28.13, df=4 & 1058, p<.0001$); and ethnicity ($\beta=0.59, P=.05$). Specifically being African-American ($\beta=0.285, P=.0001$) predicted decreased birth weight. Relative risk scores were calculated for low birth weight (< 2500 grams). The following factors were significant at the $p<.01$ level: abuse during pregnancy, unmarried status, poor obstetric history, less than a 15 lb. weight gain, less than a 24 month inter-pregnancy interval, smoking and alcohol and drug use.

In summary, social stress is often managed in inappropriate and harmful ways and results in a greater likelihood of family violence (Straus, Gelles & Steinmetz, 1980; Osofsky, Wewers, Hann & Fick, 1993). Conclusions from previous studies indicate that adult women may be more likely to be “trapped” in relationships with significant
ongoing physical and emotional abuse. Consequently, the negative psychological effects of being exposed to violence over extended period of time remain an important consideration for research (Campbell & Lewandowski, 1997).

**Violence, Trauma, and Inner-City Minority Children and Families**

Violence is defined as “an act carried out with the intention, or perceived intention of causing physical pain or injury in another person” (Straus and Gelles, 1988, p.15). Theories which assist in understanding the nature and origin of violence are derived from a sociological framework (Gelles, 1987), social-learning theory (O’Leary, 1988) ecological theory (Belsky, 1980; Garbarino, 1977) and attachment theory (Bowlby, 1946). Bowlby (1946) linked affectionless psychopathology to the absence of a maternal object and a biological predisposition. He suggested that violence and crime are attachment-system disorders. This conceptualization of violence envisions a dyadic focal point for understanding the origin of violence in society.

The ecological model, whose origins are from child maltreatment literature, involves recognizing a multiple level of systems influencing the biological and psychological development of individuals. A larger lens augments the conceptualization and includes the interaction of the sociological and the ecological perspective. Family violence is explained within a model of social structures impacting individuals and their behaviors within a series of interlocking systems (Brofenbrenner, 1979; Gelles, 1987). The major structural influences on social behavior and family violence are considered age, sex, position in the socioeconomic realm, race, and ethnicity (Gelles, 1987).

According to family/community systems theory, family violence is greater among those who are poor and unemployed (Wolffner & Gelles, 1993). Family violence
is prevalent in all socioeconomic families but may have greater consequences when it is embedded in poverty, discrimination, and social isolation which may impact the psychosocial development and adjustment of minority children and youth (Gibbs & Huang, 1998; Holton, 1995). Violence has been categorized by Green (1993) as part of the generic dimension of traumatic experiences.

Freud (1954) defined a traumatic situation as one in which “external and internal, real and instinctual dangers converge” (p. 168). Experiences of the internal and external threats are influenced by subjective appraisal and coping efforts (Pyruoso, Steinberg & Goenjian, 1996). An appreciation has developed for the severity of the consequences of acute stress and trauma through the accumulated studies of research on children exposed to intrafamilial, interpersonal, and community violence, political violence, disasters, accidents and life-threatening illnesses. Pyruoso, Steinberg and Goenjian (1996) believes that a critical link between traumatic stress and personality is the formation of trauma-related expectations as they are expressed in thoughts, emotions, and behaviors.

Figly (1989) defined a traumatic event as “an event in which there is a general sense that the family is in some kind of danger or major upheaval that involves all or one of its members” (p. 24). In his trauma paradigm Figly (1989) indicated that a family member can be traumatized in four ways: (1) simultaneous effects where the entire family is impacted; (2) vicarious effects where a member is impacted because of the trauma of another family member; (3) chiasmal effects whereby a drug addicted family member robs family members; and (4) intrafamily effects such as incest or violence. Therefore, within a systems conceptualization, individual pathology can infect
or provide the context for victimization of other family members. Trauma, therefore, can occur in an individual as part of a systematic reaction to the stressful life events of others and not only as a direct impact.

Children's developmental courses may be punctuated with traumatic events that have longitudinal consequences on adult functioning Singer, Anglin, Song, & Lunghofer, 1995). Horowitz (1978) stated that, until a trauma can be successfully integrated into the existing self-structure, the psychological manifestations of the event remain in memory as determinants of intrusive imagery or other persistent stress symptoms. Traumatic events during childhood can remain active through developmental transitions and impact tasks for the later stages.

In summary, traumatic experiences can activate both proximal and distal developmental disturbances, changes in life trajectory, risks to health, and vulnerability to life stresses. The potential impact of cumulative stress and traumatic events during childhood may influence a woman's psychological and physiological state during a major life event such as a pregnancy.

Post Traumatic Stress Disorder and Inner-City Communities

The level of traumatic exposure increases risk for the development of PTSD. Giaconia, Reinherz, Silverman, Pakiz, Frost and Cohen's (1995) longitudinal study of adolescents (N=384) was focused on mostly a white sample from working-class and lower-middle-class households. The study was started in 1977 when the subjects were five years old; additional data collection waves occurred in 1981 (age 9), 1987 (age 15), and 1990 (age 18). The following results were based on the data collected in 1990: More than two-fifths of adolescents of this sample experienced qualifying traumas by the age of 18 years. Twenty-four participants met criteria for a lifetime diagnosis of
PTSD (DSM-III-R), which reflected 6.3% of the total sample with 14.5% of the 165 participants experienced a qualifying trauma. Specifically, adolescents, who reported being raped, were eight times more likely to experience symptoms of numbing and avoidance (OR=8.02, $\chi^2=9.99$, df=1, p < .002). Two of the four adolescents whose traumas were coded as “other event” (a rate comparable to rape) reported that other diverse events such having a parent sent to prison and terminating a pregnancy were able to trigger traumatic symptoms. Females were six times as likely to develop PTSD subsequently ($\chi^2=12.71$, df=1, p < .001) as compared to males. The trauma-only group was at substantially greater risk for alcohol dependence ($\chi^2=10.77$, df=1, p < .001) and drug dependence ($\chi^2=14.63$, df=1, p < .001). The researchers cautioned that these findings suggest that other types of factors may influence the development of traumas such as characteristics of youth and their family environments. Further, the results emphasized the fact that many adolescents experienced their traumas or developed PTSD by 14-years-of-age which have long-term effects in late adolescents and adulthood.

Stressful environments, such as living in poverty and living in a violent neighborhood, may exacerbate posttraumatic responses. Research has indicated that inner-city youth exposed to community violence develop traumatic symptoms and PTSD. Fitzpatrick and Boldizar (1993) examined this relationship between chronic exposure to community violence and PTSD in a non-random sample (N=221) of a low-income African-American youth between the ages of 7 and 18 years old. More than 70% of the respondents were victims of at least one violent act. The two categories with the largest proportion of victims involved being struck either by a family member (51.1%) or by a nonfamily member (44.3%). This represents some
evidence of the potentially violent homes of the participant. Fifty-four of the participants (27.1%) met three PTSD diagnostic criteria. Sixty-eight participants (34.3%) met at least two of the three criteria while 54 participants (27.1%) met only one of the three criteria. Singer, Anglin, Song and Lungofer (1995) noted that being a witness or being a direct victim of violence were significantly related to posttraumatic stress, anger, depression, and dissociation.

In research on violence and traumatic events in children Bell and Jenkins (1991) concluded that girls may be especially vulnerable to the stressors of living in violent environments. Additional studies have been focused on female gender as a risk factor in the developmental course of PTSD (Breslau, Davis, & Andreski, 1995). Breslau and Davis (1992), Breslau, Davis, Andreski and Peterson (1991) found that in large urban populations of male and female who were members of a health maintenance organization (N=1,007), 39% (n=394) of the combined sample described exposure to an event classified as traumatic using the Diagnostic Interview Schedule. Nearly 24% met the DSM-III-R criteria for PTSD, yielding a lifetime sample prevalence of 9.2%. PTSD was associated with more chronic distress, greater symptom severity, and more medical problems. Women were four times more likely to develop PTSD than men.

Women tend to be at higher risk for violence because of their gender. Higher levels of spouse and partner abuse are documented for women in the Second National Family Violence Survey with African-American women more than twice as likely to be victims of severe violence (Hampton & Yung, 1995). African-American women were documented to have higher PTSD rates in their study. According to Neal and Turner (1991), the presence of stressful events prior to trauma may reduce a person's
psychological resources and impede that individual’s ability to cope with trauma.

Researchers (Kessler, Sonnega, Bromet, Hughes & Nelson, 1995) studied (N=5877) persons 15 to 54 years in a subsample of the National Comorbidity Survey and found that women were more likely than men to experience trauma associated with a high probability of PTDS. A significantly higher percentage of women (67.6%; z=11.5, \( p=.001 \)) with a lifetime trauma reported that their most distressing trauma was one associated with rape, sexual molestation, physical attack, being threatened with a weapon or childhood physical abuse. The combination of greater exposure to high impact traumas and greater likelihood of developing PTSD once exposed lead to the conclusion that women exposed to a trauma were more than twice as likely as men to develop PTSD (20.4% of women compared with 8.2% of men, \( z=6.7, p=.001 \)).

In summary, traumatic events occurring early in life can have a persistent impact on psychological functioning. Cumulative stressors and life events appear to weaken psychological resources and allow for maladaptive behaviors to develop. Female gender serves as a risk factor for victimization and for developing PTSD. Consequently, research is needed to better understand the respective impact of general life stress, exposure to violence, and traumatic response on functioning and outcomes for women, especially inner-city women.

Post Traumatic Stress Disorder and Trauma in Substance Abusers

Victimization has been correlated with an individual’s persistent risk for future substance-use disorder (Miller, Downs, & Gondoli, 1989; Polsky, & Follette, 1995). PTSD, regardless of nature of the trauma, is associated with high rates of other psychological disorders, and, in particular, substance abuse (Keane & Wolfe,
The comorbidity of PTSD and substance abuse has been established from clinical studies, veterans surveys and general-population surveys. Sierles, Chen, Messing, Besyner and Taylor (1986) examined 25 PTSD outpatients and found that 84% of the sample met criteria for an additional disorder. Alcoholism was evidenced in 76% of the individuals with PTSD and 64% of the individuals with antisocial personality disorder.

In a longitudinal study conducted by Kilpatrick, Acierno, Resinick, Saunders and Best (1997), a stratified sample of 4,009 U.S. women, with a mean age of 35.9, was assessed using four census regions and three sizes of place strata. Through a structured telephone interview it was determined that active drug use was associated with an increased risk of victimization. This effect was especially powerful among women who had been previously assaulted. Women reporting drug use at Wave 1 were almost twice as likely as women without drug use to experience an assault during the next 2 years, even while controlling for demographics.

The above findings support the research of Cottler, Comptom, Mager, Spitznalel and Janca (1992) who noted cocaine-opiate users were over three times as likely to report being physically attacked than nonusers. Siegal, Falck, Wang, and Carlson (2000) study also supported the occurrence of physical attacks experienced by crack-cocaine users is common and does not vary by ethnicity. Half of their sample (52.5%) reported having experienced a physical attack since becoming involved with drugs with 44% of the victims reported seeking medical care for injuries. Kilpatrick, et al. (1997) study provides a link to the assumption that victimization risk is related to type and quality of
subculture. Age and race were also significantly related to likelihood of a new assault, with younger women and women of ethnic-minority status having increased risk.

High rates of comorbidity observed in PTSD have been identified from other research sources. In the National Institute of Mental Health's Epidemiological Catchment Area study, Cottler, Compton, Mager Spitznagel and Janca (1992) explored PTSD rates and their relationships to substance abuse in an ethnically diverse sample of men and women. Female gender and cocaine or opiate use were the two strongest predictors of both exposure to traumatic stressor and subsequent development of PTSD. Regarding the prevalence of PTSD among a sample of treatment-seeking male and female substance abusers, Brown, Recupero, and Stout (1995) observed one-fourth of the sample presented with PTSD symptomology. The women had histories of physical and sexual abuse and reported more traumatic life events. Fullilove, Fullilove, Smith, Winkler, Michael, Panzer and Wallace (1993) surveyed a sample of 105 female drug users found that almost the entire sample (N=104) experienced one traumatic event or more and 59% reported symptoms consistent with PTSD. Traumatic events included both sexual assaults and physical assaults. An increased number of traumatic events were associated with the development of PTSD. Because of the strong association between substance abuse and victimization and trauma, research on the impact of trauma and violence must involve considering substance abuse as an important concomittant factor.
Substance Abuse and Pregnancy Outcomes

Drug use is considered a common problem among both Black and White pregnant women (Robins & Mills, 1993; Hans, 1999). Black and White pregnant women users tend to prefer different drugs. Gillogley, Evans and Hansen (1990) found in a Sacramento study in which urine samples were obtained on a large obstetrical sample, White women accounted for a disproportionate amount of the amphetamine use, and Black women accounted for a disproportionate amount of the cocaine and multiple drug use. Opiates were distributed equally between the ethnic groups.

Several negative pregnancy outcomes are associated with substance use. Cocaine has been associated with premature delivery, spontaneous abortion, stillbirths, high blood pressure, and pre-eclampsia (Zukerman, Frank, Hingson, Amaro, Levenson, Kayne, Parker, Vinci, Aboagye, Fried, Cambral, Timperi & Bauchner, 1989; Behnke & Eyler, 1993). Certain confounding variables exist as to whether there are direct effects or is it lack of prenatal care, poor nutrition, or multiple infections (Robins & Mills, 1993). Prenatal marijuana use effects are inconclusive in that the infant may be smaller for pregnant women who smoke (Zukerman, Frank, Hingson et al., 1989). Jones and Lopez (1989) indicated that marijuana does cross the placenta and may retard intrauterine development by reducing blood flow to the fetus. Marijuana is similar to cocaine in that it causes meconium staining and increases the risk of neonatal mortality. Other studies found no difference between users and nonusers in terms of rates of miscarriages, type of presentation at birth, Apgar status, frequency of complications or major physical anomalies at birth (Winter & Niebyl, 1990; Hatch & Bracken, 1986; Zukerman et al., 1989).
In summary, fetal alcohol syndrome is associated with major structural anomalies, poor fetal and pregnancy outcomes (Russell, 1994). Most data suggest that mild to moderate prenatal alcohol exposure indicate no major harm to the fetus (Behnke & Elyer, 1993). Studies are inconsistent to support a relationship between marijuana use and negative effects on the fetus (Behnke & Elyer, 1993). Cocaine and opiates are linked with the presence of poor fetal growth resulting in a higher incidence of low-birth weight and intrauterine growth retarded infants (Espy, Francis, & Riese, 2000). Research must address the confounding variables such as maternal nutrition and postnatal maternal nurturing effects, particularly for drugs such as cocaine, marijuana and alcohol which affect appetite and nutrition, metabolism and maternal behavior (Hutchings, 1990)

**Violence, Substance Abuse and Pregnancy Outcomes**

Violence during pregnancy has been related to negative pregnancy outcomes (Curry & Perrin, & Wall, 1998). Harmful behaviors by the mother may be triggered in response to violence, and in particular, substance use, use of cigarettes, alcohol and illegal drugs (Martin, English, Clark, Cilenti & Kupper, 1996). Women in violent situations may use substances to cope with the stress (Jones & Schecter, 1992; Walker, 1984). Both violence and substance use (Windham, Von Behren, Fenster & Schaefer, 1997) are linked to negative pregnancy outcomes.

Amaro, Fried, Cabral and Zuckerman (1990) studied a sample of 1243 from a Northeastern city in which the women were predominately low income, single, and from an ethnic minority group. Victims of violence during pregnancy were at greater risk than non-victims of being heavy users of alcohol (OR = 2.43, 95% CI = 1.71, 3.46) and illicit drugs (OR = 2.68, 95% CI = 1.72, 4.17). A Multiple Logistic Regression Analysis on
experience of violence during pregnancy demonstrated that risk of being a victim of violence was associated with a woman’s alcohol use (OR = 1.87, 95% CI = 1.24, 2.80) during pregnancy and drug use by her partner (OR = 2.26, 95% CI = 1.19, 4.30) even when controlling for race, age, marital status, and education. The results support evidence that abuse during pregnancy is associated with use of alcohol by a pregnant woman and use of illicit drugs by her male partner.

Martin, English, Clark, Cilenti, and Kupper (1996) studied a sample of 2092 from a Southeastern state composed of respondents who were 55% African-American, 35% Non-Hispanic white, and 10% from other ethnicities. One quarter of the prenatal patients experienced violence (as defined by Abuse Assessment Screen) (McFarlane, Parker, Soeken & Bullock, 1992) during their lifetimes with 3% experiencing violence during pregnancy. Violence during pregnancy is strongly associated with violence before pregnancy (OR = 10.36, 95% CI = 5.76, 18.65). Bivariate associations between violence and specific types of substance use before pregnancy demonstrated that, when compared to nonvictims, victims of violence were significantly more likely to smoke (59% vs. 32%; OR = 3.08; 95% CI = 2.52, 3.77) to drink (64% vs. 45%; OR = 2.16; 95% CI = 1.77, 2.64), and to use drugs before pregnancy (23% vs. 9%; OR = 3.01; 95% CI = 2.32, 3.92). Alcohol use during pregnancy was also related to ethnicity, with African-Americans being more likely to drink (OR = 1.48; 95% CI = 1.07, 2.05) and use drugs (OR = 3.46; 95% CI = 2.19, 5.46), and to delay the trimester in which prenatal care began. Furthermore, women who started prenatal care later were more likely to use drugs (ANOVA/Cochran = 23.83, p < .0001).
Summary and Conclusions

In summary, current models of trauma entail conceptualizing the impact of childhood abuses or traumatic events as pathways to the development of mental-health problems in adulthood (Figley, 1985; Herman, 1981). Victims of traumatic stress develop symptomatology associated with acute posttraumatic stress disorder (van der Kolk, 1987). Mellman, Randolph, Brawman-Mintzer, Flores and Milanes (1992) indicates that the original effects of the trauma can remain untreated and, therefore, become chronic and appear in a delayed fashion disguised as depression, substance abuse and revictimization. These disorders may impact the capacity for a woman to care for herself or her unborn infant during the critical developmental stage of pregnancy and to influence the birth outcome.

Families face multiple stressors throughout the life cycle that are both predictable and unavoidable stressors and unexpected stressors. McCubbin and Patterson (1983) note that family resources constitute an important part of the family’s repertoire of responses for meeting the demands of stressors and preventing a stressor event from escalating into a crisis. Current models of trauma conceptualize the impact of childhood abuses and or traumatic events as pathways to the development of mental health problems in adulthood (Figley, 1985; Herman, 1981). Formulations of interventions to increase these personal and family resources will impact future health outcomes.

Systems theory supports the present study with additional theoretical foundations from the ecological, psychological and trauma models. Each concept of life events such as trauma, life stress, substance use, and interpersonal conflict, is grounded in theoretical model for testing the causal linkages and possible outcomes of pregnancy for inner-city
women.
CHAPTER III

METHODOLOGY

This chapter covers the following methodological issues: (a) selection of participants, (b) procedure, (c) instruments, including evaluation of psychometric properties, and (d) statistical procedures.

Participants

The population consisted of a multicultural, inner-city women who attend a University Obstetric and Gynecology Clinic in a urban center. The majority of the women are on Medicaid. Since this Clinic services a large segment of the poorer women in the city, there is also other health problems encountered in this population. Those problems are adolescent pregnancy, tuberculosis, sexually transmitted disease, drug and alcohol use and positive HIV status.

This study involved a self-selected sample of inner-city pregnant women between the ages of 18 and 40 years enrolled as a patient in at University OB/GYN clinic. Inner-city minority women were selected because of their persistent poorer pregnancy outcomes. Two-hundred-fifty-six patients were interviewed for this study. Thirty participants delivered at a hospital other than University Hospital and therefore, their outcomes were unable to be located. Seventeen participants were unable to be located in the medical record system and assumed to not be pregnant. Patients with diagnoses of HIV (n = 8), gestational diabetes taking insulin (n = 2), and chronic
hypertension (greater than 150/100) \((n = 6)\) were be excluded from the study because of the likely confounding effects in childbirth outcomes. The final sample size was 193 participants. The pregnant women were accepted in their first, second and third trimester.

**Procedures**

The researcher worked collaboratively with the staff at the OB/GYN Clinic to identify pregnant patients. Announcements about the research study requesting volunteers were posted in the clinic and distributed to all patients arriving on the days that the researcher was present in the clinic. The flyer had the telephone number of the researcher should she decided to contact. The first 60 participants received compensation of $15.00. Since recruitment was slow, the New Jersey Medical School Institutional Review Board and the Seton Hall University IRB was asked to increase the amount to $30.00 for participation in the study. This was granted participants were told that their participation is voluntary, that they can terminate participation at any time and that termination would not jeopardize the care they receive.

The researcher or research assistant, who was fluent in Spanish, arrived on designated mornings and provide flyers (Appendix A) to the receptionist for all incoming women at the clinic on that day. The flyer included the place for data collection, the amount of time for data collection and renumeration. The researcher introduced herself to eligible women. If she spoke only Spanish, the Hispanic research assistant was called to interview the woman. If a woman was interested in participating, she was escorted to a private room for approximately 45-minutes and returned to the waiting room. The receptionist was informed of the location that the woman was taken to in case her name was called to be seen by the physician or nurse practitioner.
The participant was be escorted to a private area located in the clinic on the same floor. The researcher reviewed the Informed Consent (Appendix B) and secured a signature if the individual met all the exclusionary criteria of a diagnosis of HIV, diabetes, or chronic high blood pressure (greater than 150/100). The Informed Consent also included the need to follow-up on the medical chart after the delivery of the infant to obtain outcomes of pregnancy. The HIV status is part of medical chart. Strict confidentiality was maintained to keep participants’ names separated from the laboratory status. Only the researcher had access to the medical records and completed all the medical chart reviews. Code numbers were placed on all files so that names and files were unable to be connected. All individuals who were HIV were already informed and counseled as to the results of their tests. The demographic sheet (Appendix C) was read to the participants as well as the research tools (Appendix D) while they have a copy to follow along if she choose to do so. All tools and demographic sheets were read to Spanish-speaking women by the Hispanic research assistant.

After completion of all the research tools and demographic data, the study participants were be given payment for their participation in an envelope. Each participant was asked if she was experiencing emotional distress as a result of answering the questions.

Regardless of their response, the researcher discussed the referral process to seek additional counseling at the UMDNJ-Crisis Services on South Orange Avenue. In addition, the participants was given a sheet with the UMDNJ-Crisis Services and the Catholic Community Services address and telephone number to access services at a later time if necessary.
If a study participant indicated significant distress, the researcher offered to escort her to the UMDNJ-Crisis Services for evaluation and follow-up services. She was also given a sheet with the UMDNJ-Crisis Services and the Catholic Community Services address and telephone number for follow-up at a later time (Appendix E).

All participants were asked if the researcher could contact them by telephone or letter (Appendix E) the next day to see if additional services were needed. If the participant approved of the telephone call, the call was made the next day. If the participant declined to have the researcher contact her, no further efforts was made to contact the participant. Only one person requested contact the next day.

If participants disclosed information that was potentially threatening to themselves or their children and not previously reported to the clinic staff, the researcher or research assistant linked participants to appropriate referrals to both social services at the clinic and a referral to drug and alcohol treatment programs on the sheet found in (Appendix E). Substance abuse disclosed during the interview was referred to the Social Worker. This referral to the Social Worker was to facilitate linkages with further assessment or treatment services for the patient. Since the women referred for further assessment were substance users, the interventions in this group may have impacted the outcomes of the pregnancy. The referral to the Social Worker for substance use was clearly stated in the Informed Consent. Twenty-seven women were referred to Social Services. The participant were also be given an index card on which to record name, address, and telephone number and if there is a desire to receive summary results.

On completion of the Informed Consent by the participant, the researcher placed them in a storage cabinet in the researcher's office at 65 Bergen Street on the 10th floor.
in Room number 1018. The packets were coded with numbers and a master list was created to match up numbers for chart review after delivery. After matching up study participants with the pregnancy outcomes, the master list was destroyed and the packets were left with the code number only.

The researcher had requested in the Informed Consent access to both the mother's and newborn chart to verify information provided. A followed-up by the researcher of the chart was completed after postpartum discharge to identify HIV status, diabetes, hypertension and the outcomes of pregnancy. This was coordinated with medical records and the Director of the OB/GYN Clinic. The instruments were scored by the published methods. Demographic data was obtained to compare this sample with normative groups on instruments for which data exist.

Instruments

Posttraumatic Stress Diagnostic Scale (Foa, 1995)

The Posttraumatic Stress Diagnostic Scale (PDS) is 49-item, self-report instrument designed to aid in the diagnosis of posttraumatic stress disorder. The PDS reflects the DSM-IV diagnostic criteria for PTSD. The 49-items composing the PDS correspond to the DSM-IV Criteria A through F. Criteria A refers to exposure to a traumatic event; Criteria B refers to re-experiencing symptoms; Criteria C refers to avoidance of symptoms; Criteria D refers to experiencing arousal symptoms; Criteria E must have symptom duration of one month or more; and Criteria F is the presence of distress or impairment in functioning.

An individual's PDS results included the following six components: (a) PTSD diagnosis, (b) Symptom Severity Score, (c) Number of Symptoms Endorsed, (d)
specifiers related to onset and duration of symptoms, (e) Symptom Severity Rating, and (f) Level of Impairment in Functioning (Foa, 1995).

For this study, components a through f will be collected as part of the database and scored according to published methods. The Symptom Severity Score ranges from 0 to 51 and is obtained by summing the response weights of the individual's responses to Items 22-38. Items 22 to 38 correspond to the 17 symptoms outlined in the DSM-IV PTSD Criteria B, C, and D. The respondents are asked the level of impact over the past month and the responses will be weighted as follows:

0 = Not at all or only one time
1 = Once a week or less/once in a while
2 = 2 to 4 times a week/half the time
3 = 5 or more times per week/almost always

The Symptom Severity Rating is based on the Symptom Severity Score. A set of cut-off scores have been established (Foa, 1995) and were derived from a sample of 280 recent female assault victims and a sample of 96 female assault victims with PTSD who sought treatment. The cut-offs for the Symptom Severity Rating categories are as follows:

< 10 = Mild
>11 and < 20 = Moderate
>21 and < 35 = Moderate to Severe
> 36 = Severe

Number of Symptoms Endorsed is obtained by counting the number of symptoms the participant acknowledged experiencing for Items 22 to 28. The Number of Symptoms endorsed ranges from 0 to 17.
Specifiers from the DSM-IV provides additional information concerning the participant’s symptoms if a diagnosis of PTSD was made. The specifiers are:

Acute- Indicates that symptoms have been present for less than three months
Chronic-Indicates that symptoms have lasted three months or longer
With Delayed Onset-Indicates that symptom onset occurred at least six months after the traumatic event.

Level of Impairment in Functioning is based on the number of Yes responses to Items 41 to 49 of the PDS. Areas of the participant’s lives that have been affected are selected and totaled and labeled depending on the number of areas identified.

No Impairment=0 Yes Responses
Mild Impairment=1 to 2 Yes Responses
Moderate Impairment=3 to 6 Yes Responses
Severe Impairment=7 to 8 Yes Responses or Yes Response to Item 49

(All areas of your Life)

The normative sample subjects were recruited from a number of treatment and research centers with a high frequency of PTSD among their patient population. Sites included Veterans Administration hospitals, anxiety disorder and PTSD treatment clinics, women’s shelters, and emergency and trauma centers from states in the New England, MidAtlantic, Southern and Middle States (Illinois and Missouri). Participants were included in the study if (a) they were between 18 and 65 years of age, (b) they had experienced, witnessed, or been confronted with a traumatic event, and (c) the trauma occurred at least one month before the PDS was administered. Exclusion criteria were active psychosis and being unable to read or write.
PDS data were collected on 267 participants with a total of 248 valid tests collected. The mean age was 38.58 years (SD=10.82) with males representing 54.8% and females representing 45.2%. African-Americans represented 31.0% of the sample and Caucasians represented 64.9%. The subjects in the normative sample were administered the PDS, the PTSD module of the Structured Clinical Interview for the DSM-III-R (Williams, Gibbon, First, Spitzer, Davies, Borus, Howes, Kane, Pope, Rounsaville & Wittchen, 1992) and self-report questionnaires including demographic form, the Beck Depression Inventory (Beck & Steer, 1987), the State-Trait Anxiety Inventory (Spielberger, Gorush & Lushene, 1970) and the Impact of Events Scale (Horowitz, 1992). Participants completed the PDS before the SCID to prevent contamination. The diagnostic performance of the PDS was assessed by comparing a PDS diagnosis with a diagnosis from the SCID, which is generally considered the "gold standard" (Foa, 1995). A kappa of .59 between the PDS and the SCID was obtained, with 79.4% agreement between the two measures. The PDS was re-administered to a sample of participants 10 to 22 days after the first administration. Participants were asked to complete the PDS about the same traumatic event each time with a mean of 16.1 days interval between administrations. The test-retest reliability generated a kappa of .74, a chance-corrected measure of agreement. Percent agreement between diagnosis for the two administrations was 87.3%. The Pearson correlation between Symptom Severity Scores for the two administrations was .83. Internal consistency was also assessed, and a Cronbach's alpha of .92 was obtained for the 17 items on which the Symptom Severity Score is based.

The Symptom Severity Score obtained from the PDS was correlated with other
scales that measure psychological constructs which are associated with PTSD. Table 1 represents the correlations between Symptom Severity Score on PDS and other measures of psychopathology.

Table 1

<table>
<thead>
<tr>
<th>Symptom Severity Score</th>
<th>BDI</th>
<th>STAI-S</th>
<th>STAT-T</th>
<th>IES-I</th>
<th>IES-A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.79</td>
<td>.73</td>
<td>.74</td>
<td>.80</td>
<td>.66</td>
</tr>
</tbody>
</table>

Note. (N=230) (Foa, 1995); BDI = Beck Depression Inventory; STAI = State-Trait Anxiety Inventory (S = State; T = Trait); IES = Impact of Event Scale (I = Intrusion, A = Avoidance). All p<.001.

For this study, the Number of Symptoms Endorsed will be used to designate number of symptoms of PTSD. In addition, Traumatic Events will be determined by the items of traumatic event as noted in the Posttraumatic Stress Diagnostic Scale. The categories as listed the Posttraumatic Stress Diagnostic Scale (Foa, 1995) which will be considered a traumatic event are: (1) Serious accident, fire, or explosion (for example, an industrial, farm, car, plane or boating accident); (2) Natural disaster (for example, tornado, hurricane, flood or major earthquake); (3) Non-sexual assault by a family member or someone you know (for example, being mugged, physically attacked, shot, stabbed or held at gunpoint); (4) Non-sexual assault by a stranger (for example, being mugged, physically attacked, shot, stabbed or held at gunpoint); (5) Sexual assault by a family member or someone you know (for example, rape or attempted rape) (6) Sexual assault by a stranger (for example, rape or attempted rape); (7) Military combat or a war
zone; (8) Sexual contact when you were younger than 18 with someone who was 5 or more years older than you (for example, contact with genitals, breast); (9) Imprisonment (for example, prison inmate, prisoner of war, hostage); (10) Torture; (11) Life-Threatening illness; (12) Other traumatic event, specify the traumatic event. These items are used to identify which one "bothered" the person the most.

*Life Experiences Survey* (Sarason, Johnson, & Siegel, 1978)

The Life Experiences Survey (LES) (Sarason, Johnson, & Siegel, 1978) is a 50-item instrument designed to allow participants to indicate events which they have experienced during the past year, to measure separate assessment of positive and negative life changes as well as to individualize ratings of the impact of events. It is based on the assumptions the (a) life changes require adaptation on the part of the individual and are stressful, and (b) persons experiencing marked degrees of life change during the recent past are susceptible to physical and psychiatric problems (Sarason, Johnson, & Siegel, 1978; Aldwin, 1993).

Thirty-four of the items listed in the LES are similar in content to those found in Schedule of Recent Life Events (SRE) (Holmes & Rahe, 1967) and reflect life changes frequently experienced by individuals in a general population. Participants are asked to indicate those events experienced during the past year (0 – 6 months or 7 months to 1 year) as well as the extent to which they view the event as being positive or negative. Ratings are on a 7-point scale ranging from extremely negative (-3) to extremely positive (+3).

Summing the impact ratings of those events designated as positive by the subject provides a positive change score; summing the impact rating of negative events allows
for a negative change score. Adding the negative and positive value results in a total change score representing both desirable and undesirable change experienced by the participant during the past year.

Normative data were obtained on 345 students enrolled in introductory psychology courses. Means and standard deviations were derived for males (N=174) and females (N=171) and are found in Table 2.

Table 2

**LES Means and Standard Deviations of Normed Data**

<table>
<thead>
<tr>
<th>LES Scores</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>6.87</td>
<td>5.97</td>
<td>6.71</td>
<td>5.5</td>
</tr>
<tr>
<td>Negative</td>
<td>4.66</td>
<td>4.36</td>
<td>5.46</td>
<td>6.43</td>
</tr>
<tr>
<td>Total</td>
<td>11.53</td>
<td>8.01</td>
<td>12.35</td>
<td>8.82</td>
</tr>
</tbody>
</table>

*Note.* (Sarason, Johnson, and Siegel, 1978).

Two test-retest reliability studies were conducted on the LES and involved participants from undergraduate psychology courses. A five to six-week time interval between test and retest was conducted with thirty-four subjects and fifty-eight subjects respectively. Test-retest correlations for positive change score were .19 and .53 (p < .001); reliability coefficients for the negative change score were reported as .56 (p < .001) and .88 (p < .001). The coefficient for the total change score was .63 (p < .001) and .64 (p < .001). Life stress is more usefully conceptualized in terms of negative life
change. Correlation was computed for LES, State-Trait Anxiety Inventory (Spielberger, Gorsuch & Lushene, 1970), and Academic Achievement with a group of 100 students. Table 3 represents correlation between anxiety scores, and academic achievement.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Trait-Anxiety</th>
<th>State-Anxiety</th>
<th>Grade Point Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>.04</td>
<td>.03</td>
<td>-.21</td>
</tr>
<tr>
<td>Negative</td>
<td>.29**</td>
<td>.46***</td>
<td>-.38***</td>
</tr>
<tr>
<td>Total</td>
<td>.24*</td>
<td>.37***</td>
<td>-.40***</td>
</tr>
</tbody>
</table>

Note. (Sarason, Johnson, and Siegel, 1978)

*p < .05
**p < .01
***p < .001

Correlation between personal maladjustment and LES have been documented in two samples. The LES and the Psychological Screening Inventory (Lanyon, 1970, 1973) were administered to 100 volunteers drawn from personality courses at the University of Washington. Significant positive correlations were found between LES and Social Nonconformity subscale (r = .20, p < .05), designed to assess similarity to incarcerated prisoners and the Discomfort subscale (r = .23, p < .05), designed to measure neuroticism.

Another sample of 64 college students (34 males, 30 females) were selected and
administered the LES, Beck Depression Inventory (Beck, 1967), and Internal-External Locus of Control Scale (Rotter, 1966). Significant correlations between negative change score and scores on the Beck Inventory ($r = .24, p < .05$) were found. A clinical sample of students receiving treatment at a university counseling center for psychological problems was used to test discriminant validity. The counseling center clients displayed significantly higher negative change scores than did the comparison group ($t(34) = 2.21, p < .05$). Significance between group means was found for negative change scores, ($t(34) = 2.89, p < .01$), but not for positive or total life change. These results provide additional support for a relationship between negative life change and problems of a psychological nature. Negative life events that are rated by the participant as "bad" events will provide a calculated negative change score of one. Therefore, life events will be summed for a final score.

**Conflict Tactics Scale 2 (CTS2) (Straus, 1996)**

Conflict Tactics Scales II (CTS2) (Straus, 1996) revised from the Conflict Tactics Scale (Straus, 1979, 1990) measures the psychological and physical attacks on a partner in a marital, cohabiting, or dating relationship along with the use of reasoning or negotiation to deal with the conflict process. It consists of 78 statements relating to specific tactics with eight choices from "once to more than 20 times in the past year." Two other categories include "Not in the past year, but it did happen" and "This has never happened."

The theoretical foundation is conflict theory, which assumes that conflict is an inevitable process of all human interaction, whereas violence as a tactic to deal with conflict is not (Straus, Hamby, Boney-McCoy & Sugerman, 1996). Several
improvements have been made in the CTS2 Scale over the CTS original: (1) classification of the physical assault and psychological aggression items into minor and severe; (2) items are asked first for what the participant has done and then repeated on the next line for what the partner has done; (3) interspersed item order to reduce response sets; (4) each scale has subscales; and (5) the revised scale, CTS2, has two new scales, Sexual coercion scale and Injury scale.

The five scales are as follows:

(1) The Negotiation Scale reflects actions taken to settle a disagreement through Discussion. The cognitive subscale is linked to actions taken. The emotional subscale measures the extent to which positive affect is communicated by eliciting responses related to feelings of care and respect for one’s partner.

(2) The Psychological Aggression Scale describes nonverbal aggressive acts taken during conflict with a minor and severe subscale.

(3) The Physical Assault Scale reflects the violence taken by the individual with minor and severe subscales.

(4) The Sexual Coercion Scale is “defined as behavior that is intended to compel the partner to engage in unwanted sexual activity ranging from verbal commands to physical force.” This scale has both minor and severe subscales.

(5) The Injury Scale measures physical injury inflicted by a partner, which warrants medical attention.

For the purpose of this study, the subscales for Psychological Aggression, Physical Assault, Sexual Coercion, and Injury will be part of the tool package.

The data for the preliminary psychometric analysis were obtained by distribution
of 541 questionnaires to undergraduate sociology and criminal justice classes in two colleges in the spring of 1995. These students were asked about their relationships to their partners in dating, cohabiting or marital relationships. Three-hundred seventeen participants met the criteria for inclusion. Two-thirds were in a current relationship and tended to come from well-educated families.

All of the CST 2 scales have good internal consistency with coefficients as high or higher than reliabilities previously reported for the CTS 1 (Straus, 1990). Table 4 provides a list of the Internal Consistency Reliability for Approximations to CTS2 Scales.
### Table 4

**Internal Consistency Reliability for Approximations to CTS2 Scales**

<table>
<thead>
<tr>
<th>Item</th>
<th>Item-Total rb</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Negotiation (alpha = .86)</strong></td>
<td></td>
</tr>
<tr>
<td>Explained side of argument</td>
<td>.74</td>
</tr>
<tr>
<td>Suggest compromise to an argument</td>
<td>.70</td>
</tr>
<tr>
<td>Showed partner cared</td>
<td>.69</td>
</tr>
<tr>
<td>Said could work out problem</td>
<td>.63</td>
</tr>
<tr>
<td>Agreed to try partner’s solution</td>
<td>.62</td>
</tr>
<tr>
<td>Respected partner’s feelings</td>
<td>.58</td>
</tr>
<tr>
<td><strong>Psychological Aggression (alpha = .79)</strong></td>
<td></td>
</tr>
<tr>
<td>Insulted or swore at partner</td>
<td>.66</td>
</tr>
<tr>
<td>Shouted at partner</td>
<td>.65</td>
</tr>
<tr>
<td>Stomped out of room</td>
<td>.61</td>
</tr>
<tr>
<td>Threatened to hit or throw something at partner</td>
<td>.52</td>
</tr>
<tr>
<td>Destroyed something of partner</td>
<td>.47</td>
</tr>
<tr>
<td>Did something to spite partner</td>
<td>.46</td>
</tr>
<tr>
<td>Called partner fat or ugly</td>
<td>.42</td>
</tr>
<tr>
<td>Accused partner of being a lousy lover</td>
<td>.35</td>
</tr>
<tr>
<td><strong>Physical Assault (alpha = .86)</strong></td>
<td></td>
</tr>
<tr>
<td>Kicked, bit or punched partner</td>
<td>.70</td>
</tr>
<tr>
<td>Slapped partner</td>
<td>.70</td>
</tr>
<tr>
<td>Beat up partner</td>
<td>.65</td>
</tr>
<tr>
<td>Hit partner with something</td>
<td>.62</td>
</tr>
<tr>
<td>Choked partner</td>
<td>.61</td>
</tr>
<tr>
<td>Slammed partner against wall</td>
<td>.60</td>
</tr>
<tr>
<td>Grabbed partner</td>
<td>.56</td>
</tr>
<tr>
<td>Threw something at partner that could hurt</td>
<td>.52</td>
</tr>
<tr>
<td>Used knife or gun on partner</td>
<td>.52</td>
</tr>
<tr>
<td>Pushed or shoved partner</td>
<td>.51</td>
</tr>
<tr>
<td>Twisted partner’s arm or hair</td>
<td>.47</td>
</tr>
<tr>
<td>Burned or scalded partner on purpose</td>
<td>.39</td>
</tr>
<tr>
<td><strong>Sexual Coercion (alpha = .87)</strong></td>
<td></td>
</tr>
<tr>
<td>Used force to make partner have sex</td>
<td>.74</td>
</tr>
<tr>
<td>Use threats to make partner have anal sex</td>
<td>.73</td>
</tr>
<tr>
<td>Used force to make partner have anal sex</td>
<td>.70</td>
</tr>
<tr>
<td>Insisted on anal sex (no force)</td>
<td>.69</td>
</tr>
<tr>
<td>Used force to make partner have sex ????</td>
<td>.58</td>
</tr>
<tr>
<td>Insisted on sex (no force)</td>
<td>.54</td>
</tr>
<tr>
<td>Insisted on sex without a condom (no force)</td>
<td>.34</td>
</tr>
<tr>
<td><strong>Injury (alpha=.95)</strong></td>
<td></td>
</tr>
<tr>
<td>Partner was cut or bleeding</td>
<td>.92</td>
</tr>
<tr>
<td>Partner wen to doctor for injury</td>
<td>.92</td>
</tr>
<tr>
<td>Partner needed to see doctor but didn’t</td>
<td>.86</td>
</tr>
<tr>
<td>Partner felt pain the next day</td>
<td>.79</td>
</tr>
<tr>
<td>Partner had sprain or bruise could see</td>
<td>.77</td>
</tr>
<tr>
<td>Partner’s private parts were bleeding</td>
<td>.74</td>
</tr>
</tbody>
</table>

*Note.* (Straus, Hamby, Boney-McCoy, & Sugarman, 1996).
According to Straus, Hamby, Boney-McCoy and Sugarman (1996), approximation is used to indicate that some items used to compute these statistics are different than in the final CST2 used in this study. Straus, et al. (1996) indicated that several items were revised slightly subsequent to obtaining the data reported in the above table. Therefore, since many items were revised, the Internal Consistency Reliability are “approximations” of the coefficients.

Construct validity was established by making an assumption that if men are more likely than women to use coercion to obtain sex, the psychological aggression and physical assault scale should be more highly correlated with the sexual coercion scale for men than for women. Table 5 contains the correlations among approximations to the CTS2 Scales for Self-Report of perpetration. Z tests for the differences between the correlations, both of which are significant (psychological aggression and sexual coercion: \( r = .66 \) for men and \( .25 \) for women, \( z = 4.53, p < .01 \); physical assault and sexual coercion: \( r = .90 \) for men and \( .26 \) for women, \( z = 10.17, p < .01 \) (Straus, et al., 1996).
### Table 5

**Correlations Among Approximations to the CTS2**

<table>
<thead>
<tr>
<th>Scales</th>
<th>Gender</th>
<th>Negotiations</th>
<th>Psychological Aggression</th>
<th>Physical Assault</th>
<th>Sexual Coercion</th>
<th>Injury</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negotiation</td>
<td>Men</td>
<td>-</td>
<td>.22</td>
<td>-.05</td>
<td>.03</td>
<td>.01</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>-</td>
<td>.40</td>
<td>.21</td>
<td>.10</td>
<td>.16</td>
</tr>
<tr>
<td>Psychological Aggression</td>
<td>Men</td>
<td>-</td>
<td>-</td>
<td>.71</td>
<td>.66</td>
<td>.63</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>-</td>
<td>-</td>
<td>.67</td>
<td>.25</td>
<td>.41</td>
</tr>
<tr>
<td>Physical Assault</td>
<td>Men</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.90</td>
<td>.91</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.26</td>
<td>.42</td>
</tr>
<tr>
<td>Sexual Coercion</td>
<td>Men</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.87</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.29</td>
</tr>
<tr>
<td>Injury</td>
<td>Men</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

*Note.* (Straus, Hamby, Boney-Mccoy and Sugarman, 1996).

The CTS2 is scored by adding the midpoints for the response categories chosen by the participant. The midpoints are the same as the response category number for Categories 0,1,2. For Category 3 (3-5 times) the midpoint is 4, for Category 4 (6-10 times) it is 8, for Category 5 (11-20 times) it is 15 and for Category 6 (More than 20 times in the past year) we recommend using 25 as the midpoint (Straus, Hamby, Boney-
McCoy, & Sugarman, 1996).

**Michigan Alcoholism Screening Test (MAST) (Selzer, 1971)**

The standard screening instrument used in alcohol-related research is the Michigan Alcoholism Screening Test (MAST) (Selzer, 1971). The MAST is a 25 yes-no set of items in a structured interview format originally designed for inpatient settings to detect alcoholism and were tested on five groups most of which were male. Those groups included hospitalized alcoholics, a control group, persons convicted of drunk driving and disorderly behavior, and drivers whose licenses were under review. The initial design was to accurately target heavy/alcoholic drinkers, especially those who recognize they have problems. The internal consistency is good (coefficient alpha of .95). The concurrent and discriminant validity is strong (r = .95).

The scoring system (Selzer, 1971) has been found to be highly discriminating. Affirmative responses to some questions receive a value of two points, and other questions are given a one-point value. Affirmative responses to question 9 ("Have you ever attended a meeting of Alcoholics Anonymous?") , 20 ("Have you ever gone to anyone for help about your drinking?") or 21 ("Have you ever been in the hospital because of drinking?") were considered diagnostic and were assigned a value of five points. A score of three points or less was considered nonalcoholic, a score of four points was suggestive of alcoholism, and a score of five points or more indicated alcoholism.

Because this tool has not been targeted to the pregnant population, the TWEAK will also be used to support the final determination based on current research.
TWEAK Test (Russell, 1994)

This brief questionnaire represents the most effective method for screening for risk drinking during pregnancy (Russell, 1994). The TWEAK was designed specifically for pregnant women based on an adaptation of the MAST. The TWEAK screen assesses alcohol use with items on “tolerance” (number of drinks a patient can “hold”), “worry” expressed about a patient’s drinking by her family or friends; the patient’s need for an “eye-opener” (morning drink), the occurrence of postdrinking “amnesia” (blackout drinking), and the patient’s own feeling that she needs to “cut down” on her drinking.

The current version of the TWEAK (Russell, 1994) is a composite of three questions from the Michigan Alcoholism Screening Test (MAST; on blackouts, cutting down and worry), the eye-opener question form the CAGE, and the tolerance scale from the T-ACE (Sokol, Martier, & Ager, 1989). The five items of the TWEAK are considered the most sensitive in identifying alcohol abuse in women. A seven-point scale is used to score the test. The tolerance question scores two-points if a woman reports she can hold more than five drinks without passing out. A positive response to the worry question also scores two-points. Each of the last three questions scores one point for a positive response. A total of three or more points indicates heavy or problem drinking.

A clinical study (Russell, Martier, Sokol, Mudar, Jacobson & Jacobson, 1996) was conducted on African-American pregnant women (N = 2,717) who were from low socioeconomic status. The TWEAK, CAGE, T-ACE, and MAST were all administered. The T-ACE is a four-question screen that queries the patient’s alcohol tolerance (number of drinks needed to feel high), annoyed by others’ comments on her drinking (yes/no), attempts to cut down (yes/no), eye-opener/morning drink (yes/no) items. The merit of
the instruments were evaluated for each the following characteristics: sensitivity, the probability that a risk drinker is positive on the test; specificity, the probability that a non-risk drinker is negative on the test; positive predictive value, the probability that a woman with a positive screening score is a risk drinker; and efficiency, the overall percentage of women correctly identified with respect to risk drinking. Receiver-operating characteristic curves for the screens provides a representation of performance across a test’s entire range of possible cutpoints. The cutpoint is the value at or above which scores on the test are considered to be positive.

Periconceptional risk drinking was assessed by asking about their alcohol intake in a typical week before they become pregnant. Because pregnancy recognition is delayed, prepregnancy consumption was assumed to be representative of consumption around the time of conception. The researcher confirmed this assumption by calculating the probable date of conception from the date of the last menstrual period and by asking if drinking around this date was similar to the reported prepregnancy intake.

Periconceptional risk drinking was defined as one ounce or more of absolute alcohol per day (approximately 14 or more drinks per week). The results of this study indicated that seven percent of the pregnant women screened were periconceptional risk drinkers, they were significantly older, had given birth and been pregnant more often, and were screened nearly 3 weeks later in their pregnancies than non-risk drinkers. All four instruments were effective in distinguishing risk drinkers from non-risk drinkers. The receiver-operating characteristic curves were larger for the TWEAK and T-ACE than the MAST and CAGE and came closest to the upper left corner of the graph at cutpoint 2 indicating optimal combinations of sensitivity and specificity. The five-item TWEAK
was somewhat more sensitive than the four-item T-ACE. At cutpoints 1 and 2, TWEAK and T-ACE were more sensitive to risk drinking than the 25-item MAST or the 4-item CAGE. However, at cutpoint 3, the sensitivity of MAST was comparable to that of the TWEAK or T-ACE. The CAGE was not sensitive to risk drinking at any cutpoint.

In a sample of 1420 African-American patients screened with the T-ACE alone, the T-ACE’s sensitivity decreased when administered alone rather than as part of an interview with the MAST and CAGE. Although the loss of sensitivity is accompanied by an increase in specificity, sensitivity is generally considered a priority when screening. Therefore, the MAST and CAGE appear to be conditioning responses to the screening items of the TWEAK and T-ACE. Because of this phenomenon, it was decided to utilize both the MAST and the TWEAK in this study. Recommendations for increasing the validity of the TWEAK administration centered around asking questions of consumption prior to pregnancy, reconstruct drinking events by asking the patients to think about their preferred beverages, usual companions, and activities associated with drinking to provide cognitive cues. These recommendations will be followed in administering the TWEAK for this study.

Drug Abuse Screening Test (DAST) (Skinner, 1982)

The DAST is a 20-item instrument designed for clinical assessment of problems related to drug use including the use of prescribed drugs or over-the-counter drugs in excess of the standard dosage. The scale yields a quantitative index of the range of problems associated with drug use. The internal consistency reliability estimate was substantial at .92, and a factor analysis of item intercorrelations suggested an unidimensional scale. With respect to response bias, the DAST was only moderately
correlated with social desirability and denial. Concurrent validity was identified by correlating the DAST with background variables, frequency of drug use during the last 12 months and indices of psychopathology (Basic Personality Inventory, Jackson, 1976).

A 20-item instrument is a shortened version of the original 28-item tool. The 20-item DAST correlated almost perfectly ($r = .99$) with the original 28-item version. The internal consistency reliability was high (.95 for the total sample, .86 for the subsample excluding clients with only alcohol problems). All items are added and a total score of over five designates drug and drug/alcohol problems.

**Demographic**

Demographic data was collected regarding age of participants, ethnic background, marital status, educational status, number of children, number of pregnancies, miscarriages, and abortions. Medical problems concerning HIV, diabetes, sexually transmitted disease and hypertension were also noted. Alcohol, tobacco and drug use was included in the questionnaire. Father's use of alcohol or drug use was also noted. Information on support systems and resources, living circumstances and amount of time lived in inner city were requested. Additionally, participants were asked as to if this pregnancy was planned.

**Design**

The study was an exploratory descriptive design using structural equation modeling in order to test the causal ordering among a set of variables.

**Statistical Analysis**

Descriptive and inferential statistical analyses were conducted. Descriptive statistics were used to characterize demographic data and sociological data.
Assessment of the psychometric properties of the scales was also completed.

The different research questions and hypotheses required inferential data analysis. "A full structural equation model consists of two components: (a) structural model that specifies the hypothesized causal structure among latent variables (theoretical constructs not directly observable) and (b) a measurement model which defines relations between measured variables or indicators (variables that are observed directly) and the latent variables for which they are used as approximations" (Fassinger, 1987, p. 425).

Hypothesis 1: There will be a direct relationship between traumatic events, life stress, interpersonal conflict and pregnancy outcomes. The statistical procedure used was a structural equation model given the premise that the sample data was transformed into correlations or covariance matrices and described by a series of regression equations. The Amos Program (Arbuckle, 1997) provided estimations of the parameters of the model (path coefficients and error terms) and several measures of goodness-of-fit of the model to the sample data.

Hypothesis 2: There will be an indirect relationship between traumatic events, substance use of alcohol and drugs, life stress and interpersonal conflict and pregnancy outcomes. This relationship was mediated by symptoms of PTSD. The statistical procedure used was structural equation model given the premise that the sample data was transformed into correlations or covariance matrices and described by a series of regression equations. The Amos Program (Arbuckle, 1997) provided estimations of the parameters of the model (path coefficients and error terms) and several measures of goodness-of-fit of the model to the sample data.

Hypothesis 3: Women with substance use will have higher levels of traumatic
symptoms and greater negative pregnancy outcomes than women who are not users.

Chi-square test was performed on the data with a contingency table using SPSS Package Software (George & Mallery, 2000).
CHAPTER IV

RESULTS

The results of data analyses are presented in this chapter. Descriptive statistics of the demographic data will be followed by an examination of the various assumptions underlying the path analysis and structural equation modeling. The results for specific hypotheses are discussed.

Demographic Data

Responses were obtained from the structured interview of 193 pregnant women. The outcome of each pregnancy was obtained by review of the mother’s medical chart. African-American pregnant women represented a majority of the sample, \( n = 143, 74.1 \% \), followed by Hispanic women \( n = 29, 15.0\% \), South American women, \( n = 6, 3.1\% \), Asian women, \( n = 2, 1.0\% \), and other ethnic backgrounds \( n = 13, 6.7\% \). Participant’s ages ranged from 18 years to 43 years, \( M = 24.82 \) years, \( SD = 5.9 \). Religious affiliation is presented in Table 6.
Table 6

**Religious Affiliation**

<table>
<thead>
<tr>
<th>Religion</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baptist</td>
<td>69</td>
<td>35.8%</td>
</tr>
<tr>
<td>Roman Catholic</td>
<td>36</td>
<td>18.7%</td>
</tr>
<tr>
<td>Islamic</td>
<td>14</td>
<td>7.3%</td>
</tr>
<tr>
<td>Protestant</td>
<td>1</td>
<td>0.5%</td>
</tr>
<tr>
<td>Other</td>
<td>73</td>
<td>7.3%</td>
</tr>
</tbody>
</table>

The educational levels ranged from 4 years to 16 years, \((M = 11.4, \ SD = 1.9)\).

The most frequent marital status was single \((n = 167, 86.5\%)\), followed by married \((n = 24, 12.4\%)\), and two of the participants indicated other \((1.0\%)\). The majority of the women lived in Newark, New Jersey most of their life. Residential living in the inner-city was summarized in Table 7.
Table 7

Residential Living Situation

<table>
<thead>
<tr>
<th>Number of Years Living in Newark</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 years or longer</td>
<td>6</td>
<td>3.1%</td>
</tr>
<tr>
<td>11 to 20 years</td>
<td>123</td>
<td>63.7%</td>
</tr>
<tr>
<td>6 to 10 years</td>
<td>19</td>
<td>9.8%</td>
</tr>
<tr>
<td>1 to 5 years</td>
<td>37</td>
<td>19.2%</td>
</tr>
<tr>
<td>Lived outside the inner-city boundaries</td>
<td>8</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

Of the 193 women in this study, a planned pregnancy was reported by 38 (19.7%) women, an unplanned pregnancy noted by 148 (76.7%) of the women, and 8 (3.6%) women were uncertain. One-hundred and eight (56.0%) women entered prenatal care in the first trimester, and 85 (44.0%) entered in the second trimester. The numbers of pregnancies ranged from 1 to 14 ($M = 3.3$, $SD = 2.2$). Participants reported having between 1 and 10 living children ($M = 1.45$, $SD = 1.66$). The number of miscarriages were 1 to 4, and induced abortions ranged from 1 to 8 ($M = .69$, $SD = 1.10$). Women who reported receiving treatment for sexually transmitted diseases were 48 (24.9%). Participants acknowledged smoking during pregnancy were yes, 33 (17.1%), no, 149 (77.2%), and sometimes, 11 (5.7%). Drinking during pregnancy was reported as yes, 5 (2.6%), no, 181 (93.8%), and sometimes, 7 (3.6%). Drug use by participants was reported yes, 7 (3.6%), no, 182 (94.3%), and sometimes, 4 (2.0%). Fathers’ use of substances indicated yes, 43, (22.3%) and no, 150 (77.7%). Substance abuse as documented in the participants’ chart revealed that 18 women had a positive urine screen for substance use (6 for cocaine, 5
for opioids, 5 barbiturates, 4 for benzodiazapine, 1 for marijuana, and 10 for methadone). Two women tested positive for methadone were in drug treatment and had no other drugs identified in the urine screen. An additional four women admitted to using marijuana regularly during pregnancy, but did not have a urine screened.

The participants reported resources and supports systems with 92 (47.7%) women lived with the unborn child’s father and an additional 59 (30.6%) indicated that they had some contact with him. Fourteen (7.3%) women noted that they had no contact with an unborn’s father. Pregnant women also indicated other social supports with 98 (50.8%) living with extended family and 9 (4.7) living with friends. Only 26 (12.1%) reported living alone with their children. Twenty-seven women were referred to Social Service for drug and alcohol follow-up. Table 8 displays the pregnant women’s perception of additional resources available to her.
Table 8

Resource Available to Participants

<table>
<thead>
<tr>
<th>Type of Resources</th>
<th>Adequate Frequency</th>
<th>Adequate Percent</th>
<th>Inadequate Frequency</th>
<th>Inadequate Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food</td>
<td>185</td>
<td>95.9</td>
<td>8</td>
<td>4.1</td>
</tr>
<tr>
<td>Shelter</td>
<td>186</td>
<td>96.4</td>
<td>6</td>
<td>3.1</td>
</tr>
<tr>
<td>Financial</td>
<td>159</td>
<td>82.4</td>
<td>33</td>
<td>17.1</td>
</tr>
<tr>
<td>Transportation</td>
<td>145</td>
<td>75.1</td>
<td>48</td>
<td>24.9</td>
</tr>
<tr>
<td>Telephone</td>
<td>132</td>
<td>75.9</td>
<td>42</td>
<td>24.1</td>
</tr>
<tr>
<td>Medical</td>
<td>187</td>
<td>96.8</td>
<td>5</td>
<td>2.6</td>
</tr>
<tr>
<td>Infant Supplies</td>
<td>107</td>
<td>55.4</td>
<td>86</td>
<td>44.6</td>
</tr>
</tbody>
</table>

Pregnant women reported diverse types of traumatic events which are summarized in Table 9.
Table 9

**Traumatic Events**

<table>
<thead>
<tr>
<th>Types</th>
<th>Frequency</th>
<th>Percent</th>
<th>Normed Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious accident, fire or explosion</td>
<td>63</td>
<td>32%</td>
<td>57.3%</td>
</tr>
<tr>
<td>Natural disaster</td>
<td>25</td>
<td>13%</td>
<td>31%</td>
</tr>
<tr>
<td>Non-sexual assault by a family member or someone you know</td>
<td>15</td>
<td>7.8%</td>
<td>35.9%</td>
</tr>
<tr>
<td>Non-sexual assault by a stranger</td>
<td>38</td>
<td>19.7%</td>
<td>38.7%</td>
</tr>
<tr>
<td>Sexual assault by a family member or someone you know</td>
<td>36</td>
<td>18.7%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Sexual assault by a stranger</td>
<td>14</td>
<td>7.3%</td>
<td>24.6%</td>
</tr>
<tr>
<td>Military combat or war zone</td>
<td>3</td>
<td>1.6%</td>
<td>33.1%</td>
</tr>
<tr>
<td>Sexual contact when you were younger than 18 with someone who was 5 or more years older than you</td>
<td>40</td>
<td>20.7%</td>
<td>26.2%</td>
</tr>
<tr>
<td>Imprisonment (prison inmate, hostage)</td>
<td>29</td>
<td>15%</td>
<td>14.1%</td>
</tr>
<tr>
<td>Torture</td>
<td>1</td>
<td>0.5%</td>
<td>4%</td>
</tr>
<tr>
<td>Life-threatening illness</td>
<td>14</td>
<td>7.3%</td>
<td>25.4%</td>
</tr>
<tr>
<td>Other traumatic event</td>
<td>75</td>
<td>39.1%</td>
<td>19.0%</td>
</tr>
</tbody>
</table>
Participants who reported "Other Traumatic Events" are itemized in Table 10.

Table 10

Summary of "Other Traumatic Events"

<table>
<thead>
<tr>
<th>Type of Traumatic Event</th>
<th>Number of Participants Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death of family member/friend</td>
<td>47</td>
</tr>
<tr>
<td>Miscarriage</td>
<td>2</td>
</tr>
<tr>
<td>Abortion</td>
<td>3</td>
</tr>
<tr>
<td>Father murdered</td>
<td>2</td>
</tr>
<tr>
<td>Brother murdered</td>
<td>2</td>
</tr>
<tr>
<td>Abandonment by mother</td>
<td>2</td>
</tr>
<tr>
<td>Loss of infant from Sudden Infant Death</td>
<td>2</td>
</tr>
<tr>
<td>Abandonment by baby's father</td>
<td>4</td>
</tr>
<tr>
<td>Abuse and Neglect by father/mother</td>
<td>1</td>
</tr>
<tr>
<td>Death of daughter at age of 3 years</td>
<td>1</td>
</tr>
<tr>
<td>Brother beaten in front of participant</td>
<td>1</td>
</tr>
<tr>
<td>Being Homeless</td>
<td>2</td>
</tr>
<tr>
<td>Being on drugs</td>
<td>1</td>
</tr>
<tr>
<td>Children taken away by DYFS due to drugs</td>
<td>1</td>
</tr>
<tr>
<td>Attacked by other girls in High School gym</td>
<td>1</td>
</tr>
<tr>
<td>Separated from mother in Africa</td>
<td>1</td>
</tr>
</tbody>
</table>
Full criteria for Posttraumatic Stress Disorder were met in 27 participants, and the complete range of criteria from 0 to 6 (mean = 2.6, SD = 2.2) is reported in Table 11.

Table 11
Criteria for Posttraumatic Stress Disorder

<table>
<thead>
<tr>
<th>Participants Fulfilling Criteria for PTSD</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Criteria –6 Areas</td>
<td>27</td>
<td>14.1</td>
</tr>
<tr>
<td>5 Criteria</td>
<td>23</td>
<td>11.9</td>
</tr>
<tr>
<td>4 Criteria</td>
<td>25</td>
<td>13.0</td>
</tr>
<tr>
<td>3 Criteria</td>
<td>32</td>
<td>16.6</td>
</tr>
<tr>
<td>2 Criteria</td>
<td>10</td>
<td>5.2</td>
</tr>
<tr>
<td>1 Criterion</td>
<td>14</td>
<td>7.3</td>
</tr>
<tr>
<td>No Criteria</td>
<td>61</td>
<td>31.8</td>
</tr>
</tbody>
</table>

Reported posttraumatic symptoms ranged from 0 to 17 (mean = 4.38, SD = 4.56). Posttraumatic Stress Disorder Symptom Severity Scores ranged from 0 to 48 (mean = 7.9, SD = 9.2). Normal pregnancy outcomes accounted for 141 (73.0%) and 52 (27.0%) experienced abnormal outcomes. Live births involved 189 babies (97.9%) with three deaths. Birth weight ranged from 297 to 4770 grams (mean = 3097.34, SD = 622.78). Twenty-seven births were low birth weight at 2500 grams or less and 2 were less than 1500 grams. Gestational age ranged from 9 weeks to 42 weeks (mean = 37.98, SD = 3.85) with 26 infants considered preterm at 36 weeks or less. Apgar at one minute ranged from 0 to 10 (mean = 8.04, SD = 1.7), and at 5 minutes the range was 0 to 10 (mean = 9.3, SD = 1.7).
6.6). Thirty-eight (19.7%) infants were transferred to the Intensive Care Nursery and 16 (8.3%) required assisted ventilation.

Data Screening

Two types of assumptions are considered with structural equation modeling: theoretical and statistical (Munro, 1997). The statistical assumptions of normality and lineararity underlie multivariate statistical tests (Tabachnick & Fidell, 1999). Missing data were found when examining the frequencies of the variables. The missing data were replaced within Statistical Package for the Social Sciences (SPSS) (George & Mallery, 2000) using a linear predicted score by way of regression using the other variables in the design as predictors. Frequency distributions were assessed for outliers. Corrective action was taken to drop extreme cases (West, Finch & Curran, 1995).

Violations of normality and linearity were examined. Three variables (injury, sexual coercion, physical assault) were both skewed and displayed kurtotic characteristics. The rest of the variables conformed to the assumptions of normality and linearity. Several areas allowed for assumptions of normality and linearity with large samples. First, the central limit theorem indicates that the mean of the sampling distribution is identical to the population mean of the raw scores. If the population distribution of raw scores is not normal, the sampling distribution will increasingly approach a normal distribution as the size of the sample on which it is based gets larger (Polit, 1996). The sample size of 193 for this study provides a ratio of 1 variable to 14 participants. Large samples should always be more than 10 times the number of free-model parameters (Bentler, 1995). A typical recommendation involves a minimum of
100 to 200 subjects per group for structural equation modeling (Munro, 1997). Therefore, the sample size meets the requirements for SEM and is considered a large sample.

Second, maximum likelihood (ML) was utilized in this data analysis. ML concerns estimates for model parameters that assures the likelihood of observing the available data if one were to collect data from the same population again. Maximization is achieved by selecting the model parameters in such a way as to minimize the fit function (Raykov & Marcoulides, 2000). Bollen (1989) and Joreskog (1993) indicate the maximum likelihood can be utilized with minor deviations from normality.

The following variables were included in this analysis: substance abuse (derived from the scores on the Michigan Alcoholism Screening Test, TWEAK Test, and a Drug Abuse Screening Test, and participants’ charts, interpersonal conflict (derived from the psychological aggression scores, physical assault scores, sexual coercion scores, and injury scores), posttraumatic stress (derived from symptom severity scores and traumatic events), and negative pregnancy outcomes (derived from birth weight less than 2,500 grams, Apgar score at one and five minutes will be 7 or less; gestational weeks of 36 weeks or less), admission to intensive care nursery, stillbirth or fetal death). Table 12 contains the means, standard deviations and ranges of scores for each variable.
Table 12

Means, Standard Deviations and Ranges for Continuous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAST</td>
<td>1.60</td>
<td>3.63</td>
<td>0-20</td>
</tr>
<tr>
<td>MAST</td>
<td>1.89</td>
<td>5.39</td>
<td>0-40</td>
</tr>
<tr>
<td>TWEAK</td>
<td>.30</td>
<td>1.07</td>
<td>1-7</td>
</tr>
<tr>
<td>Life Stress</td>
<td>3.47</td>
<td>11.03</td>
<td>-32 - +31</td>
</tr>
<tr>
<td>PTSD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SSS</td>
<td>7.90</td>
<td>9.25</td>
<td>0-48</td>
</tr>
<tr>
<td>Conflict Tactics Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Assault</td>
<td>2.80</td>
<td>6.60</td>
<td>0-49</td>
</tr>
<tr>
<td>Psychological Aggression</td>
<td>10.65</td>
<td>9.18</td>
<td>0-40</td>
</tr>
<tr>
<td>Injury</td>
<td>.86</td>
<td>3.07</td>
<td>0-12</td>
</tr>
<tr>
<td>Sexual Coercion</td>
<td>.88</td>
<td>3.07</td>
<td>0-19</td>
</tr>
</tbody>
</table>

Cronbach (1951) defined alpha as 'the mean of all split-half coefficients resulting from the different splitting of a test" (p.297). In other words, each item can be seen as a sample test of the measure, and the overall alpha is the index of the consistency of the scale in measuring a single attribute. The scales were examined for reliability or the degree of accuracy with which the instrument measures the attribute. Table 13 displays the instruments and subscales with the corresponding number of items, reported
alpha coefficients from the literature and alpha coefficients calculated based on current data.

Table 13

Reliability Coefficients for Instruments and Subscales

<table>
<thead>
<tr>
<th>Instrument/Subscale</th>
<th>Number of Items</th>
<th>Alpha</th>
<th>Reported Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Stress Scale</td>
<td>61</td>
<td>.57</td>
<td>.56</td>
</tr>
<tr>
<td>DAST</td>
<td>20</td>
<td>.92</td>
<td>.95</td>
</tr>
<tr>
<td>TWEAK</td>
<td>5</td>
<td>.77</td>
<td></td>
</tr>
<tr>
<td>MAST</td>
<td>25</td>
<td>.87</td>
<td>.95</td>
</tr>
</tbody>
</table>

Conflict Tactic

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Aggression</td>
<td>8</td>
<td>.73</td>
<td>.79</td>
</tr>
<tr>
<td>Physical Assault</td>
<td>12</td>
<td>.73</td>
<td>.86</td>
</tr>
<tr>
<td>Injury</td>
<td>6</td>
<td>.64</td>
<td>.95</td>
</tr>
<tr>
<td>Sexual Coercion</td>
<td>7</td>
<td>.17</td>
<td>.87</td>
</tr>
</tbody>
</table>

PTSD

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17</td>
<td>n/a*</td>
<td>.92</td>
</tr>
</tbody>
</table>

Note. *not available

The model being tested is unidirectional and recursive (Pedhazur, 1982). The model was specified and estimations completed. This is followed by fit evaluation and finally respecification that will be explored in Chapter 5.
Hypothesis Testing

Structural equation modeling with Amos (Version 4.0), (Arbuckle & Wothke, 1999) was used to test the hypotheses. In this particular study, alternative models were proposed (Joreskog, 1983). Path diagrams were used to depict a particular SEM which represented the actual graphic equivalent of its mathematical representation whereby a set of equations related the dependent variables to their explanatory variables (Byrne, 2001).

The SEM was decomposed into two sub-models: a measurement model and structural model (Byrne, 2001). A measurement model identifies the relationship between the observed and unobserved variable, the scores from the testing instrument, and the underlying constructs that they are defining. The structural model highlights the relations among the unobserved variables and specifies the way by which the latent variables influence the changes of other latent variables in the model (Byrne, 2001). Maximum likelihood estimation was used in the analysis to provide variance/covariance estimates derived from a solution in stages until a solution cannot be improved by further estimation (Hoyle & Panter, 1995).

Valid tests of the theoretical model normally depend on a “good fit” of the measurement model to the data (Munro, 1997). Chi-square is utilized to examine the fit of the model to the data. Since the chi-square assesses the difference between observed data and a full model that is a restricted structure composed of the measurement and theoretical model, a chi-square test will need to be non-significant. The focus is to confirm the null hypothesis indicating that there is no difference between the data and the model.
Since Chi-square is known to reject models because of large sample size, additional indexes are included in the analysis to quantify the degree of fit along a continuum (Hu & Bentler, 1995). In additional to Chi-square, three fit indexes were calculated and presented for this study: Goodness-of-Fit Index (GFI) (Joreskog, 1984), Adjusted Goodness-of-Fit (AGIF) (Hu & Bentler, 1995), and AKAIKE Information Criteria (AIC) (Hu & Bentler, 1995). Tanaka (1993) identified several dimensions of fit indexes that should be considered in selecting appropriate indexes for study evaluation: (a) model complexity, (b) normed versus nonnormed indices, and (c) the indices demonstrate a dependence on sample size. Two of the three fit indexes selected to be evaluated in this study were selected because they are not sample-size dependent (CFI & AIC). Hu and Bentler (1995) noted that a Chi-square test offers only a dichotomous decision strategy implied by a statistical decision rule and cannot be used to quantify the degree of fit along a continuum with some prespecified boundary.

Fit indexes have been developed to assess the degree of congruence between the model and the data (Hu & Bentler, 1995). Two types of fit indexes were used: the absolute index and relative or incremental index. The first type of fit index is the absolute index. The absolute index allows the researcher to consider how well an a priori model reproduces the sample data. Goodness-of-fit index (GFI), and Adjusted Goodness of Fit index are considered absolute indexes and provide information about how closely the models compare to a perfect fit (Byrne, 2001).

The second fit index is the relative or incremental fit index. This fit index is utilized to evaluate is how much better the model fits compared to a baseline model, usually an independence model. Akaike's (1987) information criterion (AIC) represents a relative type of fit index. AIC was utilized to determine model fit. Hoyle (1995)
reported that adjunct fit indexes have been developed which are descriptive in nature.

The AIC is derived from the comparison between the fit of a specified model (perfect fit) generated by Amos Program and an independence model (worse possible fit for the data that assumes that all observed variables are uncorrelated with one another) generate by Amos Program. The default model generated by Amos Program will need to be closer to the saturated model. The saturated model is considered the most ideal model. The saturated model is based on the analysis of complete data and therefore, fits the sample data perfectly. The indexes can range from 0.00 to 1.00 with a value close to 1.00 being indicative of a good fit. The upper limit of the fit indexes for GFI, CFI and AGFI is 0.90 as the normed cutoff (Hoyle & Panter, 1995). Finally, the study will present the changes in chi-square values relative to changes in degrees of freedom (chi-square difference tests) which were used to compare models.

Hypothesis 1: There was a direct relationship between traumatic events, life stress and interpersonal conflict and pregnancy outcomes (Figure 2).

Table 14 summarizes the results from the goodness-of-fit indices. The results from the saturated model represent a hypothetical model with perfect fit, while the results from the independence model represent a hypothetical model with the worst possible fit. In hypothesis 1, the chi-square is non-significant: (20.889, p = .10) which suggests that the model was a good fit for the data. The Goodness of Fit Index, the Adjusted Goodness of Fit and the AKAIKE Information Criteria all indicate adequate model fit. Since all the fit indexes reached acceptable normed index of .9, the indexes indicate an adequate model fit. AIC was closer to the saturated model than the independence model and therefore, fit the postulated model.
Table 14

Summary of Model Fit Indices from Hypothesis 1

<table>
<thead>
<tr>
<th>Index</th>
<th>Default Model</th>
<th>Saturated Model</th>
<th>Independence Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>20.889*</td>
<td>0.00</td>
<td>154.52</td>
</tr>
<tr>
<td>AIC</td>
<td>48.88*</td>
<td>56.00</td>
<td>168.52</td>
</tr>
<tr>
<td>Goodness-of-Fit Index</td>
<td>0.97*</td>
<td>1.00</td>
<td>0.80</td>
</tr>
<tr>
<td>Adjusted Goodness-of-Fit Index</td>
<td>0.93*</td>
<td></td>
<td>0.73</td>
</tr>
<tr>
<td>Comparative Fit Index</td>
<td>0.94*</td>
<td>1.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note. *Satisfactory Model Fit

Estimates are regression weights and identify the individual impact each independent variable has on the dependent variable—pregnancy outcome. Each individual path in the model is evaluated for significance. The regression weights were assumed to determine the significance of each path. Table 15 presents the estimated regression weight, estimated standard error of the regression weights, the critical ratio (the regression weight divided by the standard error), and the p value. When the p value for a regression weight is less than .05, the corresponding path was statistically significant.
### Table 15

**Hypothesis 1 Analysis**

<table>
<thead>
<tr>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traumatic Events→ Pregnancy Outcomes</td>
<td>0.049</td>
<td>0.06</td>
<td>0.76</td>
</tr>
<tr>
<td>Life Events→ Pregnancy Outcomes</td>
<td>-0.006</td>
<td>0.00</td>
<td>-1.94</td>
</tr>
<tr>
<td>Conflict→ Pregnancy Outcomes</td>
<td>-0.010</td>
<td>0.03</td>
<td>-0.32</td>
</tr>
<tr>
<td>Psychological Aggression→ Conflict</td>
<td>5.16</td>
<td>0.60</td>
<td>8.51</td>
</tr>
<tr>
<td>Physical Assault→ Conflict</td>
<td>6.50</td>
<td>0.34</td>
<td>19.14</td>
</tr>
<tr>
<td>Sexual Coercion→ Conflict</td>
<td>0.78</td>
<td>0.15</td>
<td>5.06</td>
</tr>
<tr>
<td>Injury→ Conflict</td>
<td>1.14</td>
<td>0.21</td>
<td>5.30</td>
</tr>
</tbody>
</table>

**Note.** *p*=.05 or less

Table 15 indicated that traumatic events were not a predictor of pregnancy outcomes. Life stress was a significant predictor of pregnancy outcomes. The relationship between life stress and pregnancy outcomes was negative. This demonstrates
that more stress is related to poor pregnancy outcomes and that less stress would be
predictor of more favorable pregnancy outcomes. Conflict is considered a latent variable
and is measured adequately by all four subscales. Conflict was not a significant variable
in predicting pregnancy outcome.

The value of the covariances—traumatic stress and psychological aggression—are
represented by paths with a bi-directional arrow in the main diagram as shown in Figure
2.

The Square Multiple Correlation (SMC) is a measure of the strength of linear
relationship where the proportion of variance in the dependent variable is predicted from
the independent variable (Joreskog, 1993). Physical assault predicted 97% of the
variance for Interpersonal Conflict and Psychological Aggression predicted 32% of the
variance for Interpersonal Conflict. The SMC indicated that 2% of the total variance in
pregnancy outcomes is accounted for by the combined effects of independent variables.
Hypothesis 1

Figure 2. ✧ Indicates a significant pathway.
Hypothesis 2: There was an indirect relationship between traumatic events, life stress, interpersonal conflict and substance use and pregnancy outcomes mediated by symptoms of PTSD (Figure 3).

Table 16 summarizes the results from the goodness-of-fit indices from Hypothesis 2. The results from the saturated model represent a hypothetical model with perfect fit, while the results from the independence model represent a hypothetical model with the worst possible fit. In hypothesis 2, the chi-square was significant: (107.28, p = .00). This suggests inadequate model fit. The Comparative Fit Index, the Goodness of Fit Index (Joreskog, 1993), and the AIC (AKAIKE Information Criteria) suggested adequate model fit.

Table 16

Summary of Model Fit Indices from Hypothesis 2

<table>
<thead>
<tr>
<th>Index</th>
<th>Default Model</th>
<th>Saturated Model</th>
<th>Independence Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>107.28</td>
<td>0.00</td>
<td>622.62</td>
</tr>
<tr>
<td>AIC</td>
<td>155.28*</td>
<td>156.00</td>
<td>646.37</td>
</tr>
<tr>
<td>Goodness-of-Fit Index</td>
<td>0.91*</td>
<td>1.00</td>
<td>0.60</td>
</tr>
<tr>
<td>Adjusted Goodness-of-Fit Index</td>
<td>0.87</td>
<td></td>
<td>0.52</td>
</tr>
<tr>
<td>Comparative Fit Index</td>
<td>0.90*</td>
<td>1.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note. *Satisfactory Model Fit
In Hypothesis 2, PTSD symptom severity score was not a predictor of pregnancy outcomes. Conflict was not a predictor of PTSD SSS. The latent variable, traumatic events, was significant predictor of Posttraumatic Stress Disorder with regression weight of 8.55 at $p = .00$. Life stress was also a predictor of PTSD Symptom Severity Scores with a regression weight of negative 0.15 at $p = 0.00$. The latent variable, substance abuse, was a significantly related to PTSD symptom severity scores with a regression weight at 1.10 at $p = .05$. Psychological aggression, physical assault, sexual coercion and injury were predictors of the latent variable, conflict. DAST, MAST, and TWEAK and Substance Abuse Confirmed by Chart were significantly related to the latent variable, Substance abuse. Table 17 is a summary of the variables and the regression weights and the probability levels.

The Squared Multiple Correlation was 27% for PTSD Symptom Severity Score. Substance Abuse predicted 97% of the variance of PTSD SSS. MAST score contributed 51%, DAST contributed 60%, and TWEAK contributed 16% of the variance in predicting Substance Use. The Squared Multiple Correlation was 0.013 or 1% of the total variance accounted for by the combined effects of independent variables, substance abuse, conflict, PTSD SSS, on the dependent variable, pregnancy outcome.
### Table 17

**Hypothesis 2 Analysis**

<table>
<thead>
<tr>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traumatic Events → PTSD Symptom Severity Score</td>
<td>8.55</td>
<td>1.12</td>
<td>7.64</td>
</tr>
<tr>
<td>Life Stress → PTSD Symptom Severity Score</td>
<td>-0.15</td>
<td>0.05</td>
<td>-3.12</td>
</tr>
<tr>
<td>Conflict → PTSD Symptom Severity Score</td>
<td>0.42</td>
<td>0.56</td>
<td>0.74</td>
</tr>
<tr>
<td>Substance Abuse → PTSD Symptom Severity Score</td>
<td>1.10</td>
<td>0.57</td>
<td>1.93</td>
</tr>
<tr>
<td>Physical Assault → Conflict</td>
<td>6.50</td>
<td>0.34</td>
<td>19.14</td>
</tr>
<tr>
<td>Sexual Coercion → Conflict</td>
<td>0.78</td>
<td>0.15</td>
<td>5.07</td>
</tr>
</tbody>
</table>
(Table 17 continued)

<table>
<thead>
<tr>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psychological Aggression → Conflict</td>
<td>5.20</td>
<td>0.61</td>
<td>8.51</td>
</tr>
<tr>
<td>Injury → Conflict</td>
<td>1.14</td>
<td>0.21</td>
<td>5.30</td>
</tr>
<tr>
<td>DAST → Substance Abuse</td>
<td>0.28</td>
<td>0.02</td>
<td>12.14</td>
</tr>
<tr>
<td>MAST → Substance Abuse</td>
<td>0.28</td>
<td>0.02</td>
<td>12.14</td>
</tr>
<tr>
<td>TWEAK → Substance Abuse</td>
<td>0.08</td>
<td>0.01</td>
<td>5.59</td>
</tr>
<tr>
<td>Substance Abuse Chart → Substance Abuse</td>
<td>0.41</td>
<td>0.02</td>
<td>16.46</td>
</tr>
<tr>
<td>PTSD Symptom Severity Score → Pregnancy Outcomes</td>
<td>0.00</td>
<td>0.00</td>
<td>1.47</td>
</tr>
</tbody>
</table>

**Note:** p < 0.05 or less
Hypothesis 2

Figure 3. ✪ Indicates significant pathways.
Hypothesis 3: Women with substance use will have higher symptoms of PTSD and greater negative pregnancy outcomes (Figure 4). Table 18 summarizes the results from the goodness-of-fit indices. The results from the saturated model represent a hypothetical model with perfect fit, while the results from the independence model represent a hypothetical model with the worst possible fit. In hypothesis 3, the chi-square is significant: (106.93, p = .00) which suggests that the model was an inadequate fit for the data. The Comparative Fit Index, the Goodness-of-Fit Index, the AGFI, and the AKAIKE Information Criteria suggested adequate model fit.

Table 18

Summary of Model Fit Indices for Hypothesis 3

<table>
<thead>
<tr>
<th>Index</th>
<th>Default Model</th>
<th>Saturated Model</th>
<th>Independence Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>106.93</td>
<td>0.00</td>
<td>622.62</td>
</tr>
<tr>
<td>AIC</td>
<td>160.93*</td>
<td>156.00</td>
<td>646.62</td>
</tr>
<tr>
<td>Goodness-of-Fit Index</td>
<td>0.91*</td>
<td>1.00</td>
<td>0.60</td>
</tr>
<tr>
<td>Adjusted Goodness-of-Fit Index</td>
<td>0.87</td>
<td></td>
<td>0.52</td>
</tr>
<tr>
<td>Comparative Fit Index</td>
<td>0.90*</td>
<td>1.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note. *Satisfactory Model Fit
Figure 4. Indicates a significant pathway.
In Hypothesis 3, the latent variable, substance abuse was predictive of the latent variable conflict with estimate of 3.84 at $p = .02$. Traumatic events was a significant predictor of PTSD Symptom Severity Score with regression weight of 8.52 at $p = .00$. Life stress was a predictor of PTSD Symptom Severity Scores with regression weights of negative 0.16 at $p = 0.00$. Physical assault was a predictor of the latent variable conflict which was a pathway to PTSD symptom severity score. MAST, DAST and TWEAK were all significantly related to the latent variable substance abuse at $p = .00$. Table 19 is a summary of the variables and the regression weights and the probability levels.

Substance abuse predicted 88% of the variance on both dependent variables, PTSD SSS and Pregnancy Outcomes. The Squared Multiple Correlation represents the total amount of variance accounted for the dependent variable for all the independent variables. In this study, 0.013 or 1% is the total variance is accounted for by the combined effects of independent variables.
<table>
<thead>
<tr>
<th>Path</th>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance Abuse → Conflict</td>
<td>3.84</td>
<td>1.69</td>
<td>2.26</td>
<td>0.02*</td>
</tr>
<tr>
<td>Traumatic Events → PTSD Symptom Severity Score</td>
<td>8.52</td>
<td>1.12</td>
<td>7.60</td>
<td>0.00*</td>
</tr>
<tr>
<td>Conflict → PTSD Symptom Severity Score</td>
<td>0.82</td>
<td>0.52</td>
<td>1.58</td>
<td>0.11</td>
</tr>
<tr>
<td>Life stress → PTSD Symptom Severity Score</td>
<td>-0.16</td>
<td>0.05</td>
<td>-3.22</td>
<td>0.00*</td>
</tr>
<tr>
<td>Psychological Aggression → Conflict</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Assault Conflict</td>
<td>1.03</td>
<td>0.40</td>
<td>2.53</td>
<td>0.01*</td>
</tr>
<tr>
<td>Sexual Coercion → Conflict</td>
<td>0.32</td>
<td>0.17</td>
<td>1.85</td>
<td>0.06</td>
</tr>
<tr>
<td>Injury → Conflict</td>
<td>0.38</td>
<td>0.22</td>
<td>1.47</td>
<td>0.08</td>
</tr>
</tbody>
</table>
(Table 19 continued)

<table>
<thead>
<tr>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAST $\rightarrow$ Substance Abuse</td>
<td>0.71</td>
<td>0.05</td>
<td>12.83</td>
</tr>
<tr>
<td>MAST $\rightarrow$ Substance Abuse</td>
<td>0.61</td>
<td>0.05</td>
<td>11.55</td>
</tr>
<tr>
<td>TWEAK $\rightarrow$ Substance Abuse</td>
<td>0.21</td>
<td>0.03</td>
<td>5.99</td>
</tr>
<tr>
<td>Substance Abuse Chart $\rightarrow$ Substance Abuse</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTSD Symptom Severity Score $\rightarrow$ Pregnancy Outcomes</td>
<td>0.005</td>
<td>0.004</td>
<td>1.47</td>
</tr>
</tbody>
</table>

*Note.* $p < .05$ or less

Hypotheses 1a and 2a were developed after consideration of the influence of certain variables on pregnancy outcomes. According to the Medical Director of the Clinic, substance abuse is increased in this population. Incorporating substance abuse as having a direct impact on pregnancy outcomes becomes an important question to investigate.

Hypothesis 1 A: There will be a direct relationship between traumatic events, life stress, substance use and interpersonal conflict and pregnancy outcomes (Figure 5).
Table 20 summarizes the results of the goodness-of-fit indices. The results from the saturated model represent a hypothetical model with perfect fit, while the results from the independence model represent a hypothetical model with the worst possible fit. In hypothesis 1A, the chi-square is significant: (96.798, p = .00) which suggested an inadequate model fit. The Comparative Fit Index, Goodness of Fit Index, the Adjusted Goodness of Fit, and the AKAIKE Information Criteria all suggested adequate model fit.

Table 20

Summary of model fit indices for Hypothesis 1a

<table>
<thead>
<tr>
<th>Index</th>
<th>Default Model</th>
<th>Saturated Model</th>
<th>Independence Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>96.798</td>
<td>0.00</td>
<td>549.11</td>
</tr>
<tr>
<td>AIC</td>
<td>140.798*</td>
<td>132.00</td>
<td>571.11</td>
</tr>
<tr>
<td>Goodness-of-Fit Index</td>
<td>0.91*</td>
<td>1.00</td>
<td>0.61</td>
</tr>
<tr>
<td>Adjusted Goodness-of-Fit Index</td>
<td>0.87</td>
<td></td>
<td>0.53</td>
</tr>
<tr>
<td>Comparative Fit Index</td>
<td>0.89</td>
<td>1.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Note. *Satisfactory Model Fit
Figure 5. * Indicates a significant pathway.
Results for Hypothesis 1a indicate that traumatic events is not a predictor of negative pregnancy outcomes with a regression weight of 0.013 and a \( p = 0.84 \). Negative life stress was not a significant predictor of pregnancy outcomes at with a regression weight of negative 0.00 and \( p = 0.09 \). In addition, substance abuse was not a predictor of negative pregnancy outcomes with a regression weight at 0.09 and \( p = 0.06 \) but can be considered a trend. Table 21 is a summary of the variables and the regression weights and the probability levels.

The Squared Multiple Correlation represents the total amount of variance accounted for the dependent variable for all the independent variables. In this study, 0.03 or 3% of the total variance is accounted for by the combined effects of independent variables on the dependent variable—pregnancy outcome.
### Table 21

**Hypothesis 1a Analysis**

<table>
<thead>
<tr>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traumatic Events → Pregnancy Outcomes</strong></td>
<td>0.02</td>
<td>0.06</td>
<td>0.46</td>
</tr>
<tr>
<td><strong>Life Stress → Pregnancy Outcomes</strong></td>
<td>-0.00</td>
<td>0.00</td>
<td>-1.69</td>
</tr>
<tr>
<td><strong>Conflict → Pregnancy Outcomes</strong></td>
<td>-0.02</td>
<td>0.03</td>
<td>-0.67</td>
</tr>
<tr>
<td><strong>Psychological Aggression → Conflict</strong></td>
<td>5.20</td>
<td>0.61</td>
<td>8.51</td>
</tr>
<tr>
<td><strong>Physical Assault → Conflict</strong></td>
<td>6.50</td>
<td>0.34</td>
<td>19.14</td>
</tr>
<tr>
<td><strong>Sexual Coercion → Conflict</strong></td>
<td>0.78</td>
<td>0.15</td>
<td>5.06</td>
</tr>
<tr>
<td><strong>Injury → Conflict</strong></td>
<td>1.14</td>
<td>0.21</td>
<td>5.30</td>
</tr>
<tr>
<td><strong>Substance Abuse → Pregnancy Outcomes</strong></td>
<td>0.06</td>
<td>0.03</td>
<td>1.89</td>
</tr>
<tr>
<td><strong>DAST → Substance Abuse</strong></td>
<td>0.28</td>
<td>0.02</td>
<td>12.12</td>
</tr>
</tbody>
</table>
Table 21 (continued)

<table>
<thead>
<tr>
<th></th>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAST → Substance Abuse</td>
<td>0.24</td>
<td>0.02</td>
<td>10.94</td>
<td>0.00*</td>
</tr>
<tr>
<td>TWEAK → Substance Abuse</td>
<td>0.07</td>
<td>0.01</td>
<td>5.57</td>
<td>0.00*</td>
</tr>
<tr>
<td>Substance Abuse → Substance Abuse</td>
<td>0.41</td>
<td>0.02</td>
<td>16.48</td>
<td>0.00*</td>
</tr>
</tbody>
</table>

Note. *p < .05 or less

Hypothesis 2a: Traumatic events, life stress, substance abuse and conflict will have an impact on both PTSD SSS and pregnancy outcomes (Figure 6).

Table 22 indicated the goodness-of-fit indexes. In hypothesis 2a, the chi-square is significant: (101.49, p = .00) which indicated an inadequate model fit. The Comparative Fit Index, the Goodness of Fit Index, the Adjusted Goodness of Fit Index and the AIC (AKAIKE Information Criteria) all suggest that the data are an adequate fit for the model.
Table 22

Summary of Model Fit Indices for Hypothesis 2a

<table>
<thead>
<tr>
<th>Index</th>
<th>Default Model</th>
<th>Saturated Model</th>
<th>Independence Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-square</td>
<td>101.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goodness-of-Fit Index</td>
<td>0.91*</td>
<td>1.00</td>
<td>0.60</td>
</tr>
<tr>
<td>Adjusted Goodness-of-Fit Index</td>
<td>0.87</td>
<td></td>
<td>0.52</td>
</tr>
<tr>
<td>Comparative Fit Index</td>
<td>0.90*</td>
<td>1.00</td>
<td>0.00</td>
</tr>
<tr>
<td>AIC</td>
<td>159.49*</td>
<td>156.00</td>
<td>646.62</td>
</tr>
</tbody>
</table>

Note. *Satisfactory Model Fit

In Hypothesis 2a, again traumatic events was a predictor of PTSD symptom severity scores with regression weight of 8.50 at p = .00. Life stress was also a significant predictor of PTSD symptom severity score with a negative 0.012 at p = 0.03. A significant predictor of substance abuse as a latent variable was the PTSD symptom severity score, a dependent variable in this model. The pathway from PTSD symptom severity score to pregnancy outcome was not significant. Table 23 present the regression weights and the significance level.

The Squared Multiple Correlation for this hypothesis is 0.27 or 27% with PTSD symptom severity score as the dependent variable or outcome variable. This indicates that 27% of the variance of all the independent variables explains PTSD symptom severity score. The other dependent variable is pregnancy outcome with a squared multiple correlation of 0.07 or 7%. This again represents the total amount of variance
accounted for by all the independent variables.

Table 23

**Hypothesis 2a Analysis**

<table>
<thead>
<tr>
<th></th>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traumatic Events→PTSD</strong></td>
<td>8.53</td>
<td>1.12</td>
<td>7.61</td>
<td>0.00*</td>
</tr>
<tr>
<td><strong>Symptom Severity Score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Life Stress→PTSD</strong></td>
<td>-0.15</td>
<td>0.05</td>
<td>-3.11</td>
<td>0.03*</td>
</tr>
<tr>
<td><strong>Symptom Severity Score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Conflict→PTSD</strong></td>
<td>0.45</td>
<td>0.58</td>
<td>.78</td>
<td>0.28</td>
</tr>
<tr>
<td><strong>Symptom Severity Score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Substance Abuse→PTSD</strong></td>
<td>1.11</td>
<td>0.57</td>
<td>1.92</td>
<td>0.03*</td>
</tr>
<tr>
<td><strong>Symptom Severity Score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Psychological Aggression→Conflict</strong></td>
<td>5.42</td>
<td>0.75</td>
<td>7.22</td>
<td>0.00*</td>
</tr>
<tr>
<td><strong>Physical Assault→Conflict</strong></td>
<td>6.25</td>
<td>0.62</td>
<td>10.02</td>
<td>0.00*</td>
</tr>
</tbody>
</table>
(Table 23 continued)

<table>
<thead>
<tr>
<th>Regression Weights</th>
<th>Standard Error</th>
<th>Critical Ratio</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual Coercion → Conflict</td>
<td>0.81</td>
<td>0.17</td>
<td>4.78</td>
</tr>
<tr>
<td>Injury → Conflict</td>
<td>1.18</td>
<td>0.23</td>
<td>4.99</td>
</tr>
<tr>
<td>DAST → Substance Abuse</td>
<td>0.28</td>
<td>0.02</td>
<td>12.18</td>
</tr>
<tr>
<td>MAST → Substance Abuse</td>
<td>0.24</td>
<td>0.02</td>
<td>10.89</td>
</tr>
<tr>
<td>TWEAK → Substance Abuse</td>
<td>0.08</td>
<td>0.01</td>
<td>5.62</td>
</tr>
<tr>
<td>Substance Abuse → Substance Abuse Chart</td>
<td>0.41</td>
<td>0.02</td>
<td>16.43</td>
</tr>
<tr>
<td>Substance Abuse → Pregnancy Outcomes</td>
<td>0.05</td>
<td>0.03</td>
<td>1.80</td>
</tr>
<tr>
<td>Traumatic events → Pregnancy Outcomes</td>
<td>0.00</td>
<td>0.07</td>
<td>0.09</td>
</tr>
<tr>
<td>Life Stress → Pregnancy Outcomes</td>
<td>0.00</td>
<td>0.00</td>
<td>1.52</td>
</tr>
<tr>
<td>Conflict → Pregnancy Outcomes</td>
<td>0.02</td>
<td>0.03</td>
<td>0.78</td>
</tr>
<tr>
<td>PTSD Symptom Severity Score → Pregnancy Outcomes</td>
<td>0.00</td>
<td>0.00</td>
<td>0.65</td>
</tr>
</tbody>
</table>

Note. *p ≤ .05 or less
Figure 6. * Indicates significant pathways.
Additional Statistical Analysis: Comparison of Models

Comparisons in models differences associated with their chi-squares and degrees of freedom were examined in Table 24. Table 25 represents how each model compares to the other models. Model 1 and Model 1a were considered not significant, indicating comparable fit. Model 2, 2a, and 3 were significantly different than Model 1 and Model 1a. Rank order would place Model 1 and Model 1a as the better model fit, Model 2, Model 2a and 3 as different and possibly represent inadequate fit for the data.

Table 24

Characteristics of the Models

<table>
<thead>
<tr>
<th>Models</th>
<th>Chi-square</th>
<th>Degrees of Freedom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis1</td>
<td>20.88</td>
<td>14</td>
</tr>
<tr>
<td>Hypothesis 1a</td>
<td>96.79</td>
<td>44</td>
</tr>
<tr>
<td>Hypothesis 2a</td>
<td>101.49</td>
<td>49</td>
</tr>
<tr>
<td>Hypothesis 3</td>
<td>106.93</td>
<td>51</td>
</tr>
<tr>
<td>Hypothesis 2</td>
<td>107.28</td>
<td>54</td>
</tr>
</tbody>
</table>
Table 25

Comparison of Chi-square Values for Different Models

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Difference in df</th>
<th>Difference in Chi-squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model 1a - Model 1</td>
<td>( \chi^2 = 96.79 - \chi^2 = 20.88 = 30 )</td>
<td>75.91</td>
</tr>
<tr>
<td>Model 2 - Model 2a</td>
<td>( \chi^2 = 107.28 - \chi^2 = 101.49 = 5 )</td>
<td>5.78*</td>
</tr>
<tr>
<td>Model 3 - Model 2a</td>
<td>( \chi^2 = 106.93 - \chi^2 = 101.49 = 2 )</td>
<td>5.44*</td>
</tr>
<tr>
<td>Model 3 - Model 1a</td>
<td>( \chi^2 = 106.93 - \chi^2 = 96.79 = 7 )</td>
<td>10.14*</td>
</tr>
<tr>
<td>Model 2 - Model 1a</td>
<td>( \chi^2 = 107.28 - \chi^2 = 96.79 = 11 )</td>
<td>10.49*</td>
</tr>
</tbody>
</table>

Note. *p < .05
CHAPTER V
DISCUSSION AND RECOMMENDATIONS

The aim of this study was to explore the impact of life stress, interpersonal conflict, substance use and trauma on pregnancy outcomes of inner-city women. In addition, an attempt was made to gain additional precision regarding the findings of previous researchers indicating that stress is predictive of negative pregnancy outcomes. An extension of previous research was to examine the impact of trauma on pregnancy outcomes.

Three structural models were developed to examine various ways different behaviors patterns (substance use and interpersonal conflict) and life stress and traumatic events may affect pregnancy outcomes. Two additional models were added due to previous data that indicated substance use was a common behavior pattern of pregnant women in this clinic. These last two models included substance abuse as directly impacting pregnancy outcomes. The findings supported the hypothesis that women with negative life events and engaging in substance abuse have infants experiencing lower Apgar scores, more respiratory distress, lower birth weights, premature (less than 36 weeks), and more likely to be transferred to an intensive care nursery. The significant finding of trauma not impacting pregnancy outcomes will require further exploration in the concept of resiliency in this sample.
Findings emerged from both the descriptive analysis of items in the structured interview. The important findings of each analysis are discussed, conclusions are drawn, and a new model (respecification) for future research is suggested based on findings.

Descriptive Analysis

High levels (76.7%) of unintended pregnancy were noted in this study. Past research studies show discrepancies in findings related to unintended pregnancies and negative pregnancy outcomes. Sable, Spencer, Stockbauer, Schramm, Howell and Herman (1997) indicated that there was no significant association between low birth weight and the traditional unwanted pregnancy variables (mistimed and unwanted). Ahmed (1990) demonstrated that unmarried status was a demographic risk factor for low birth weight. Unanswered questions relate to how this impacts interpersonal partner conflict and social supports.

Approximately 20% of women will drink some alcohol during pregnancy (Chang, Wilkins-Haug, Berman, Goetz, Behr, & Hiley, 1998). This is compared to the study participants who reported 2.6% do drink and another 2% drink sometimes during their pregnancy. Yet, analysis of the scores from the DAST, the MAST, and the TWEAK revealed that 47 (24.4%) women were at risk for substance abuse.

Substantiated drug use from urine toxicology screens taken at the time of delivery revealed that 11.4% of the participants were positive for either cocaine, amphetamines or heroin. From the structured interview only 3% (n = 7) indicated drug use, and another 2% (n = 4) reported occasional use for a total of only 5% of the sample disclosing drug use. Christmas, et al. (1992) study identified fifty-eight of the 302 participants from an obstetric clinic in an academic health sciences area (19.2%) as current users of alcohol or
illicit substances. Only 17 of the 41 women (41.4%) with toxicological evidence of recent use admitted to current use. Increased identification by routes other than questionnaire are important to identify current users of drugs that impact pregnancy outcomes.

In this sample 86.5% of participants considered themselves single in comparison to the New Jersey 1996 statistics that indicated 27.4% of the mothers were unmarried at the time of the child’s birth, conception, or at any time between. Thus, the sample from the inner-city reflected more extreme rates of single-parenthood along with the financial and psychological burden that being single represents. This represented a sample that would experience more life stress as an aspect of pregnancy. This was confirmed in the study that this sample experienced significant life stress but the impact on pregnancy outcomes was not support. As noted previously, this may be related to resiliency and other protective factors actively operating in this sample.

New Jersey Statistics (1996) noted that in Essex County, in particular, where the data were collected, there were 5,086 births in 1996, 146 (2.8%) newborns weighing less than 1,500 grams, 489 (9.6%) newborns weighing between 1,500 and 2,499 grams, and 4,431 newborns weighting over 2,500 grams. In this sample, 2 (1.04%) newborns were less than 1,500 grams and 27 (14%) newborns weighted between 1,500 and 2,500 grams. Thus, the sample was represented a larger percent of newborns with low birth weight between 1,500 and 2,499 grams.

Participants reported that 47% (n = 92) live with the unborn child’s father, and another 50% (n = 98) stated that they lived with extended family which may include the unborn child’s father. Only 12% of the participants (n = 26) reported living alone with their children. High social-support network among participants may have acted as a
buffer to the impact of traumatic events since social support has been demonstrated to influence pregnancy outcomes (Oakley, 1985; Thoits, 1983). Increased experience of social support by the participants may have influenced the impact of traumatic life events in these women’s lives.

Sixty-three percent of the women were born and raised in a large urban center, with high crime rates. Analysis of data from the Posttraumatic Stress Diagnostic Scale (Foa, 1995) indicated that 39% of the participants had between 4 and 6 (full criteria) criteria for PTSD. Trauma categories with moderate percents were Serious Accidents (32%), Non-sexual assault by a stranger (19.7%), Sexual Assault by a family member (18.7%), Sexual Contact younger than 18 years (20.7%) and Other traumatic events (38.9%). Posttraumatic Stress Diagnostic Scale’s normative sample (Foa, 1995) percentages of the types of traumatic events as compared to the sample data were higher in all categories except Other 39.1% versus 19.0 % for the normed sample. Even though traumatic events were not at the normed level, the current sample had levels close to the normed sample (18.7% and 22.2%, respectively) for sexual assault by family member or acquaintance. In addition, Imprisonment was also higher for the current sample of 15% compared to the normed sample, 14.1%. Finally, sexual contact when a woman was younger than 18 years was 20.7% for the sample and 26.2% for the normed group. Since there is no current research on posttraumatic stress disorder in pregnant inner-city women, comparison to other pregnant groups is lacking. Nevertheless, 46.7% of this study participants reported either having been sexually assaulted and/or sexually molested. Another 27.5 % reported being assaulted by either a stranger or someone they
knew. Trauma in this population can be considered significant both from an interventions and a research perspective.

Structural Equation Modeling

Hoyle and Panter (1995) indicated that “associations in a structural equation modeling are necessary but not sufficient evidence of causal relations” (p.175). A goodness-of-fit index that demonstrates adequate fit in addition to statistically significant paths from the independent to the dependent variable and high squared multiple correlations allows for plausibility of the theoretical model tested. “A model that fits only fits in the sense of being plausible in a population given a particular set of sample data and it is likely that other models could be generated that would be equally plausible” (p. 432).

The measurement component of the model was analyzed in reference to reliability of the instruments. The greater the unreliability of the instruments used to measure variables in the analysis, the greater is the threat to the validity of the analysis. Reliability coefficients generally should be at least 0.70 (Polit, 1996). Cronbach’s alpha, an index of the degree to which all of the different items in a scale are measuring the same attribute, was low (0.179) for the sexual coercion scale of the Conflict Tactics Scale in comparison to the authors’ alpha approximation of 0.87. This discrepancy may reflect significantly different samples.

Life Stress scale reflected a reliability coefficient of .578 from this sample and was .56 as noted in Sarason’s initial tool-development findings. Life stress has been found in the research to be directly related to adverse pregnancy outcomes which is supported in this study also.
Structural Equation Modeling (SEM) provides a way to examine construct validity. The Psychological Aggression, Physical Assault and Injury Scales from the Conflict Tactics Scale had significant paths to Conflict as a latent variable in all the hypotheses except three, thus indicating adequate measure of the underlying construct.

Munro (1997) indicated that an adequate range for structural equation modeling is 100 to 200 subjects. Kline (1998) offered the recommendation that a desirable goal of sample size in SEM is to have the ratio of the number of subjects to the number of model parameters be 20:1. In this sample size 256 was based on 20 participants to each of the fourteen variables. Two-hundred and fifty-five interviews were conducted to account for possible participant drop-out. Unforeseen circumstances of deliveries at other area hospitals other than the IRB-approved area hospital in addition to participants who were not pregnant, and removal of participants from the sample with diabetes, HIV and hypertension, reduced the final sample size to 193. The final sample size was 193 and therefore, dropped the ratio to 14:1, which is below the recommended range as noted by Kline (1998) but still adequate range for structural equation modeling involving a minimum of 100 to 200 subjects (Munro, 1997).

Analysis of Models

The findings elucidate several important areas. First, chronic stressors of daily living was found to negatively impact a fetal development and a source of negative pregnancy outcomes. This has been substantiated in the research. The second finding is that posttraumatic symptoms were not found to influence pregnancy outcomes in a negative way. Analysis of this finding may be related to three areas: (1) the tool's construct ability to capture the extent of the traumatic symptoms; (2) the choice of
variable to represent trauma in this study; (3) inner-city women’s traumatic experiences do not have the potency to impact the developing fetus. The third area may be directly related to resiliency in this sample.

One of the major considerations on the outcome of this study is that in spite the high levels of trauma, the pregnancy outcomes were not impacted with negative consequences. The insignificant findings may be a positive reflection of resiliency which may be a key attribute in explaining this phenomena. Resilience is defined as the capacity to rebound from adversity strengthened and more resourceful where an active process of endurance, self-righting and growth occurs in response to crisis and challenge (Walsh, 1998). Other supporting evidence from the research examines that the source of resilience in the face of traumatic events is a sustained perception of one’s own worth (Liem, James, O’Toole, & Boudewyn, 1997), augmented by confidence that one can “successfully cope with life’s challenges” (Rutter, 1990).

Mattis, Bell, Jagers and Jenkins (1999) indicated that exposure to stress can result in resiliency with positive changes in values and beliefs of individuals. Research on African Americans suggests that spiritual, affective and communal values are central to resiliency (Jagers, 1997; Jagers & Mock, 1993; Jagers, Smith, Mock, & Dill, 1997). In addition, strong family bonds, adaptability of family roles, achievement and religious orientation contribute to coping with stressors (Mattis, Bell, Jagers, & Jenkins, 1999). Spirituality and religion serve a fundamental position in the lives of African Americans and provides a sense of purpose, power and self-identity (Calvert, 1997). Brown and Gary (1994) study found that African Americans with a denominational affiliation
reported fewer depressive symptoms. The contribution of resiliency in this study will need to be the focus of future research.

Improvement in pregnancy outcomes, in particular low birth weight, is a major health-care objective, especially in minority women. Research has focused that stressful life events (Newton & Hunt, 1984; Istvan, 1986) is a major contributor to poorer pregnancy outcomes. The life-stress paradigm (McLean, Hatfield-Timajecy, Wingo, & Floyd, 1993) is based on life events or chronic stress may impact pregnancy outcomes through the effects on individual behaviors or physiological responses (endocrinological & immunological).

In addition, a relationship between interpersonal violence and pregnancy outcomes have been suggested by clinical experience and studies (Petersen, Gazmararian, Spitz, et al 1997). Walker (1991) documented high rates of Posttraumatic Stress Disorder in women exposed to spousal or partner abuse. West, Fernandez, Hillard, Schoof and Parks (1990) found that 47% of a sample from a battered women’s shelter met full criteria for PTSD. Another contribution to negative pregnancy outcomes is drug and alcohol use.

Three main models and two sub-models were tested in this study. Hypothesis 1 is considered the best fit for the sample data. Life stress had a significant pathway to pregnancy outcomes, that is transfer to intensive care nursery, assisted ventilation, and fetal death. Interpersonal conflict as a latent variable included all significant paths to psychological aggression, physical assault, sexual coercion, and injury. The results are consistent with previous research finding that life stress impacts pregnancy outcomes, in particular negative life events as a direct path to negative pregnancy outcomes.
Psychological aggression and traumatic events were represented by a bi-directional arrow, indicating that the two variables have a statistically significant effect on each other.

The hypothesized model was a good fit for the data, and the regression coefficient was significant for life stress. Hypothesis 1 was supported. This model indicated that stressful life events are related to negative pregnancy outcomes. This finding has been demonstrated in the literature (Orr, et al., 1996; McLean, et al., 1993; Newton & Hunt, 1984; Istvan, 1986). Collins, David, Symons, Handler, Wall and Andes (1998) reported that in a hospital-based case controlled study of African-American mothers exposure to three or more stressful life events during pregnancy and negative perception of residential environments were associated with very low birth weight infants. Neugebauer, Kline, Stein, Shrout, Warburton and Susser (1996) reported that recent negative life events increased the risk of spontaneous abortion of a chromosomally normal fetus. In this particular study, events involving death and loss among friends and family appeared to implicate the extensive literature demonstrating increased mortality and morbidity following bereavement. Historically, Morishima, Pedersen & Finster (1978) described animal studies demonstrating maternal agitation caused in significant elevations in maternal arterial blood pressure which resulted in fetal deterioration attributable to decreased oxygenation.

The Squared Multiple Correlation for the dependent variable of pregnancy outcomes was 2%. Clearly the independent constructs in the model accounted for only a small amount of the variation and co-variation in the dependent construct—pregnancy
outcome. There are many other variables that are obviously associated with the dependent construct and that were not represented in the model.

Both interpersonal conflict as a latent variable and traumatic events were not found related to pregnancy outcomes. There is significant lack of controlled research that evaluates the impact of violence on pregnancy outcomes. Physical blunt trauma to the abdomen can lead directly to adverse pregnancy outcomes, but the incidence has not been studied. O'Campo, Gielen, Faden and Kass (1994) reported that in a study sample of 358 low income women, 65% experienced either verbal or physical abuse, but neither was associated with birth weight or gestational age. Additional studies (Amaro, et al. 1990; Berenson, et al. 1994; Dye, Tolliver, Lee, & Kenney, 1995; Schei, Samuelsen, & Bakketeig, 1991) have not supported violence as influencing pregnancy outcomes.

In Hypothesis 1, life events predicted negative pregnancy outcomes, but not traumatic events. A traumatic event is defined as one that involves "actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (APA, 1994, p.427). This definition implies emphasis on a person's perception of the danger and on the person's emotional reaction to the event. On the Challenge-Stress-Trauma continuum posited by Gray (1988) aversive events can be located on a continuum. An aversive event can be determined by a number of factors that includes: (1) the degree of bizarreness of the stimuli/event; (2) the presence of cues that signal responses will not be rewarded for positive outcomes; (3) the presence of cues that punishment will occur; and (4) the actual occurrence of pain or life-threatening events. Therefore, traumatic events may have been more intense, but not sufficiently long lasting to impact actual psychological or physiological pregnant woman and or may have been more distal to the
individual or the time of pregnancy. Further, the participants of the study may possess internal resiliency qualities that operate to counter the impact of their traumatic events.

In Hypothesis 1a both life stress and latent variable substance abuse (composed of verification from urine screens at delivery, scores from the DAST, scores from MAST and scores from TWEAK) were significant paths to pregnancy outcomes. Even though Chi-square was significant, other model fits were adequate. The hypothesis was not supported in that both substance use and increased life stress were not significant paths to pregnancy outcomes. Substance use has been related to low birth weight in past research. Pettiti and Coleman study (1990) found that cocaine accounted for 10% of cases of low birth weight in Black women in Alameda, California. Estimates of the use of cocaine during pregnancy have ranged from 8% to 10% (Gilloogley, Evans, Hansen, Samuels & Batra, 1990) to as high as 31% (Ostrea, Brady, Gause, Raymundo & Stevents, 1992).

Thompson and Kingree (1998) have reported that in a low-income residential substance-abuse treatment center for pregnant women, there were high rates of trauma (72% had experienced sexual assault, 67% had experienced physical assault, and 68% had experienced indirect violent trauma). The study sample had moderate rates of traumatic stress since 40.9% of the women displayed some symptoms consistent (met criteria for 3, 4 and 5) and 14% met full criteria for posttraumatic stress disorder. In this study, 11.4% of this sample of women tested positive for substance use. Further exploration may need to focus on how PTSD interacts with substance use and its impact on maternal attachment and infant bonding.

Hypothesis 2 concerned the impact of traumatic events, substance use, interpersonal conflict and life stress on Posttraumatic Stress Disorder Symptom Severity
Scores, and was partially supported. There is a significant direct path from substance abuse, traumatic events, and life stress to Posttraumatic Stress Disorder Symptom Severity Scores, but not a significant path from PTSD SSS to pregnancy outcomes.

Kessler, Sommela, Bronet, Hughes and Nelson (1995) reported that women endure proportionately greater levels of high-severity traumatic events in their lives. Kilpatrick, Saunders, Veronen, Best and Von, (1987) study linked higher levels of traumatic events with posttraumatic stress disorders. Several studies have resulted in finding that traumatization may also elevate an individual’s risk for future substance use disorders (Miller, Downs, Gondoli, & Keil, 1987; Polusny & Follette, 1995). For this sample, the high rates of traumatic events would be indicative of higher rates of substance abuse, but the possibility exists that protective factors operate to improve coping by this participant group.

In Hypothesis 2a, both PTSD SSS and pregnancy outcomes are the dependent variable. This model has significant pathways to traumatic events, substance abuse, life stress from PTSD SSS. In addition, substance abuse and life stress had significant paths to pregnancy outcomes. However, there was not a significant path from PTSD SSS to pregnancy outcomes.

Hypothesis 3 also had adequate model fits by the additional indices. In comparison to the other models hypothesized, hypothesis 3 was considered the most unlikely to represent the hypothesized model. The Squared Multiple Correlations indicated that physical aggression represented 0.90% of the variance on its predictor—Conflict. Both the MAST and the DAST represented 51% and 60% of the variance on
the predictor-- Substance Abuse. Substance Abuse represented 93% of the variance for its predictor-- PTSD Symptom Severity Score (SSS).

Hypothesis 3 was only partially supported. Substance abuse has a significant pathway to interpersonal conflict, but not to PTSD SSS, and, again, traumatic events and life stress were significantly linked to PTSD SSS. Amaro, Freid, Carbral and Zukerman (1990) studied pregnant women in a predominately urban, minority group and found that 7% (n = 92) reported physical or sexual violence during pregnancy and that this cohort were more likely to be users of alcohol or drugs. In addition, their partners also were more likely to use marijuana or cocaine. The Squared Multiple Correlation indicated that Substance Abuse represented 88% of the variance of its predictor--Conflict. In addition, DAST and the MAST represented 63% and 53%, respectively, of the variance on the predictor--Substance Abuse. About 1% off the variance of pregnancy outcome is explained by the combined independent variables. This clearly indicates that pregnancy outcomes are multidimensional and complex in nature and require further research.

Limitations of the Study

A linear structural equation modeling is considered a hypothesized pattern of linear relationships among a set of variables for the purpose of providing a meaningful and parsimonious explanation for observed relationships within a set of measurable variables (MacCullum, 1995). Therefore, the best one can expect is to provide a close approximation or plausible model to observed data rather than an exact model fit. Since Model 1 and Model 1a were not significantly different, and all other models were significantly different from the first two models based on Chi-square comparisons, they may provide a closer approximation to the sample data.
The sample of participants were a self-selected group of inner-city women with a defined set of unique demographic, cultural and contextual factors, this significantly limits generalizability. It is uncertain whether the sample selected is representative of the pregnant women in general from other urban centers. The Hispanic participants were read the questions by a trained Hispanic research assistant from an English version. The tools were not available in the participant’s native language. The Hispanic research assistant may not have fully clear the meanings of the statements as she read them to the participants, thus impacting the results.

The measures were mostly self-report, but substance abuse was validated through urine screening. Sexual coercion and Injury Scales in the CTS2 were newly constructed measures and alpha coefficients were .179 and .648, respectively. This low alpha coefficient permits serious questioning of the reliability of this scale. Lack of research on women and minorities in general provide limited comparison of norms related to PTSD scores, and, therefore, further research is needed.

Recommendations for Further Research

Several recommendations for further research may be made. This exploratory study provides support for past research on life events impacting pregnancy outcomes. Research should focus on the particular target points. First, the supportive or protective factors operating in this sample where trauma did not significantly impact pregnancy outcomes in a negative direction requires further investigation. The protective factors such as resiliency and spirituality, sense of community and social supports must be delineated to explore their impact on pregnancy outcomes. Second, quantifying of demographic and contextual parameters as latent variables will assist in providing
evidence that the community a person resides may impact pregnancy outcomes. The contextual factors should include the racial discrimination and the stressors experienced (Utsey, Ponterotto, Reynolds, & Cancelli, 2000). Third, theory building can be more aggressive to account for the multiplicity of factors that impact pregnancy outcomes, including both psychological factors and physiological factors. Mattis, Bell, Jagers and Jenkins (1999) noted that the proximity (direct versus indirect), duration (acute versus chronic), and quality (traumatic versus non-traumatic) of exposure to stress are important valences along which to evaluate the impact of environmental stressors. Chronic, indirect exposure to non-traumatic stressors (details of stories of a death of a loved one) may have different psychological ramifications than direct trauma impacting an individual. The authors hypothesize that direct, chronic and traumatic exposure may have the poorest outcomes to both psychological and physiological health. In light of this hypothesis, pathways created from these variables to pregnancy outcomes should be considered.

Fourth, posttraumatic stress disorder symptom severity scores was not a significant path to pregnancy outcomes but may impact the quality of the mother-infant relationship. In particular, attachment to the infant may be altered with the dissociation and numbing that arises from a PTSD diagnosis. Fourth, Finally, research will need to focus on the both distal and proximal impact of PTSD has on relationships of inner-city women. Fifth, the reconfiguration of the structural equation model should expand the trauma variable to be latent and incorporate additional variables, such as number of traumatic events and level of criteria for PTDS. This may increase the strength of the variable and better capture the potency of the trauma on study participants.
Recommendations for Further Interventions

Overwhelming daily stress on the lives of single pregnant women require intervention methods to effectively reduce the psychological and physical burden these women experience through their developmental transitions. This sample demonstrated higher levels of sexual abuse than the sample that was used to validate the PTSD tool. The maternal-infant relationship should become a focus of interventions given the psychological burden these women bear.

Researchers have documented the severe and long-term psychological consequences of abuse, yet some victims of sexual abuse appear relatively unscathed, asymptomatic and functioning without impairment (Finkelhor, Hotaling, Lewis, & Smith, 1990). Such individuals, termed “resilient” because of their abilities to withstand the negative impacts of childhood trauma, comprise a small, but interesting, minority of survivors (Himelein & McElrath, 1996). What cognitive and psychological processes operate to help explain this effective coping with aversive life events should be investigated both to inform the theoretical model and to enhance treatment strategies.

In conclusion, this study examined 5 models developed to understand the relationship between life events, interpersonal conflict, substance use, trauma and their impact on pregnancy outcomes in inner-city women. Hypothesis 1 was supported demonstrating that life events was significantly related to negative pregnancy outcomes. Hypothesis 1 was ranked the best in terms of goodness-of-fit parameters among all the 5 models tested. For all other hypotheses, the Chi-square was significant but other fit indexes were satisfactory except for the Adjusted Goodness of Fit Indexes which was found to be lower than the cutoff point. Hypothesis 1a affirmed a relationship between
life stress and negative pregnancy outcomes and a trend for substance abuse to be related to negative pregnancy outcomes. Hypothesis 2a demonstrated that life stress is related to PTSD Symptom Severity Score and negative pregnancy outcomes, but PTSD SSS was not predictive of negative pregnancy outcomes. Substance abuse was also predictive of negative pregnancy outcomes.
References


Appendices
Appendix A

Flyer to Prospective Participants
AN INVITATION TO PARTICIPATE
IN A
RESEARCH STUDY AS PART OF A DOCTORAL DISSERTATION STUDY
FOR SETON HALL UNIVERSITY

PREGNANT WOMEN

Participants will be asked to answer questions concerning the following areas:

Demographic Data Sheet which asks for background information.
Life Events Scale measures stresses in your life.
Conflicts Tactics Scale asks about different ways that you handle conflict with your partner.
Drug Assessment Scale asks about your use of drugs.
Michigan Alcoholism Screening Test which will ask about use of alcohol.
TWEAK Test asks about our drinking behaviors.
Posttraumatic Stress Diagnostic Scale will ask about very stressful events in your life.

Contact Person: Barbara Caldwell (PhD Candidate at Seton Hall University)
Address: 65 Bergen Street
Telephone: 973-972-7450
Place: 3rd Floor of the DOC Building in the OB/GYN Suite
Length of Time of Interview: One hour and 15 minutes
Payment: $30.00

Please Note:

All information will be kept confidential and participation is voluntary. Deciding not to participate will not affect your care in this clinic. The purpose of the study is to learn more about life stress and how it affects the birth of the newborn.
Appendix B

Informed Consent
CONSENT TO PARTICIPATE IN A RESEARCH STUDY

TITLE OF STUDY:

Life Events, Interpersonal Conflict, Substance Use and Trauma's Impact on Pregnancy Outcomes

University of Medicine and Dentistry of New Jersey-School of Nursing & Seton Hall University

RESEARCH STUDY:

I, ____________________________ , have been asked to participate in a research study under the direction of Barbara Caldwell, RN, MA, MSN as part of her doctoral dissertation at Seton Hall University. Barbara Caldwell is not an employee of the clinic and has no direct care or connection with the clinic. Deciding not to participate in this study will not affect my care at this clinic. Other professional persons who work with her as study staff may assist or act for her.

PURPOSE:

The purpose of this research study is to increase understanding of how stressful, important events in a woman's life, conflict with partners and drug and alcohol use are related to the baby's health at delivery.

DURATION:

My participation in this study will last for about one (1) hour and 15 minutes to complete six (6) questionnaires and one (1) information sheet.

PROCEDURES:

If you agree to participate in this study, the following will occur:

You will be asked to answer questions about events and serious problems in your life, conflict with your partner, and your use of drug and/or alcohol. You will be asked to complete 1 information sheet and answer 6 questionnaires. You will be given the option to either complete the information sheet and questionnaires alone or one of the study staff will read each question to you and record your answer on the questionnaire. You will be given a copy of each questionnaire so that you can follow the questions as they are asked.

You are being asked to have the hospital medical chart of your newborn infant reviewed after delivery to describe your baby's health. By signing the informed consent you are allowing the researcher to have permission to access the baby's medical chart.
After completion of 1 information sheet and the 6 questionnaires, the researcher or research assistant will be asked if you feel the need to have follow-up at the UMDNJ Crisis Services and will given a sheet of paper with information on how to contact the Crisis Services. At the end of the interview, you will be asked if the study staff can call you tomorrow to see if you would like to discuss this interview.

You can decide at that time to either (1) be called tomorrow or (2) decline the offer of being called tomorrow about additional resources for myself or my family. If a telephone call is requested by you, additional psychological support services will be discussed and you will be given the Crisis Services telephone number along with another agency's telephone serving women and families. If you decline the follow-up telephone call or letter, you will receive no further contact by the researcher or research assistant.

SUBJECTS:
You will be one of about 220 subjects to participate in this study. All subjects are African-American pregnant patients at the clinic, between the ages of 18 and 40 years. You will need to speak English without the need of a translator.

EXCLUSIONS:
You should not participate in this study if any of the following apply:

1. You are not African-American.
2. You have been diagnosed with HIV (AIDS).
3. You have known or suspected diabetes (sugar).
4. You have chronic high blood pressure.

RISKS/DISCOMFORTS:
I have been told that the study described above may involve the following risks and/or discomforts:

The only reason we would share information without your explicit permission would be in cases where we would specifically required by law to do so. There are two exceptions to the promise of confidentiality. If information is revealed concerning suicide, homicide or child abuse or neglect (that is, situations in which there is danger to yourself or others), it is required by law that this information be reported to the proper authorities. If you disclose that a child is being abused or neglected, a report to DYFS will be made by the researcher. If you disclose that you are currently using drugs or there is evidence of domestic abuse, a referral will be made to the Social Work Services of the OB/GYN Clinic.

The questions may be asked about difficulties and conflicts with your partner or family. There is the possibility that answering the questions may raise some uncomfortable feelings. We encourage you to complete all the questions on the questionnaires in order to best help us understand pregnancy outcomes; however, you are free not to respond to any question for any reason. If in the course of your participation in the study, you decide that you would like
to discuss some of these issues with a professional counselor, referral numbers will be provided to you.

There also may be risks and discomforts that are not yet known.

**BENEFITS:**

The benefits of participating in this study may be:

To better understand how events that happen during pregnancy such as fighting with partners, use of drugs/alcohol and serious stressful problems effect the birth of the child for a mother. However, you may receive no benefit from participating in this study. ALTERNATIVE Since you are a volunteer subject, your alternative is not to participate in the study. During the course of the study, you will be told about any new information that may affect my ability to remain in the study.

**CONFIDENTIALITY:**

Every effort will be made to maintain the confidentiality of the study records. All information that you tell the researcher will be kept confidential and my name will not be used on any paper. A master key book will be kept with all names and hospital identification numbers and respective code numbers to complete the follow-up of the birth outcomes of the baby with the medical record. At the end of the study, the master key book will be destroyed so that all materials will be identified by the code number only. All information collected will be reported in group form and no names will be used on any paper.

Every effort will be made to maintain the confidentiality of my study records. Officials of the University of Medicine and Dentistry of New Jersey-New Jersey Medical School, University Hospital will be allowed to inspect sections of my medical and research records related to this study. If the findings from the study are published, you will not be identified by name. My identity will remain confidential unless disclosure is required by law.

**FINANCIAL COSTS TO THE SUBJECT:**

If you use the UMDNJ-Crisis Services on South Orange Avenue, your health insurance may cover the cost for these services. Services will be provided at the Domestic Violence Crisis Services at the Emergency Department either by charity care eligibility evaluation or on a sliding fee schedule. No other form of compensation is available.

**PAYMENT FOR PARTICIPATION:**

You will receive $30.00 for participation in this study after the interview is completed. If you need to withdraw from the study during the interview, you will be paid $5.00 instead of $30.00.

**MEDICAL THERAPY FOR INJURY**

If you participate in this study, you will be exposed to certain risks of physical injury in addition to those connected with standard forms of therapy. These include:

Some of the questions being asked may cause you to remember something in the past that may cause emotional distress. The researcher will provide a place, UMDNJ-Crisis Services on South Orange Avenue, where you can be referred for follow-up treatment. Patients, who have no
insurance, will be evaluated for eligibility for coverage under charity care. Individuals, who do are not eligible for charity care, can receive services based on a sliding fee scale.

In addition, it is possible that in the course of these studies, new adverse effects of (emotional distress) that result in physical injury may be discovered. Medical and/or dental treatment will be arranged by UMDNJ for participants who sustain physical injuries or illnesses as a direct consequence of participation in this research. My health insurance carrier or other third party payor will be billed for the cost of this treatment. No additional financial compensation is available.

RIGHT TO REFUSE OR WITHDRAW:

I understand that my participation is voluntary and I may refuse to participate, or may discontinue my participation at any time, without penalty or loss of benefits to which I am otherwise entitled. I also understand that the investigator has the right to withdraw me from the study at any time.

There is no medical consequence to withdraw from this research. Participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which I am otherwise entitled and I can discontinue participation at any time without penalty or loss of services.

INDIVIDUAL(S) TO CONTACT:

If I have any questions about my treatment in this study, I can contact:

Barbara Caldwell, Telephone # 973-972-7450, at 65 Bergen Street, Newark

If I have any questions about my rights as a research subject, I can contact:

Bertholomew J. Tortalia, M.D.
Chair, Institutional Review Board
New Jersey Medical School
(973) 972-4561

I will receive a copy of this consent form if I agree to participate in this research study.

_____ subject’s initials

The Department of Health and Human Services requires that you be advised as to the availability of medical treatment if a physical injury should result from research procedures. No special medical arrangements have been made regarding your participation in this project. If you are a registered student at Seton Hall University, you are eligible to receive medical treatment at the University Health Services. If you are not a registered student at the University, immediate medical treatment is available at usual and customary fees at the local community hospital.

In the event you believe that you have suffered any injury as a result of the participation in the research program, please contact the Chairperson of the IRB (phone number 210-378-8808) who will review the matter with you and identify any other resources that may be available to you.

This project has been reviewed and approved by the Seton Hall University Institutional Review Board for Human Subjects Research. The IRB believes that the research procedures adequately safeguard the subject’s privacy, welfare, civil liberties, and rights. The Chairperson of the IRB may be reached through the Office of Grants and Research Services. The telephone number of the Office is 201-378-9809.
I have read the material above and any questions I asked have been answered to my satisfaction. I agree to participate in this activity, realizing that I may withdraw without prejudice at any time.

__________________________  ______________________
Subject                                Date

SIGNATURE OF SUBJECT

I have read this entire form, or it has been read to me, and I understand it completely. All of my questions regarding this form or this study have been answered to my complete satisfaction. I agree to participate in this research study.

Subject: Name: ___________________ Signature: ___________________
Witness: Name: ___________________ Signature: ___________________
Date: ____________________________

SIGNATURE OF INVESTIGATOR OR RESPONSIBLE INDIVIDUAL

To the best of my knowledge the subject, ______________________, has assimilated the entire content of the above consent form, and understands the study and its risks well. The subject's questions have been accurately answered to her complete satisfaction.

Investigator: Name: ___________________ Signature: ___________________
Witness: Name: ___________________ Signature: ___________________
Date: ____________________________
Appendix C

Demographic Sheet
DEMOGRAPHIC SHEET

Do NOT put your name anywhere on this form. Please answer all questions as best as you can.

1. Date of Birth: ____________________________

2. Education Level: Years of Education ____________________________

3. Ethnic Background:
   (Check only one)
   a. African-American ____________________________
   b. Hispanic ____________________________
   c. South American: ____________________________
   d. Asian: ____________________________
   e. Other: ____________________________

4. What is your religion preference?
   a. Catholic ____________________________
   b. Protestant ____________________________
   c. Islamic ____________________________
   d. Baptist ____________________________
   e. Other ____________________________

5. Number of Pregnancies: ____________________________

6. Number of children living: ____________________________

7. Number of miscarriages: ____________________________

8. Number of Abortions: A. Induced ____________________________
                        B. Spontaneous ____________________________

9. Receiving treatment for STDs: Yes: _____ No: _____

10. Smoking during current pregnancy: Yes: _____ No: _____ Sometimes: _____


13. Month of pregnancy that prenatal care started:
    a. First Trimester ____________________________
    b. Second Trimester ____________________________

15. Current living arrangements:

(Check One Only):

a. Living with child's father: Yes____ No.____

b. Living with extended family members:____

c. Living with friends:____

d. Living alone or with children:____

16. Contact with biological father of the unborn child:

(Check One):

a. Living alone with some contact with fetus's father: Yes____ NO:____

b. Living alone with no contact with fetus's father:____

17. Unborn child's father uses drugs or alcohol: Yes____ No____

18. Tangible Resources:

A. _____ Adequate Resources

B. _____ Inadequate Resources

1. _____ Food

2. _____ Shelter

3. _____ Medical

4. _____ Financial

5. _____ Transportation

6. _____ Telephone

7. _____ Infant supplies

19. Was this pregnancy planned?

(Check One)

A. Yes____

B. Uncertain____

C. No____

20. Number of Weeks Pregnant:

21. Expected Date of Delivery:

22. How long have you lived in the city of Newark?

a. _____ 1 to 5 years

b. _____ 6-10 years

c. _____ 11 to 20 years
Appendix D

Research Tools
Drug Abuse Screening Test:

To be read to participant: *I am going to read to you statements about the use of drugs. Please respond by either yes or no answer.*

<table>
<thead>
<tr>
<th>Points</th>
<th>Item</th>
<th>Answer Yes</th>
<th>Answer No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. Have you used drugs other than those required for medical reasons?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2. Have you abused prescription drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3. Do you abuse more than one drug at a time?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4. Can you get through the week without using drugs (other than those required for medical reasons)?</td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>5. Are you always able to stop using drugs when you want to?</td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>6. Have you had “blackouts” or “flashbacks” as a result of drug use?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>7. Do you ever feel bad about your drug abuse?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8. Does your spouse or parents ever complain about your involvement in drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>9. Has drug abuse ever created problems between you and your spouse?</td>
<td></td>
<td></td>
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<tr>
<td>1</td>
<td>10. Have you ever lost friends because of your use of drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>11. Have you ever neglected your family or missed work because of your drug abuse?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>12. Have you ever been in trouble at work because of drug abuse?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>13. Have you ever lost your job because of drug</td>
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<tr>
<td>1</td>
<td>14. Have you ever gotten into fights when under the influence of drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>15. Have you ever engaged in illegal activities in order to obtain drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>16. Have you ever been arrested for possession of illegal drugs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>17. Have you ever experienced withdrawal symptoms as a result of heavy drug intake?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>18. Have you had medical problems as a result of your drug use (memory loss, hepatitis, convulsions, bleeding)?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>19. Have you ever gone to anyone for help for a drug problem?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>20. Have you ever been involved in a treatment program specifically for drug use?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Michigan Alcoholism Screening Test

*To be read to participant:* I am going to read to you statements about drinking. Please respond by either a yes or no answer.

<table>
<thead>
<tr>
<th>Points</th>
<th>Questions</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1. Do you feel you are a normal drinker?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>2. Have you ever awakened the morning after some drinking the night before and found that you could not remember a part of the evening before?</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>3. Does your partner ever worry or complain about your drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>4. Can you stop drinking without a struggle after one or two drinks?</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>5. Do you ever feel bad about your drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>6. Do friends or relatives think you are a normal drinker?</td>
<td>Yes</td>
</tr>
<tr>
<td>0</td>
<td>7. Do you ever try to limit your drinking to certain times of the day or to certain places?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>8. Are you always able to stop drinking when you want to?</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>9. Have you ever attended a meeting of Alcoholics Anonymous (AA)?</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>10. Have you ever gotten into fights when drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>11. Has drinking ever created problems for you and your partner?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>12. Has your partner or family members ever</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Question</td>
<td>Yes</td>
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<tr>
<td>---</td>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td>2</td>
<td>13. Have you ever lost friends or a boyfriend because of drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>14. Have you ever gotten into trouble at work because of drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>15. Have you ever lost a job because of drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>16. Have you ever neglected your obligations, your family, or your work for two or more days in a row because you were drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>1</td>
<td>17. Do you ever drink before noon?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>18. Have you ever been told you have liver trouble?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>19. Have you ever had delirium tremens (DTs), severe shaking, heard voices or seen things that were not there after heavy drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>20. Have you ever gone to anyone for help about your drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>5</td>
<td>21. Have you ever been in the hospital because of drinking?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>22. Have you ever been a patient in a psychiatric hospital or on a psychiatric ward in a general hospital where drinking was part of the problem?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>23. Have you ever been seen at a psychiatric or mental health clinic or gone to a doctor, social worker or clergyman for help with an emotional problem in which drinking had played a part?</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>24. Have you even been arrested, even for a few years ago?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>hours because of drunk behavior?</td>
<td></td>
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<td>---</td>
<td>---------------------------------</td>
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</tr>
<tr>
<td>2</td>
<td>25. Have you ever been arrested for drunk driving or driving after drinking?</td>
<td>Yes</td>
</tr>
</tbody>
</table>
TWEAK TEST: Drinking Behaviors

To be read to participant: I am going to read to you statements that I would like you to consider. In particular, consider the drinking prior to becoming pregnant and the usual place and friends present.

T= How many drinks can you hold?  ____________________
(If score is more than 5 drinks, score 2 points)

W= Have close friends or relatives worried or complained about your drinking in the past year?
Yes_______ No________
(If participant indicates a yes, score 2 points)

E = Eye-Opener: Do you sometimes take a drink in the morning when you first get up?
Yes_______ No________
(If yes, score one point)

A = Amnesia: Has a friend or family member ever told you about things you said or did while you were drinking that you could not remember?
Yes________ No________
(If yes, score one point)

K(c)= Do you sometimes feel the need to cut down on your drinking?
Yes_______ No________
(If yes, score one point)

Total Points: ________ (A total score of 2 or more indicates a woman at risk for drinking)
Conflicts Tactics Scale

No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spats or tiffs because they are in a bad mood, are tired, or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please circle how many times you did each of these things in the past year, and how many times your partner did them in the past year. If you or your partner did not do one of these things in the past year, but it happened before that, circle “7”.

How often did this happen?

1= Once in the past year
2= Twice in the past year
3=3 to 5 times in the past year
4=6 to 10 times in the past year
5=11 to 20 times in the past year
6=More than 20 times in the past year
7=Not in the past year, but it did happen before
8=This has never happened

1. I showed my partner I cared even though we disagreed. 123456 70
2. My partner showed care for me even though we disagreed. 123456 70
3. I explained my side of a disagreement to my partner. 123456 70
4. My partner explained his side of a disagreement to me. 123456 70
5. I insulted or swore at my partner. 123456 70
6. My partner did this to me. 123456 70
7. I threw something at my partner that could hurt. 123456 70
8. My partner did this to me. 123456 70
9. I twisted my partner’s arm or hair. 123456 70
10. My partner did this to me. 123456 70
11. I had a sprain, bruise or small cut because of a fight with my partner. 123456 70
12. My partner had a sprain, bruise or small cut because of a fight with me. 123456 70
13. I showed respect for my partner’s feeling about an issue. 123456 70
14. My partner showed respect for my feelings about an issue. 123456 70
15. I made my partner have sex without a condom. 123456 70
16. My partner did this to me.

17. I pushed or shoved my partner.

18. My partner did this to me.

19. I used force (like hitting, holding down, or using a weapon) to make my partner have oral or anal sex.

20. My partner did this to me.

21. I used a knife or gun on my partner.

22. My partner did this to me.

23. I passed out from being hit on the head by my partner in a fight.

24. My partner passed out from being hit on the head in a fight with me.

25. I called my partner fat or ugly.

26. My partner called me fat or ugly.

27. I punched or hit my partner with something that could hurt.

28. My partner did this to me.

29. I destroyed something belonging to my partner.

30. My partner did this to me.

31. I went to a doctor because of a fight with my partner.

32. My partner went to a doctor because of a fight with me.

33. I choked my partner.

34. My partner did this to me.

35. I shouted or yelled at my partner.

36. My partner did this to me.

37. I slammed my partner against the wall.

38. My partner did this to me.

39. I said I was sure we could work out a problem.

40. My partner was sure we could work it out.

41. I needed to see a doctor because of a fight with my partner, but I didn’t.

42. My partner needed to see a doctor because of a fight with me, but didn’t.
43. I beat up my partner.

44. My partner did this to me.

45. I grabbed my partner.

46. My partner did this to me.

47. I used force (like hitting, holding down, or using a weapon) to make my partner have sex.

48. My partner did this to me.

49. I stomped out of the room or house or yard during a disagreement.

50. My partner did this to me.

51. I insisted on sex when my partner did not want to (but did not use physical force).

52. My partner did this to me.

53. I slapped my partner.

54. My partner did this to me.

55. I had a broken bone from a fight with my partner.

56. My partner had a broken bone from a fight with me.

57. I used threats to make my partner have oral or anal sex.

58. My partner did this to me.

59. I suggested a compromise to a disagreement.

60. My partner did this to me.

61. I burned or scalded my partner on purpose.

62. My partner did this to me.

63. I insisted my partner have oral or anal sex (but did not use physical force).

64. My partner did this to me.

65. I accused by partner of being a lousy lover.

66. My partner accused me of this.

67. I did something to spite my partner.

68. My partner did this to me.

69. I threatened to hit or throw something at my partner.
70. My partner did this to me.
71. I felt physical pain that still hurt the next day because of a fight with my partner.
72. My partner still felt physical pain that still hurt the next day because of a fight we had.
73. I kicked my partner.
74. My partner did this to me.
75. I used threats to make my partner have sex.
76. My partner did this to me.
77. I agreed to try a solution to a disagreement my partner suggested.
78. My partner agreed to try a solution I suggested.
THE LIFE EXPERIENCES SURVEY

Listed below are a number of events which sometimes bring about change in the lives of those who experience them and which necessitate social adjustment. Please check those events which you have experienced in the recent past and indicate the time period during which you have experienced each event. Be sure that all check marks are directly across from the items they correspond to.

Also, for each item please place the number that corresponds to how the extent (amount) to which you viewed the event as having either a positive or negative impact on your life at the time the event occurred. That is, indicate the type and extent of impact that the event had.

For instance, a rating of—3 would indicate an extremely negative impact. A rating of 0 suggests no impact either positive or negative. A rating +3 would indicate an extremely positive impact.

<table>
<thead>
<tr>
<th>Item</th>
<th>O to 6 months</th>
<th>7 months to 1 year</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Marriage</td>
<td></td>
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<tr>
<td>2. Detention in jail</td>
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<td></td>
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<tr>
<td>or similar institution</td>
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<td>3. Death of</td>
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<tr>
<td>spouse/partner</td>
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<td>4. Major change in</td>
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<tr>
<td>sleeping habits (much</td>
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<td></td>
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</tr>
<tr>
<td>more or much less sleep)</td>
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<tr>
<td>5. Death of close family</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>member:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>a. Mother</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Father</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>c. Brother</td>
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<td></td>
<td></td>
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<tr>
<td>d. Sister</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>e. Grandmother</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>f. Grandfather</td>
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<td></td>
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<tr>
<td>g. Other (Specify)</td>
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<tr>
<td>6. Major change in</td>
<td></td>
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<td>eating habits (much</td>
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<td>more or much less food</td>
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<td>intake)</td>
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<tr>
<td>7. Foreclosure on</td>
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</tbody>
</table>
mortgage or loan

8. Death of close friend
9. Outstanding personal achievement

10. Minor law violation (traffic tickets disturbing the peace, etc)

11. Death of a child

12. Female: Pregnancy

13. Changed work situation (different work responsibility, major change in working conditions, working hours etc)

14. New Job

15. Serious illness or injury of close family member:
   a. Father
   b. Mother
   c. Sister
   d. Brother
   e. Grandfather
   f. Grandmother
   g. Partner
   h. Other (Specify)

16. Sexual difficulties

17. Trouble with employer (in danger of losing job, being suspended or demoted)

18. Trouble with in-laws

19. Major change in financial status (a lot better off or a lot worse off)

20. Major change in
<p>| | |</p>
<table>
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<th></th>
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<tbody>
<tr>
<td>21.</td>
<td>Gaining a new family member (through birth, adoption, family member moving in etc)</td>
</tr>
<tr>
<td>22.</td>
<td>Change in residence</td>
</tr>
<tr>
<td>23.</td>
<td>Marital separation from mate (due to conflict)</td>
</tr>
<tr>
<td>24.</td>
<td>Major change in church activities (increased or decreased attendance)</td>
</tr>
<tr>
<td>25.</td>
<td>Marital reconciliation with mate</td>
</tr>
<tr>
<td>26.</td>
<td>Major change in number of arguments with spouse/partner (a lot more or a lot less arguments)</td>
</tr>
<tr>
<td>27.</td>
<td>Change in partner/husband's work (loss of job, beginning new job, etc)</td>
</tr>
<tr>
<td>28.</td>
<td>Major change in usual type and/or amount of recreation</td>
</tr>
<tr>
<td>29.</td>
<td>Borrowing more than $10,000 (buying home, car etc)</td>
</tr>
<tr>
<td>30.</td>
<td>Borrowing less than $10,000 (buying TV, car, school loan etc)</td>
</tr>
<tr>
<td>31.</td>
<td>Being fired from job</td>
</tr>
<tr>
<td>32.</td>
<td>Having an abortion</td>
</tr>
<tr>
<td>33.</td>
<td>Major personal</td>
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</tr>
<tr>
<td>34. Major change in social activities e.g. parties, movies, visiting (increased or decreased participation)</td>
<td></td>
</tr>
<tr>
<td>35. Major change in living conditions of family (new home, deterioration of home, neighborhood, etc)</td>
<td></td>
</tr>
<tr>
<td>36. Divorce</td>
<td></td>
</tr>
<tr>
<td>37. Serious injury or illness of close friend</td>
<td></td>
</tr>
<tr>
<td>38. Retirement from work</td>
<td></td>
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<tr>
<td>39. Son or daughter leaving home (due to marriage, work etc)</td>
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<tr>
<td>40. Ending formal schooling</td>
<td></td>
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<tr>
<td>41. Separation from partner (due to work, travel etc)</td>
<td></td>
</tr>
<tr>
<td>42. Engagement</td>
<td></td>
</tr>
<tr>
<td>43. Breaking up with boyfriend/partner</td>
<td></td>
</tr>
<tr>
<td>44. Leaving home for the first time</td>
<td></td>
</tr>
<tr>
<td>45. Reconciliation with boyfriend/partner</td>
<td></td>
</tr>
<tr>
<td>Other recent experiences which have had an impact on your life</td>
<td></td>
</tr>
<tr>
<td>46.</td>
<td></td>
</tr>
<tr>
<td>47</td>
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</tbody>
</table>
Thank you.
Appendix E

Letter to Participants
Research Participant:

Should you feel the need to have follow-up counseling for personal or family problems, you can contact the following agencies:

**University of Medicine and Dentistry of New Jersey**

University Behavioral HealthCare
Crisis Services
South Orange Avenue
Telephone Number: 973-972-6100
After 5 P.M. Call 973-623-2323

**Catholic Community Services**

1161 Raymond Blvd.
Newark, New Jersey
Telephone Number: 973-596-3925
Contact Person: Jenny Rivera

Thank you for participating in this research project.

Sincerely,

Barbara Caldwell