TRAUMA, COPING, AND THE COUPLE RELATIONSHIP: AN INVESTIGATION OF PREGNANT COUPLES' BIOPSYCHOSOCIAL-SPIRITUAL HEALTH

by

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Pregnancy and trauma are each complex biopsychosocial-spiritual processes with implications for the couple relationship, but there is not enough research on the ways that the two constructs are connected. Two articles were completed for this study: (a) a systematic review of literature published on the impact of traumatic stress on obstetric, neonatal, and postnatal outcomes and (b) a dyadic research study of couples' experiences with traumatic stress, pregnancy coping, and the couple relationship. The findings reported in the systematic review indicate that maternal trauma can impact maternal obstetric physical and mental health, fetal prenatal health, and maternal postnatal outcomes. The research study revealed that maternal and partner pregnancy stress, trauma, and relationship report are related, and discussed patterns of moderation and indirect effects between the variables. Based on these findings, implications and recommendations are provided for researchers, practitioners, and policymakers who work with pregnant couples and trauma survivors. Finally, recommendations are made specifically for Medical Family Therapy researchers and practitioners.

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DEDICATION

For my husband. When we fell in love so young, I never could have known the man you would become or the millions of ways you would take care of me. This dissertation might be the hardest thing I've ever done, but my proudest accomplishment is the way we love each other. I will never say thank you enough – I love you.

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PREFACE

As a psychology undergraduate student, I loved learning about the way that the mind worked, but the information that really captured my interest was at the intersection of mental and physical health. As I furthered my training as a Marriage and Family Therapist, I recognized that the systemic concepts I was learning applied not only between people in relationships, but also within people with regard to health. Engel's biopsychosocial model (1977, 1980) along with Wright, Watson, and Bell's (1996) addition of spiritual health provided a lens through which I came to view these internal systemic processes of health. I was able to apply this biopsychosical-spiritual framework to my thesis research on couples and childbearing decision making, which I conducted with Drs. Karina Shreffler and Kami Schwerdtfeger-Gallus.

My MFT training and interest in a more holistic view of health led me to the Medical Family Therapy doctoral program at East Carolina University. There, I expanded the focus of my research and clinical experience to capture many of the experiences surrounding fertility and the couple relationship, including infertility, in-vitro fertilization, pregnancy, and pregnancy loss. These foci are a particularly good demonstration of a BPSS understanding of health because they are inherently relational, capturing at least the relationship between mother and child, and, most often, between a mother, her partner, and the child.

At East Carolina University, Dr. Angela Lamson was conducting research on BPSS health, trauma, and couples in the military. Inspired by her research, as well as that of Dr. Schwerdtfeger-Gallus, which focuses on pregnancy and trauma, I determined that for my dissertation, I wanted to study the intersection of these interests: pregnancy, the couple relationship, and trauma. Use of the BPSS framework allowed me to use a theory I felt

comfortable with to examine complicated family situations that, as I would find out, are more connected than many would suppose.

As I began to search and read the literature on pregnancy and trauma using the BPSS framework, I noticed the stark lack of attention to the importance of the couple relationship, which was very surprising to me. As a clinician, I have spent years helping my clients to build strong family relationships; and from a MFT's standpoint it is crucial that the couple relationship be strong to prepare for the upcoming stress of a pregnancy. There was slightly more research on the couple relationship with regard to trauma, but even that research was frequently lacking a dyadic perspective. In response to these observations, I conducted my systematic review on the impact of trauma on pregnancy, specifically punctuating the lack of attention to the context of the couple relationship. Based on those findings, my own clinical research, and the overall body of literature I had read, I designed a study with the purpose of more clearly understanding the mechanisms and pathways in the relationships between trauma, pregnancy, and the couple relationship. It is my hope that with this research, pregnant women, trauma survivors, and couples will experience increased attention and care from researchers, practitioners, and policymakers.

CHAPTER 1: INTRODUCTION

In the course of the family life cycle, certain events are traditionally expected as normal: children grow up and leave home, they partner in their own intimate relationships, and they have children of their own (Carter & McGoldrick, 1999). Within the last few decades, alternative paths to the traditional model of childbearing have become more widespread, and assistive reproductive technologies have empowered women to make decisions about their childbearing with a freedom that did not exist in the past (Sunderam et al., 2009). Women who previously could not attain pregnancy because of lack of a partner, infertility, or advanced maternal age now have the opportunity to conceive.

While the landscape of pregnancy and childbearing decisions is changing, pregnancy rates in the United States are remaining somewhat constant: the 2008 pregnancy rate of 105.5 pregnancies per 1,000 women in the United States is very similar to the pregnancy rate in 2000 (Ventura, Curtin, Alma, & Henshaw, 2012). Further, while this figure represents a 9% decrease overall from the peak pregnancy rates in 1990, the breakdown in age is reflective of the trends discussed above – there are now 40% less teenage pregnancies annually than there were in 1990, and rates for women in their 30s and 40s have increased (Ventura et al., 2012). Overall, the CDC estimated that a little more than one in ten women will experience a pregnancy each year (Ventura et al., 2012). Pregnancy, then, remains a very common.

Although it is a normative developmental process, pregnancy can be stressful for a number of reasons. In one study, women who described their pregnancies as wanted reported less stress (2.4 on a scale from 1-5, on average) than those who described their pregnancies as mistimed (2.6) or unwanted (2.8), but there was only a small meaningful difference between groups (Maxson & Miranda, 2011). Some of the reasons that pregnancy can be stressful for

women include the numerous physical changes, potential health complications, or possible mental health concerns.

Many women experience the biological changes of pregnancy as physically uncomfortable, even in a normally progressing pregnancy; complications can further limit activity and quality of life when treatment involves frequent trips to the physician's office for monitoring or bed rest at home or in the hospital (Richter, Parkes, & Chaw-Kant, 2007). In addition, common physical complications may arise throughout the pregnancy, such as elevated medical risk for the mother or fetus during pregnancy (National Institute of Health, 2012), including comorbid physical conditions such as diabetes (2-10% of pregnancies [Centers for Disease Control, 2011]) and hypertension (6-8% of pregnancies [Leeman & Fontaine, 2008]), or pregnancy complications such as placenta previa (.25-1.8% of pregnancies [Rosenberg, Pariente, Sergienko, Wiznitzer, & Sheiner, 2011]) or preeclampsia (6-10% of pregnancies [Backes et al., 2011).

Pregnancies can also be complicated by co-occurring mental health diagnoses. Depression (Bennett et al., 2004), anxiety (Ross & McLean, 2006), and post-traumatic stress disorder (Seng, Low, Sperlich, Ronis, & Liberzon, 2009) are all commonly experienced by pregnant women. Researchers estimate that 10% of pregnant women meet criteria for major depression, and 18% show elevated depressive symptomology (Marcus, 2009); 9.5% have generalized anxiety disorder (Buist, Gotman, & Yonkers, 2011), and 7.7% have posttraumatic stress disorder (PTSD; Loveland Cook et al., 2004). No co-occurring diagnosis during pregnancy is without risk, but the presence of trauma or PTSD is particularly concerning for pregnant women, as individuals with PTSD frequently experience changes to their neuroendocrine and cardiovascular systems (Yehuda, 2011), both of which are important for

healthy fetal growth and development (Chang & Streitman, 2012). In fact, there is some evidence that trauma may be associated with negative pregnancy outcomes (e.g., low birth weight (Rosen, Seng, Tolman, & Mallinger, 2007) or preterm delivery (Lipkind, Curry, Huynh, Thorpe & Matte, 2010).

Fortunately, strong social support systems are protective for both pregnant women (Coffman & Ray, 2002) and trauma survivors (Olff, 2012). One of the most important social relationships for most pregnant women is the partner relationship; although demographics of pregnant women are changing, over 75% of births still take place within the context of a committed couple relationship (Martinez, Daniels, & Chandra, 2012). Researchers have demonstrated that higher levels of partner support in pregnancy predict lower maternal stress (Stapleton et al., 2012) and the odds of preterm birth decrease with better paternal support (Ghosh, Wilhelm, Dunkel-Shcetter, Lombardi, & Ritz, 2010).

In some instances, the couple relationship can be a source of stress rather than support. In pregnancy, relationship dissatisfaction has been linked to maternal emotional distress (Rosand, Slinning, Eberhard-Gran, Roysamb, & Tambs, 2011). Disagreements about the pregnancy can also be problematic. When partners do not agree on the intendedness of the pregnancy (i.e., one partner describes the pregnancy as intended and one does not), there is elevated risk of inadequate prenatal care and preterm birth (Hohmann-Marriott, 2009). Thus, negative aspects of the couple relationship may have both maternal and fetal effects.

The couple relationship can also be stressful when one or both partners have experienced a trauma. Psychological trauma, in particular, has a pervasive impact on the couple relationship, impacting communication, connection, understanding, sexual intimacy, and overall couple resources both within and outside the couple relationship (Nelson Goff et al., 2006). The

detrimental effects of trauma are magnified when both partners are trauma survivors – referenced in the literature as "dual trauma couples" (Balcom, 1996; Nelson, Wangsgaard, Yorgason, Kessler, & Carter-Vassol, 2002). In couples where both partners have a trauma history, unpredictable trauma responses in an individual can trigger subsequent trauma responses in his or her partner, and each individual may be re-traumatized by their partner's pain (Balcom, 1996). Dual trauma couple relationships are frequently characterized by communication problems, power struggles, and preoccupied/dismissing cycles (Nelson et al., 2002); these problematic relational patterns make it very difficult for each partner to receive the support they need.

In summary, both pregnancy and trauma are common experiences, and they frequently co-occur. The couple relationship may serve as either a protective factor or a risk factor for both pregnant women and trauma survivors, depending on the characteristics of the relationship itself. However, in spite of the importance of the couple relationship to pregnancy, no researchers have studied pregnancy and trauma utilizing a dyadic design that includes both partners' data. Dyadic research design is particularly important when studying inherently relational constructs (such as pregnancy and the couple relationship), because attending to only one family member's perspective does not fully capture the systemic nature of the phenomenon (Oka & Whiting, 2013).

Purpose and Design

The purpose of this dissertation is to help develop a deeper understanding of the interactive processes of pregnancy, trauma, and the couple relationship through a review of the literature, a systematic review, and an empirical study. First, an in-depth review of the literature on trauma and pregnancy is presented in chapter two. In order to better organize the information on these complex conditions, the biopsychosocial-spiritual model (Engel, 1977; Engel, 1980;

Wright, Watson, & Bell, 1996) is used as a framework for presenting the biological, psychological, social, and spiritual processes of pregnancy and trauma. In addition, a brief discussion of the literature on comorbid pregnancy and trauma is provided. This literature review provides a base for understanding the interrelationships of pregnancy and trauma in the context of the couple relationship.

Then, a systematic review is presented in chapter three. The systematic review was conducted to address the question: "What effect do pregnant women's PTSD and trauma symptoms have on obstetric, fetal, and neonatal health? And, what impact does the couple relationship have on these effects?" After a systematic search of four databases, 46 articles were identified for inclusion in the review. Through the review, it was found that trauma does have biopsychosocial effects on pregnant mothers and their developing babies, but no studies were found in which researchers utilized a dyadic design or assessed mothers' partners' trauma. This article identifies the fact that although previous researchers have demonstrated there is an effect of trauma on maternal and neonatal outcomes, no studies have been conducted using both partners in their data collection and analysis, which leaves out a key component of the interaction between pregnancy, trauma, and context of the couple relationship.

The methodology for this study is presented in chapter four. Couples were recruited online to take an electronic survey independently from their partners. Participants completed a survey consisting of measures of the couple relationship, trauma history, and pregnancy coping. Ethical considerations and planned analyses are also presented.

Chapter five is a manuscript reporting the results of the study described in the methodology chapter. Regression analyses were performed to determine indirect effects within the constructs of trauma, pregnancy, and the couple relationship. Trends in trauma history and

symptomology, pregnancy stress and coping, and relationship satisfaction and quality are also reported in this chapter. The dissertation concludes with a discussion chapter that punctuates the need for future research, clinical, and policy implications based on the findings (chapter six).

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CHAPTER 2: A BIOPSYCHOSOCIAL-SPIRITUAL VIEW OF PREGNANCY AND TRAUMA

Pregnancy is experienced by millions of women each year. In 2008, the Centers for Disease Control (CDC) estimated that there were 6,578,000 pregnancies in the United States, which represents about 106 pregnancies per 1,000 women in the country (Ventura, Curtin, Abma, & Henshaw, 2012). While statistics are often kept on diverse medical conditions that influence pregnancies in the US, it is more difficult to determine how many pregnancies are complicated by the incidence of psychological or emotional trauma. Researchers have estimated that 80% of United States residents have experienced at least one or more traumatic events (Breslau, 2009). Although a much smaller percentage of the population (about 6% - 12%) develops a strong reaction to the trauma that could be characterized as posttraumatic stress disorder (PTSD), these numbers still represent a sizeable portion of the population (Breslau, 2009). PTSD is the third most common psychiatric diagnosis among pregnant women, following only major depressive disorder and nicotine dependence (Loveland Cook et al., 2004). It is estimated that about 8% of pregnant women have current PTSD diagnoses, and 20% have lifetime PTSD diagnoses (Seng, Low, Sperlich, Ronis, & Liberzon, 2009).

The biopsychosocial (BPS) model (Engel, 1977, 1980) provides a framework for understanding the complex implications of a health condition (such as pregnancy or trauma) for an individual's biological, psychological, and social functioning through a systemic lens (von Bertalnaffy, 1968). Through the BPS model, Engel (1980) proposed that the biology of a person (e.g., hormones, genetic makeup) is connected to his or her psychological functioning (e.g., personality, mental health), which is also related to social relationships (e.g., family relationships, social support). Engel created his model in reaction to the reductionist model favored by

traditional biomedical science, in order to advocate for a more thorough conceptualization of complicated health processes (Engel, 1977).

In later years, the spiritual dimension was added to the model to reflect the impact that beliefs, meaning-making, and spiritual practices have on health processes (Wright, Watson, & Bell, 1996); the combined model is referred to as the biopsychosocial-spiritual (BPSS) approach. In this approach, spirituality is defined not by a particular religion but as a set of beliefs that help one make meaning of life and establish a sense of connection with the world (Wright et al., 1996).

The biopsychosocial-spiritual model can be used to illuminate the relationships between mind-body-spirit and relationships to develop a deeper understanding of complex health diagnoses (Wright et al., 1996). Through this literature review, the biological, psychological, social, and spiritual aspects of pregnancy and trauma will first be examined separately, and then a brief overview of the literature about co-existing pregnancy and trauma history will be provided. This overview of the experiences of pregnancy and trauma will provide the reader with a nuanced understanding of the complexities of the two experiences, demonstrating the importance of studying their co-occurrence.

Pregnancy

As stated previously, pregnancy is experienced by about 10% of women in the United States each year (Ventura et al., 2012). Although pregnancy and childbirth is considered to be a normative part of the family life cycle (Carter & McGoldrick, 1999), it is a major health condition with multifaceted implications for women and their families even in the best of circumstances. When pregnancy is coupled with difficult life circumstances, comorbid conditions, or other complicating factors, it can be incredibly stressful with far reaching impacts

on the woman, her family, and her developing child (Dunkel Schetter, 2011; Dunkel Schetter & Tanner, 2012). Viewing pregnancy through the lens of the BPSS model can help develop insight into these complicated processes. Figure 1 provides a visual display of the biological, psychological, social, and spiritual aspects of pregnancy presented in the following literature review.

Biological Aspects of Pregnancy

There are a multitude of biological changes that occur throughout the course of a pregnancy, as nearly all of the mother's internal biological systems are altered to support the growth of the fetus (Chang & Streitman, 2012; Torgersen & Curran, 2006). Metabolic changes, hormonal changes, cardiovascular change, or worsening health factors can greatly influence the pregnancy process or progress into what is known as a high risk pregnancy.

Metabolic changes begin almost immediately after conception (Lain & Catalano, 2007). One such metabolic change (the presence of progesterone) is the first indicator of pregnancy measured by pregnancy tests (Barclay, 2009). Ongoing changes in metabolism throughout the pregnancy facilitate the storage of nutrients that are used for fetal development and later breastfeeding (Lain & Catalano, 2007). Healthy metabolic systems encourage growth of the fetus throughout the pregnancy while complications in the metabolic system can results in challenges to the mother and baby's health. Metabolic concerns are monitored, however some health conditions may be considered high risk and require even more oversight of baby and mother. Examples of these high risk conditions are described in more detail below.

Metabolism is closely linked to hormonal functioning. Hormonal changes during pregnancy include the production of human chorionic gonadotropin (hCG), a hormone produced by the blastocyst that causes the placenta to develop (Chen et al., 2010), as well as oxytocin,

which is associated with the end stages of pregnancy, labor, and bonding (Brummelte & Galea, 2010). The hormonal changes associated with pregnancy have been implicated in mothers' mental health during pregnancy and post-delivery, particularly with regard to stress and depression (Brummelte & Galea, 2010).

Pregnant mothers also experience significant changes to their cardiovascular systems (Chang & Streitman, 2012; Torgersen & Curran, 2006), anatomically and functionally. The physical position of the heart changes during pregnancy as organs are rearranged to make room for the expanding uterus and developing fetus (Barclay, 2009). Fetal growth compresses the room the lungs have to expand, so mothers experience frequent shortness of breath (Chang & Streitman, 2012). Simultaneously, cardiac output increases so that enough blood and oxygen are delivered to the uterus (Torgersen & Curran, 2006).

Cardiovascular changes throughout pregnancy are common, including changes to heart rate variability. Heart rate variability is an indicator of the underlying processes that impact normal fluctuations in heart rate, and it can provide insight particularly into autonomic nervous system functioning (Acharya, Joseph, Kannathal, Lim, & Suri, 2006). Heart rate variability is thought to correspond with the heart's response to unpredictable stimuli by indicating the body's parasympathetic-sympathetic balance (Acharya et al., 2006). When there is balance between the sympathetic (activating) and parasympathetic (homeostatic) systems, individuals have greater fluctuations in heart rate variability (i.e., more variability). In cases of prolonged stress or imbalance between the parasympathetic and sympathetic systems, heart rate variability is constrained (i.e., less variability).

Stein and colleagues (1999) found that maternal heart rate variability declined somewhat during pregnancy, possibly indicating overall stress on the autonomic nervous system due to

pregnancy or related factors. In another study, heart rate variability did not differ significantly among pregnant women, and although there were no group differences in blood pressure (another measure of cardiovascular activity) between pregnant and non-pregnant women, there were significant differences in heart rate variability between the two groups (Voss et al., 2000). Specifically, as with Stein et al.'s study (1999), pregnant women had less variable heart rate variability than their non-pregnant counterparts (Voss et al., 2000), supporting a higher likelihood for distress.

The medical characteristics of the expecting mother (e.g., hypertension or gestational diabetes) or the prenatal infant (e.g. exposure to infection or prenatal defects) may classify a pregnancy as "high risk" (National Institute of Health, 2012); this designation indicates that there is a higher risk of health complications or even fatality for either mother or child (Dulude, Belanger, Wright, & Sabourin, 2002). Along with the inherent uncertainty during a high-risk pregnancy, treatment often includes activity restrictions, such as bed rest or hospitalization, which may be experienced as aversive and inhibitive (Gupton, Heaman, & Ashcroft, 1997; Leichtentritt et al., 2005; May, 2001; Richter, Parkes, & Chaw-Kant, 2007). High risk pregnancy often stem from biological health factors but certainly influence and are influenced by psychological aspects of pregnancy.

Psychological Aspects of Pregnancy

The psychological aspects of pregnancy can include emotional reactions (Tyrlik, Konecny, & Kula, 2013), stress and coping styles (Denis, Michaux, & Callahan, 2012; Leichtentritt et al., 2005), and mental health difficulties including depression and anxiety (Bennett, Einarson, Taddio, Koren, & Einarson, 2004; Denis et al., 2012; Dunn, Handley, & Shelton, 2007). Women experience a wide variety of pregnancy-related emotions, ranging from

excitement and elation to nervousness or fear (Tyrlik et al., 2013). Varying emotional experiences are contextually dependent and have been related to mothers' individual characteristics (e.g., age, previous pregnancy experience, pregnancy planning). In general, mothers who feel prepared for the upcoming changes related to childbirth typically are more content than those who feel that they are not psychologically prepared (Tyrlik et al., 2013). However, unexpected changes could alter that security at any point during the pregnancy.

Women facing high-risk pregnancy, especially, tend to experience significant stress (Denis et al., 2012). In a phenomenological study, women described persistent concern regarding their own health, as well as the health of their unborn child (Leichtentritt et al., 2005). Participants expressed a desire to give birth as soon as possible, because of the personal strain and stress it was placing on them, but also a competing need to prolong the pregnancy for the sake of their child's health. One woman described her conflicting emotions by stating, "I don't know what to do. I feel I am entirely trembling inside" (Leichtentritt et al., 2005, p. 46). Women who have more trouble balancing these competing thoughts report more emotional distress (May, 2001).

In addition to concern about their unborn child, women with high-risk pregnancy also frequently experience difficulty meeting their everyday responsibilities, particularly when activity restriction is in place (May, 2001). While on bed rest or hospitalized, women cannot work, maintain their household, or care for any older children that have already been born. This conflict of role expectations places a stressful burden on the woman, as well as her family (Kemp & Page, 1986). Women reported that hospitalization was associated with feelings of loss regarding normal life and childbearing (Lichtentritt et al., 2005), and the mismatch between expectations and experience is frequently distressing.

Depression and anxiety are also somewhat prevalent among pregnant women. Bennett and colleagues (2004) conducted a meta-analysis on studies with pregnant women and use of the Beck Depression Inventory in order to project an estimate for the total prevalence of depression among pregnant women. They determined that there is a 7.4% prevalence of depression in the first trimester, followed by a boost in the second (12.8%) and third (12.0%) trimesters (Bennett et al., 2004). Similarly, in a systematic review of research on anxiety disorders during the perinatal period, Ross and McLean (2006) identified the prevalence of generalized anxiety disorder (8.5%), obsessive-compulsive disorder (.2% to 1.2%), panic disorder (1.3% to 2.0%), and PTSD (2.3% to 7.7%) in pregnancy. Other researchers have estimated that about 8% of pregnant women have a current PTSD diagnosis, and 20% have had PTSD sometime in their life (Seng, Low, Sperlich, Ronis, & Liberzon, 2009). Both depression and anxiety are associated with complications for mothers' obstetric health (e.g., preterm labor and pregnancy symptoms), as well as fetal and neonatal well being and behavior (Adler, Fink, Bitzer, Hosli, & Holzgreve, 2007; Dunkel Schetter & Tanner, 2012). Similarly, researchers connect PTSD to negative pregnancy outcomes such as low birth weight (Rosen, Seng, Tolman, & Mallinger, 2007) and preterm delivery (Lipkind, Curry, Huynh, Thorpe, & Matte, 2010).

Interestingly, the effects of these psychiatric disorders may be mitigated by positive coping strategies (Lobel, Yali, Zhu, DeVincent, & Meyer, 2002; Giurgescu, Penkofer, Maurer, & Bryant, 2006). Optimistic women are more likely to perceive their pregnancy as controllable, even in a high-risk situation; they also use less avoidant coping and have less emotional distress (Lobel et al., 2002). In a study of 105 high-risk pregnant women, Giurgescu and colleagues (2006) found that higher levels of uncertainty about pregnancy outcomes were associated with greater distress and less use of adaptive coping strategies. However, women who did use

positive coping strategies, such as those who depended on social support, experienced increased psychological well being compared to those who were more isolated (Giurgescu et al., 2006). Through these findings, the psychosocial connection between internal psychological experience and relationship support is demonstrated. While coping strategies are typically considered to be psychological processes, dependence upon others for social support bridges the psychological and social aspects of the pregnancy experience.

Social Aspects of Pregnancy

Social support seems to be an important mitigating factor in women's experience of pregnancy, particularly when there are complications or the pregnancy is considered medically high risk (Giurgescu et al., 2006). In a phenomenological study of ten pregnant women, support was defined as being present, providing care and respect, sharing information, and believing in one another (Coffman & Ray, 2002). Women reported that their families provided critical support throughout their experience of a high-risk pregnancy (Sittner, DeFrain, & Hudson, 2005). Specifically, they stated that the family's ability to manage stress and crisis, commitment to one another, appreciation and affect, and enjoyable time together help them to navigate the stress of a high-risk pregnancy.

One chief benefit of the BPSS model is the ability to conceptualize complex interdependent connections between the four aspects (biological, psychological, social, and spiritual) of health. With regard to supportive relationships, the effects of social support impact women not only psychologically, but also physiologically. Specifically, the presence of strong social support – particularly in the context of a partner relationship – has been correlated to the presence of elevated stress hormones in women with high-risk pregnancy (Kemp & Hatmaker, 1989), indicating changes at the metabolic endocrine level. In addition, women who expect and

receive support from their spouse experience less depressive symptoms (Besser, Priel, & Wiznitzer, 2002).

One of the most common social relationships for a pregnant woman is the partner relationship – over three quarters of births occur within the context of a committed relationship (Martinez, Daniels, & Chandra, 2012). The couple relationship is a particular area of social support that women find beneficial during the experience of high-risk pregnancy. A positive couple relationship can be protective against the general stress of a high-risk pregnancy as well as more severe symptoms of depression and anxiety (Besser et al., 2002; Kemp & Hatmaker, 1989).

Conversely, the stress of high-risk pregnancy directly impacts the couple relationship, and the relationship can become a source of stress, rather than strength. Women and their partners may find themselves physically and psychologically vulnerable if their expectations for the pregnancy do not match their experience (Leichtentritt, Blumenthal, Elysassi, & Rotmensch, 2005). Among high-risk women, the stress from the negative life events associated with a high-risk pregnancy is associated with decreased perceived support, which negatively affects the partner relationship (Mercer, Ferketich, & DeJoseph, 1993). Further, the stress of a high-risk pregnancy does not just influence the mother. Men whose wives were on bed rest reported that the greatest difficulties they faced were assuming multiple roles, managing emotional responses (e.g. fear and uncertainty), and caring for their partners (Maloni & Ponder, 1997). Just as the mothers' attention was divided between her own desires and her concern of the well-being of the unborn child (Leichtentritt et al., 2005), men described worry for both the health of their partners and for the developing baby (Maloni & Ponder, 1997). Although the authors of this study only

interviewed male partners, it is logical to presume that the stress related to pregnancy faced by both partners would interface and escalate dyadic interactions.

Spiritual Aspects of Pregnancy

Spirituality is an important part of many pregnant women's experiences (Callister & Khalaf, 2010; Carver & Ward, 2007; Jesse, Schoneboom, & Blanchard, 2007). In a qualitative study of 130 women in their second trimester, participants reported that spirituality provided them with guidance and support, protection or blessing, strength and confidence, and help with difficult choices (Jesse et al., 2007). Many aspects of spirituality have been described as important to pregnant women, including communication with a higher power and expression of spiritual rites and rituals to promote healing (Carver & Ward, 2007). Callister and Khalaf (2010) conducted a secondary analysis of qualitative phenomenological studies published from diverse samples of women from different religions (e.g., Christian, Jewish, and Islam) on six continents. They found that the importance of spirituality in pregnancy transcends any particular religion or region of the world. Further, beyond spirituality influencing their coping, women described their pregnancies as having an impact on their spirituality – many reported that they felt closer to God as a result of their pregnancy and childbirth experiences, and they found more significance in their spirituality and religion during pregnancy and childbirth than they had in the past (Callister & Khalaf, 2010).

As with the other components of the BPSS model, there is evidence for the intersection of biological, psychosocial, social, and spiritual aspects of pregnancy. Spirituality seems to be a strong protective factor for the stress of a medically high-risk pregnancy (Dunn et al., 2007). Dunn and colleagues (2007) found a significant negative correlation between spiritual well being and symptoms of depression and anxiety in women with high-risk pregnancies; that is, women

who reported greater spiritual well being also reported less psychiatric symptoms. Further, in a qualitative study of 12 women with high risk pregnancy, women reported that their spirituality helped them and their families deal with the high risk pregnancy and that it led to positive emotional outcomes including hope and empowerment in uncertainty (Price et al., 2007). Although there is some research that couples tend to view pregnancy through a spiritual lens (Mahoney, Pargament, & DeMaris, 2009), there has been no further investigation into the ways that spirituality impacts biological, psychological, or social functioning for pregnant couples.

This initial section examined pregnancy through a biopsychosocial-spiritual lens. Recognizing the biological, psychological, social, and spiritual aspects of pregnancy is key to understanding the complex experience of pregnancy for women and their partners. As stated previously, a significant number of pregnant women report a history of trauma or have a current PTSD diagnosis. In the next section, trauma will be examined through a biopsychosocial-spiritual lens in order to promote a deeper understanding its BPSS impact.

Trauma

Trauma is a common occurrence in today's society, and a trauma response can often become an organizing principle impacting almost every aspect of life. As stated previously, about four out of five Americans have experienced some type of potentially traumatic event in their lifetime, and 6-12% of the population has had a diagnosis of PTSD at some point in life (Breslau, 2009). Although PTSD was previously categorized as an anxiety disorder, the new *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5;* American Psychiatric Association, 2013) established a new category of disorders known as "Trauma- and Stressor-Related Disorders." The grouping includes PTSD, as well as acute stress disorder, adjustment disorder, and reactive attachment disorder – all disorders that have "exposure to a traumatic or

stressful event" as a key criterion (*DSM-5*; APA, 2013). Stress and trauma are somewhat subjectively defined – what one individual experiences as "stress," another might experience as "trauma." Frequently in trauma questionnaires, participants are provided with a number of potentially traumatic events and then are asked to report whether they personally experienced the event as traumatic (e.g., the Traumatic Events Questionnaire [Vrana & Lauterbach, 1994], or the Traumatic Life Events Questionnaire [Kubany et al., 2000]). The key difference between "stress" and "traumatic stress" is whether an individual feels fear, helplessness, or horror at the time of the trauma (*DSM-5*, APA, 2013).

Because there is such a vast difference in prevalence of exposure to potentially traumatic events and PTSD diagnoses (Breslau, 2009), it is important to note that there are many ways researchers measure trauma (Weathers & Keane, 2007). At times, researchers use a broad operational definition of any exposure to potentially traumatic events, such as abuse, assault, or the traumatic death of a close loved one (e.g., Schwerdtfeger & Nelson Goff, 2007; Sumner et al., 2011). In other cases, they evaluate posttraumatic stress symptoms (e.g., Armstrong, Hutti, and Myers, 2009; Lev-Wiesel, Chen, Daphna-Tekoah, & Hod, 2009) or put forth a PTSD diagnosis, as measured through medical record review (e.g., Seng et al., 2001) or by meeting DSM criteria for PTSD on an assessment, known as "probable diagnosis" (e.g., Engel, Berkowitz, Wolff, & Yehuda, 2005). Throughout the review of trauma literature in this review, "trauma history" or "trauma background" will refer to the more broad definition of exposure to potentially traumatic events; "PTSD diagnosis" will denote a study in which researchers measured for a PTSD diagnosis. Finally, the reader should note that because of the recent release of the DSM-5 (APA, 2013), all of the studies cited in this literature review defined PTSD using the DSM-IV-TR (APA, 2000) criteria.

The overall systemic response to trauma, and factors that influence the development of PTSD, can be conceptualized through a BPSS lens. Figure 2 illustrates the biological, psychological, social, and spiritual aspects of trauma that will be presented in the following literature review.

Biological Aspects of Trauma

Although there is agreement among researchers that PTSD is associated with particular biological markers, evidence and theories vary about exactly which systems are involved and how they are impacted by exposure to trauma (Klaassens, Giltay, Cuijpers, van Veen, & Zitman, 2012; Shah et al., 2013; Yehuda, 2011). Two major stress-response systems, however, have been shown to be involved in trauma responses – particularly, the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system (SNS). The HPA axis is a pathway that connects the hypothalamus in the brain, the pituitary gland, and the adrenal system; its function is to help organisms adapt and change to fluctuations in stability and stress (Heim, Newport, Mletzko, Miller, & Nemeroff, 2008). The SNS and the Parasympathetic Nervous System (PNS) make up the Autonomic Nervous System (ANS). The ANS regulates the body's reaction and response to threats. The SNS alerts the body to a threat and prepares the "fight or flight" response through such mechanisms as accelerating heartbeat and suppressing intestinal movements, while the PNS serves as a "braking system" to return the body to homeostasis (Lipov & Kelzenberg, 2012). Thus, although the HPA and SNS are separate biological systems, each is activated in response to stress and threatening situations.

Like pregnancy, trauma is also associated with changes in heart rate variability (HRV). Again, HRV is a cardiovascular indicator of the functioning of the autonomic nervous system (ANS), which regulates the body's physiological response to environmental and internal

stressors (Acharya et al., 2006). HRV and trauma have most frequently been studied in military populations (e.g., Bhatnagar et al., 2013; Lee & Theus, 2012). In combat veterans, PTSD has been associated with restricted range of HRV, indicating imbalanced sympathetic/parasympathetic systems (Tan, Dao, Farmer, Sutherland, & Gevirtz, 2011). It is likely that a similar effect would be seen in survivors of other traumas.

Although it is difficult to determine why the HPA axis and sympathetic nervous system are deregulated in many trauma survivors, some conclusions may be drawn about the impact this has on the biology of people with a history of trauma exposure or PTSD. Researchers have found that when stress-response systems are activated in the long term, individuals are more likely to develop PTSD (Cohen et al., 2007) or depression (Heim et al., 2008) at a later date. In addition, although the neurobehavioral mechanisms are not fully understood (Ursano, 2012), researchers have hypothesized that stress response activation could be associated with higher reports of chronic pain comorbid with PTSD (Moeller-Bertram, Keltner, & Strigo, 2012; Morasco et al., 2013). In sum, although a clear picture of the exact mechanisms of the physical manifestations of trauma and PTSD have yet to emerge, the biological impact of trauma affects some of the most crucial systems in the body, including the neurological and cardiovascular systems.

Psychological Aspects of Trauma

Researchers frequently describe coping as a psychological process associated with PTSD and trauma (Littleton et al., 2007). Most theories of coping with trauma assert that one of the most important aspects of coping is to process the traumatic event itself, but there is also evidence that maintaining a positive attitude after a trauma is beneficial to attaining positive outcomes (Bonanno, Pat-Horenczyk, & Noll, 2011). In a meta-analysis on trauma and coping strategies, Littleton and colleagues (2007) found that while there was an association between

avoidance strategies and distress, there was not a relationship between approach strategies (e.g., confronting the trauma) and distress. It is likely that some degree of coping flexibility (e.g., making adjustments to coping strategy as necessary for the individual) is actually best (Bonanno et al., 2011).

The relationship between coping and PTSD also illustrates the interaction between multiple aspects of the BPSS model. Specifically, researchers have shown that the "significant impairment" criterion of PTSD predicted variance in participants' quality of life, depression, and negative affect (Boals, Riggs, & Kraha, 2013). The authors concluded that individuals who have positive coping skills to manage their trauma consequentially experience less "significant impairment", which decreases the likelihood they will have other physical and mental health complications stemming from their PTSD (Boals et al., 2013).

PTSD commonly co-occurs with other psychiatric disorders: researchers have found that lifetime incidence of PTSD is associated with elevated lifetime rates of mood, anxiety, and substance abuse disorders, as well as suicide attempts (Cougle, Resnick, & Kilpatrick, 2009; Ginzburg, Ein-Dor, & Solomon, 2010; Pietrzak, Goldstein, Southwick, & Grant, 2011). Although individuals who had some traumatic response symptoms without meeting full criteria for diagnosis experienced less co-morbid disorders than those who met full PTSD criteria, their odds were still greater than the general population with no posttraumatic stress symptoms (Pietrzak et al., 2011). The BPSS model proposes that these psychological aspects of trauma will have an impact on the social and relational dynamics of trauma survivors, which will be explored next.

Social Aspects of Trauma

There is a great deal of evidence that social support is a strong protective factor for trauma survivors (Olff, 2012) across a wide range of circumstances, including motor vehicle accidents (Gabert-Quillen et al., 2012), mass shootings (Grills-Tquechel, Littleton, & Axsom, 2011), natural disasters (Kaniasty, 2012), and combat experiences (Pietrzak, Johnson, Goldstein, Malley, & Southwick, 2009). The wide range of traumatic circumstances reflected in this literature suggests that social support is an important protective factor for trauma survivors in general, regardless of the type of traumatic event.

Much has been written about the impact of trauma on the couple relationship (Balcom, 1996; Henry et al., 2011; Nelson Goff et al., 2006; Schwerdtfeger et al., 2008), from the individual partner perspective. Trauma has a deep and lasting impact on many aspects of the couple relationship, including communication, connection, understanding, sexual intimacy, and overall couple resources within and outside of the relationship (Nelson Goff et al., 2006). If maladaptive responses to trauma persist over time, though, they can detract from couple relationship quality (Henry et al., 2011).

The couple relationship is further complicated when both partners have experienced trauma in the past (Balcom, 1996; Nelson, Wangsgaard, Yorgason, Kessler, & Carter-Vassol, 2002), regardless of the origins of those traumas. In the literature, these couples are referred to as "dual trauma couples" (Balcom, 1996; Nelson et al., 2002). Because reactions to trauma can become such an organizing principle in an individual's life, when both partners experience trauma, their relationship can be dominated by chaos (Balcom, 1996). In these relationships, both partners can exhibit problematic trauma responses. Their interactions with one another or

experience of each other's trauma response can trigger inadvertent, spontaneous re-traumatization.

Frequent themes within the context of dual trauma couples include difficulty negotiating roles in the couple relationship, problems with setting boundaries and maintaining intimacy, triggering the trauma response in one another, and poor development of coping mechanisms (Henry et al., 2011). In addition to these challenges, dual-trauma couples frequently experience preoccupied/dismissing cycles, issues of power and control, and denial of the continuing impact of trauma on their lives (Nelson et al., 2002). These complicated relationship dynamics make it challenging for a couple to navigate the normative stresses of life, and even more so when faced with intense experiences, such as a high-risk pregnancy.

Again, the systemic nature of the BPSS model emphasizes the relationship between the biological, psychological, social, and spiritual dimensions of trauma. One such relationship between social and psychological aspects of trauma can be seen in the literature on the couple relationship and individual coping strategies. As stated previously, trauma often has a negative impact on the couple relationship; however, it is not necessarily always detrimental. In one qualitative study, participants emphasized that they experienced limited trauma symptoms when they implemented helpful coping strategies in their family or partner relationships (e.g., receiving emotional support from or talking about the trauma with a significant other) and built resilience into their relationships (Schwerdtfeger et al., 2008).

In another example of the intersection of the BPSS processes of trauma, Olff (2012) reviewed the biological impacts of trauma, including the physiological stress response, dysfunction of regulatory systems in the body, and genetic risk factors, as well as the evidence that social support is a strong mediator in the relationship between a traumatic threat and

subsequent PTSD diagnosis and social functioning. She noted the important role that oxytocin plays in bonding and suggested that this hormone may be an important link between traumatic experiences, social support, and positive adaptation subsequent to trauma (Olff, 2012). Again, this pathway demonstrates the way that BPSS constructs are closely linked with one another.

Spiritual Aspects of Trauma

In a broad sense, spirituality may refer to making meaning of the world through formal or informal belief structures (Altmaier, 2013). Whether this meaning-making process takes place through a formalized structure like an organized religion or an informal personal worldview, the process of constructing meaning can be healing for trauma survivors (Altmaier, 2013; Shaw, Joseph, & Linley, 2005). Previous researchers have found that meaning making can help trauma survivors process traumatic events into a comprehensive narrative in a way that helps them feel a sense of emotional and behavioral resolution (Altmaier, 2013; Peres, Moreira-Almeida, Nasello, & Keonig, 2007; Shaw et al., 2005).

Positive religious coping may include engaging in affirming religious practices (e.g., prayer) or receiving support from a faith community (Tausch et al., 2011). Positive religious coping has been associated with higher levels of psychological well being and lower levels of depression in individuals recovering from sexual assault (Ahrens, Aebling, Ahmad, & Hinman, 2010). However, religious coping can also be problematic, particularly when individuals cope by distancing themselves from their spiritual beliefs and utilizing their religious activities as a way of avoiding directly dealing with their assault (Ahrens et al., 2010).

It should be noted that religion may be most important to trauma survivors who already place importance on their spiritual beliefs or religion before the trauma occurs, as researchers have tended to find no between-group differences in spirituality or religiosity in research

participants who have experienced a recent traumatic life event and those who have not (Hussain, Weisaeth, & Heir, 2011; Perera & Frazier, 2013). In a sample that was not particularly religious, Hussain, Weisaeth, and Heir (2011) found that religious beliefs did not prevent long-term mental distress after a natural disaster and religiosity was not related to higher levels of life satisfaction.

Researchers have linked posttraumatic growth to spirituality and perceptions of spiritual transformation after a trauma (Bray, 2010; Lancaster & Palframan, 2009; Schultz, Tallman, & Altmaier, 2010). Posttraumatic growth refers to the perceived growth individuals experience after a traumatic experience, and it is commonly reported among trauma survivors (Park & Helgeson, 2006). From a posttraumatic growth perspective, traumatic events act as a crucible through which the survivor experiences personal and spiritual growth (Bray, 2010). Traumatic experiences challenge trauma survivors' core beliefs about themselves, the world, and the meaning of life, which results in deliberate and voluntary rumination (Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012). When the survivors are able to make meaning of their experiences and come to a coherent narrative about the trauma, they experience resolution and posttraumatic growth (Triplett et al., 2012). Other religious processes that have been associated with posttraumatic growth include positive religious coping, readiness to face existential questions, and religious participation (Shaw et al., 2005).

Like pregnancy, trauma is a complex experience with biological, psychological, social, and spiritual aspects. There are some similar components to the BPSS experiences of pregnancy and trauma, such as changes to the cardiovascular and nervous system, comorbidity with depression and anxiety, the impact of the couple relationship, and the importance of spirituality. As trauma and pregnancy frequently co-occur, a brief introduction to the literature on comorbid trauma and pregnancy will be presented next.

Trauma and Pregnancy

The relationship between trauma and pregnancy is bidirectional. First, past traumatic events can be a risk factor for pregnancy complications (Lev-Wiesel et al., 2009). Researchers have found that women who report a history of past traumatic events (e.g., child abuse or sexual abuse) are more likely to experience a high-risk pregnancy; this relationship is predicted by patients' experiences of avoidance and intrusion symptoms (Lev-Wiesel et al., 2009). Further, women who had a history of traumatic events are also more likely to experience prenatal depression and delivery complications (Lev-Wiesel et al., 2009).

Second, difficult birth experiences (Nicholls & Ayers, 2007) and the experiences of miscarriage and infertility (Schwerdtfeger & Shreffler, 2009) can be experienced as traumas themselves. Nicholls and Ayers (2007) found that difficult birth experiences can lead to posttraumatic stress symptoms, impacting the partner relationship as well as the relationship between parent and child. Schwerdtfeger and Shreffler (2009) found that involuntarily childless women who had a history of pregnancy loss reported high levels of fertility-related stress even up to seven years after their pregnancy loss. These findings add support to the idea that women's childbearing experiences can serve as a source of distress – the authors suggest that pregnancy loss and infertility could be considered potentially traumatic events. Unfortunately, little if any research has been done to determine whether men experience birth complications, miscarriages, or infertility as traumatic. From a systemic perspective, though, any impact on one family member could impact another.

There is evidence to suggest that comorbid trauma and pregnancy may result in negative pregnancy outcomes. Previous researchers have found associations between trauma and obstetric outcomes, such as diagnosis of hypermeisis gravadum, which is characterized by

intense nausea and vomiting during pregnancy (Seng et al., 2013) or preterm birth (Seng et al., 2001; Morland, Leskin, Block, Campbell, & Friedman, 2008). Researchers have also demonstrated relationships between maternal trauma and neonatal outcomes including low birth weight (Chang, Chang, Lin, & Kuo, 2002; Rosen et al., 2007) and head circumference at birth (Engel et al., 2005). However, there are some seeming contradictions in the data, including researchers who found no differences in participants with and without trauma (e.g., Dornelas, Oncken, Greene, Sankey, & Kranzler, 2013; Lipkind et al., 2010). Thus, further research is needed to explore the varying findings in this area. Below are implications that initiate ideas that could be further explored.

Discussion

Pregnancy and trauma are each biopsychosocial-spiritual conditions impacting pregnant women and their partners. By using a BPSS lens, the complex interactions between biological, psychological, social, and spiritual aspects of both trauma and pregnancy are evident. In both pregnancy and trauma, there are associations with the cardiovascular and autonomic nervous systems. Each is commonly comorbid with depression and anxiety, and emotions and coping are important individual psychological processes to both pregnant women (Guardino & Dunkel Schetter, 2014; Hamilton & Lobel, 2008) and trauma survivors (Bonanno et al., 2011). Additionally, both trauma and pregnancy have implications for meaning-making and spiritual connection, including developing a deeper spiritual connection with one's partner and a higher power (Callister & Khalaf, 2010; Lancaster & Palframan, 2009; Schultz et al., 2010). Social support is a strong protective factor in both pregnancy (Coffman & Ray, 2002) and trauma (Olff, 2012), but each can place a strain on one of the most important support relationships – the couple partnership. However, despite the importance of the couple relationship, little dyadic research

has been conducted for either pregnancy or trauma. Researchers should use a systemic, dyadic perspective to evaluate the couple processes for both pregnancy and trauma.

Further, pregnancy and trauma are frequently comorbid. When these two BPSS conditions are overlaid on top of one another, there is evidence about how coping and relationships are affected (Lopez, Konrath, & Seng, 2011), but it becomes increasingly difficult to determine what parts of the experience are associated with the pregnancy, what parts are associated with trauma, and which are related to the unique interaction between co-morbid pregnancy and trauma. It is possible that the couple relationship serves as a moderating variable between pregnancy and trauma – that is, it may be that couples with high relationship satisfaction, quality, and/or adjustment experience less severe complications from their stress, due to the protective nature of the relationship. Further research should be conducted to elucidate the mechanisms that underlie the interactions between pregnancy and trauma within the context of the couple relationship.

A deeper exploration into the intersection of pregnancy and trauma is warranted to increase understanding of these commonly occurring comorbid BPSS health conditions. Without a clear understanding of the cumulative effects of pregnancy and trauma, or the mechanisms that link trauma and pregnancy, it is impossible to know how to best treat pregnant couples who are trauma survivors in the hopes of building resilience and improving outcomes for pregnant women and their partners.

Conclusion

This literature review has provided an overview of the biological, psychological, social, and spiritual aspects of pregnancy and trauma. Both pregnancy and trauma are complex experiences with many implications for women and their partners. An initial overview of the

research on co-occurring pregnancy and trauma was presented, along with recommendations for future research. By developing a more complex perspective on the BPSS aspects of pregnancy and trauma, researchers and practitioners can more effectively understand, research, and treat pregnant women, trauma survivors, and their partners.

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Figure 1. *Summary of BPSS Aspects of Pregnancy Identified in Literature Review*

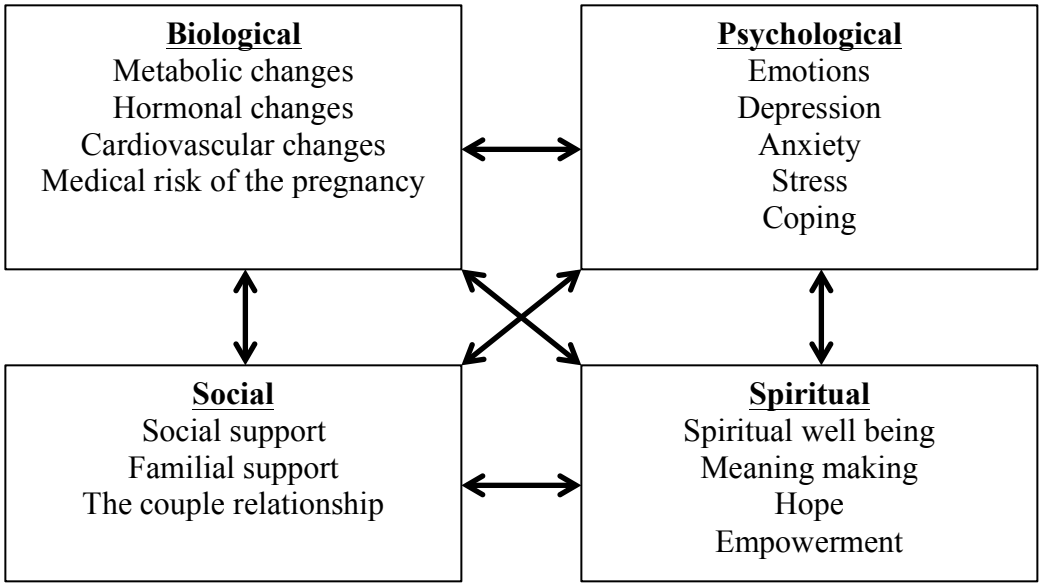
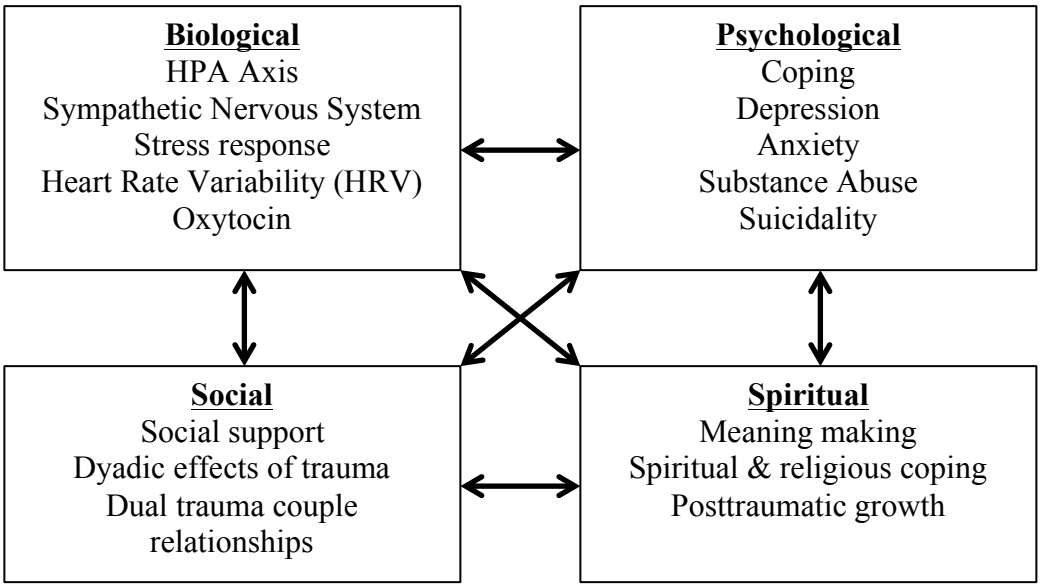


Figure 2. *Summary of BPSS Aspects of Trauma Identified in Literature Review*



CHAPTER 3: MATERNAL TRAUMA AND PREGNANCY: A SYSTEMATIC REVIEW OF THE BIOPSYCHOSOCIAL EFFECTS ON OBSTETRIC, NEONATAL, AND POSTNATAL OUTCOMES

Pregnancy is a complex biopsychosocial experience for women and their partners. In the best circumstances, pregnancy has a significant impact on physical health, psychological functioning, and the couple relationship; when it is complicated by risk or distress, it can place even more strain in each of these areas. Researchers have suggested that trauma history and posttraumatic stress disorder are associated with a more frequent occurrence of pregnancy complications and increased health risks (e.g., Morland, Leskin, Block, Campbell, & Friedman, 2008; Seng et al., 2001). However, to date, no systematic reviews have been conducted to synthesize findings on the relationship between psychological trauma and pregnancy outcomes, strengthening the knowledge base in this area.

According to the APA Diagnostic and Statistical Manual (4th ed., text rev.; *DSM-IV-TR;* American Psychiatric Association, 2000), traumatic experiences are those that provoke fear for one's own life or that of another person, or which cause intense fear, helplessness, or horror. Three clusters of symptoms define the diagnosis in the DSM-IV-TR: re-experiencing, avoidance, and arousal. It should be noted that the criteria for PTSD have been changed in the DSM-5, and a new category for disorders of trauma and stress has been added (APA, 2013). However, because of the very recent publication of the DSM-5, all of the researchers who conducted the studies identified by this review utilized DSM-IV-TR criteria.

PTSD is a diagnosis with psychological, emotional, biological, and social implications, and it has been associated with poor physical health outcomes in the general population (Aversa et al., 2012; Schnurr & Green, 2004; Schnurr & Jankowski, 1999). PTSD is the third most

common psychiatric illness among pregnant women, yet few receive professional help with its management despite reporting distress and impairment in their everyday lives (Cook et al., 2004; Seng et al., 2010).

Another frequently ignored aspect of the trauma experience is the context of the couple relationship, although researchers are increasingly calling for attention to this area (Henry et al., 2011; Nelson Goff & Smith, 2005). Most pregnancies occur within the context of a couple relationship. In a 2012 report on the National Survey on Family Growth, researchers at the CDC reported 55% of women who gave birth between 2006 and 2010 were married, and 22% were in cohabiting relationships; thus, 77% of all births occurred within a couple relationship (Martinez, Daniels, & Chandra, 2012). Further, a pregnant woman's partner is often the most significant component of her support system - this relationship can act as a buffer for general stresses in pregnancy, as well as more significant problems like depression and anxiety (Besser et al., 2002). However, trauma may be more difficult to buffer and can have a deep and lasting impact on many aspects of the couple relationship, including communication, connection, understanding, sexual intimacy, and overall couple resources within and outside of the relationship (Nelson Goff et al., 2006).

Previous systematic reviews have been conducted on the impact of violence on reproductive health (Gazmararian et al., 2000) and the impact that physical trauma has on pregnancy outcomes (Mendez-Figueroa, Dahlke, Vrees, & Rouse, 2013). Other reviews have examined the prevalence of anxiety disorders (Ross & McLean, 2006) and PTSD (Cook et al., 2004) in pregnant women, as well as the relationship between depression and anxiety and obstetric, fetal, and neonatal outcomes (Adler, Fink, Blitzer, Hosli, & Holzgreve, 2007). Thus, reviewers have examined the impacts of potentially traumatic experiences and mental health

concerns other than PTSD on pregnancy. While researchers have linked PTSD to adverse pregnancy outcomes in individual studies (e.g., Lev-Wiesel, Chen, Daphna-Tekoah, & Hod, 2009; Morland et al., 2008; Seng et al., 2001), no systematic reviews have been conducted to consolidate these separate findings. In addition, no review has examined the role that the couple relationship may have in mediating or moderating these effects. This systematic review was conducted to explore the question: What effect do pregnant women's PTSD and trauma symptoms have on obstetric, fetal, and neonatal health? And, what impact does the couple relationship have on these effects?

Method

Cooper's (2010) approach to systematic literature reviews was used to guide this methodology. Three databases were selected for this systematic review: PsycInfo, PubMed via Medline, and Health Source. These three databases draw on different source material and have slightly different foci, including psychology, medicine, and nursing (respectively). The researcher and two research assistants independently searched each database with a series of search terms chosen to reflect the essential constructs in the research question. No limit for year was set in the search parameters. Identical searches were conducted in each database made up of the search terms "pregnancy," "prenatal," "obstetric," "fetal," and "perinatal" combined with "posttraumatic stress," "post-traumatic stress," and "trauma history." For each search, one pregnancy keyword was paired with one trauma keyword, making 15 total searches in each database. Figure 3 demonstrates this process. The searches were conducted February and March of 2013.

The initial keyword search yielded 1,517 results. Through title and abstract searches, 175 unique articles that fit criteria were identified. Further examination of the inclusion and

exclusion criteria yielded 46 total articles for inclusion in the review (see Figure 1). Members of the research team worked independently and triangulated results at each step to ensure validity and reliability of the article selection. The team met in person, compared discrepant articles to the inclusion and exclusion criteria, and made a unanimous decision on each discrepancy.

Results

The articles selected for inclusion in this review spanned nearly two decades (1994 to 2013) and covered a wide range of results including obstetric and neonatal outcomes, as well as physical, mental, and relationship health. Results of the studies are coded in Table 2 in four domains: (1) obstetric outcomes, including prenatal care, pregnancy symptoms, pregnancy complications, utero-placental circulation, labor, and delivery (n=14 articles); (2) maternal prenatal psychosocial health, including mental health, relationship health, and prenatal risk behaviors (n=22 articles); (3) neonatal outcomes, such as birth weight, gestational age, Apgar score, cardiac vagal tone, and neonatal behavior (n=12 articles); and (4) maternal postnatal health, including recovery from delivery, mental health, and relationship health (n=11 articles). Although a fifth category, fetal outcomes, was included in the search strategy, no studies were identified where researchers measured fetal outcomes (e.g., fetal activity, heart rate, or cerebro-umbilical circulation).

Obstetric Outcomes

A number of obstetric outcomes in relation to PTSD or trauma symptoms were identified, but with mixed findings. In one of the first studies to review the relationship between trauma history and obstetric outcomes, Seng and colleagues (2001) compared the obstetric outcomes of women with a diagnosis code for PTSD with those who had never been diagnosed. A PTSD diagnosis in this sample was associated with higher incidences of spontaneous abortion and

excessive vomiting, ectopic pregnancies, pre-term contractions, and abnormal fetal growth. The authors did not find between group differences in gestational diabetes or preeclampsia (Seng et al., 2001). Morland and colleagues (2008) found that women who had a miscarriage were more likely to disclose prior victimization, and the intensity of violent victimization and the psychological effects of abuse were related to increased odds of miscarriage. Further, a PTSD diagnosis occurred significantly more frequently in the miscarriage group than in the live birth comparison group (Morland et al., 2008). Other researchers found higher incidences of high-risk pregnancy and childbirth complications (Lev-Wiesel, Chen, Daphna-Tekoah, & Hod, 2009), hyperemesis gravidarum (Seng et al., 2013), and gynecological problems (Yampolsky, Lev-Wiesel, & Ben-Zion, 2010) in women with a history of trauma.

In contrast, some researchers did not find a relationship between trauma and obstetric outcomes. In a 2007 study, Morland and colleagues did not find a PTSD diagnosis to be associated with birth outcomes. Further, while Dailey and colleagues noted that trauma history was associated with longer hospital stays at birth, there was no association found between trauma history and birth weight, gestational age at delivery, preterm labor, or length of infant hospital stay (Dailey, Humphreys, Rankin, & Lee, 2011).

Despite these two dissenting studies, most findings indicated that trauma did have an effect on obstetric outcomes. PTSD was found to affect women's lived experience of labor – specifically, sexual abuse survivors experienced trauma reactions to giving birth (Rhodes & Hutchinson, 1994). Trauma was found to be associated with delayed receipt of prenatal care (Morland et al., 2007; Munro, Reitz, & Seng, 2012; Roller, 2011; Seng, Low, Sperlich, Ronis, & Liberzon, 2009; Stewart, Gagnon, Merry, & Dennis, 2012) and higher incidences of

complicating medical diagnoses such as anorexia or bulimia (Meltzer-Brody et al., 2011) and general chronic illness during pregnancy (Munro et al., 2012).

In a few studies, researchers attempted to explain trauma's impact on pregnancy through exploration of stress-related biomarkers. Seng, Low, Ben-Ami, and Liberzon (2005) found that PTSD symptoms were related to lower basal salivary cortisol levels, which indicate dysregulated stress response. Seng et al. (2013) found women with comorbid hyperemesis gravidarum (severe, intractable nausea and vomiting) and PTSD had higher levels of oxytocin than those with only one diagnosis or the other. While oxytocin is generally associated with positive experiences, such as sex and maternal bonding, higher levels of oxytocin are also released under stressful conditions. Although the authors hypothesized that stress-related hormonal differences would distinguish between abused pregnant women and those who did not report abuse, no differences were found in hypothalamic-pituitary-adrenal-placental axis hormones between the two groups (Talley, Heitkemper, Chicz-Demet, & Sandman, 2006).

None of the researchers that examined the impacts of trauma on obstetric outcomes examined the role of the partner relationship in the context of this trauma. Even in studies where the trauma was relational in nature (e.g., sexual abuse or intimate partner violence), relational measures were not used and current relationship functioning was not examined (see Rhodes & Hutchinson, 1994; Morland & colleagues, 2008; and Stewart & colleagues, 2012).

Maternal Prenatal Psychosocial Outcomes

A number of articles reported findings on maternal prenatal outcomes, including physical, mental, and relational health, prenatal care, and risk behaviors (e.g. substance use) in relation to PTSD or trauma history. In a qualitative study, women reported the ways that their PTSD symptoms had a specific impact on their pregnancies and the need to manage their PTSD

symptoms during pregnancy (Seng, Low, Sparbel, & Killion, 2004). Pregnant women with PTSD reported functional impairments in their family relationships, life satisfaction, and overall functioning (Harris-Britt, Martin, Li, Casanueva, & Kupper, 2004; Seng et al., 2009); this finding was most salient when the perpetrator of the trauma was the woman's partner (Harris-Britt et al., 2004). Results of another study indicated that this was not a rare circumstance - pregnant women who had PTSD symptoms were more likely to have current victimization during their pregnancy and were three times as likely to report being in an emotionally abusive relationship (Haller & Miles, 2003). Partner relationships are not the only relationships affected by trauma background. Pregnant women with PTSD are more likely to report problematic relationships overall (Eggleston et al., 2009). In fact, Schwerdtfeger and Nelson Goff (2007) found that mothers who reported interpersonal trauma also had a lower level of prenatal attachment with their unborn children.

PTSD seems to be comorbid with other mental health diagnoses frequently in pregnancy. It was found to be correlated with antenatal depression (Meltzer-Brody et al., 2013), panic disorder, and suicidal ideation (Smith, Poschman, Cavaleri, Howell, & Yonkers, 2006). Pregnant women who had been abused during their lifetimes reported higher rates of depression, perceived stress, and anxiety as well (Armstrong, Hutti, & Myers, 2009; Dailey et al., 2011; Morland et al., 2007; Talley et al., 2006; Xiong et al., 2010; Yampolsky et al., 2010). They were more likely to report current and lifetime suicidal ideation, as well as difficulty controlling violent behaviors (Eggleston et al., 2009). Almeida, Cunha, Pires, and Sá (2012) also found a wide range of mental health difficulties associated with exposure to violence during pregnancy, including somatization, obsession-compulsion, paranoid ideation, and psychoticism. Further,

women reported that these symptoms had a pervasive impact on their lives, impacting work, cognition, interpersonal relations, and biological changes (Almeida et al., 2012).

Pregnant women with trauma histories were found to be more likely to report tobacco (Dailey et al., 2011; Lopez, Konrath, & Seng, 2011; Seng, Sperlich, & Low, 2008) or substance abuse during pregnancy (Bessa et al., 2010; Morland et al., 2007; Munro et al., 2012; Seng et al., 2001; Seng et al., 2009; Smith et al., 2006). Further, those who had PTSD were less likely to complete treatment for substance abuse (Thompson & Kingree, 1998) during pregnancy than those with no trauma exposure. Although Thomas and Kingree (1998) found that PTSD symptoms were significantly negatively correlated with substance abuse program completion, Dornelas, Oncken, Greene, Sankey, and Kranzler (2013) found no differences in smoking cessation behaviors between women with and without a lifetime history of PTSD. No other studies with results in this domain had conflicting conclusions.

Although an important aspect of psychosocial functioning is social support, the researchers who conducted the studies identified by this review placed very little emphasis on couple functioning. Although women reported effects on their relationship health and family functioning (Eggleston et al., 2009; Seng et al., 2009), researchers did not focus in on the couple relationship specifically or collect partner data about their perceptions of relationship quality or satisfaction.

Neonatal Outcomes

Although neonatal outcomes were examined less frequently, some researchers did find significant relationships with PTSD or trauma history in this area. Pregnant women who lost their partner in a major disaster (Chang, Chang, Lin, & Kuo 2002), reported high hurricane exposure (Xiong et al., 2008) or who reported current interpersonal violence victimization

(Rosen, Seng, Tolman, & Mallinger, 2007; Stewart et al., 2012) were more likely to deliver low birth weight infants. Although no relationship was found between infant birth weight or gestational duration and probable PTSD diagnosis in women who were exposed to the World Trade Center attack, researchers did find a negative correlation between mothers' posttraumatic stress symptoms and infant head circumference at birth (Engel, Berkowitz, Wolff, & Yehuda, 2005).

The findings in this domain seemed to be particularly mixed. For example, in the general population, posttraumatic stress symptoms were found to be negatively associated with overall perinatal outcomes at delivery in one study (Seng et al., 2005), but in other reports, PTSD diagnosis was not found to be significantly associated with birth outcomes (Morland et al., 2007), gestational age at delivery, or low birth weight (Dornelas et al., 2013; Ford & Ayers, 2011; Rogal et al., 2007; Xiong et al., 2008). Even findings within the same study were at times mixed. In another study of women exposed to the World Trade Center attacks, general exposure was not related to gestational age at delivery or birth weight, but women with high PTSD scores were more likely give birth earlier to lower birth weight babies (Lipkind, Curry, Huynh, Thorpe, & Matte, 2010) than those with lower PTSD scores. Although comparison of the findings reported above seem to indicate that exposure is more important than the PTSD diagnosis, Lipkind et al's 2010 study indicated the opposite. Similarly, while Seng and colleagues (2011) found that a PTSD diagnosis was not associated with pre-term birth, the diagnosis was associated with lower birth weight in the general sample and lower gestational age at delivery when child sexual abuse survivors were isolated from survivors of other types of trauma.

Chang and colleagues (2002) found that spousal death was the only factor identified in their study that was significantly associated with low birth weight; this lends evidence to the

suggestion that the couple relationship is a significant source of support for pregnant women. It is possible that other significant strains on the couple relationship, such as those caused by trauma history, may impact pregnancy as well. However, other than two studies that included intimate partner violence as a source of trauma (Stewart et al., 2012; Rosen et al., 2007), no researchers that measured neonatal outcomes considered the couple relationship at all.

Maternal Postnatal Outcomes

The authors of several articles discussed the association between maternal postnatal health and PTSD or trauma, particularly with regard to postnatal depression and experiencing birth as a re-traumatization. Women who had a trauma background were more likely to be traumatized by their birth experiences (Cohen, Ansara, Schei, Stuckless, & Stewart, 2004; Ford & Ayers, 2011; Onoye, Goebert, Morland, Matsu, & Wright, 2009; Soet, Brack, & Dilorio, 2003), particularly when they had a history of sexual trauma (Soet et al., 2003) or emotional abuse (Cohen et al., 2004), or when they had previously experienced two or more traumatic life events (Cohen et al., 2004). However, there is some evidence that the presence of strong social support may mitigate this finding (Beck & Watson, 2010; Ford & Ayers, 2011). Further, after giving birth, women who had higher PTSD symptoms during pregnancy also experienced the most posttraumatic growth – that is, positive changes in relationships, self-perception, or life philosophy in the wake of trauma (Sawyer, Ayers, Young, Bradley, & Smith, 2012).

With regard to general postnatal mental health, violence during the year of pregnancy was associated with higher maternal depression scores (Stewart et al., 2012), as well as more somatic symptoms, more PTSD symptoms, and lower life satisfaction overall (Varma, Chandra, Thomas, & Carey, 2007). In one study, history of abuse or trauma was the only characteristic studied that predicted postpartum depression (Meltzer-Brody et al., 2013). However, as with

neonatal outcomes, potentially contradictory findings were reported in this outcome domain as well. Armstrong and colleagues found that mothers' posttraumatic stress symptoms correlated with depression and anxiety during the third trimester, but not 3 or even 6-8 months postpartum (Armstrong et al., 2009). Sumner and colleagues (2011) found that women with a trauma background did not report lower postpartum emotional well being than those with no trauma history, but they did have lower perceived overall postpartum health and lower perceived physical health status.

With regard to relational data, Ford and Ayers (2011) found that support during birth was associated with fewer PTS symptoms after birth, but they were not specific about whether the support their participants identified was provided by a partner or another member of their support system. As with the other domains, a few researchers measured intimate partner violence as a source of trauma, but none of the studies cited in this section contained partner data or relational analyses.

Discussion

Although this systematic review did not place a parameter on date of publication, the earliest study found for inclusion was in 1994, and only two were published before 2000. However, 44 other studies published in 2001 and later were identified as meeting inclusion criteria. This proliferation of research indicates that there is an emerging interest in the relationship between trauma and pregnancy. This review brings together the results of these 46 studies to provide an overview and critique of the findings. When considering all the studies at once, several trends in design and data collection emerged.

First, although different research teams seemed to present conflicting findings in each of the domains, to some extent this disparity may be explained through differences in measurement

of trauma. Trauma may be operationalized in many different ways (Weathers & Keane, 2007). In the studies reviewed here, some researchers considered participants' exposure to specific traumatic events such as natural disasters (Chang et al., 2002; Xiong et al., 2008, Xiong et al., 2010), terrorism (Engel et al., 2005; Lipkind et al., 2010), or abuse (Rhodes & Hutchinson, 1994, while others measured participants' general exposure to potentially traumatic events (Thompson & Kingree, 1998). In addition, some researchers measured participants' posttraumatic symptoms, while others identified participants as " probable PTSD diagnoses" (e.g., Engel et al., 2005) or used a PTSD diagnosis code in the participants' medical charts (e.g., Seng et al., 2001) to divide women into groups. Each of these different methods of operationalizing trauma may lead to different results. Although progress has been made in the establishment of psychometrically sound measures of PTSD, more work needs to be done on assessment of trauma exposure (Weathers & Keane, 2007). In addition, due to differing outcomes based on whether studies measured PTSD diagnoses or trauma exposure, multiple methods of measuring trauma should be used to ensure the most valid results.

Second, many of the researchers reviewed relied upon participants' retrospective memory of events and symptoms. While some helpful information can be gained by asking postpartum mothers about their experiences during pregnancy, one prominent symptom of posttraumatic stress is that it impacts perception of time – a foreshortened sense of future, for example, is one of the criteria for diagnosis (*DSM-IV-TR;* American Psychiatric Association, 2000). Although, recently researchers have found that sexual assault survivors' retrospective reports of symptoms a month later generally match their daily reports (Naragon-Gainey, Simpson, Moore, Varra, & Kaysen, 2012), and that recall of potentially traumatic events is better than of general, non-traumatic life events four years later (Lalande & Bonanno, 2011). However, certain personality

traits (Lalande & Bonanno, 2011) and symptom clusters (Naragon-Gainey et al., 2012) have an impact on recall that may cause reliability or validity challenges.

Finally, PTSD is a biopsychosocial diagnosis that impacts the health of the whole person, physically, mentally, and socially (Christopher, 2004). These aspects of health are closely intertwined and reciprocal. The couple relationship is one strong component of social support for most pregnant women, and trauma strongly impacts the couple relationship (Nelson et al., 2006). Although many researchers of pregnancy and trauma considered social support on a general level or examined relational traumas, in all of the studies examined in this review, the only studies that included information about the partner relationship were those that were examining intimate partner violence (e.g., Varma et al., 2007), and no studies collected partner data or utilized dyadic analyses. The lack of research in this area may be obfuscating potential mediating or moderating variables in the relationship between trauma and pregnancy outcomes.

For future research, it is important that researchers pay more attention to the relational nature of trauma, focusing on the couple relationship in pregnancy as an unexplored area that could potentially provide more insight into the relationship between trauma and pregnancy outcomes. Researchers should explore the trauma background of both partners and consider the role that the partner relationship may play in mediating or moderating the impact of the trauma response on pregnancy outcomes. Further, advanced statistical methodologies should be used that are capable of analyzing multiple variables in a way that makes sense of these complex processes.

This review brings together findings from two decades of research indicating that pregnant women's trauma history and exposure to traumatic events have an impact on their obstetric, prenatal mental health, neonatal, and postnatal outcomes. The research presented

could have potential answers to health disparities in preterm birth, miscarriage, infant death, and other significant obstetric, neonatal, or postpartum outcomes. Pregnant women and their children will be better served through a deeper understanding of the pathways between trauma history and pregnancy outcomes.

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Figure 1. *Literature Synthesis Methodology*

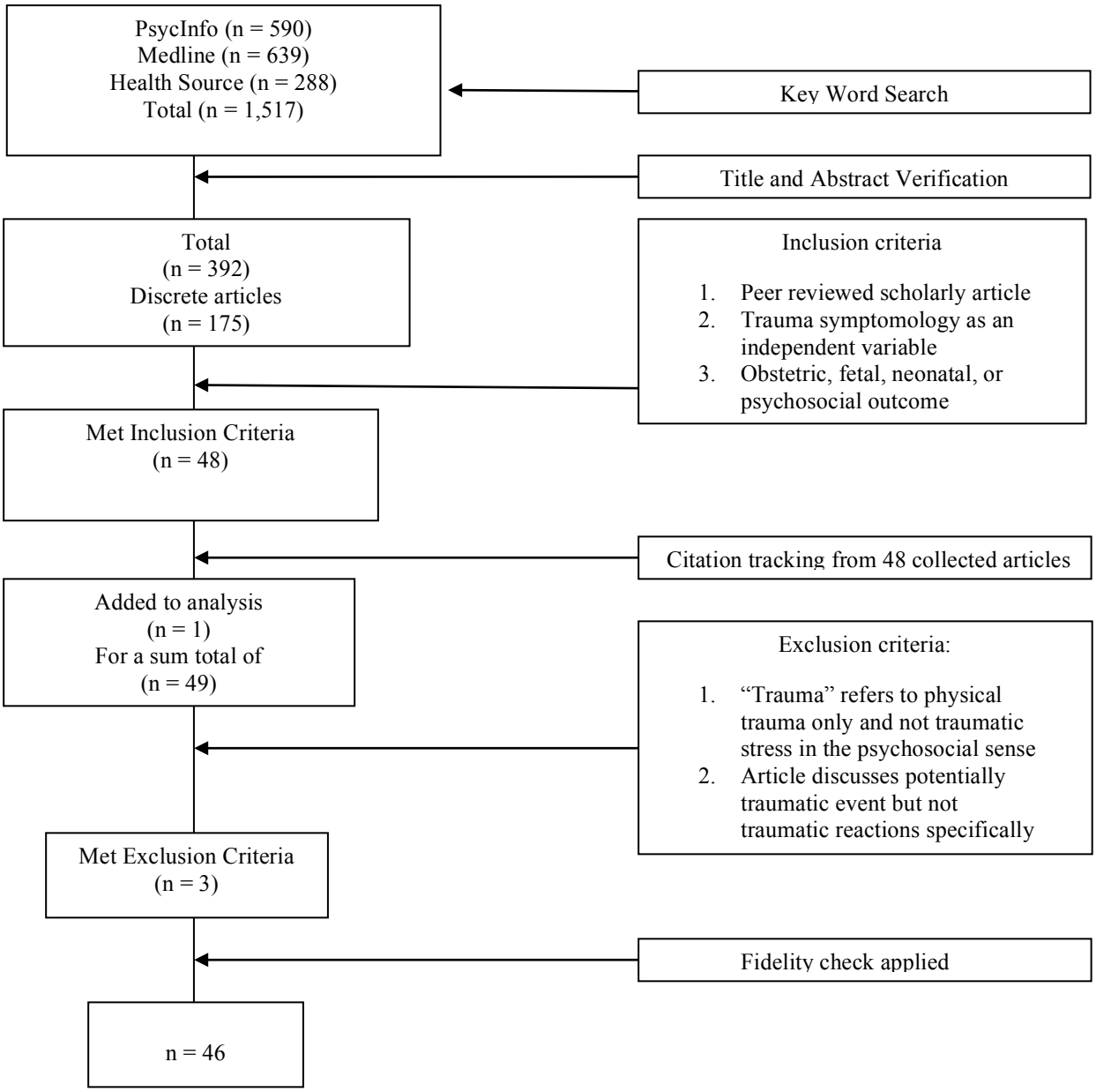

Table 1. *Findings*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Rhodes & Hutchinson, 1994	Ethnography, individual interviews	N/A	N = 7 women; data collected after birth	Women reported the physical sensations of giving birth triggered traumatic sensory memories of sexual abuse. Sexual abuse survivors may display fighting, surrendering, retreating, or hypervigilant reactions during labor.	1
Thomspon & Kingree, 1998	TSS; Civilian Mississippi Scale for Combat Related PTSD	Substance abuse program completion	N = 96 low-income pregnant substance abusers enrolled in residential treatment	Trauma exposure not related to program completion. PTSD significantly related to program completion: those who quit treatment 2x more likely to meet criteria for PTSD. Treatment completed by 37% of symptomatic participants, but 59% of participants with no symptoms.	2
Seng, Oakley, Sampselle, Killion, Graham-Bermann, & Liberzon, 2001	Medical record review	Pregnancy complications	N = 1093 Medicaid eligible mothers; chart review after birth	Pregnancy complicated by mental disorder or substance abuse more frequently in PTSD group. Spontaneous abortion and excessive vomiting significantly associated with PTSD diagnosis. Ectopic pregnancy, pre-term contractions, excessive fetal growth, and poor fetal growth more common in PTSD group. No between group differences in gestational diabetes or preeclampsia.	1, 2

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Chang, Chang, Lin, & Kuo, 2002	EEC; PTSRC; CHQ-12	Low birth weight (≤2500g)	N = 171 Chinese pregnant women; data collected after birth	Significant association between low birth weight and spousal death due to earthquake.	3
Haller & Miles, 2003	CPA Intake form; ASI; MMPI-2; MCMI-III; AAQ	Victimization during pregnancy	N = 77 women in residential treatment for substance abuse. 2/3 were pregnant; 1/3 were parents of infant <6 months.	92% of women who exceeded cutoff for Borderline Personality Disorder reported current victimization (within the last 30 days). Most women who met criteria for PTSD reported current victimization (87%). Women who reported childhood physical abuse three times more likely to report a current emotionally abusive relationship. Childhood sexual abuse not found to be predictive of current victimization.	2
Soet, Brack, & Dilorio, 2003	PAI; W-DEQ; CBSEI; MOS; STAI; SOC; TES; MIS	Experience of childbirth as traumatic	N = 112 pregnant women in third trimester (time 1); N = 103 women 4 weeks after expected delivery (time 2)	Women traumatized by birth experience are significantly more likely to have a history of sexual trauma than women not traumatized. History of sexual trauma was predictive of perception of childbirth as traumatic.	4
Cohen, Ansara, Schei, Stuckless, & Stewart, 2004	DTS; EPDS; CTS	Postnatal PTSD symptoms	N = 198 women, 8 to 10 weeks postpartum	PTS at 8 to 10 weeks postpartum significantly associated with having previously experienced two or more traumatic life events Participants who reported emotional abuse as an adult reported postpartum PTS significantly more frequently Participants who reported a history of two or more traumatic life events >3 times as likely to have PTSD diagnosis.	4

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Harris-Britt, Martin, Li, Casanueva, & Kupper, 2004	PSS[1]	Functional impairment during pregnancy	N = 85 women; 6-7 months gestation	Women reported functional impairments related to PTSD symptoms, including family relationships (42%), life satisfaction (39%), and overall functioning (36%). Greater percentages of women reported functional impairment when the timing of the event was closer to pregnancy. Women who reported their trauma was perpetrated by their partners were more likely to meet criteria for PTSD.	2
Seng, Low, Sparbel, & Killion, 2004	Individual Interviews; Content Analysis	N/A	N = 15 women who experienced childhood abuse; postpartum	Participants drew connections between PTSD symptoms and experience of pregnancy. Participants recognized a need to manage their PTSD symptoms during their pregnancies.	2
Engel, Berkowitz, Wolff, & Yehuda, 2005	PCL; LEI; STAI; BDI	Gestational age at delivery, birth weight, birth head circumference	N = 52 women who experienced World Trade Center attack; prior to delivery	PTS symptoms positively associated with gestational duration. PTS symptoms negatively associated with infant head circumference at birth No relationship between probable PTSD diagnosis and gestational duration, birth weight, or head circumference.	3
Seng, Low, Ben-Ami, & Liberzon, 2005	LSC; NWS-PTSD; Optimality Index-US	Base peak cortisol levels, perinatal outcomes	N= 25 women; prior to 20 weeks (baseline), medical record review after delivery	PTSD symptoms related to lower basal salivary cortisol levels (indicating dysregulated stress response). PTSD symptoms negatively correlated with overall perinatal outcomes (measured by Optimality Index Score)	1, 3
Smith, Poschman, Cavaleri, Howell, & Yonkers, 2006	PRIME-MD; MINI; CIDI	Suicidality, comorbid psychiatric disorders	N = 948 women; during pregnancy	High cormbidity found between PTSD and depression (66.7% of participants), panic disorder (36.4% of participants), current alcohol or drug use (27.3% of participants), and suicidal ideation (33.3%).	2

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Talley, Heitkemper, Chicz-Demet, & Sandman, 2006	DA; PASPH; PASNP; PLES; PDQ; PSS[2]; STAI; CES-D	HPA hormones (CRH, ACTH, BE, & cortisol); depression, anxiety	N = 16 women; 23-28 weeks gestation	No differences in HPA hormones between groups. Women in abused group had higher rates of depression, perceived stress, and state anxiety.	2
Morland, Goebert, Onoye, Frattarelli, Derauf, Herbst, Matsu, & Friedman, 2007	TEQ; PCL-C; STAI; CES-D; TWEAK	Birth outcomes (via medical records)	N = 101 women; first trimester (baseline), postnatal medical record review	Participants with PTSD also reported increased alcohol use, smoking, substance abuse, abnormal weight gain, and poor prenatal care PTSD was significantly associated with prenatal depression and anxiety PTSD was not significantly associated with birth outcomes	1, 2, 3
Rogal, Poschman, Belanger, Howell, Smith, Medina, & Yonkers, 2007	MINI; PRIME-MD	Low birth weight, pre-term delivery	N = 1100 women; during pregnancy (baseline), medical chart review after birth	Trend toward women in PTSD group delivering earlier than non-PTSD reference group, but no statistical significance. Low birth weight not associated with PTSD.	3
Rosen, Seng, Tolman, & Mallinger, 2007	CTS; CIDI	Low birth weight	N = 632 mothers; retrospective medical record analysis	Mothers who reported current IPV or met criteria for a mental health disorder (either depression or PTSD) more likely to have a low birth weight infant. Mothers who reported both current IPV and met criteria for a mental health disorder (either depression or PTSD) most likely to have low birth weight infant.	3

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Schwerdtfeger & Nelson Goff, 2007	TEQ; TSC-40; PBI; MAAS	Mother-infant prenatal attachment	N = 41 women; second or third trimester	No significant correlation between number of traumatic events experienced and mother prenatal attachment behavior subscales or current prenatal attachment and bonding. Reported interpersonal trauma significantly associated with higher trauma symptoms and lower prenatal attachment.	2
Varma, Chandra, Thomas, & Carey, 2007	ISA; SES[1]; SASS; BDI; PCL, SWLS	Depression; life satisfaction; somatic symptoms	N = 203 women; antenatal	Reported violence during the childbearing year associated with more somatic symptoms, higher depression scores, more PTSD symptoms, and lower life satisfaction	4
Morland, Leskin, Block, Campbell, & Friedman, 2008	PCS; HARASS; CTS; DA; PSS[1]	Miscarriage	N = 118 women; within the childbearing year	Miscarriage group more likely to disclose victimization. Positive association of likelihood of miscarriage versus live birth and intensity of violent victimization reported. Psychological effects of abuse related to increased odds of miscarriage. PTSD diagnosis significantly more common in miscarriage group than live birth comparison group. Interaction between age and violence severity in last year accounted for most variance in predicting miscarriage.	1
Seng, Sperlich, & Low, 2008	LSC; NWS-PTSD; CIDI; PRAMS	Perinatal mental health; perinatal risk behaviors	N = 1259 women; before 28 weeks (time 1); N = 357 women; postpartum interview (time 2)	Rates of tobacco use during pregnancy significantly higher among women who reported history of abuse	2

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Xiong, Harville, Mattison, Elkind-Hirsch, Pridjian, & Buekens, 2008	PCL-C, EDS	Low birth weight (<2,500g), preterm birth (gestation age <37 weeks)	N = 220 women;	High hurricane exposure associated with three times greater risk of low birth weight High hurricane exposure associated with two times greater risk of preterm birth No significant statistical association between PTSD and low birth weight or preterm birth	3
Armstrong, Hutti, & Myers, 2009	CES-D; IES; STAI; MAQ	Depression, anxiety	N = 38 women; third trimester (time 1), 3 months postpartum (time 2), 6-8 months after birth (time 3)	Mothers' PTS symptoms positively correlated with depression and anxiety during pregnancy (at time 1), but not postpartum depression or anxiety (time 2 or 3).	2, 4
Eggleston, Calhoun, Svikis, Tuten, Chisolm, & Jones, 2009	SCID-I; ASI; urinalysis	Suicidality, aggression, maternal psychosocial impairment	N = 105 pregnant, substance abusing women	Participants with PTSD were more likely to report current and lifetime suicidal ideation and suicide attempts Participants with PTSD were more likely to report current and lifetime difficulty controlling violent behaviors Participants with PTSD reported more problematic relationships. Participants with PTSD more likely to be homeless.	2
Lev-Wiesel, Chen, Daphna-Tekoah, & Hod, 2009	PSS-I; CES-D; TEQ; SCE	High risk pregnancy	N= 1071 pregnant women diagnosed with high-risk pregnancy; during pregnancy (time 1), 1 month after birth (time 2), 6 months after birth (time 3)	Higher rate of high-risk pregnancies among women with trauma history Intrusion and avoidance symptoms predicted membership in high risk group Regression model including PTS symptoms, history of trauma, and depression predictive of high risk pregnancy, but PTS symptoms total score not predictive. Reported trauma history and PTS symptoms during pregnancy associated with childbirth complications	1

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Onoye, Goebert, Morland, Matsu, & Wright, 2009	TLEQ; PLC-C; CES-D; TWEAK; STAI; PSS[2]; SSQ	Postpartum PTSD	N = 52; first prenatal visit, second trimester, third trimester, and postpartum	Women above cutoff for PTSD at first assessment 3 times as likely to have postpartum PTSD than those who did not. Women who reported interpersonal types of trauma were twice as likely to have postpartum PTSD. Prenatal depression and anxiety were not predictive of postnatal PTSD	4
Seng, Low, Sperlich, Ronis, & LIberzon, 2009	LSC; NWS-PTSD; CIDI; PRAMS	Prenatal depression, anxiety, and distress; prenatal health behaviors	N = 1,581 pregnant women <28 weeks gestation	Women with PTSD received prenatal care latest Smoking, alcohol, and illicit drug use reported more frequently by those with greater PTSD symptoms Prenatal depression and anxiety significantly associated with PTSD diagnosis Participants with current PTSD reported impairment and distress in school and work as well as family functioning; most considered their symptoms "very distressing."	1, 2
Beck & Watson, 2010	Individual Interviews	N/A	N = 35 women; postpartum	Women with a previous traumatic birth experience reported feelings of fear, terror, anxiety, panic, dread, and denial during subsequent pregnancies. Participants reported utilizing journaling, reading, and other strategies to cope with the upcoming delivery during pregnancy. Women reported that support from others during their subsequent childbirth helped them feel it was a "healing" experience. Women who reported their subsequent birth did not go as expected reported they did not experience the subsequent birth as "healing."	2

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Bessa, Mitsuhiro, Chalem, De Moracs Barros, Barros, Guinsburg, & Laranheira, 2010	CIDI; PNA; hair analysis	Cocaine and marijuana use	N = 1000 pregnant teenage women; third trimester	Participants with PTSD significantly more likely to use cocaine and/or marijuana during the third trimester of pregnancy	2
Lipkind, Curry, Huynh, Thorpe, & Matte, 2010	PCL	Birth weight; gestational age at delivery	N = 499 women who were pregnant when exposed to 9/11 attacks; 3-4 years after attack	No difference in average gestational age and birth weight for comparison and exposure groups overall. Increased odds of preterm delivery and low birth weight for women with high PTSD score compared to low PTSD score.	3
Xiong, Harville, Mattison, Elkind-Hirsch, Pridjian, & Buekens, 2010	PCL-C, EDS	Depression, PTSD	220 women from New Orleans and 81 women from further away in Louisiana; Same sample as Xiong et al., 2008	Frequency of depression higher in women with high hurricane exposure than women without high exposure	2
Yampolsky, Lev-Wiesel, & Ben-Zion, 2010	PSS-I; CESD; TEQ; CSAS	PTSD, depression, chronic illness, gynecological problems	1830 pregnant women at least 6 months pregnant	Child sexual abuse history associated with greater incidence of PTSD and depression during pregnancy, in addition to more frequent incidence of chronic illness and gynecological problems.	1, 2

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Dailey, Humphreys, Rankin, & Lee, 2011	THQ; PSS; PMS; CES-D	Risk behaviors, medical conditions during pregnancy, perinatal and infant outcomes	N = 116 pregnant African American women; 25 to 28 weeks gestation	Women who used tobacco during pregnancy reported more trauma history Trauma history associated with higher levels of depression, anxiety, and generalized stress Trauma history associated with fewer prenatal visits Trauma history associated with longer hospitalization at birth No association between trauma history and birth weight, gestational age at delivery, preterm labor, or length of infant hospital stay.	1, 2, 3
Ford & Ayers, 2011	PDS; EPDS; MHLCS; SES[2]; IIS;	PTS symptoms after birth	N = 109; 36 weeks (time 1), 3 weeks after birth (time 2), 3 months after birth (time 3)	PTS symptoms during pregnancy associated with new PTS symptoms after birth In women with prior trauma, increased support during birth strongly related to decreased PTS symptoms after birth	4
Lopez, Konrath, & Seng, 2011	LSC; NWS-PTSD; SCID; PRAMS	Pregnancy smoking	N = 1567 women, prior to 28 weeks gestation	Smokers had higher rates of current and lifetime PTSD compared to quitters and nonsmokers. Cluster D PTSD symptoms (autonomic hyperarousal) associated with significantly increased odds of smoking	2
Meltzer-Brody, Zerwas, Leserman, Holle, Regis, & Bulik, 2011	EPDS; SCID; STAI; PHQ	Perinatal depression, perinatal eating disorders	N = 158 women; during pregnancy (time 1), within 12 months postpartum (time 2)	Women with anorexia or bulimia during pregnancy more likely to report physical and sexual trauma history than those without an eating disorder. Women with bulimia during pregnancy reported significantly higher number of traumas.	1

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Roller, 2011	Individual Interviews; grounded theory	N/A	N = 12 women; postpartum	Participants reported avoiding prenatal care until 2nd or 3rd trimester because pelvic exams instigated flashbacks to childhood sexual abuse. Participants described three phases of moving beyond the pain of childhood sexual abuse in the prenatal period: reliving it, taking charge of it, and getting over it.	1
Seng, Low, Sperlich, Ronis, & Liberzon, 2011	LSC; NWS-PTSD; PRAMS; CIDI; AAS	Birth weight, gestational age	N = 839 women	Current PTSD not associated with preterm birth for general sample Current PTSD associated with lower birth weight in general sample; this finding strongest among child sexual abuse survivors Gestational age at delivery correlated with current PTSD among child sexual abuse survivors	3
Sumner, Valentine, Eisenman, Ahmed, Myers, Wyatt, Liu, Zhang, & Rodriguez, 2011	AAS; ACE; THQ; MOS; BDI-FS; PCL-C; PSS[2]; PRAMS	Perceived postpartum health status	N = 193 women, 12 weeks postpartum	Lower perceived overall postpartum health related to trauma history (higher number of non-IPV traumatic events). No relationship between trauma history or symptoms and perceived postpartum emotional wellbeing. Perceived postnatal physical health status associated with trauma history (greater number of non-IPV traumatic events).	4

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Almeida, Cunha, Pires, & Sá, 2012	CTS2; BSI; IACLIDE	Psycho-pathology, psychosocial health	N = 184 pregnant women; third trimester	Women who reported any act of abuse during pregnancy scored significantly higher on somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, paranoid ideation, psychoticism, and global severity index of BSI. Abused women more likely to report depressive symptoms and to report that those symptoms impact work, cognition, interpersonal relations, and biological changes.	2
Munro, Reitz, & Seng, 2012	LSC; NWS-PTSD; PUQE; PRAMS; AAS	Unmet needs in health status	N = 947 women, <28 weeks gestation	Rape survivors had significantly higher rates of unmet care needs in physical health status, STI screening, psychological care, and legal/safety areas. Childhood rape survivors had higher rates of substance abuse in pregnancy than adult-only rape survivors or non-victims. Rape status significantly predicted chronic conditions, substance abuse, STIs, mental health, and current abuse.	1, 2
Sawyer, Ayers, Young, Bradley, & Smith, 2012	SRQ-20; IES-R; PSS-SR; PTGI; MSPSS;	Posttraumatic growth after childbirth	N = 96 pregnant women; >28 weeks gestation (time 1) and 8 weeks postpartum (time 2)	Women with higher symptoms of PTSD during pregnancy also experienced more posttraumatic growth after childbirth.	4

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Stewart, Gagnon, Merry, & Dennis, 2012	AAS; EPDS; HTQ; HSCL; PRQ; VAS	Pregnancy and postpartum health status and health care utilization	N = 1025 pregnant migrant women; two weeks postpartum (time 1) and four months postpartum (time 2)	Women who reported violence associated with pregnancy reported healthcare limitations including maternal vaccinations not up-to-date, not taking folic acid before pregnancy, beginning prenatal care after first trimester, and not using contraception after birth even though they are not planning to become pregnant. Abused women were more than twice as likely to give birth to low birth-weight infant, but this finding was not statistically significant. Abused women reported more postpartum depression and PTSD symptoms.	1, 3, 4
Dornelas, Oncken, Greene, Sankey, & Kranzler, 2013	SCID; FTND	Smoking status measured at end of pregnancy	N = 194 women; <26 weeks gestation (at enrollment), 32-34 weeks gestation (at outcome measurement)	No differences found in maternal smoking cessation, infant birth weight, gestational age at delivery, or neonatal admissions between women with or without a lifetime history of PTSD.	2, 3
Meltzer-Brody, Bledsoe-Mansori, Johnson, Killian, Hamer, Jackson, Wessel, & Thorp, 2013	EPDS; MOS; SAS-SR; ESI; GSES; PPAQ	Postpartum depression status	N = 212 pregnant adolescents; second or third trimester (time 1) and 6 weeks postpartum (time 2)	Trauma history significantly associated with antenatal depression. History of abuse or trauma was the only demographic variable that significantly distinguished mothers who were depressed after childbirth from those who were not.	4

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

Table 1. *Findings (Continued)*

Authors & Year	Standardized Measures	Dependent Variable	Sample; Assessment Time Point	Results	Outcome Domain
Seng, Sperlich, Low, Ronis, Muzik, & Liberzon, 2013	LSC; NWS-PTSD; CIDI; PRAMS	Postpartum mental health status and mother-infant bonding	N = 566 women; prior to 28 weeks gestation (time 1), near 35 weeks gestation (time 2), six weeks postpartum (time 3)	Lifetime PTSD and comorbid PTSD and depression (but not antenatal depression alone) were predictive of postpartum depression. Lifetime PTSD and comorbid depression (but not antenatal depression alone) predicted impaired mother-infant bonding.	4
Seng, Miller, Sperlich, van de Ven, Brown, Carter, & Liberzon, 2013	PUQE; LSC; NWS-PTSD; DES	Oxytocin levels	N = 37 women; <16 weeks gestation	Women with comorbid hyperemesis gravidarum (HG) and PTSD displayed higher levels of oxytocin than those with HG only or PTSD only.	1

Note: The following domains are represented numerically – Obstetric (1), Maternal Prenatal Psychosocial (2), Neonatal (3), and Maternal Postnatal (4)

- **AAQ:** Aggressive Acts Questionnaire;
- **AAS:** Abuse Assessment Screen;
- **ACE**: Adverse Childhood Experiences Survey;
- **ASI**: Addiction Severity Index;
- **BDI**: Beck Depression Inventory;
- **BDI-FS**: Beck Depression Inventory Fast Screen;
- **BSI**: Brief Symptom Inventory;
- **CBSEI**: Childbirth Self-Efficacy Inventory;
- **CES-D**: Center for Epidemiological Studies Depression tool;
- **CHQ-12**: Chinese Health Questionnaire;
- **CIDI**: Composite International Diagnostic Interview;
- **CPA Intake Form**: Center for Perinatal Addiction Intake Form;
- **CSAS**: Childhood Sexual Assaults Scale;
- **CTS**: Revised Conflict Tactics Scale;
- **CTS2**: Conflict Tactic Scale 2;
- **DES**: Dissociative Experiences Scale;
- **DTS**: Davidson Trauma Scale;
- **DA**: Danger Assessment;
- **EDS**: Edinburgh Depression Scale;
- **EEC**: Earthquake Exposure Checklist;
- **EPDS**: Edinburgh Postnatal Depression Scale;
- **ESI**: Everyday Stressors Index;
- **FTND**: Fagerstrom test of nicotine dependence;
- **GSES**: General Self Efficacy Scale;
- **HARASS**: Reassessment in Abusive Relationship: A Self-Report Scale;
- **HSCL**: Hopkins Symptom Checklist;
- **HTQ**: Harvard Trauma Questionnaire;
- **IACLIDE**: Inventory of the Clinical Evaluation of Depression;
- **IES**: Impact of Events Scale;
- **IES-R**: Impact of Events Scale-Revised;
- **IIS**: Intrapartum Intervention Score;
- **ISA**: Index of Spouse Abuse;
- **LEI**: Life Events Inventory;
- **LSC**: Life Stressor Checklist;
- **MAAS**: Maternal Antenatal Attachment Scale;
- **MAQ**: Maternal/Paternal Attitudes Questionnaire;
- **MCMI-III**: Millon Clinical Multiaxial Inventory;
- **MHLCS**: Multidimensional Health Locus of Control Scale;
- **MINI**: MINI International Neuropsychiatric Interview;
- **MIS**: Medical Intervention Scale;
- **MMPI-2**: Minnesota Multiphasic Personality Inventory;
- **MOS**: Medical Outcomes Study Social Support Survey;
- **MSPSS**: Multidimensional Scale of Perceived Social Support;
- **NCS**: National Comorbidity Survey;
- **NWS-PTSD**: National Women's Study PTSD module

- **PAI**: Pregnancy Attitude Index;
- **PASNP**: Partner Abuse Scale – Nonphysical;
- **PASPH**: Partner Abuse Scale – Physical;
- **PBI**: Parental Bonding Instrument;
- **PCL**: Post-traumatic Stress Disorder Checklist;
- **PCL-C**: PTSD Checklist – Civilian Version;
- **PCS**: Power and Control Scale;
- **PDQ**: Perinatal Distress Questionnaire;
- **PDS**: PTSD Diagnostic Scale;
- **PHQ**: Patient Health Questionnaire
- **PLES**: Perinatal Life Events Scale;
- **PMS**: Profile of Mood States;
- **PNA**: Perinatal Needs Assessment;
- **PPAQ**: Postpartum Adjustment Questionnaire;
- **PSS**[1]: PTSD Symptom Scale;
- **PSS**[2]: Perceived Stress Scale;
- **PSS-I**: Posttraumatic Stress Disorder Symptom Scale;
- **PSS-SR**: PTSD Symptom Scale – Self Report;
- **PRAMS**: CDC Perinatal Risk Assessment Monitoring System
- **PRIME-MD**: Primary Care Evaluation of Mental Disorders Brief Patient Health Questionnaire;
- **PRQ**: Personal Resource Questionnaire;
- **PTGI**: Posttraumatic Growth Inventory;
- **PTSRC**: Posttraumatic Stress Reaction Checklist;
- **PUQE**: Pregnancy-Unique Quantification of Emesis & Nausea
- **SAS-SR**: Social Adjustment Self-Report;
- **SASS**: Scale for Assessment of Somatic Symptoms;
- **SCID**: Structured Clinical Interview for DSM-IV;
- **SCID-I**: Structured Clinical Interview for DSM-IV;
- **SCE**: Subjective Childbirth Experience Questionnaire
- **SES**[1]: Sexual Experiences Scale;
- **SES**[2]**:** Self-Efficacy Scale;
- **SOC**: Sense of Coherence Scale;
- **SRQ-20**: Self-Reporting Questoinnaire-20;
- **SSQ**: Social Support Questionnaire;
- **STAI**: State-Trait Anxiety inventory;
- **SWLS**: Satisfaction with Life Scale
- **TES**: Traumatic Events Scale;
- **TEQ**: Traumatic Events Questionnaire;
- **THQ**: Trauma History Questionnaire
- **TLEQ**: Traumatic Life Events Questionnaire;
- **TSC-40**: Trauma Symptom Checklist-40
- **TSS**: Traumatic Stress Schedule;
- **TWEAK**: Tolerance, Worry, Eye-Opener, Amnesia, and Cut down drinking;
- **VAS**: Pain Visual Analog Scale;
- **W-DEQ**: Wijma Delivery Expectancy Questionnaire

CHAPTER 4: METHODOLOGY

This study was designed to examine pregnancy and trauma within couple relationships from a biopsychosocial-spiritual perspective. A self-report questionnaire was collected from pregnant couple dyads to address the following research question: How are partners' trauma symptoms and perceptions of the couple relationship related to pregnancy stress and coping?

Study Design

Participants

After IRB approval was attained, couples were recruited to participate in an online survey of their experiences with pregnancy, trauma, and their couple relationship. Couples were recruited through posted flyers in physician offices, for-profit ultrasound clinics, and maternity clothing boutiques. They were also recruited through online social networking including facebook, twitter, and reddit. To be included in the study, couples were required to have a current pregnancy and to be in a committed relationship. Participants whose partners did not complete the questionnaire were excluded from the analysis.

Measures

Participants in the study completed the questionnaire individually from their partners; each participant's responses were kept confidential and not shared with his or her partner. Parallel versions of the survey were created for mothers (Appendix C) and partners (Appendix D). Participants completed a demographics section, limited to information on their age, gender, ethnicity, socioeconomic status, religion, and education background. In addition, they provided information on their relationship history including marital status, length of relationship, length of marriage (if applicable), and the size of their household.

Questions about participants' pregnancy and childbirth history included the gestational week of the pregnancy at the time of the survey as well as information on the number of previous live births, miscarriages, stillbirths, and other pregnancy losses. Participants were asked to provide basic health information about whether they had experienced common medical illnesses, including hypertension, obesity, asthma, depression or diabetes, or illnesses particularly related to pregnancy complications, such as endometriosis or polycystic ovarian syndrome. The remaining parts of the survey centered around three variables: pregnancy stress and coping, perception of the relationship (relationship report), and trauma history.

Pregnancy Coping Measures. Mothers participating in the study completed the Revised Prenatal Coping Inventory (NuPCI) (Hamilton & Lobel, 2008). The NuPCI is a 44-item scale measuring coping behaviors during pregnancy. There are three subscales: planning-preparation ($M = 2.09$, $SD = .70$ at mid pregnancy), avoidance ($M = 1.28$, $SD = .65$ at mid pregnancy), and spiritual-positive coping ($M = 2.36$, $SD = .82$ at mid pregnancy). In a study of 321 pregnant women, Hamilton and Lobel found that at mid-pregnancy, $\alpha = .85$ for the Planning-Preparation subscale, $\alpha = .79$ for the avoidance subscale, and $\alpha = .78$ for the spiritual-postiive coping subscale. The partners completed the partner's version of the NuPCI. This version is based on the original NuPCI, with items re-worded to capture the partner's experience of pregnancy and use of pregnancy-related coping strategies. This version of the NuPCI was developed by Schwerdtfeger (2008) with the permission of the measure's original authors, and currently has no published psychometric properties (personal communication, November 15, 2012). In a pilot study of 20 male partners, Schwerdtfeger found $\alpha = .834$ for the planning/preparation subscale ($M = 1.91$, $SD = .51$), $\alpha = .840$ on the avoidance subscale ($M = 1.00$, $SD = .16$), and $\alpha = .875$ on the spiritual-positive coping subscale ($M = 2.17$, $SD = .15$) (personal communication, January 22,

2013). Although this measure has little research support currently, it was included in this study because there are no measures for men that specifically address prenatal coping styles.

Couple Relationship Measures. Two measures of couple relationship functioning were utilized in this study. Each partner completed both measures. First, the Kansas Marital Satisfaction Scale (KMSS) was used to assess relationship satisfaction. This three-item scale has a possible range of 3-21, where higher scores indicate greater marital satisfaction. It has internal consistency of $\alpha = .93$ (Schumm et al., 1986). In a sample of the general population, the mean score was 18.28 (SD = 2.57) with a range of 9-21 (Schumm et al., 1986). In a primarily white non-hispanic, well-educated sample of women in their third trimester, Fitzpatrick, Vangelisti, and Firman (1994) found the *alpha* reliability to be .93. The measure was used more recently in a study of 132 pregnant couples, but no psychometric properties were provided in the analysis (Gjerdingen & Center, 2003).

Second, the Positive and Negative Quality in Marriage Scale (PNQMS) is a measure of relationship quality that examines both positive and negative affect within the relationship (Fincham & Linfield, 1997). The six-item measure has three items measuring positive marital quality and three items measuring negative marital quality; the range of each dimension is 0-30, where higher scores indicate greater degrees of positive or negative marital quality, respectively. The measure was developed and normed with couples in the general population, but to date, it has not been used with pregnant couples. There are six items on this measure, which has $\alpha = .91$ for positive marital quality and $\alpha = .91$ for negative marital quality in the general population (Mattson, Paldino, & Johnson, 2007).

Trauma Measures. Each partner completed three measures of trauma history. The Traumatic Events Questionnaire (TEQ) is a thirteen item structured open-ended questionnaire

that assesses whether participants have experienced ten different potentially traumatic life events, such as assault or natural disaster (Vrana & Lauterbach, 1994). For each item, participants endorsed whether they have experienced it, how many times they've had that experience, and how old they were each time. The number of items endorsed is summed to provide a total occurrence score. For each item endorsed, the participant indicates the degree to which they were injured, felt their life was threatened, experienced the event as traumatic at the time, and presently experience the event as traumatic on a 7-item likert-type scale. The highest sum of these ratings on a single event is used as the trauma intensity score (higher scores indicate more intense trauma experience). In a population of college students, the TEQ has high test-retest reliability (r = .91); 84% of students reported at least one traumatic event (Lauterbach & Vrana, 1996). The test has moderate to substantial agreement with a structured clinical interview in primary care patients (Crawford, Lang, & Laffaye, 2008). In a sample of 41 pregnant women, Schwerdtfeger and Nelson Goff (2008) found that 87.7% reported they had experienced at least one traumatic event, and that participants on average reported 3.02 traumas (SD = 2.36).

Second, the Trauma Symptom Checklist-40 (TSC-40) is a 40-item questionnaire on which participants report their current trauma symptomology (Briere, 1996). For each item, participants rate the frequency with which they have experienced that symptom in the last two months, from 0 (never) to 3 (often). There are six subscales in this measure: dissociation (6 items, range 0-18), anxiety (9 items, range 0-27), depression (9 items, range 0-27), sexual abuse trauma index (7 items, range 0-21), sleep disturbance (6 items, range 0-18), and sexual problems (8 items, range 0-24). Participants also receive a total score (all 40 items, range 0-120). The TSC-40 has high internal consistency ($\alpha = .90$) and good discriminant validity ($p < .0001$) in distinguishing between sexually abused women and those who had not experienced abuse (Elliott

& Briere, 1992). In a sample of 41 pregnant women, total TSC-40 scores ranged from 2-59, with mean 22.06 and standard deviation 14.96 (Schwerdfeger & Nelson Goff, 2008).

Finally, the PTSD Checklist – Civilian version (PCL-C) is a 17-item measure that corresponds to the specific symptoms of PTSD (Weathers, Litz, Herman, Huska, & Keane, 1993). Participants report how much they have been bothered by each symptom on a scale from 1 (not at all) to 5 (extremely). The total possible range for the PCL-C is 17-85. In a sample of 1,161 women from the general population, the mean PCL-C score was 27.2, with SD = 10.3 (Walker, Newman, Dobie, Ciechanowski, & Katon, 2002). The measure has test-retest reliability of .88 after one week (Campbell et al., 1999) and high internal consistency .96 (Morril et al., 2008). The PCL-C has also been used with pregnant women. Engle and colleagues (2005) published a study in which they examined the traumatic responses of 187 pregnant women who survived the World Trade Center bombings. The mean PCL-C score in this study was 29.2, with SD = 10.4.

Procedure

After IRB approval, participant recruitment began in person and online. Flyers and cards were produced with basic information about the project and a link and QR code that directed participants to the survey, which was hosted on Qualtrics. Recruitment materials were distributed to locations pregnant women may frequent, including obstetrician's offices, for-profit ultrasound offices, and maternity boutiques. Recruitment materials were placed in visible places where participants could come across them. In addition, survey recruitment information was posted to social media sites, including facebook, twitter, and reddit. In the course of taking the survey, participants were asked to share the survey link with their partners in order to attempt collection of dyadic data.

Survey data was periodically transferred from the secure Qualtrics server to a SPSS data file kept on a password protected computer in a locked office. The file was backed up on a password protected flash drive, also kept in a locked office. Survey data did not contain any identifying information.

Ethical Considerations

Several ethical considerations must be taken into account when working with a vulnerable population such as pregnant women or people who have experienced trauma. Each of the trauma measures in this study was been specially selected because they have been used with pregnant women in the past. Further, in a study of the effects of trauma research on pregnant women by Schwerdtfeger and Nelson Goff (2008), women in the study who had experienced trauma did not choose to end the research protocol; further, they reported that they had favorable reactions to participating in the trauma-focused research. While there were no significant differences in negative reaction for women with varying degrees of lifetime trauma exposure, women who had experienced greater numbers of trauma experiences and higher levels of current trauma symptomology actually reported that their participation was more personally meaningful than women with less trauma history. Two of the trauma measures used for this study – the TEQ and the TSC-40 – were utilized in Scwerdtfeger and Nelson Goff's research (2008).

Another ethical consideration when working with couples with trauma history is the possibility of interpersonal violence (IPV), suicidal ideation, or other severe mental health concerns. Previous researchers have established that people with trauma history are at higher risk for IPV than the general population, whether trauma history is measured through exposure to potentially traumatic events (Testa, VanZile-Tamsen, & Livingston, 2007) or post-traumatic symptoms resulting from previous trauma (Cougle, Resnick, & Kilpatrick, 2009). In this study,

identifying information was not collected, so it was impossible to refer participants on for therapeutic services if they reported IPV. However, a post-survey debriefing statement was displayed to all participants upon completion of the survey. The debriefing statement provided a number for the national suicide hotline as well as a link to a service that provides information for licensed therapists in the participant's area.

Analyses

Correlations and paired samples t-tests were used to examine the relationships between mothers' and partners' responses with regard to the demographic variables and the trauma, pregnancy, and couple relationship measures. 97 total couples were recruited for participation in the study; power analyses were used to determine that this sample size was sufficient to test the following hypotheses. The Monte Carlo method (Selig & Preacher, 2008) was used to identify indirect effects in the relationships between constructs. The analyses centered around three specific hypotheses:

1. Mothers' perception of the relationship (relationship report) moderates the relationship between mothers' trauma symptoms and mothers' pregnancy. Specifically, trauma symptoms will have a weaker impact on pregnancy stress when mothers report less negative relationship sentiment.
2. Each partner's perception of the relationship (relationship report) has an indirect effect on the other partner's relationship report via his or her own trauma symptoms. Specifically, mothers' negative relationship quality influences mothers' trauma symptoms and partners' negative relationship quality. Similarly, partners' negative marital quality influences partners' trauma symptoms and mothers' negative relationship quality. It is hypothesized that there is a direct effect of mothers' trauma on partners' negative marital quality, but there is a separate, significant effect of the trauma symptoms on partner

relationship quality that is influenced by trauma symptoms' influence on mother's relationship quality.

3. Each participant's relationship report has an indirect effect on their partner's relationship report and their own report of pregnancy stress. Specifically, mothers' negative marital quality influences partners' negative marital quality and mothers' pregnancy stress. Similarly, partner's relationship satisfaction influences mothers' relationship satisfaction and partners' pregnancy stress (Figure 7).

Summary

A dyadic survey design was used to examine the relationship between trauma, pregnancy, and the couple relationship. In this chapter, psychometric properties of the measures included in the study were reviewed, as well as ethical considerations for researching pregnancy and trauma. In addition, a data analysis strategy was presented, including specific hypotheses that were tested.

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CHAPTER 5: PREGNANCY, TRAUMA, AND THE COUPLE RELATIONSHIP: PATHWAYS OF CONNECTION

In 2008, the Center for Disease Control (CDC) estimated that there were 106 pregnancies per 1,000 women in the United States, a figure that represents a little more than 10% of the US female population (Ventura, Curtin, Abma, & Henshaw, 2012). Trauma is also a frequent occurrence in the United States: by some estimates, 80% of US residents have experienced a traumatic experience in their lifetime (Breslau, 2009). Given that both trauma and pregnancy affect such wide sections of the population, it is likely that those who become pregnant also have a current or past trauma. Researchers have supported this supposition – posttraumatic stress disorder (PTSD), which can develop in response to traumatic life events, is the third most common psychiatric diagnosis among pregnant women (Loveland Cook et al., 2004).

Researchers have suggested that maternal PTSD during pregnancy is linked to obstetric, neonatal, and postnatal outcomes (Wilson, Lamson, Hodgson, Russoniello, & Ivanescu, 2013). For example, previous researchers found that pre-existing PTSD diagnoses are more common among women who had a pregnancy that resulted in a miscarriage than those who gave birth (Morland et al., 2008). PTSD has also been associated with higher incidence of high-risk pregnancy and birth complications (Lev-Wiesel, Chen, Daphna-Tekoah, & Hod, 2009), as well as poorer prenatal psychosocial health (including functional impairments in family relationships), life satisfaction, and overall functioning (Harris-Britt, Martin, Li, Casanueva, & Kupper, 2004; Seng, Low, & Ronis, 2009). Postnatally, trauma is related to increased somatic symptoms, PTSD symptoms, lower life satisfaction overall (Varma, Chandra, Thomas, & Carey, 2007), and postpartum depression (Meltzer-Brody et al., 2013).

While PTSD is diagnosed at the individual level, researchers and clinicians are increasingly recognizing its relational impact (e.g., Brown et al., 2012; Gilbar, Weinberg, & Gil, 2011). In the new guidelines for diagnosing PTSD in the Diagnostic and Statistical Manual (5th ed; DSM-5; American Psychiatric Association, 2013), there are four clusters of symptoms: intrusion, avoidance, negative alterations in cognition and mood, and alterations in arousal and reactivity. To be diagnosed with PTSD, a person must experience symptoms in each of these clusters for more than a month (American Psychiatric Association, 2013). Some potential symptoms are specifically relational, (such as feeling estranged from others), but even those that do not directly involve another person could have a detrimental impact on close relationships (Greenman & Johnson, 2012). For example, one major symptom of PTSD is affect management and regulation difficulties (American Psychiatric Association, 2013). The inability to manage affect makes it difficult for trauma survivors to get close to other people due to their difficulty with managing their emotions (Greenman & Johnson, 2012).

However, close relationships are an important protective factor in healing from PTSD and the development of post-traumatic growth (Gabert-Quillen et al., 2012; Grills-Taquechel, Littleton, & Axsom, 2011). Previous researchers have found that strong social support is associated with increased quality of life after exposure to a potentially traumatic event (Grills-Taquechel et al., 2011), even up to twenty years after the trauma exposure (Kaniasty, 2012). Unfortunately, there is little evidence overall examining the link between the couple relationship and pregnant women's experiences of PTSD. Researchers have called for more relational understandings of both pregnancy (Wilson et al., 2013) and trauma (Henry et al., 2011; Nelson Goff & Smith, 2005) and the interface of these two experiences (Wilson et al., 2013). The purpose of this study is to use dyadic data analysis to further expand on the intersection of

trauma and pregnancy within the couple relationship, utilizing the biopsychosocial-spiritual model.

Theoretical Orientation

A theoretical perspective that is useful for discussing the relationships between pregnancy, trauma, and the couple relationship is the biopsychosocial-spiritual model (BPSS; Engel, 1977, 1980; Wright, Watson, & Bell, 1996). Engel (1977, 1980) proposed that biological, psychological, and social aspects of functioning and health were interconnected and that each domain of functioning influences the others reciprocally. Later, Wright, Watson, and Bell (1996) expanded this approach to acknowledge the importance of spiritual health. For example, physical health complications during pregnancy (e.g., gestational diabetes or pre-term labor) have been related to higher incidence of depression and anxiety (Adler, Fink, Bitzer, Hosli, & Holzgreve, 2007; Dunkel Schetter & Tanner, 2012), which may be mitigated by positive coping strategies and relying on strong social support systems (Lobel, Yali, Zhu, DeVincent, & Meyer, 2002; Giurgescu, Penkofer, Maurer, & Bryant, 2006) and spirituality (Callister & Khalaf, 2010; Jesse, Schoneboom, & Blanchard, 2007).

Trauma may likewise be conceptualized through a BPSS lens. The body responds to psychological trauma with changes to the autonomic nervous system (Tan, Dao, Farmer, Sutherland, & Gevirtz, 2011) that are connected to a variety of physical symptoms including hyperarousal, insomnia, and alterations in sexual functioning (Pacella, Hruska, & Delahanty, 2013). Prolonged activation of the physical stress response is also associated with higher incidence of depression (Heim, Newport, Mletzko, Miller, & Nemeroff, 2008). Further, if maladaptive responses to trauma persist over time, relational health (i.e., the couple's relationship) is likely to suffer (Henry et al., 2011). Spirituality also plays an important role in

trauma; specifically, resolving traumatic stress often requires making meaning of difficult experiences (Altmaier, 2013; Peres, Moreira-Almeida, Nasello, & Keonig, 2007; Shaw, Joseph, & Linley, 2005), and positive religious coping has been associated with higher levels of psychological well being and lower levels of depression among trauma survivors (Ahrens, Aebling, Ahmad, & Hinman, 2010).

The BPSS lens is helpful for establishing a theoretical connection between trauma, pregnancy, and the couple relationship because it provides a framework for understanding how these complex constructs may be related to one another, and provides support for the bidirectional nature of the constructs' influence on one another. However, previous researchers have largely overlooked the relational nature of pregnancy and trauma and the inclusion of both mother and committed relationship partner as research participants, therefore significant gaps exist in the literature. Thus, the following hypotheses were created with the intent of addressing gaps in the literature while simultaneously contributing to needed research in areas of couple and family health, traumatology, and gynecology and obstetrics.

Hypotheses

In order to provide further insight into the relationships between trauma, pregnancy, and the couple relationship, three hypotheses were tested.

1. Previous research has shown that trauma history is associated with psychosocial difficulties in pregnancy including anxiety and stress (Ross & McLean, 2006) as well as couple relationship difficulties (Henry et al., 2011; Schwerdtfeger et al., 2008). Thus, it is hypothesized in this study that mothers' perception of the relationship (relationship report) moderates the relationship between mothers' trauma symptoms and mothers'

pregnancy stress (Figure 1). Specifically, trauma symptoms will have a weaker impact on pregnancy stress when mothers report less negative relationship sentiment.

2. In previous studies, pregnant mothers with PTSD have reported impairments in their relationships in general (Harris-Britt, Martin, Li, Casanueva, & Kupper, 2004). Further, trauma history is associated with poorer relationship quality for trauma survivors' partners as well (Henry et al., 2011). Therefore, it is predicted in this study that each partner's perception of the relationship (relationship report) has an indirect effect on the other partner's relationship report via his or her own trauma symptoms (Figure 2). Specifically, mothers' negative relationship quality influences mothers' trauma symptoms and partners' negative relationship quality (Figure 3). That is, the relationship between mothers' trauma symptoms and partners' negative relationship quality may be partially explained by mothers' negative relationship quality. Similarly, partners' negative marital quality influences partners' trauma symptoms and mothers' negative relationship quality (Figure 4). It is hypothesized that there is a direct effect of mothers' trauma on partners' negative marital quality, but there is a separate, significant effect of the trauma symptoms on partner relationship quality that is accounted for by trauma symptoms' influence on mother's relationship quality. This bidirectional effect is expected in accordance with the BPSS model.
3. Although stress is typically studied as a precursor to relationship quality and satisfaction (e.g., Neff & Brody, 2011; Randall & Bodenmann, 2009), there is also evidence that concern about a difficult relationship leads to individuals perceiving life as more stressful (Story & Bradbury, 2004). Thereby it is predicted that each participant's relationship report has an indirect effect on their partner's relationship report and their partner's report

of pregnancy stress (Figure 5). Specifically, partners' negative marital quality has an indirect effect on mothers' pregnancy stress through mothers' negative marital quality (Figure 6). Similarly, mothers' negative marital quality has an indirect effect on partners' pregnancy stress through partners' negative marital quality (Figure 7).

Method

This study utilized a dyadic quantitative survey methodology; IRB approval was attained from the University Medical Center Institutional Review Board at East Carolina University. Pregnant women (N = 382) and partners (N = 114) separately completed an online questionnaire about their biopsychosocial-spiritual health (including the current pregnancy), couple relationship, trauma symptomology, and pregnancy coping. Although all participants were asked to invite their partner to participate, dyadic information is only available for 97 matched couples with both partners (n = 97 mothers and n = 97 partners) participating. Statistical power analyses demonstrated that this sample was sufficient to test the hypotheses for this study.

Measures

Participants completed three measures related to trauma, measuring exposure to potentially traumatic life situations (Traumatic Events Questionnaire [TEQ]; Vrana & Lauterbach, 1994) current, general trauma symptomology (Traumatic Symptom Checklist-40 [TSC-40]; Briere, 1996), and PTSD symptomology (PTSD Checklist – Civilian [PCL-C]; Weathers, Litz, Herman, Huska, & Keane, 1993). Each of these measures has been used safely with pregnant women in previous research. The TEQ is a 13-item structured open-ended questionnaire that assesses respondent exposure to potentially traumatic events (Vrana & Lauterbach, 1994). In a sample of pregnant women, 87.7% reported having experienced at least one traumatic event on the TEQ, and participants reported an average of 3.02 traumas (SD =

2.36) experienced in their lifetimes (Schwerdtfeger & Nelson Goff, 2008). The TSC-40 has a total score, as well as six subscales measuring dissociation, anxiety, depression, sexual abuse trauma, sleep disturbance, and sexual problems (Briere, 1996). In a sample of pregnant women, TSC-40 scores ranged from 2-59, with mean 22.06 and standard deviation 14.96 (Schwerdtfeger & Nelson Goff, 2008). The final measure of trauma, the PCL (civilian version) is a 17-item measure that corresponds with the diagnostic criteria for PTSD. In a sample of pregnant women, Engle and colleagues (2005) found that the PCL had a mean of 29.2, with standard deviation 10.4.

Pregnancy coping was measured through the Revised Prenatal Coping Inventory (NuPCI; Hamilton & Lobel, 2008). The NuPCI has a single-item measure of pregnancy stress that states, "How stressful has your pregnancy been over the past month?" Partners are asked how stressful their partner's pregnancy has been. The item is scored as either "not stressful at all," "somewhat stressful," or "very stressful." In addition, there are three scales in the NuPCI that measure pregnancy coping (Hamilton & Lobel, 2008): planning-preparation ($M = 2.09$, $SD = .70$, $\alpha = .85$), avoidance ($M = 1.28$, $S = .65$, $\alpha = .79$), and spiritual-positive coping ($M = 2.36$, $SD = .82$, $\alpha = .78$). This instrument was originally developed for pregnant mothers, but a partner's version was developed with the permission of the original author (K. Schwerdtfeger, personal communication, November 15, 2012). The partners' version has the same subscales as the mothers' version (K. Schwerdtfeger, personal communication, November 15, 2012): planning/preparation ($M = 1.91$, $SD = .51$, $\alpha = .83$), avoidance ($M = 1.00$, $SD = .16$, $\alpha = .84$), and positive/spiritual coping ($M = 2.17$, $SD = .15$, $\alpha = .88$). The NuPCI has not been used specifically with samples with PTSD, so psychometric properties for that population are unknown.

To evaluate the couple relationship, two measures of couple functioning were utilized – satisfaction (Kansas Marital Satisfaction Survey [KMSS]; Schumm et al., 1986) and quality (Positive and Negative Quality in Marriage Scale [PNQMS]; Fincham & Linfield, 1997). The KMSS is a three-item scale measuring relationship satisfaction, with a high internal consistency ($\alpha = .93$; Schumm et al., 1986). In the general population, the mean score of the KMSS is 18.28, with SD = 2.87 (Schumm et al., 1986). In a sample of pregnant women in their third trimester, the measure also has high internal consistency ($\alpha = .93$; Fitzpatrick, Vangelisti, & Firman, 1994). The PNQMS consists of two subscales: one measuring positive affect within the relationship (PMQ) and one measuring negative relationship quality in the relationship (NMQ; Fincham & Linfield, 1997). The PNQMS has high internal consistency for both scales ($\alpha = .91$ for each; Mattson, Paldino, & Johnson, 2007). Although it has not been used with pregnant women, the PNQMS has been used with trauma survivors (Lewis, 2012). In a sample of military couples (Lewis, 2012), many of which reported trauma symptomology, the PMQ scale had a mean of 27.13 for husbands (SD = 2.85) and 23.6 for wives (SD = 8.39). The NMQ scale had a mean of 6.8 for husbands (SD = 5.16) and 9.58 for wives (SD = 7.85).

Procedure

The survey was conducted online using Qualtrics survey software. Upon IRB approval of the study, participants were recruited for participation through flyers posted at places where pregnant women could be expected to go, including obstetrician's offices, for-profit ultrasound clinics, and maternity clothing boutiques. In addition, the link to the survey was posted on social media networking sites. Participants completed online consent documents and were provided with debriefing information at the end of the survey. Participants who responded to the survey were invited to share the link with their partners in order to encourage the collection of dyadic

data, but each partner completed the survey separately and no partner answers were shared by the researcher.

Results

Demographic information for both mothers and committed romantic partners are described below, followed by reports on the trends that emerged from the measurements included in the study. Findings from regression analyses testing for indirect effects and moderation of variables (as described in the figures referenced above) are also presented below.

Demographics

While same sex couples were also invited to participate in this study, the final sample consisted of n = 97 heterosexual couples with both partners participating (Table 1). Participants were predominantly white (92.8% of mothers, 81.4% of partners). The average age of mothers was 27.09 (SD = 4.16); partners were slightly older, with an average age of 28.77 (SD = 4.13). Most identified as religious (63.9% of mothers, 63.9% of partners), although about a third reported no religious affiliation (36.1% of mothers, 34.0% of partners). The sample was well educated, with 55.6% of mothers (n = 54) and 55.6% of partners (n = 54) having at least a college degree.

Relationship status. The overwhelming majority of mothers reported they had been married at least once (n = 81, 83.5%), and two mothers reported having been married more than once. Four mothers (4.12%) reported having at least one divorce, and twelve (12.4%) reported they had never been married. Among partners, 85.6% reported they had been married at least once; 7.2% reported they had been divorced at least once, and 13.4% reported they had never been married. The mean relationship length that mothers reported with their current partner was 5.93 years (SD = 3.74). Interestingly this sample of pregnant mothers had a higher marital rate

than previous researchers have cited (i.e., 55% is the national average; Martinez, Daniels, & Chandra, 2012); 82.5% of the mothers reported that they were currently married to their partners, with a mean marital length of 3.45 years (SD = 2.83).

Fertility history. Most of the women in the sample reported they had no biological children (n = 66, 68.0%); 22.7% (n = 22) reported they had one biological child already, and 9.3% (n = 9) reported two or more biological children. Five women (5.15%) had stepchildren, and two (2.06%) had adopted children. About one third of the women (n = 36, 37.1%) reported that their current pregnancy was their first pregnancy, which means that nearly half (n = 27) of all of those who had no biological children had likely experienced a miscarriage, stillbirth, or other loss prior to this pregnancy. The average gestational week mothers reported for their current pregnancy was 24.31 weeks (SD = 9.728, range: 5-42). The mean number of total pregnancies reported was 2.02 (SD = 1.33, range: 1-7).

Women reported previous pregnancy outcomes including live birth (n = 30), stillbirth (n = 1), miscarriage (n = 28), and other pregnancy loss including abortion (n = 14). The percentage of women who reported having had an abortion in this sample (14.43%) is much lower than the national average: as of 2011, the most recent year available, it was estimated that 30% of women in the United States have had an abortion by age 45 (Jones & Kavanaugh, 2011). The rate of miscarriage reported (28.9%) was above the national average (15-20%; National Library of Medicine, 2012). Six women reported being diagnosed with endometriosis, and ten reported having polycystic ovarian syndrome; both of these conditions can interfere with fertility (de Ziegler, Borghese, & Chapron, 2010; Goodarzi, Dumesic, Chazenbalk, & Azziz, 2011).

Partners were also asked to report on their fertility histories, including all times a current or past partner has been pregnant with the participant's child, regardless of outcome. Partners

reported slightly fewer mean pregnancies than mothers (M = 1.88, SD = 1.15, range: 1-6). Fewer partners (41.2%) than mothers reported that the current pregnancy was their first pregnancy. When asked about the result of previous pregnancies, partners reported live birth (n = 31), stillbirth (n = 1), miscarriage (n = 24), and other pregnancy loss including abortion (n = 9). Thirty-four partners (35.1%) reported that they have at least one biological child, with a range of one to four children reported. Three partners reported stepchildren, and one reported having adopted children.

Relationship Report

Relationship satisfaction, positive relationship quality, and negative relationship quality were measured for both partners. Relationship satisfaction reports were similar for mothers (M = 18.90, SD = 2.60) and partners (M = 19.21, SD = 1.67). The same trend was true for both positive relationship quality (mothers: M = 30.65, SD = 2.88; fathers: M = 30.08, SD = 3.52) and negative relationship quality (mothers: M = 9.14, SD = 4.86; fathers: M = 8.96, SD = 5.58). Paired samples t-tests (Table 2) demonstrated that there were not significant differences between partners with regard to relationship satisfaction (p = .304), positive relationship quality (p = .192), or negative relationship quality (p = .765). However, all three relationship measures were significantly correlated and the correlation between mothers' and partners' negative relationship quality (r = .467, $p < .001$) was stronger than the correlation between relationship satisfaction (r = .338, p = .001) or positive relationship quality (r = .247, p = .023).

Trauma Exposure and Symptomology

Both mothers and partners reported exposure to potentially traumatic life events (Table 3). Only 14.4% of mothers (n = 14) reported that they had never experienced a potentially traumatic event; 26.8% (n = 26) reported having experienced one potentially traumatic event in their

lifetime, and 52.6% of mothers (n = 51) reported two or more potentially traumatic events. The mean number of potentially traumatic events reported by mothers was 2.03 (SD = 1.67). Partners reported experiencing fewer potentially traumatic events on average (M = 1.47, SD = 1.58), and a greater proportion of partners reported having never experienced a potentially traumatic event (n = 30, 30.9%) than mothers. Mothers were more likely to endorse having experienced relational traumas (e.g., assault, abusive relationships, and the tragic death of a loved one) than were partners. Although 18.6% of mothers reported being victims of sexual assault at some point within their lifetime, no partners reported having been sexually abused or assaulted. The only category that was reported more commonly by partners than mothers was having their life be threatened or being at risk for severe injury (24.7% of partners, compared to 9.3% of mothers).

Mothers in the sample reported low levels of trauma symptomology in general (Table 2). On the PTSD Checklist-Civilian Version (PCL-C), the mean total score for mothers was 23.91 (SD 9.07); the scores ranged from 14 to 51. On the Trauma Symptom Checklist, mothers' mean total score was 23.25 (SD 13.54), with a range of 3 to 60. The distribution of mothers' scores on both the PCL-C and the TSC had a positive skew, indicating that the majority of women who responded were not experiencing many trauma symptoms. Partners also reported low levels of trauma symptomology, in general, but with more variance in the distribution than mothers' trauma reports. On the PCL-C, partners' mean total score was 28.32 (SD = 11.67), with a range of 17 to 58. Partners' mean total score on the TSC was 17.68 (SD = 15.97), with scores ranging from 0 to 76. While both of these measures are designed to assess trauma, the PCL has questions that align specifically with the DSM-IV-TR criteria for PTSD (American Psychiatric Association, 2000), while the TSC measures general trauma symptomology. There were strong

positive correlations both between mother and partner PCL scores ($r = .446$, $p < .001$) and mother and partner TSC scores ($r = .494$, $p < .001$).

A paired samples t-test demonstrated that there was a significant difference between partners' trauma reports. Mothers' PCL scores (M = 23.94, SD = 9.47) were significantly lower ($t = -3.34$, $p = .001$) than partners' PCL scores (M = 28.18, SD = 11.78). However, mothers' TSC (M = 22.68, SD = 13.50) scores were significantly higher ($t = 3.084$, $p = .003$) than partners' TSC scores (M = 17.39, SD = 16.06). Mothers scored significantly higher on every subscale of the TSC (including dissociation, depression, sexual abuse trauma index, sleep, and sexual symptoms) except for anxiety. The highest reported subscale for mothers (M = 7.31, SD = 3.65) and partners (M = 4.53, SD = 3.96) alike was sleep disturbance.

Pregnancy Stress and Coping

On the single item report of pregnancy stress, the mean score for mothers was 1.77 (SD = .576) and partners reported slightly less stress (M = 1.64, SD = .558); this difference approached significance at the α=.05 level ($t = 1.79$, $p = .077$).

With regard to coping, the NuPCI has subscales for planning, avoiding, and spiritual coping. Mothers reported significantly higher use of all three coping styles than their partners: on the planning subscale (mothers: M = 32.44, SD = 10.66; fathers: M = 24.90, SD = 17.0; $t = 3.80$, $p < .001$), the avoiding subscale (mothers: M = 12.69, SD = 7.13; fathers: M = 8.18, SD = 6.43; $t = 4.75$, $p < .001$), and the spiritual coping subscale (mothers: M = 10.97, SD = 7.19; fathers: M = 9.31, SD = 6.79; $t = 2.88$, $p = .005$). While there were significant positive correlations between mothers' and partners' use of the planning ($r = .263$, $p = .020$) and avoiding ($r = .249$, $p = .029$) subscales, the strongest correlation was with regard to spiritual coping ($r = .733$, $p < .001$), indicating strong partner agreement in the area of spirituality.

Hypothesis Testing

To test for connections between trauma symptoms, the couple relationship, and pregnancy coping, a series of analyses were performed. Multiple regressions were used to test for moderation in hypothesis one. The Monte Carlo method (Selig & Preacher, 2008) was used to examine indirect effects in hypotheses two and three.

Hypothesis 1. In the first model, the mothers' relationship report was tested as a moderating variable between mothers' trauma symptoms and mothers' report of pregnancy stress (Figure 1). It was predicted that mothers' trauma symptoms would have a stronger impact on pregnancy stress when mothers reported an increased negative marital quality in their relationships; that is, a lower level of negative sentiment in the relationship may act as a buffer between trauma symptoms and pregnancy stress.

Mothers' TSC was found to significantly predict mothers' pregnancy stress ($b = 0.017$, $t = 4.216$, $p < .001$, $r^2 = .165$); mothers' NMQ also predicted a significant portion of the variance in mothers' pregnancy stress ($b = .044$, $t = 3.828$, $p < .001$, $r^2 = .140$). An interaction term was computed from the product of mothers' TSC and mothers' NMQ. Then, an additional linear regression was performed using mothers' TSC, mothers' NMQ, and the interaction term as predictor variables with mothers' pregnancy stress representing the response variable. This regression equation significantly predicted a greater portion of the variance in mothers' pregnancy stress ($r^2 = .215$, $F(3,88) = 8.043$, $p < .001$) than the regression for mothers' TSC alone. While both the main effects for mothers' TSC ($b = .014$, $t = 1.769$, $p = .007$) and mothers' NMQ ($b = .064$, $t = 2.134$, $p = .036$) were significant, the coefficient for the interaction term was not statistically significant ($b = -.001$, $t = -1.180$, *ns*). Thus, the hypothesis that mothers' NMQ serves as a moderating variable between mothers' trauma symptoms and mothers' pregnancy

stress was not supported. That is, the influence of trauma symptoms (TSC) on mothers' pregnancy stress was not significantly different for mothers with lower levels of negative relationship quality than those with higher levels of relationship quality, so hypothesis one was not supported.

Hypothesis 2. The second conceptual model was created to test the relationship between each partner's trauma symptoms and each partner's relationship report (Figure 2). Because the final sample size was not sufficient to conduct a structural equation model, this model was separated into two sub-models. In the first model tested (Figure 3), mothers' relationship report was used as the predictor variable, partner relationship report was the response variable, and mothers' trauma symptoms were tested for indirect effects. In the second model tested (Figure 4), partners' trauma symptoms were tested for indirect effects on mothers' relationship report via partners' relationship report.

For the first test of indirect effects (predicting partner's relationship report), mothers' PCL was chosen as the measure to indicate mothers' trauma symptoms, and NMQ was chosen as the variable to represent the relationship report construct (Figure 3). Although all of the models attempted were statistically significant at the $\alpha < .01$ level, the overall predictive value of this model was higher ($r^2 = .249$) than when mothers' TSC was paired with NMQ ($r^2 = .245$), when mothers' TSC was paired with KMSS ($r^2 = .162$), or when mothers' PCL was paired with KMSS ($r^2 = .131$).

Regression analyses supported mothers' PCL having significant indirect effects on partners' NMQ through mothers' NMQ. The confidence interval ($\alpha = .01$) for the indirect effect was .007 to .031, indicating the presence of a statistically significant indirect effect. Further, the regression that predicted partners' NMQ from mothers' NMQ ($b = .537$, $p < .001$) had nearly as

much predictive power (r^2 = .218) as the model that included both mothers' PCL and mothers' NMQ (r^2 = .249). Thus, changes in mothers' negative marital quality scores accounted for most of partners' negative marital quality scores' influence on mothers' trauma symptomology.

These analyses were repeated using partner's TSC and PCL, KMSS, and NMQ to determine the best factors to use to test partners' relationship report as a mediating variable between partners' trauma symptoms and mothers' relationship report (Figure 4). Although all of the multiple regression models were statistically significant, the model with the best predictive power (r^2 = .222) utilized partners' PCL (b = -.003, p = .953) and partners' NMQ (b = .409, p < .001) to predict mothers' NMQ ($F(2,77) = 10.979$, $p < .001$). The confidence interval for the indirect effect (α = .01) was .029 to .167), indicating that there was a statistically significant indirect effect. Specifically, partners' PCL is associated with higher levels of partners' NMQ, which predicts mothers' NMQ. Hypothesis two, then, was supported.

Hypothesis 3. In the final model, mothers' relationship report and partners' relationship report are used to predict pregnancy stress for mothers and partners (Figure 5). This conceptual model was broken out into two tests. In the first test (Figure 6), mothers' NMQ was for indirect effects in the relationship between partners' NMQ and mothers' pregnancy stress. As with hypothesis two, several combinations of variables were tested to determine which measures to use to represent the constructs in the conceptual model.

Although the response variable (maternal pregnancy stress) was the same in each regression model, four pairs of mother/partner relationship report were tested: mother KMSS and partner KMSS; mother NMQ and partner NMQ; mother KMSS and partner NMQ; and partner NMQ and mother KMSS. The overall multiple regression equation was significant in each of the

tests, so predictive values for the models were compared. Based on the psychometric properties of these analyses, the model using partner NMQ and mother NMQ was selected (Figure 6).

Partners' NMQ was a significant predictor of mothers' pregnancy stress in simple regression (b = .025, p = .031, r^2 = .055). However, confidence interval for the indirect effect in this model (α = .01) was .004 to .036, indicating a statistically significant indirect effect. Thus, although higher levels of partner negative sentiment are predictive of increased reports of maternal pregnancy stress, this relationship is likely mediated by maternal negative marital quality. Specifically, partner negative relationship quality has a negative impact on mothers' negative marital quality, which has an inverse relationship with mothers' pregnancy stress.

The same conceptual model was tested to determine whether mother relationship report has an indirect effect on partner pregnancy stress via partner relationship report. Several combinations of predictor variables were tested to determine which would best demonstrate the conceptual model. The model used for analysis included mother NMQ, partner NMQ, and partner pregnancy stress. The confidence interval for the indirect effect in this model (α = .05) was .002 to .028, indicating the presence of a statistically significant indirect effect. This model was not an outstanding fit – the resulting regression equation only predicts about ten percent of the variation in partners' pregnancy stress (r^2 = .105). However, this finding supports the hypothesis that partner relationship satisfaction is a mediating variable between maternal relationship satisfaction and partner pregnancy stress. That is, a portion of the influence that maternal negative marital quality exerts on partner pregnancy stress can be explained by the relationship between mother negative marital quality and partner negative marital quality.

Discussion

This study contributes to the literature by providing a dyadic look at trauma, pregnancy, and the couple relationship. Previous researchers have reviewed studies examining the effects of trauma on pregnancy (Wilson et al., 2013) and the couple relationship (Henry et al., 2011). Researchers have also explored the benefits of supportive relationships for mitigating pregnancy stress (Besser, Priel, & Wiznitzer, 2002; Kemp & Hatmaker, 1989). This study extends the findings of previous research by examining the pathways between trauma, pregnancy, and the couple relationship and by using a dyadic methodology to examine trauma, the relationship, and pregnancy from both partners' perspectives.

The dyadic data collected in this study yielded a number of interesting results. First, there was at least a moderate positive correlation between mothers' and partners' scores on every measurement in the study, but the correlations were not so strong as to indicate that mother and partner reports were redundant. Further, mothers' and partners' responses were significantly different on each of the trauma measures (other than the anxiety subscale of the TSC) and on each of the pregnancy coping scales. These findings together demonstrate the importance of collecting dyadic data, as neither mothers' responses nor partners' responses alone would demonstrate the full picture of the couple dynamic with regard to trauma or pregnancy coping.

Although previous researchers have examined the influence of the couple relationship on pregnancy (Besser et al., 2002; Kemp & Hatmaker, 1989) and demonstrated the connection between trauma and pregnancy (Lev-Wiesel et al., 2009; Seng et al., 2013), this study expands on those findings by including both partners in the study rather than collecting data from just the pregnant mother, as is common in previous research. The dyadic nature of the research design enabled exploration of hypotheses specific to the couple relationship, such as the impact that one

partner's trauma has on the other partner's relationship report, or the impact of one partner's relationship report on the other partner's pregnancy stress.

Hypothesis one, which considered mothers' negative marital quality (NMQ) as a moderating variable between mothers' trauma symptomology (TSC) and mothers' pregnancy stress, was not supported by the data. Although the main effects for both mothers' TSC and mothers' NMQ were significant predictors of mothers' pregnancy stress, the interaction term was not significant, indicating that mothers' NMQ does not exert a systematic influence on the relationship between mothers' TSC and mothers' pregnancy stress. Mothers' trauma symptomology (TSC) explained a greater proportion of pregnancy stress than mothers' relationship report (NMQ). This result could be related to previous findings that mothers' trauma symptoms are related higher frequencies of pregnancy risk and complications (Lev-Wiesel et al., 2009; Morland et al., 2008).

Hypotheses two and three addressed ways that each partner's experience can influence the other. In the second hypothesis, mothers' negative relationship quality was demonstrated to be a mediator in the relationship between mothers' trauma symptoms and partners' negative relationship quality. Higher levels of mothers' trauma symptoms were associated with increased mothers' negative marital quality, which in turn was associated with higher partners' negative marital quality. Thus, one of the ways that trauma impacts the couple relationship is through negative sentiment between partners. The same finding held true for partners' trauma symptoms influencing mothers' negative relationship quality via partners' relationship quality. This is consistent with previous findings (Lev-Wiesel & Amir, 2001) that exposure to partners' trauma experiences is associated with higher levels of negative marital quality in a different population (holocaust survivors).

In hypothesis three, mothers' marital satisfaction was found to be a mediating variable between partners' negative marital quality and mothers' pregnancy stress. That is, although higher levels of partner negative marital quality were associated with higher levels of maternal stress, this relationship was no longer statistically significant when mothers' marital satisfaction was taken into account. Likewise, maternal relationship satisfaction significantly predicted partner pregnancy stress, until the partner's own relationship satisfaction was taken into account. This fits with previous findings that perceptions of the partner relationship can impact pregnancy stress (Besser et al., 2002; Kemp & Hatmaker, 1998). It is possible that further testing may reveal a more complex pathway that accounts for a dyadic understanding of these systemic relationship processes.

The findings in both hypothesis two and three exemplify the interconnected nature of mothers' and partners' trauma, perceptions of the couple relationship, and pregnancy stress. The significant indirect effects supported by the analyses do not indicate that the relationship between the predictor and response variables are entirely explained, as would be the case in mediation. Instead, indirect effects suggest that a significant portion of the relationship between the indicator and response variables is accounted for by the third variable, while the original influence remains. In this study, statistically significant indirect effects indicate a between-partner intersection of the constructs of trauma, pregnancy, and the couple relationship.

Limitations

There are some limitations to this study, specifically with regard to the sample. First, the sample size was insufficient to conduct SEM analyses such as actor-partner interaction models, which allow for more complicated models of the relationships between partner variables to be tested while accounting for the non-independence of couple data (Oka & Whiting, 2013), as well

as error variance. Therefore, while the analyses presented in this study present partial explanations of the pathways between trauma, pregnancy, and the couple relationship, a complex model of the actor-partner effects between the constructs could not be tested.

Second, the sample consisted primarily of educated, white, heterosexual couples. This is potentially problematic because the sample does not capture the experience of marginalized populations, who are most vulnerable to trauma and PTSD (Ozer, Best, Lipsey, & Weiss, 2008; Brewin, Andrews, & Valentine, 2000), so it is possible that the sample utilized in this study is not representative of typical trauma symptomology. Participants as a whole did report lower average traumatic symptomology on the TSC than in a similar study of trauma in the couple relationship (e.g., Henry et al., 2011). However, the proportion of participants who exceeded the recommended cut-off score on the PCL-C was consistent with the estimated 15% prevalence of PTSD in the civilian population (National Center for PTSD, 2014). Specifically 21.6% of mothers (n = 21) and 28.9% of partners (n = 28) exceeded the lower recommended cut-off score, and 12.4% of mothers (n = 12) and 24.7 partners (n = 24) exceeded the more stringent recommended cut-off score.

Implications

This study has both research and clinical implications. With regard to research, more robust studies need to be conducted with larger, more diverse samples. If sufficient power existed, researchers could use more sophisticated analyses (i.e. SEM and APIM models) to clarify the pathways connecting pregnancy, trauma, and the couple relationship between partners. In addition, analysis of a more diverse sample would determine whether the trends and results of this study still hold true in populations more vulnerable to traumatic stress exposure and symptomology.

Second, it is clear from the statistical analyses that the two measures that correspond with trauma symptomology (i.e. PCL and TSC) are measuring related, but separate, constructs. Researchers studying trauma in the future should be sure to use multiple measures of traumatic stress and trauma symptomology, so as not to miss capturing the full range of trauma experiences. Finally, researchers studying pregnancy or trauma should collect dyadic data, rather than relying on a single-partner report. Although each partner's responses were correlated with one another, the fully systemic nature of neither pregnancy nor trauma will be captured without utilization of relational research designs.

With regard to clinical implications, practitioners should attend to the biopsychosocial-spiritual trauma experience of pregnant women, as well as their partners, with regards to both diagnosis and treatment. Obstetricians should conduct a biopsychosocial-spiritual trauma assessment with both partners (when available) upon mothers' intake into the practice to determine the potential impact of hers and her partners' trauma and couple relationship on her pregnancy stress. In addition, it is important that practitioners address the dyadic relationship and traumatic stress needs of their patient via the context of the couple, and honor the role of spiritual coping when it is important to the couple. These practices may be done either through direct intervention or close collaboration with a qualified mental health practitioner, who can treat both the trauma symptoms and the couple relationship. Attention to these areas of couples' experience will result in more holistic biopsychosocial-spiritual care of the whole person (and whole dyad).

Conclusion

Informed by the biopsychosocial-spiritual theoretical model, this study used dyadic data analysis to examine the intersection between trauma and pregnancy in the context of the couple relationship. Mothers' and partners' reports of trauma, their perceptions of the relationship, and

pregnancy stress and coping were correlated with one another. In addition, several models of indirect effects were supported by the data, which indicates that each partner's trauma history, relationship report, and pregnancy stress are mutually influencing one another. Further research is needed to determine the complex pathways of relationships between these variables.

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Table 1. *Demographic Information for Mothers and Partners*

Indicator	Frequency(%) or Mean(SD)	
	Mother	Partner
Age (Average)	27.09(4.16)	28.77(4.13)
Race		
European-American	90(92.3%)	79(81.4%)
Hispanic	8(8.2%)	5(5.2%)
American Indian/Alaska Native	3(3.1%)	2(2.1%)
African-American	2(2.1%)	7(7.2%)
Asian-American	1(1.3%)	5(5.2%)
Other	---	3(3.1%)
Relationship Status		
Married	88(90.7%)	83(85.6%)
Divorced	4(4.1%)	7(7.2%)
Single, Never Married	12(12.4%)	13(13.4%)
Religion		
Protestant	27(27.8%)	26(26.8%)
Non-denominational	16(16.5%)	16(16.5%)
None	35(36.1%)	33(34.0%)
Other	14(14.4%)	20(20.6%)
Education		
Grade 9-11	---	3(3.1%)
GED/HS Diploma	4(4.1%)	9(9.3%)
Some College	38(39.2%)	27(27.8%)
College Graduate	37(38.1%)	34(35.1%)
Graduate School	17(17.5%)	20(20.6%)
Current Children		
Biological	31(32.0%)	34(35.1%)
Adopted	2(2.6%)	1(1.0%)
Stepchildren	5(5.2%)	3(3.1%)
Other	1(1.0%)	---
Gestational Week (Average)	24.31(9.73)	25.07(9.79)
Pregnancy History		
Number of pregnancies	2.02(1.33)	1.88(1.15)
Live birth	30(30.9%)	31(32.0%)
Stillbirth	1(1.0%)	1(1.0%)
Miscarriage	28(28.9%)	24(24.7%)
Other pregnancy loss	13(13.4%)	9(9.3%)

Table 2. *Mean Scores and Standard Deviations for All Indicators*

Item	Mothers (N=97) M(SD)	Partners (N=97) M(SD)
Trauma Measures		
PCL-C (Total)	23.91(9.07)***	28.31(11.67)***
TSC (Total)	23.25(13.54)***	17.68(15.97)***
TSC (Dissociation)	3.32(2.62)*	2.64(3.39)*
TSC (Anxiety)	3.44(2.98)	3.44(3.70)
TSC (Depression)	5.85(3.74)***	3.95(3.85)***
TSC (SATI[1])	3.22(2.62)***	2.10(3.04)***
TSC (Sleep)	7.31(3.65)***	4.53(3.96)***
TSC (Sexual)	3.66(3.02)**	2.74(3.02)**
Relationship Health Measures		
KMSS	18.90(2.60)	19.21(1.67)
PMQ	30.73(2.81)	30.03(3.58)
NMQ	9.28(4.84)	8.91(5.54)
Pregnancy Stress & Coping Measures (NuPCI)		
Pregnancy Stress	1.77(.576)*	1.64(.558)*
Planning coping	32.5(11.07)***	25.9(16.8)***
Avoidant coping	12.84(7.47)***	8.31(6.43)***
Spiritual Coping	10.75(7.05)***	9.49(6.82)***

*p < .10. **p < .05. ***p < .01.

[1]SATI is the Sexual Abuse Trauma Index

Table 3. *Frequency of Traumatic Event Types Reported by Mothers and Partners*

Event	Frequency(%)	
	Mother	Partner
Traumatic Death of Loved One	35(36.1%)	24(24.7%)
Natural Disaster	28(28.9%)	23(23.7%)
Child Abuse (any type)	24(24.7%)	9(9.3%)
Accident	23(23.7%)	15(15.5%)
Assault (any type, any age)	23(23.7%)	9(9.3%)
Sexual Assault (any age)	18(18.6%)	--
Abusive Relationship (as adult)	16(16.5%)	3(3.1%)
Life Threatened/Severe Injury	9(9.3%)	22(22.7%)
Witnessed Violent Death	8(8.2%)	9(9.3%)
Other (not specified)	6(6.2%)	8(8.2%)

Table 4. *Bivariate Correlations between Indicators for Mothers*

	1	2	3	4	5	6	7	8	9
1. PCL-C	_								
2. TSC	.73**	_							
3. KMSS	-.31**	-.46**	_						
4. PMQ	-.26*	-.23*	.48**	_					
5. NMQ	.34**	.42**	-.66**	-.41**	_				
6. Pg Stress	.42**	.41**	-.40**	-.32**	.38**	_			
7. Plan	.17	.23*	-.00	.08	.08	-.08	_		
8. Avoid	.46**	.59**	-.33**	-.26*	.40**	.42**	.22*	_	
9. Spiritual	-.05	-.12	-.12	-.36	.05	.65	.06	.07	_

*$p < .05$. **$p < .01$.

Table 5. *Bivariate Correlations between Indicators for Partners*

	1	2	3	4	5	6	7	8	9
1. PCL-C	_								
2. TSC	.82***	_							
3. KMSS	-.24**	-.18	_						
4. PMQ	-.11	-.09	.36***	_					
5. NMQ	.43***	.25**	-.29***	-.07	_				
6. Pg Stress	.14	.20*	-.28**	-.04	.26**	_			
7. Plan	-.04	.17	.09	.15	-.25**	.08	_		
8. Avoid	.42***	.52***	-.14	-.06	.15	.45***	.23**	_	
9. Spiritual	.07	.03	.01	-.07	-.22*	-.23**	.16	.14	_

*$p < .10$. **$p < .05$. ***$p < .01$.

Table 6. *Bivariate Correlations for Mothers (Above the Diagonal) and Partners (Below the Diagonal)*

	1	2	3	4	5	6	7	8	9
1. PCL-C	**.45*****	.39***	-.21*	-.19*	.33***	.42***	.02	.35***	.04
2. TSC	.51***	**.49*****	-.34***	-.23**	.36***	.27**	.05	.31***	-.04
3. KMSS	-.24**	-.20*	**.34*****	.28***	-.36***	-.23**	.13	-.27**	-.07
4. PMQ	.01	-.03	.26**	**.25****	-.21*	-.34***	-.02	-.18	-.05
5. NMQ	.20*	.11	-.32***	-.25**	**.47*****	.10	-.06	.28**	.09
6. Pg Stress	.20*	.27**	-.11	-.18*	.24**	**.37*****	-.16	.28**	-.03
7. Plan	.05	-.07	.06	.16	.18	.11	**.26****	.01	-.10
8. Avoid	.25**	.18	-.29***	-.23**	.28***	.22*	-.01	**.25****	-.01
9. Spiritual	-.01	-.12	-.05	.03	.06	-.17	-.03	.01	**.73*****

*$p < .10$. **$p < .05$. ***$p < .01$.

Figure 1. *Model of Moderation Tested in Hypothesis One*

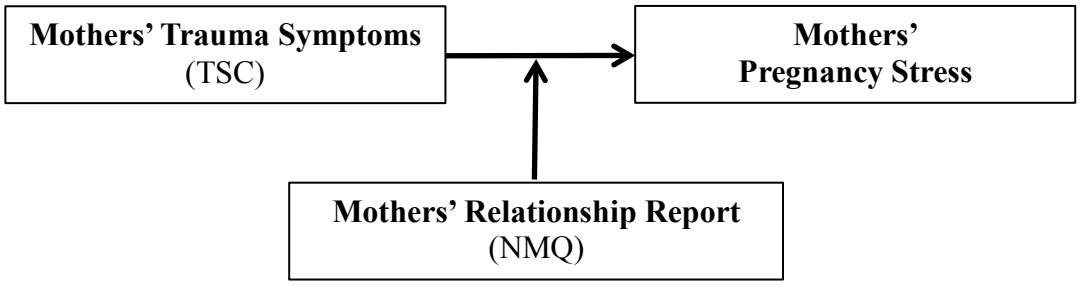


Figure 2. *Conceptual Model for Hypothesis Two*

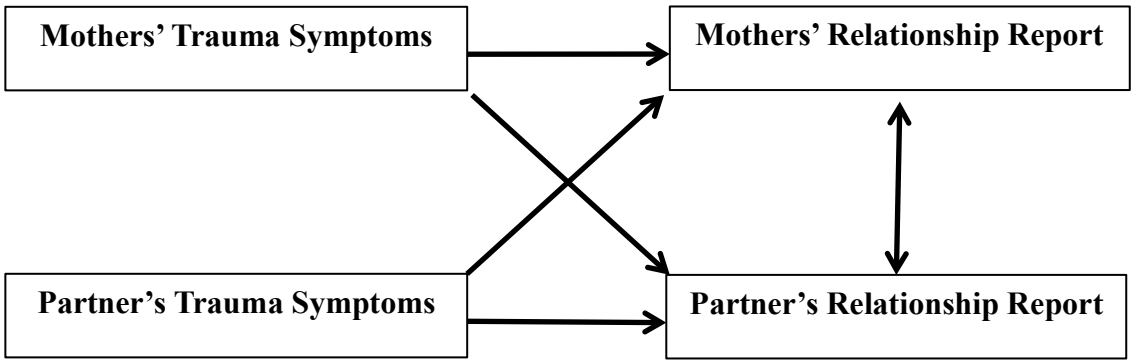
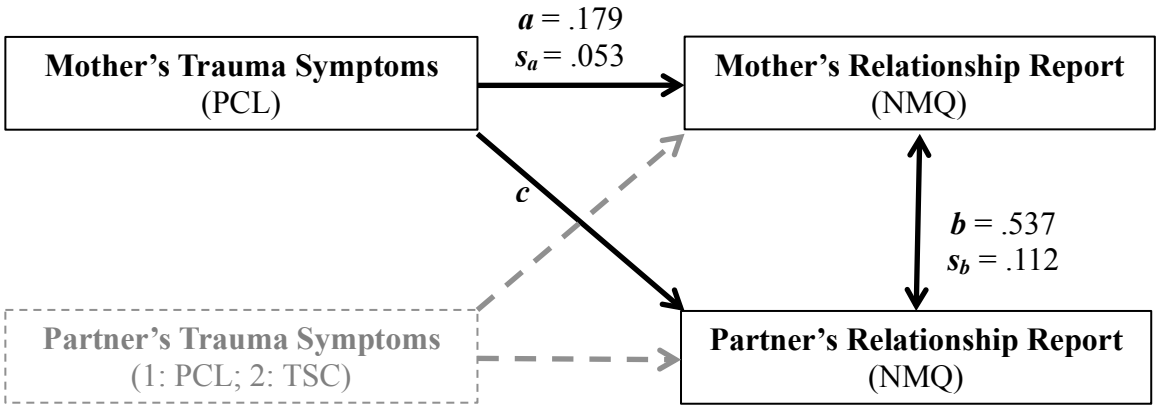


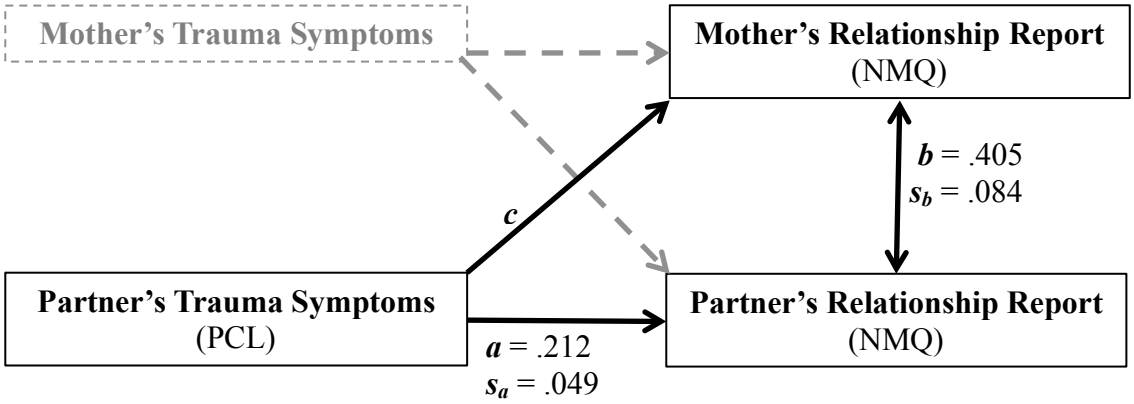
Figure 3. *Monte Carlo Test for Indirect Effects of Mothers' PCL on Partners' NMQ, via Mothers' NMQ*[1]



Confidence Interval (α = .01) for indirect effect C = .0355 to .173

[1]Standardized coefficients (beta) from linear regression analysis, as well as the standard error of those terms, are reported for each direct effect.

Figure 4. *Monte Carlo Test for Indirect Effects of Partners' PCL on Mothers' NMQ, via Partners' NMQ*[1]



Confidence Interval (α = .01) for indirect effect C = .0286 to .167

[1]Standardized coefficients (beta) from linear regression analysis, as well as the standard error of those terms, are reported for each direct effect.

Figure 5. *Conceptual Model Tested in Hypothesis Three*

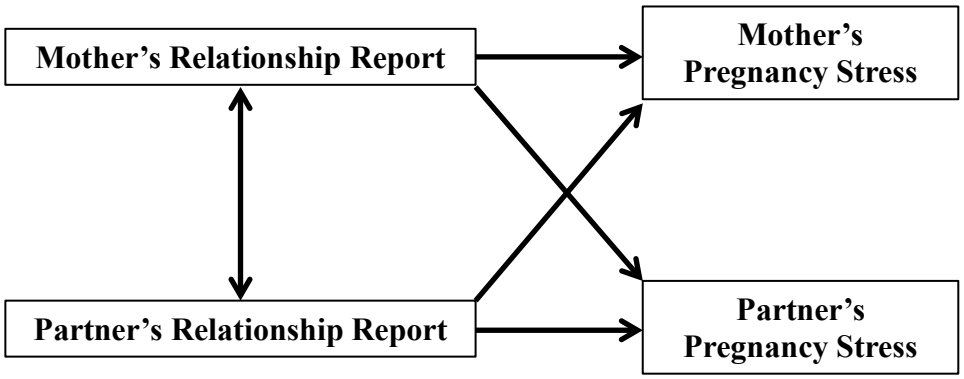
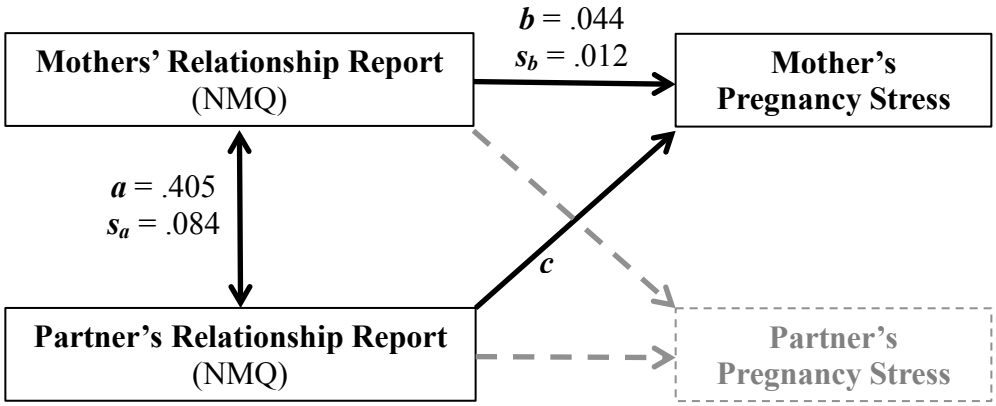


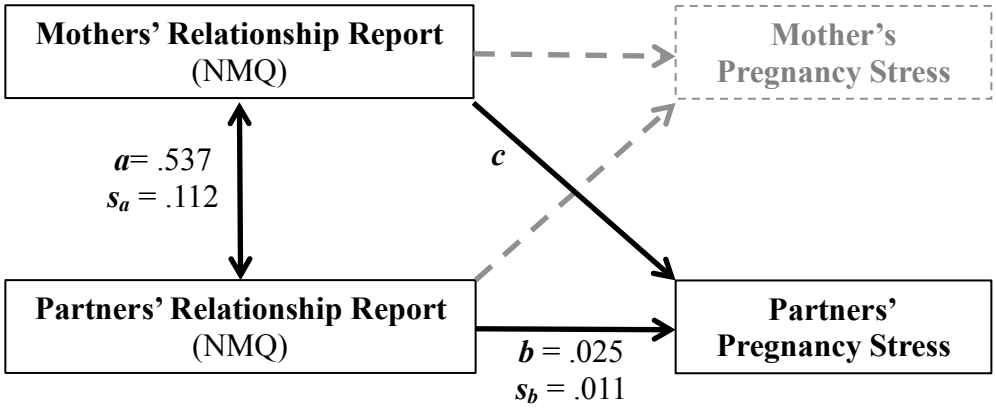
Figure 6. *Monte Carlo Test for Indirect Effects of Partners' NMQ on Mothers' Pregnancy Stress, via Mothers' NMQ*[1]



Confidence Interval (α = .01) for indirect effect C = .004 to .036

[1]Standardized coefficients (beta) from linear regression analysis, as well as the standard error of those terms, are reported for each direct effect.

Figure 7. *Monte Carlo Test for Indirect Effects of Mothers' NMQ on Partners' Pregnancy Stress, via Partners' NMQ*[1]



Confidence Interval (α = .05) for indirect effect *C* = .002 to .028

[1]Standardized coefficients (beta) from linear regression analysis, as well as the standard error of those terms, are reported for each direct effect.

CHAPTER 6: IMPLICATIONS FOR ADDRESSING THE INTERSECTION OF TRAUMA, PREGNANCY, AND THE COUPLE RELATIONSHIP

The primary purpose of this dissertation has been to examine the couple relationship with regard to pregnancy and trauma, in order to better illustrate the ways that the couple relationship can be either a strength or a stressor for pregnant women. Chapter two presented a biopsychosocial-spiritual examination of the extant literature on both pregnancy and trauma, establishing the theoretical foundation for this work. In chapter three, a systematic review of the literature on pregnancy and trauma demonstrated findings that maternal trauma is associated with negative outcomes in maternal, prenatal, and neonatal health. In addition, the systematic review highlighted the absence of attention to the couple relationship, despite the critical role it plays in both trauma processes and pregnancy. Chapter four presented a dyadic methodology designed to study the relationship between the pregnancy, trauma, and couple constructs. In chapter five, the results of a study utilizing dyadic data to address the complicated relationships between pregnancy, trauma, and the couple relationship were presented. The findings of that study illustrated the connectedness of trauma symptomology, the couple relationship, and the couple's pregnancy stress and coping. In this chapter, research, clinical, and policy implications for this research will be presented.

Research Implications

Three important research recommendations emerged from the results from article one and two of this dissertation. First, researchers should collect dyadic data from mothers and their partners when studying pregnancy as well as trauma. Second, researchers should be intentional when researching trauma for studies to select appropriate measures that will capture multiple aspects of the trauma experience. Finally, given the impact of stress on maternal prenatal and

fetal health, researchers should take care when working with pregnant mothers to choose measures that are safe and will avoid re-traumatization.

Need for Dyadic Research

Problematically, researchers rarely conduct dyadic or systemic methodologies, even when the construct of interest concerns the partner relationship (e.g., Rosand, Slinning, Eberhard-Gran, Roysamb, & Tambs, 2011; Whisman, Davila, & Goodman, 2011). By utilizing a single-response design, the burden is placed on one family member to speak for the whole, which does not capture the systemic, familial nature of the relationship (Oka & Whiting, 2013).

There are some practical and logistical hurdles to collecting dyadic data that may help explain the lack of couple and family data in this area (Whittenborn, Dolbin-MacNab, & Keiley, 2013). Recruitment of multiple system-members can be challenging, although researchers can mitigate this potential pitfall by recruiting from multiple roles. For example, in dyadic pregnancy research, researchers should make efforts to recruit both expectant mothers and expectant partners separately, and then invite participants to encourage their partner to participate. Utilization of multiple recruitment strategies (e.g., separate recruiting efforts focused on mothers and on partners) helps to make recruitment more effective (Whittenborn et al., 2013).

Another potential problem with dyadic research is that response bias may be introduced if all family members are not confident in the confidentiality of their responses (Whittenborn et al., 2013); that is, participants may alter their answers out of fear that their family members will be given access to their private information. To minimize this risk, researchers should emphasize confidentiality in the consent and debriefing processes to ensure participants understand their rights and protections. It may also help to set up separate data collection procedures for each

partner (e.g., collecting data at different times or in different locations) to emphasize the confidentiality of responses.

Ultimately, collection of dyadic and systemic data provides a more nuanced understanding of research questions and allows for more complicated methods of analysis. Particularly when studying a phenomenon that exists primarily within the context of couple and family relationships (e.g., pregnancy), researchers should make every effort to utilize multiple perspectives so that a truly systemic understanding emerges from the data.

Dyadic research on pregnancy has the potential to further elucidate the pathways between pregnancy, trauma, and the couple relationship. This dissertation utilized correlation and regression to demonstrate the interconnected nature of these constructs, which provides additional information about the relatedness of pregnancy, trauma, and the couple relationship, but more research is needed to illustrate the pathways that connect these constructs. In further study, structural equation modeling and the use of an actor-partner interaction model (APIM) should be used to demonstrate the ways that each partner's trauma and stress impact the couple relationship and the pregnancy itself. Further, researchers should conduct larger scale studies incorporating dyadic data to better determine whether a strong couple relationship can act as a protective buffer to mitigate the detrimental effects of trauma on pregnancy health.

Trauma Measurement in Research

Many different measures of trauma and traumatic stress exist (e.g., the Patient-Centered Checklist and the Trauma Symptom Inventory). This study incorporated three measures of trauma: exposure to potentially traumatic events (Traumatic Events Questionnaire; Vrana & Lauterbach, 1994), traumatic stress symptoms aligning with the diagnostic criteria for PTSD (Patient Centered Checklist – Civilian Version; Weathers, Litz, Herman, Huska, & Keane, 1993),

and a broad measure of trauma and stress (Trauma Symptom Checklist-40; Briere, 1996). Statistically, it became clear in chapter five that, for this sample, the TSC-40 and PSC were measuring different aspects of trauma. Thus, future researchers should take care to use multiple measures of trauma, because use of a single trauma measure could fail to capture the range of experiences associated with exposure to potentially traumatic events, traumatic stress syndromes, and PTSD diagnosis.

Research with Pregnant Mothers

In designing this study, one methodological consideration was on the safety of the measures chosen for pregnant mothers to complete. Traumatic stress during pregnancy has an impact on maternal psychosocial prenatal health as well as fetal and neonatal outcomes, as described in the research presented in the systematic review (found in chapter three). Therefore, researchers should select measures safe for pregnant woman so as to avoid re-traumatization during the completion of the measures or vicarious trauma to the fetus. In addition, resources should be offered to all participants that provides them with avenues for seeking treatment, should they need help addressing their feelings about their trauma exposure and symptomology.

Practice Implications

Based on the biopsychosocial-spiritual (BPSS) model (Engel, 1977, 1980) that guided this dissertation (chapter two), as well as the systematic review of the literature on trauma and pregnancy (chapter three) and the dyadic data collected on women and their partner's pregnancy experiences (chapter five), several clinical recommendations are made below. Pregnant women and their partners are likely to come into contact with a variety of healthcare professionals, including OBGYNs, primary care physicians, nurse midwives, and mental health clinicians. In each of these contexts, practitioners should attend to patients' BPSS experience, practice from a

relational perspective, and address both mothers' and partners' trauma from a resilience perspective while not negating or minimizing the influence that trauma has constructed in their lives.

Biopsychosocial-Spiritual Practice

Whether single or coupled, any change in stage or family formation, even those that are welcome, introduces stress into the system (Carter & McGoldrick, 1999; Pearlin, 2010). As described in the theoretical framework and literature review (chapter two) of this dissertation, pregnant mothers experience biological, psychological, social, and spiritual changes. Biologically, mothers experience changes to hormones (Lain & Catalano, 2007) and cardiovascular systems (Chang & Streitman, 2012; Torgersen & Curran, 2006). Many women also have some level of medical risk in their pregnancy (e.g., high blood pressure or gestational diabetes), which may result in activity restrictions or medical intervention (Richter, Parkes, & Chaw-Kant, 2007). Psychologically, pregnancy is an emotional experience for many women (Tyrlik, Konecny, & Kula, 2013) that is frequently comorbid with depression and anxiety (Bennet, Einarson, Taddio, Koren, & Einarson, 2004; Denis, Michaux, & Callahan, 2012; Dunn, Handley, & Shelton, 2007).

Furthermore, pregnancy is associated with many changes to the mother's and her partner's social experience, beginning with the couple relationship itself – parents must negotiate new roles and responsibilities and determine new boundaries for their evolving couple relationship (Brotherson, 2007). Social support is an important factor in women's experience of pregnancy (Giurgescu, Penkofer, Maurer, & Bryant, 2006), but when family relationships are not healthy, they can place further stress on the transition into the new life stage (Pearlin, 2010). Finally, spirituality is an important part of many women's pregnancy experience (Callister &

Khalaf, 2010; Carver & Ward, 2007; Jesse, Schoneboom, & Blanchard, 2007), to improve coping (Callister & Khalaf, 2010) and reduce anxiety and depression (Dunn et al., 2007).

Trauma is also an experience with BPSS implications, for both mothers and their partners. Traumatic stress is associated with changes to the body's stress-response mechanisms in the nervous system (Acharya, Joseph, Kannathal, Lim, & Suri, 2006; Lipov & Kelzenberg, 2012). Posttraumatic stress disorder, which can result from exposure to potentially traumatic events, is frequently comorbid with psychological difficulties such as depression, anxiety, substance use disorders, and suicidal ideations (Cougle, Resnick, & Kilpatrick, 2009; Ginzburg, Ein-Dor, & Solomon, 2010; Pietrzak, Goldstein, Southwick, & Grant, 2011). Relationally, traumatic stress is associated with higher levels of emotional avoidance and difficulty connecting with others (Nelson Goff et al., 2006), and is specifically associated with poorer couple relationship functioning (Henry et al., 2011). Spirituality is associated with better coping after trauma (Tausch et al., 2011) and is implicated in the meaning-making process that is foundational to healing from traumatic stress (Bray, 2010).

Due to the biopsychosocial-spiritual nature of both pregnancy and trauma, practitioners should take a BPSS perspective when treating pregnant women and their partners. A thorough BPSS assessment should be conducted when beginning treatment (Bruns & Disorbio, 2009; Smith, Fortin, Dwamena, & Frankel, 2013), and the assessment should guide practitioners to identify the patient's unique values and perspectives in a way that a traditional biomedical model focusing only on the disease process would neglect to consider. Providers should then incorporate BPSS findings into pregnant mothers' and their partners' prenatal care – honoring their values and maximizing strengths (such as spiritual coping or social support) throughout the

care process. The use of a BPSS perspective can also help providers unify their understanding of the interactions between pregnancy and trauma, providing a framework for understanding each.

Relational Framework of Care

Attention to patient values is particularly useful via a relational lens to treatment. A specific route for relational care that is recognized within health care contexts is known as patient (Aboumatar & Cooper, 2013) and family centered care (Johnson, 2012). Partially prompted by a mandate from the Institute of Medicine (Institute of Medicine, 2001), recent changes in health care have placed an increased emphasis on patient centered care (Aboumatar & Cooper, 2013; Barry & Edgman-Levitan, 2012; Epstein & Street, 2011). The six aims for improving health care, constructed by the IOM, defined patient centered care as "providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions" (Institute of Medicine, 2001, p. 40). Attention to patients' values requires providers to become more aware of contextual issues that influence patient health (i.e., biological factors as well as mental, behavioral, and relational health of the patient). These contextual issues must also be navigated through ever changing developmental stages, such as the transition from single or coupled adult into the role of single or coupled parent.

Due to relational nature of the transition to parenthood, a provider may realize a necessary shift from patient centered care that may be individually oriented to the need for family centered care particularly surrounding issues of pregnancy and childbirth, including fertility (Dancet et al., 2011), maternity care (Jiminez, Klein, Hivon, & Mason, 2010), and childbirth (Dempsey & Teague, 2013). Family centered care was developed as an extension of patient centered care and is defined as a partnership model of shared decision making in care

between the provider and the patient (Johnson, 2012; Kuo et al., 2012). With regard to pregnancy and childbirth, the goal of family centered care is to attend to the needs of the mother and her family (Jiminez et al., 2010); in this way, family centered care functions like patient centered care (e.g., respecting patient agency and values), but attends to the larger family system in addition to the individual patient.

Given that three quarters of all pregnancies occur within the context of a couple relationship (Martinez, Daniels, & Chandra, 2012), providers must better attend to patient and family centered clinical care. Unfortunately, it can be overwhelming for clinicians to attempt to address the full scope of the patient and family context in the current health care landscape and limitations placed within payment structures (Sinsky et al., 2013). The sheer volume of patients that must be seen each day limits many appointments to about fifteen minute encounters, and patients frequently have more than one concern they want to address in a single episode of care (Sinsky et al., 2013).

Practitioners should ameliorate the pressure of addressing the full scope of patients' biopsychosocial-spiritual needs by expanding the system, both by operating from an integrated care framework where appropriate (Doherty, McDaniel, & Hepworth, 1994). Collaboration with other providers, such as the relationship between physicians and mental health clinicians, forms a team around patients that distributes the burden of care so that it does not rest on any one provider, but on the team as a whole. Use of an integrated medical record or charting system promotes better communication between collaborating practitioners and is a best-practice for patient-centered care (Reti, Feldman, Ross, & Safran, 2009; Taliani, Bricker, Adelman, Cronholm, & Gabbay, 2013).

Additionally, practitioners should incorporate pregnant mothers' support systems into patients' care whenever possible, particularly their partners. Previous researchers have shown that relationships are important to pregnancy stress and coping (Giurgescu et al., 2006). In the present study, mothers' and partners' pregnancy coping and pregnancy stress were positively correlated with one another. Further, each partner's trauma symptomology was related to their (and their partner's) relationship report, which in turn impacted pregnancy stress for themselves and their partners. When incorporating partners into mothers' prenatal care, providers should directly address mothers' and partners' adjustment to pregnancy together by answering questions and concerns and providing information and direction to both partners, instead of relaying information through the mother only. Providers should also extend formal information pertaining to trauma and pregnancy stress to partners, either through printed literature or information posted in waiting and exam rooms.

Practitioners should also work to promote healthier couple relationships for pregnant mothers and their partners. In this study, lower levels of pregnancy stress were associated with higher relationship satisfaction and positive relationship quality, and lower levels of negative relationship quality. Obstetricians and midwives should work together with mental health clinicians either in integrated BPSS treatment plans or through a collaborative referral relationship to increase opportunities for couple focused treatments during pregnancy.

Maternal and Partner Trauma

Traumatic stress reactions have a pervasive impact on the lives of trauma survivors (van der Kolk, Roth, Pelcovitz, Sunday, & Spinazzola, 2005) and their partners (Dorahy et al., 2013; Henry et al., 2011). Symptoms of traumatic stress include re-experiencing the event, heightened arousal, avoidance, and negative mood and feelings (*DSM-5;* American Psychiatric Association,

2013). While these symptoms are diagnosed on an individual level, their relational impact is powerful, and partners of trauma survivors often have difficulty coping with trauma symptoms in the context of their relationship (Nelson, Wangsgaard, Yorgason, Kessler, & Carter-Vassol, 2002). Practitioners should work to support both mothers and partners in the case of their own trauma history, but also the influence of one partner's trauma into the life of the other.

As discussed in chapter two, maternal trauma is associated with detrimental prenatal outcomes for both the mother and her unborn child, as well as poorer neonatal outcomes immediately after birth (Wilson, Lamson, Hodgson, Russoniello, & Ivanescu, 2013). In this sample, 79.4% of mothers and 54.7% of partners reported exposure to at least one potentially traumatic event, with mothers reporting 2.03 events on average (SD = 1.67) and partners reporting 1.47 events on average (SD = 1.58). The proportion of the sample of pregnant mothers and partners in this study who reported trauma symptoms was consistent of that in the general population – about 15%.

Given that a significant portion of the patient population seen by obstetricians has been exposed to a potentially traumatic event, practitioners should have protocols in place for attending to the needs of this population. In this sample, mothers commonly reported relational traumas such as sexual assault (18.6%), child abuse (24.7%), or an abusive relationship (16.5%). Pregnant mothers who have experienced sexual trauma may have difficulty with the many internal exams required during pregnancy, particularly when her provider is not aware of previous trauma. Practitioners should ask patients about their preferences for exams and work to help the patient feel that she is in control of the procedure (e.g., giving a verbal explanation of the steps of the needed procedure before they occur). In addition, clinicians should encourage

mothers to utilize positive coping mechanisms to address their anxiety during appointments such as deep breathing or muscle relaxation.

Partner trauma history is also relevant to pregnancy health, given that there is a positive correlation between partners' trauma history and both partners' and mothers' reports of pregnancy stress, as discussed in chapter five. Although partner support could be an aid for pregnant women facing trauma, many partners are also experiencing trauma symptomology. These couples, referred to as "dual trauma couples" in the literature, have their own set of unique needs and challenges that are compounded by each partner's trauma symptomology (Balcom, 1996; Nelson et al., 2002; Nelson et al., 2006). When practitioners provide information to patients about trauma and posttraumatic stress, they should also provide relevant information for partners. Practitioners should be also prepared to provide support to trauma survivors and referrals for appropriate treatment.

Couple and Family Resilience

There is some evidence to suggest that family support and the strength of the couple relationship are critical for the system to make a positive shift into a new developmental stage (Carlson, Pilkauskas, McLanahan, & Brooks-Gunn, 2011; Mortensen, Torsheim, Melkevik, & Thuen, 2012). Providers may get so caught up in a patient's problems, concerns, and primary reason for a visit that they neglect to inquire on the strengths of the patient/couple. One perspective that may be helpful for providers when considering couple strengths is that of resilience (Windle, 2011). Resilience refers to the ability to "bounce forward" or adapt after stress (Windle, 2011), and it has been implicated in better overall functioning in populations of pregnant woman (Dunkel Schetter, 2011) and those with PTSD (Agaibi & Wilson, 2005; Bonanno, Westphal, & Mancini, 2011).

One advantage of viewing patients through the lens of resilience is that it is a strengths-based model rather than a deficit model (Windle, 2011). The search for underlying pathology in the traditional medical model can emphasize patients' deficits more than their strengths; similarly, a focus on traumatic events or experiences can put too much attention on the past, which has already occurred and cannot be changed. When practitioners utilize a resilience framework, however, patients' strengths are identified as important and their sense of agency in their own health care is increased (Dowrick, Kokanovic, Hegarty, Griffiths, & Gunn, 2008). Practitioners should promote resilience in their patients by emphasizing patient strengths, expanding on positive emotion, and encouraging patients to use social support from their existing social networks or adding new support systems into their lives (Dowrick et al., 2008).

Policy Implications

Although researchers may work to better understand trauma and pregnancy in the context of the couple relationship, and practitioners may seek to treat patients and their partners effectively, relevant policy must be enacted to sustain these changes. Practice administrators should enact policies on screening and treatment of trauma for pregnant patients and their partners, and lawmakers should establish policy that creates a financial climate that makes patient and family centered care more a more sustainable business model for practices.

PTSD Screening. Despite the important role of couple trauma history in pregnancy, many practitioners do not screen for trauma symptomology (Coimbra, 2013). There are several effective tools for screening available, however. The PTSD-Checklist – Civilian version (PCL; Weathers et al., 1993) is a 17-item screening tool that may be self-administered by patients. The items on the PCL align with the symptoms of PTSD, and a new version (the PCL-5) was recently released to correspond with the changes to PTSD criteria in the DSM-5 (Weathers et al., 2013).

The M3 checklist is a three-minute self-administered tool that screens for depression, bipolar, anxiety, and post-traumatic stress disorders; it was designed for use in primary care settings (Gaynes et al., 2010). Other screening tools for PTSD exist, and recent reviews by Haley (2011) and Spoont and colleagues (2013) provide administrators and policy-makers with the information to choose one that is appropriate to the unique needs of their own practices. Overall, best practice procedures must be implemented for treatment and referral processes when women or partners present with symptoms of trauma during the pregnancy (e.g., those recommended by the International Society for Traumatic Stress Studies [Foa, Keane, Friedman, & Cohen, 2008]). Further research should be conducted to determine whether additional best practices can be identified when working with trauma and pregnant couples specifically.

Patient Centered Care. Qualitative researchers have demonstrated that patients desire to be treated with "whole person" care and partnership (Betchel & Ness, 2010). Thus, policy makers should continue seeking sustainable alternative payment models that will enable the execution of patient centered care, such as comprehensive term-based care and use of the Patient Centered Medical Home (PCMH) model (Nielsen, Langner, Zema, Hacker, & Grundy, 2012). Researchers have demonstrated that family therapy services may reduce healthcare utilization (Law, Crane, & Berge, 2003), as well as the costs of healthcare overall for both the patient and family members (Crane, 2011) when partners are included in health care appointments. Therefore, policies should also be enacted that promote inclusion of family members in patient care.

Provider Education. Although the American Congress of Obstetricians and Gynecologists (ACOG) has issued an opinion on OBGYN treatment of intimate partner violence (American College of Obstetricians and Gynecologists, 2012), no similar statement exists for

addressing other types of potentially traumatic events or traumatic stress in general. The ACOG should issue a statement on the importance of attending to and treating traumatic stress in patients seeking obstetric care, with best practice recommendations for treating this population.

In addition, the educational objectives in the core curriculum in Obstetrics and Gynecology (issued by the Council on Resident Education in Obstetrics and Gynecology) should be amended to include stronger support for family-centered care. While the current guidelines for prenatal care include "[understanding] the effect of family structure, social factors, and economic factors on access to care and pregnancy outcomes," the recommendations fall short of recommending relationally focused care for pregnant women (American College of Obstetricians & Gynecologists, 2013, p. 33).

Medical Family Therapy Implications

Medical Family Therapy is a field that looks at research, training, treatment, and policy from a biopsychosocial-spiritual health lens via a relational framework (Doherty et al., 1994; Bischoff, Springer, Felix, & Hollist, 2011). Medical Family Therapy researchers explore health processes from a relational lens and seek to establish systemic understandings of health and relationships (Mendenhall, Pratt, Phelps, & Baird, 2012). Through collaborative, integrated treatment, Medical Family Therapist clinicians support patients' agency, which can be conceptualized as empowerment to make healthcare decisions, and communion, or their feelings of relational connectedness to their medical providers and the healthcare system (Doherty et al., 1994). Given the purpose and skillset of Medical Family Therapists, researchers and practitioners operating from this stance are uniquely poised to implement research protocols including samples of dyads and treat couples at the intersection of pregnancy and trauma, as recommended in this chapter. Furthermore, outcomes from research or clinical practice may then

be transformed into training opportunities for providers from diverse disciplines or shared with policy makers to improve overall care pertaining to trauma and/or pregnancy.

With regard to research, Medical Family Therapists have a theoretical stance and training in methods that are ideal to support the research described in this study. Medical Family Therapy is grounded in a systemic understanding of health and relationships, and the biopsychosocial-spiritual model is closely integrated into the Medical Family Therapy conceptualization of problems. The findings of the literature reviewed in chapter two illustrate the BPSS nature of both trauma and pregnancy. In chapter three, research was described that supports the connection between trauma and pregnancy outcomes, as well as a gap in the literature regarding the role of the couple relationship at the intersection of pregnancy and trauma. Medical Family Therapists, with their training and expertise in family relationships, have the capacity to conduct BPSS-informed research that will help fill this gap in the literature.

Medical Family Therapists are also equipped to provide integrated or collaborative treatment with other healthcare providers to support the needs of pregnant women and their partners who have experienced trauma. Whereas a mental health clinician might attend to trauma needs without enough emphasis on the biological processes of pregnancy, or a medical practitioner (i.e., obstetrician or nurse midwife) might attend to the medical and physical needs of the patient without attending to the psychological aspects of traumatic stress, a Medical Family Therapist has the training and experience to appropriately attend to both trauma and pregnancy. In addition, Medical Family Therapists have the relational training needed to focus not only on the health and trauma of the mother, but also the needs of the partner as well.

Conclusion

The research in this dissertation has illustrated the complex relationships between pregnancy, trauma, and the couple relationship. Several recommendations in this chapter have been made for researchers, practitioners, and policy makers in order to best meet the needs of this population and to continue in the endeavor to further understand this important intersection of life events. Researchers, practitioners, and policymakers should each work to study, provide for, and protect the interests of pregnant mothers and their partners, particularly when they have the added stressor of trauma complicating their relationship and their pregnancy.

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APPENDIX A: LETTER OF IRB APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** · **www.ecu.edu/irb**

Notification of Initial Approval: Expedited

From:	Social/Behavioral IRB
To:	Angela Lamson
CC:	Grace Wilson
Date:	5/21/2013
Re:	UMCIRB 13-000204 Trauma, Coping, and the Couple Relationship: An Investigation of Pregnant Couples' Biopsychosocial-Spiritual Health

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 5/21/2013 to 5/20/2014. The research study is eligible for review under expedited categories #4 and #7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

The approval includes the following items:

Name
Biomarker Sheet.docx | History
Biomarker Sheet.docx | History
Informed Consent - High Risk Partners.doc | History
Informed Consent - High Risk.doc | History
Informed Consent - Low Risk Partners.doc | History
Informed Consent - Low Risk.doc | History
Measure Authorizations.pdf | History
Questionnaire Packet - Mothers.docx | History
Questionnaire Packet - Partners.docx | History
Recruitment Flyer.pdf | History
Resource List | History
Study Protocol.docx | History

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: PERMISSION TO USE MEASURES

PERMISSION TO USE PNQMS

Frank Fincham <ffincham@fsu.edu> March 17, 2013 4:08 PM
To: Grace Wilson
RE: Permission to use PNQMS for Research

Yes, please do use it. Good luck with your research.

-----Original Message-----
From: Wilson, Grace Ann [mailto:WILSONG11@students.ecu.edu]
Sent: Sunday, March 17, 2013 8:29 AM
To: ffincham@fsu.edu
Subject: Permission to use PNQMS for Research

Hi Dr. Fincham,

I am a PhD student at East Carolina University conducting my dissertation under the direction of Dr. Angela Lamson. My research pertains to the relationship between trauma, the couple relationship, and pregnant couples' coping with high risk pregnancy. I would love to have your permission to use the Positive and Negative Quality in Marriage Scale as one of my measures of couple relationship functioning.

Please let me know if you need any more information!

Thank you,

Grace Wilson, MS, LMFTA
PhD Student, Medical Family Therapy
East Carolina University

PERMISSION TO USE KMSS

Permission Requests - UK <permissionsuk@wiley.com>
To: "Wilson, Grace Ann" <WILSONG11@students.ecu.edu>
RE: NON-RIGHTSLINK

March 18, 2013 12:21 PM

1 Attachment, 2 KB

Dear Grace,

Thank you for your request.

Permission is granted for you to use the material requested for your thesis/dissertation subject to the usual acknowledgements and on the understanding that you will reapply for permission if you wish to distribute or publish your thesis/dissertation commercially.

Permission is granted solely for use in conjunction with the thesis, and the material may not be posted online separately.

Any third party material is expressly excluded from this permission. If any material appears within the article with credit to another source, authorisation from that source must be obtained.

Kind Regards

Emma Willcox
Permissions Assistant

WILEY

From: Wilson, Grace Ann [mailto:WILSONG11@students.ecu.edu]
Sent: 17 March 2013 12:43
To: Permission Requests - UK
Subject: NON-RIGHTSLINK

Hello,
My name is Grace Wilson and I am attempting to complete a request to use the Kansas Marital Satisfaction Scale (Journal of Marriage and the Family) for my dissertation project and to publish the results of it.
I am following the directions on the NCFR website to get permission to use this scale, however, due to its publication date (1986), I cannot find it on the Wiley website to request permission. The article is entitled, "Concurrent and discriminant validity of the Kansas Marital Satisfaction Scale"
Thank you,
Grace

PERMISSION TO USE MARITAL ADJUSTMENT TEST

Permission Requests - UK <permissionsuk@wiley.com>
To: "Wilson, Grace Ann" <WILSONG11@students.ecu.edu>
RE: NON-RIGHTSLINK

March 20, 2013 7:22 AM

1 Attachment, 2 KB

Dear Grace Wilson,

Thank you for your request.

Permission is granted for you to use the material requested for your thesis/dissertation subject to the usual acknowledgements and on the understanding that you will reapply for permission if you wish to distribute or publish your thesis/dissertation commercially.

Permission is granted solely for use in conjunction with the thesis, and the material may not be posted online separately.

Any third party material is expressly excluded from this permission. If any material appears within the article with credit to another source, authorisation from that source must be obtained.

Kind Regards

Emma Willcox
Permissions Assistant

WILEY

From: Wilson, Grace Ann [mailto:WILSONG11@students.ecu.edu]
Sent: 19 March 2013 13:18
To: Permission Requests - UK
Subject: NON-RIGHTSLINK

Hi Duncan,

I have attached the completed form. Please let me know if there's anything I need to change - I am not planning to reprint any of the article for publication, but I do need to print the measure itself for the assessment packet I will use with the participants for my dissertation.

Thank you,

Grace Wilson, M.S., LMFTA
Medical Family Therapy PhD Student
East Carolina University

On Mar 18, 2013, at 7:14 AM, Permission Requests - UK <permissionsuk@wiley.com> wrote:

Dear Grace Wilson

Thank you for your request.

Please complete the attached form with full details of your intended use and the specific material from the article that you wish to use, and return the form to us via email.

Yours sincerely

Duncan James
Associate Permissions Manager
John Wiley & Sons Ltd.
The Atrium
Southern Gate, Chichester
West Sussex, PO19 8SQ
UK

From: Wilson, Grace Ann [mailto:WILSONG11@students.ecu.edu]
Sent: Sunday, 17 March, 2013 12:46 PM
To: Permission Requests - UK
Subject: NON-RIGHTSLINK

Hello,

I am interested in using the Marital Adjustment Test for my dissertation project and would like to ask permission to use this measure.

Here is the information for this measure:

Short Marital-Adjustment and Prediction Tests: Their Reliability and Validity Harvey J. Locke and Karl M. Wallace Marriage and Family Living Vol. 21, No. 3 (Aug., 1959), pp. 251-255 Published by: National Council on Family Relations Article Stable URL: http://www.jstor.org/stable/348022

Thank you,

Grace Wilson

<journal perm sheet feb2013.xlsx>

PERMISSION TO USE PCL-C

"Barnett, Erin" <Erin.Barnett@va.gov> March 19, 2013 9:02 AM
To: "'graceannwilson@gmail.com'" <graceannwilson@gmail.com>
PTSD assessments

1 Attachment, 42 KB

Greetings, and thank you for your assessment instrument request. You may access these instruments by Ctrl+Click on: https://downloads.va.gov

Step 1: Click "multiple files" link. If that does not work, go to "single files"
Step 2: Once file browser window opens, double click to open "PTSDinfo" folder.
Step 3: Double click to open "PTSD Assessments".
Step 4: Measures are grouped within folders by type. Select the trauma measure or measures you are looking for within each folder. Refer to the folder listing in the left panel of the screen to access particular folders. You may need to right click on the document you want to download. Select 'Download'. Select 'Save'.

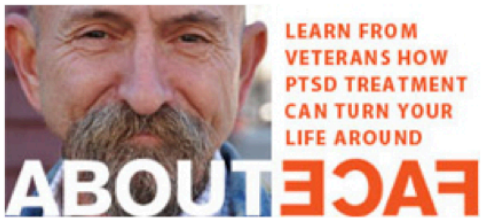
You may have to click to get past a security page. If it asks for a **Username and Password**, the Username is "PTSD" and Password is "Assessments" – these are case sensitive.

These assessment tools were created by government employees and therefore are not copyrighted and are **free for use by qualified health professionals**. Please let us know if you have any trouble downloading these instruments. Also, no thank you email is necessary.

Sincerely, National Center for PTSD Staff

I have access to this email Tuesdays, Wednesdays, and Thursdays.

Erin Barnett, Ph.D.
Psychologist
National Center for PTSD/
Dartmouth Trauma Interventions Research Center



PERMISSION TO USE TEQ

Scott R Vrana <srvrana@vcu.edu> February 6, 2013 9:42 PM
To: "Wilson, Grace Ann" <WILSONG11@students.ecu.edu>
Re: Obtaining TEQ for Dissertation Research

4 Attachments, 533 KB

On Wed, Feb 6, 2013 at 8:53 PM, Wilson, Grace Ann <WILSONG11@students.ecu.edu> wrote:

> Hi Dr. Vrana,
>
> I am a PhD student at East Carolina University conducting my thesis under the direction of Dr. Angela Lamson. I am a Licensed Marriage & Family Therapy - Associate, and Dr. Lamson is an LMFT and an AAMFT approved supervisor. My research pertains to the relationship between trauma, the couple relationship, and pregnant couples' coping with high risk pregnancy.
>
> Please let me know if you need any more information!
>
> Thank you,
>
> Grace Wilson, MS, LMFTA
> PhD Student, Medical Family Therapy
> East Carolina University

--
Scott Vrana
Professor, Departments of Psychology and Psychiatry
806 W. Franklin St. Box 842018
Virginia Commonwealth University
Richmond, VA 23284-2018
http://www.psychology.vcu.edu/people/vrana.shtml
804-828-1242
804-828-2237 (fax)


Vrana & Lau...pdf (195 KB)

Lauterbach....pdf (158 KB)

PPTSD-R.pdf (84 KB)

TEQ-Civilian.pdf (95 KB)

Trauma Symptom Check-list 33 and 40 (TSC-33 and TSC-40)

John Briere, Ph.D. and Marsha Runtz, Ph.D.

Please note: Use of this scale is limited to professional researchers. The TSC-40 is a research measure, not a clinical test. It is not intended as, nor should it be used as, a self-test under any circumstances.

This page contains a psychometric review of the TSC 33/40, with references up to mid-1998, **followed by a free copy of the TSC-40 (at the end of this page)** for use by researchers. Cut and paste to your word processor as needed (formatting will require adjustment).

This summary is substantially adapted from Briere, J. (1996), Psychometric review of the Trauma Symptom Checklist-40, in B.H. Stamm (Ed.). Measurement of stress, trauma, and adaptation. Lutherville, MD: Sidran Press.

PERMISSION TO USE NuPCI

STONY BROOK
STATE UNIVERSITY OF NEW YORK

Department of Psychology

Today's date: 29 March 2013

Dear Ms. Wilson (Grace),

Thank you for your interest in my research. Your request to use the Revised Prenatal Coping Inventory (NuPCI) for your research has been approved. The instrument is attached, with proper reference citations. Relevant publications are also attached.

Please recall that you agreed to provide a description of the methods and results of your research project following its completion, to properly cite the source of the instrument that is being provided to you, and to comply with copyright laws.

Should you need additional assistance, please do not hesitate to contact me. I wish you continued success in your work.

Sincerely,

Marci Lobel

Marci Lobel, Ph.D.
Professor
Principal Investigator, Stony Brook Pregnancy Project
marci.lobel@stonybrook.edu

Attachments:
Revised Prenatal Coping Inventory (NuPCI)
Hamilton & Lobel, *J Psychosom Obstet & Gynecol* 2008
Lobel et al., *Psychol & Health* 2002

APPENDIX C: MOTHER'S SURVEY

Participant #_____._____

Demographics Section

1. What is your age? _____

2. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Other (Please identify) _____

3. What is your racial/cultural/ethnic origin? *(Check all that apply)*

- ☐ American Indian or Alaska Native
- ☐ Asian or Pacific Islander
- ☐ African-American (Black)
- ☐ Hispanic or Latino
- ☐ European-American (White)
- ☐ Other (Please Identify)_____

4. What is your religious preference? *(Check one)*

- ☐ Protestant (e.g., Baptist, Lutheran, etc.) _____
- ☐ Catholic
- ☐ Jewish
- ☐ None
- ☐ Non-denominational
- ☐ Other (Please specify) _____

5. What is your sexual orientation?

- ☐ Heterosexual
- ☐ Homosexual
- ☐ Bisexual
- ☐ Other (Please Identify)_____

Relational Information

1. How long have you been with your partner (in months and years)?
    a. include time dating: _____ years, _____ months
    b. include time married: _____ years, _____ months

2. Are you currently legally…
    a. Married
        i. If so how many times? _____
    b. Divorced
        i. If so how many times? _____
    c. Widowed
        i. If so how many times? _____
    d. Single, never married

3. How many children do you have?
    a. Biological and/or legally_____
    b. Stepchildren _____
    c. Adopted _____
    d. Other_____

4. How many children live in your household who are...
    a. 5 years old or younger? _____
    b. 6 through 12 years old? _____
    c. 13 through 17 years old?_____

Education/Vocational Information

5. What is the highest grade or year of school you completed?
    a. Never attended school or only attended kindergarten
    b. Grades 1 through 8(Elementary)
    c. Grades 9 through 11 (Some high school)
    d. Grade 12 or GED (High school graduate)
    e. Some college of technical school
    f. College graduate
    g. Graduate School (Advance Degree)

6. Are you currently: (Please choose one)
    a. Employed for wages (Not self-employed)
    b. State government employee
    c. Federal government employee
    d. Self-employed
    e. Out of work for more than 1 year
    f. Out of work for less than 1 year
    g. A homemaker
    h. A student
    i. Retired
    j. Unable to work
    k. Other:_____

7. Do you live in a …
    a. house
    b. apartment
    c. mobile home
    d. Other_____

8. Is the home…
    a. Owned by you or someone in this household with a mortgage or loan?
    b. Owned by you or someone in this household free and clear (without a mortgage or loan)?
    c. Occupied without payment of rent?
    d. Rented from someone who doesn't live in the household
    e. Other_____

9. What is your total household income?
    a. Less than $10,000
    b. $10,000 to $19,999
    c. $20,000 to $29,999
    d. $30,000 to $39,999
    e. $40,000 to $49,999
    f. $50,000 to $59,999
    g. $60,000 to $69,999
    h. $70,000 to $79,999
    i. $80,000 to $89,999
    j. $90,000 to $99,999
    k. $100,000 to $149,999
    l. $150,000 or more

General Health Information

1. Please list ALL of your current medical and mental health diagnoses.
    a. _____ e. _____
    b. _____ f. _____
    c. _____ g. _____
    d. _____ h. _____

2. Please list all of your medication/prescriptions.
    a. _____ e. _____
    b. _____ f. _____
    c. _____ g. _____
    d. _____ h. _____

Are you receiving mental health treatment at this time?

i. Yes
    i. If so, for what reason/diagnosis_____
j. No

3. Are you receiving marriage or family therapy at this time?
    a. Yes
        i. If so, for what reason/diagnosis_____
    b. No

4. Have you ever been diagnosed with any of the following health condiitions?
    a. Hypertension ……Yes No
    b. Obesity ……Yes No
    c. Asthma ……Yes No
    d. Depression ……Yes No
    e. Diabetes ……Yes No
    f. Endometriosis ……Yes No
    g. Polycystic Ovarian Syndrome ……Yes No

Pregnancy & Childbirth History

1. How many times have you been pregnant (regardless of outcome)? Include total number of pregnancies from current and past relationships: _____

2. Please list the number of times you have experienced each of the following pregnancy outcomes:
    a. Live birth: _____
    b. Stillbirth: _____
    c. Miscarriage: _____
    d. Other pregnancy loss: _____

3. How far along is your current pregnancy? (in gestational weeks): _____

4. Is your current partner the biological father of your unborn child?
    a. Yes
    b. No
    c. I'm not sure

Participant #_____._____

Marital Assessments

-Please mark the box that applies to you-On a scale from 0=Not at all to 10=Extremely

		0	1	2	3	4	5	6	7	8	9	10
		Not at all										Extremely
1.	Considering the positive qualities of your s *the negative ones,* evaluate how positive th											
2.	Considering only negative feelings you have towards your spouse, *and ignoring the positive ones,* evaluate how these feelings are.											
3.	Considering the negative qualities of your s *the positive ones,* evaluate how negative the											
4.	Considering only good feelings you have about your marriage, *and ignoring the bad ones,* evaluate how good these feelings are.											
5.	Considering only positive feelings you have towards your spouse, *and ignoring the negative ones,* evaluate how these feelings are.											
6.	Considering only bad feelings you have about your marriage, *and ignoring the good ones,* evaluate how bad these feelings are.											

Participant #_____._____

Part I: Mark an X in the appropriate box

		Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1.	How satisfied are you with your marriage?							
2.	How satisfied are you with your husband/ wife as a spouse?							
3.	How satisfied are you with your relationship with your husband/wife ?							

Part II

1) Fill in the dot on the scale below which best describes the degree of happiness, everything considered, of your present marriage. The middle point, "happy," represents the degree of happiness which most people get from, marriage, and the scale gradually ranges on one side to those few people who are very unhappy in marriage, and on the other, to those few who experience extreme joy or felicity in marriage.

Very Unhappy Happy Perfectly Happy

Participant #_____._____

2) State the approximate extent of agreement or disagreement between you and your mate on the following items. Please check each column.

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
. Handling family finances						
. Matters of recreation						
. Demonstration of affection						
. Friends						
. Sex relations						
. Conventionality (right, good, or proper conduct)						
. Philosophy of life						
. Ways of dealing with in-laws						

Circle One:

10. When disagreements arise, they usually result in:
(a) Husband *giving in (b) Wife giving in (c) Agreement by mutual give and take*

11. Do you and your mate engage in outside interests together:
(a) *All of them (b) Some of them (c) Very few of them (d) None of them*

12. In leisure time do you generally prefer:
(a) To be "on the go" (b) To stay at home?

13. Do you ever wish you had not married?
(a) *Frequently (b) Occasionally (c) Rarely (d) Never*

14. If you had your life to live over, do you think you would:
(a) Marry *the same person (b) Marry a different person (c) Not marry at all*

15. Do you confide in your mate:
(a) *Almost never (b) Rarely (c) In most things (d) In Everything?*

Participant #_____._____

Directions: This section is designed to measure some of the emotions that:

- existed in the family in which you were raised.
- currently exist in one of your other relationships.

Since each person and family is unique, there are no right or wrong answers. Just try to respond as honestly as you can. ***Please respond to every statement.***

Rate statements **1-12** as they apply to the family and parent(s) with whom you spent most of your childhood.

In reading the following statements, apply them to yourself and your family and then circle the rating that best fits.

5 = STRONGLY AGREE with the statement.
4 = AGREE with the statement.
3 = NEITHER AGREE NOR DISAGREE with the statement.
2 = DISAGREE with the statement.
1 = STRONGLY DISAGREE with the statement.

	Strongly Disagree				Strongly Agree
I could trust my family to seek my best interests.	1	2	3	4	5
Individuals in my family were blamed for problems that were not their fault.	1	2	3	4	5
Pleasing one of my parents often meant displeasing the other.	1	2	3	4	5
I received the love and affection from my family I deserved.	1	2	3	4	5
No matter what happened, I always stood by my family.	1	2	3	4	5
At times, it seemed one or both of my parents disliked me.	1	2	3	4	5
Love and warmth were given equally to all family members.	1	2	3	4	5
At times, I was used by my family unfairly.	1	2	3	4	5
I felt my life was dominated by my parents' desires.	1	2	3	4	5
Individuals in my family were willing to give of themselves to benefit the family.	1	2	3	4	5
I continue to seek closer relationships with my family.	1	2	3	4	5
I often felt deserted by my family.	1	2	3	4	5

Participant #_____._____

Please respond to statements **13-24** as they apply to ***one*** relationship in your life.

- If you are MARRIED, rate the statements as they apply to your relationship with your spouse.
- If you are WIDOWED, rate the statements as you recall they applied to your relationship with your spouse.
- If you are DIVORCED OR SINGLE, rate the statements as they apply to your closest relationship excluding parents or children.

In reading the following statements, apply them to yourself and the appropriate relationship and then circle the rating that best fits.

5 = STRONGLY AGREE with the statement.
4 = AGREE with the statement.
3 = NEITHER AGREE NOR DISAGREE with the statement.
2 = DISAGREE with the statement.
1 = STRONGLY DISAGREE with the statement.

	Strongly Disagree				Strongly Agree
I try to meet the emotional needs of this person.	1	2	3	4	5
I do not trust this individual to look out for my best interests.	1	2	3	4	5
When I feel hurt, I say or do hurtful things to this person.	1	2	3	4	5
This person stands beside me in times of trouble or joy.	1	2	3	4	5
Before I make important decisions, I ask for the opinions of this person.	1	2	3	4	5
There is unequal contribution to the relationship between me and this individual.	1	2	3	4	5
When I feel angry, I tend to take it out on this person.	1	2	3	4	5
We are equal partners in this relationship.	1	2	3	4	5
We give of ourselves to benefit one another.	1	2	3	4	5
I take advantage of this individual.	1	2	3	4	5
I am taken for granted or used unfairly in this relationship.	1	2	3	4	5
This person listens to me and values my thoughts.	1	2	3	4	5

Participant #_____._____

Trauma

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem *in the last month*.

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing *memories, thoughts,* or *images* of a stressful experience from the past?					
2.	Repeated, disturbing *dreams* of a stressful experience from the past?					
3.	Suddenly *acting* or *feeling* as if a stressful experience *were happening again* (as if you were reliving it)?					
4.	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
5.	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?					
6.	Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?					
7.	Avoid *activities* or *situations* because *they remind you* of a stressful experience from the past?					
8.	Trouble *remembering important parts* of a stressful experience from the past?					
9.	Loss of *interest in things that you used to enjoy?*					
10.	Feeling *distant* or *cut off* from other people?					
11.	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
12.	Feeling as if your *future* will somehow be *cut short*?					
13.	Trouble *falling* or *staying asleep*?					
14.	Feeling *irritable* or having *angry outbursts*?					
15.	Having *difficulty concentrating*?					
16.	Being *"super alert"* or watchful on guard?					
17.	Feeling *jumpy* or easily startled?					

Participant #_____._____

DIRECTIONS: This questionnaire is comprised of a variety of traumatic events which you may have experienced. For each of the following "numbered" questions, indicate whether or not you experienced the event. If you have experienced one of the events, circle "Yes" and complete the "lettered" items immediately following it that ask for more details. If you have not experienced the event, circle "No" and go to the next "numbered" item.

No Yes **1. Have you been in or witnessed a serious industrial, farm, or car accident, or a large fire or explosion?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the event? _____

No Yes **2. Have you been in a natural disaster such as a tornado, hurricane, flood or major earthquake?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the event? _____

Participant #_____._____

No Yes **3. Have you been a victim of a violent crime such as rape, robbery, or assault?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the crime? _____

No Yes **4. As a child, were you the victim of either physical or sexual abuse?**

a. How old were you when it began? _____

b. How old were you when it ended? _____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. Check all categories that describe the experience…

❑ physical abuse

❑ sexual abuse

Participant #_____._____

No Yes **5. <u>As an adult</u>, have you had any unwanted sexual experiences that involved the threat or use of force?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **<u>was</u>** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **<u>is</u>** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

No Yes **6. <u>As an adult</u>, have you ever been in a relationship in which you were abused either physically or otherwise?**

a. How old were you when it began? _____

b. How old were you when it ended? _____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **<u>was</u>** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **<u>is</u>** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

Participant #_____._____

No Yes **7. Have you witnessed someone who was mutilated, seriously injured, or violently killed?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

No Yes **8. Have you been in serious danger of losing your life or of being seriously injured?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the event? _____

No Yes **9. Have you received news of the mutilation, serious injury, or violent or unexpected death of someone close to you?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. What relation was this person to you? _____

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

No Yes **10. Have you ever had any other very traumatic event like these?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the event? _____

No Yes **11. Have you had any experiences like these that you feel you can't tell about (note: you don't have to describe the event).**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

Participant #_____._____

If you answered "Yes" to one or more of the questions above, which was the **MOST** traumatic thing to have happened to you? Fill in the number of the question (e.g., #2 for natural disaster). _____

Did you answer **Yes** to more than one question above while thinking about the same event?

Yes❑ No❑

If yes, which items refer to the same event? _____

_____

If you answered "No" to all questions, describe briefly the most traumatic thing to happen to you._____

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd____ 3rd____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

Participant #_____._____

How often have you experienced each of the following in the last two months?

	Never			Always
1. Headaches	0	1	2	3
2. Insomnia (trouble getting to sleep)	0	1	2	3
3. Weight loss (without dieting)	0	1	2	3
4. Stomach problems	0	1	2	3
5. Sexual problems	0	1	2	3
6. Feeling isolated from others	0	1	2	3
7. "Flashbacks" (sudden, vivid, distracting memories)	0	1	2	3
8. Restless sleep	0	1	2	3
9. Low sex drive	0	1	2	3
10. Anxiety attacks	0	1	2	3
11. Sexual overactivity	0	1	2	3
12. Loneliness	0	1	2	3
13. Nightmares	0	1	2	3
14. "Spacing out" (going away in your mind)	0	1	2	3
15. Sadness	0	1	2	3
16. Dizziness	0	1	2	3
17. Not feeling satisfied with your sex life	0	1	2	3
18. Trouble controlling your temper	0	1	2	3
19. Waking up early in the morning and can't get back to sleep	0	1	2	3
20. Uncontrollable crying	0	1	2	3
21. Fear of men	0	1	2	3
22. Not feeling rested in the morning	0	1	2	3
23. Having sex that you didn't enjoy	0	1	2	3
24. Trouble getting along with others	0	1	2	3
25. Memory problems	0	1	2	3
26. Desire to physically hurt yourself	0	1	2	3
27. Fear of women	0	1	2	3
28. Waking up in the middle of the night	0	1	2	3
29. Bad thoughts or feelings during sex	0	1	2	3
30. Passing out	0	1	2	3
31. Feeling that things are "unreal"	0	1	2	3
32. Unnecessary or over-frequent washing	0	1	2	3
33. Feelings of inferiority	0	1	2	3
34. Feeling tense all the time	0	1	2	3
35. Being confused about your sexual feelings	0	1	2	3
36. Desire to physically hurt others	0	1	2	3
37. Feelings of guilt	0	1	2	3
38. Feelings that you are not always in your body	0	1	2	3
39. Having trouble breathing	0	1	2	3
40. Sexual feelings when you shouldn't have them	0	1	2	3

Participant #_____._____

PCI

a. In the past month, what has been the most stressful aspect of being pregnant for you? _____

_____

_____

_____

_____

b. How stressful has your pregnancy been over the past month? *(Circle one)*

0	1	2
Not at all stressful	Somewhat stressful	Very stressful

Following is a list of things that pregnant women sometimes do to try and manage the strains and challenges of being pregnant. Sometimes our attempts to manage a stressful situation of to feel better are successful, but other times they are not successful. For each item, please circle the number that best describes how often you have tried it ***over the last month*** *as a way of managing the strains and challenges of being pregnant, even if it wasn't successful.* ***In the past month,*** *how often have you done each of these things to try and manage the strains and challenges of being pregnant:*

***In the past month*, how often have you**	***Never***	***Almost Never***	***Sometimes***	***Fairly Often***	***Very Often***
1. Imagined how the birth will go?	0	1	2	3	4
2. Talked to people about what it is like to raise a child?	0	1	2	3	4
3. Compared yourself to women having a more difficult pregnancy?	0	1	2	3	4
4. Taken out your frustrations on other people?	0	1	2	3	4
5. Asked doctors or nurses about the birth?	0	1	2	3	4
6. Read from the bible or a book of prayers?	0	1	2	3	4
7. Tried to keep feelings about being pregnant to yourself?	0	1	2	3	4
8. Reminded yourself that you've been through worse times in your life?	0	1	2	3	4
9. Tried to focus on what is important in life?	0	1	2	3	4
10. Slept in order to escape problems?	0	1	2	3	4
11. Thought about what it will be like after the baby comes?	0	1	2	3	4
12. Planned how you will handle the birth?	0	1	2	3	4
13. Spent time or talked with someone who just had a baby?	0	1	2	3	4
14. Made plans to get baby clothes or supplies?	0	1	2	3	4
15. Tried to focus in the positive parts of your pregnancy rather than the negative parts?	0	1	2	3	4
16. Prayed for strength or courage to get through your pregnancy?	0	1	2	3	4
17. Gotten advice and understanding from someone about your pregnancy? ***If so, from whom?***_____	0	1	2	3	4

18. Tried not to think about the birth?	0	1	2	3	4
19. Spent time with other pregnant women or talked with them?	0	1	2	3	4
20. Told yourself that things could be worse?	0	1	2	3	4
21. Had an alcoholic drink to feel better?	0	1	2	3	4
22. Felt lucky to be a woman and be able to experienced pregnancy?	0	1	2	3	4
23. Planned how you or someone else will take care of the baby?	0	1	2	3	4
24. Imagined or pretended being the mother of a newborn?	0	1	2	3	4
25. Tried to avoid reading or hearing stories about childbirth?	0	1	2	3	4
26. Wished that the birth was already over?	0	1	2	3	4
27. Tried to make yourself feel better with food?	0	1	2	3	4
28. Planned changes in the number of hours that you work, or in things that you do at work? ***If so, please specify changes:_____*** _____	0	1	2	3	4
29. Smoked a cigarette to feel better?	0	1	2	3	4
30. Thought about pregnant women who are doing better than you?	0	1	2	3	4
31. Tried to stay away from other people?	0	1	2	3	4
32. Gone for a walk or gotten some exercise to feel better?	0	1	2	3	4
33. Prayed that the birth will go well?	0	1	2	3	4
34. Talked to family or friends about what it is like to give birth?	0	1	2	3	4
35. Felt that being pregnant has made your life better?	0	1	2	3	4
36. Prayed that the baby will be healthy?	0	1	2	3	4
37. Wished that you weren't pregnant?	0	1	2	3	4
38. Tried to keep your feelings about the pregnancy from interfering with things you had to do?	0	1	2	3	4
39. Felt that having a baby was fulfilling a lifetime dream or goal?	0	1	2	3	4
40. Used a drug to feel better?	0	1	2	3	4
41. Gone to church, synagogue, a mosque, or other place to pray?	0	1	2	3	4
42. Read or watched something about childbirth that told what it would be like?	0	1	2	3	4

APPENDIX D: PARTNER'S SURVEY

Participant #_____._____

Demographics Section

1. What is your age? _____

2. What is your gender?

- ☐ Male
- ☐ Female
- ☐ Other (Please identify) _____

3. What is your racial/cultural/ethnic origin? *(Check all that apply)*

- ☐ American Indian or Alaska Native
- ☐ Asian or Pacific Islander
- ☐ African-American (Black)
- ☐ Hispanic or Latino
- ☐ European-American (White)
- ☐ Other (Please Identify)_____

4. What is your religious preference? *(Check one)*

- ☐ Protestant (e.g., Baptist, Lutheran, etc.) _____
- ☐ Catholic
- ☐ Jewish
- ☐ None
- ☐ Non-denominational
- ☐ Other (Please specify) _____

5. What is your sexual orientation?

- ☐ Heterosexual
- ☐ Homosexual
- ☐ Bisexual
- ☐ Other (Please Identify)_____

Relational Information

1. How long have you been with your partner (in months and years)?
    a. include time dating: _____ years, _____ months
    b. include time married: _____ years, _____ months

2. Are you currently legally…
    a. Married
        i. If so how many times? _____
    b. Divorced
        i. If so how many times? _____
    c. Widowed
        i. If so how many times? _____
    d. Single, never married

3. How many children do you have?
    a. Biological and/or legally_____
    b. Stepchildren _____
    c. Adopted _____
    d. Other_____

4. How many children live in your household who are...
    a. 5 years old or younger? _____
    b. 6 through 12 years old? _____
    c. 13 through 17 years old?_____

Education/Vocational Information

5. What is the highest grade or year of school you completed?
    a. Never attended school or only attended kindergarten
    b. Grades 1 through 8(Elementary)
    c. Grades 9 through 11 (Some high school)
    d. Grade 12 or GED (High school graduate)
    e. Some college of technical school
    f. College graduate
    g. Graduate School (Advance Degree)

6. Are you currently: (Please choose one)
    a. Employed for wages (Not self-employed)
    b. State government employee
    c. Federal government employee
    d. Self-employed
    e. Out of work for more than 1 year
    f. Out of work for less than 1 year
    g. A homemaker
    h. A student
    i. Retired
    j. Unable to work
    k. Other:_____

7. Do you live in a …
    a. house
    b. apartment
    c. mobile home
    d. Other_____

8. Is the home…
    a. Owned by you or someone in this household with a mortgage or loan?
    b. Owned by you or someone in this household free and clear (without a mortgage or loan)?
    c. Occupied without payment of rent?
    d. Rented from someone who doesn't live in the household
    e. Other_____

9. What is your total household income?
    a. Less than $10,000
    b. $10,000 to $19,999
    c. $20,000 to $29,999
    d. $30,000 to $39,999
    e. $40,000 to $49,999
    f. $50,000 to $59,999
    g. $60,000 to $69,999
    h. $70,000 to $79,999
    i. $80,000 to $89,999
    j. $90,000 to $99,999
    k. $100,000 to $149,999
    l. $150,000 or more

General Health Information

1. Please list ALL of your current medical and mental health diagnoses.
    a. _____ e. _____
    b. _____ f. _____
    c. _____ g. _____
    d. _____ h. _____

2. Please list all of your medication/prescriptions.
    a. _____ e. _____
    b. _____ f. _____
    c. _____ g. _____
    d. _____ h. _____

Are you receiving mental health treatment at this time?

i. Yes
    i. If so, for what reason/diagnosis_____
j. No

3. Are you receiving marriage or family therapy at this time?
    a. Yes
        i. If so, for what reason/diagnosis_____
    b. No

4. Have you ever been diagnosed with any of the following health condiitions?
    a. Hypertension ……Yes No
    b. Obesity ……Yes No
    c. Asthma ……Yes No
    d. Depression ……Yes No
    e. Diabetes ……Yes No

Pregnancy & Childbirth History

1. How many times has your partner (current or past partner) been pregnant with your child (regardless of outcome)? Include total number of pregnancies from current and past relationships: _____

2. Please list the number of times you have experienced each of the following pregnancy outcomes:
    a. Live birth: _____
    b. Stillbirth: _____
    c. Miscarriage: _____
    d. Other pregnancy loss: _____

3. How far along is your partner's current pregnancy? (in gestational weeks): _____

4. Are you the biological parent of your partner's unborn child?
    a. Yes
    b. No
    c. I'm not sure

Participant #_____._____

Marital Assessments

-Please mark the box that applies to you-On a scale from 0=Not at all to 10=Extremely

		0	1	2	3	4	5	6	7	8	9	10
		Not at all										Extremely
1.	Considering the positive qualities of your spouse, *and ignoring the negative ones,* evaluate how positive these qualities are.											
2.	Considering only negative feelings you have towards your spouse, *and ignoring the positive ones,* evaluate how these feelings are.											
3.	Considering the negative qualities of your spouse, *and ignoring the positive ones,* evaluate how negative these qualities are.											
4.	Considering only good feelings you have about your marriage, *and ignoring the bad ones,* evaluate how good these feelings are.											
5.	Considering only positive feelings you have towards your spouse, *and ignoring the negative ones,* evaluate how these feelings are.											
6.	Considering only bad feelings you have about your marriage, *and ignoring the good ones,* evaluate how bad these feelings are.											

Participant #_____._____

Part I: Mark an X in the appropriate box

		Extremely Dissatisfied	Very Dissatisfied	Somewhat Dissatisfied	Mixed	Somewhat Satisfied	Very Satisfied	Extremely Satisfied
1.	How satisfied are you with your marriage?							
2.	How satisfied are you with your husband/ wife as a spouse?							
3.	How satisfied are you with your relationship with your husband/wife ?							

Part II

1) Fill in the dot on the scale below which best describes the degree of happiness, everything considered, of your present marriage. The middle point, "happy," represents the degree of happiness which most people get from, marriage, and the scale gradually ranges on one side to those few people who are very unhappy in marriage, and on the other, to those few who experience extreme joy or felicity in marriage.

Very Unhappy Happy Perfectly Happy

Participant #_____._____

2) State the approximate extent of agreement or disagreement between you and your mate on the following items. Please check each column.

	Always Agree	Almost Always Agree	Occasionally Disagree	Frequently Disagree	Almost Always Disagree	Always Disagree
. Handling family finances						
. Matters of recreation						
. Demonstration of affection						
. Friends						
. Sex relations						
. Conventionality (right, good, or proper conduct)						
. Philosophy of life						
. Ways of dealing with in-laws						

Circle One:

10. When disagreements arise, they usually result in:
(a) Husband *giving in (b) Wife giving in (c) Agreement by mutual give and take*

11. Do you and your mate engage in outside interests together:
(a) *All of them (b) Some of them (c) Very few of them (d) None of them*

12. In leisure time do you generally prefer:
(a) To be "on the go" (b) To stay at home?

13. Do you ever wish you had not married?
(a) *Frequently (b) Occasionally (c) Rarely (d) Never*

14. If you had your life to live over, do you think you would:
(a) Marry *the same person (b) Marry a different person (c) Not marry at all*

15. Do you confide in your mate:
(a) *Almost never (b) Rarely (c) In most things (d) In Everything?*

Participant #_____._____

Directions: This section is designed to measure some of the emotions that:

- existed in the family in which you were raised.
- currently exist in one of your other relationships.

Since each person and family is unique, there are no right or wrong answers. Just try to respond as honestly as you can. ***Please respond to every statement.***

Rate statements **1-12** as they apply to the family and parent(s) with whom you spent most of your childhood.

In reading the following statements, apply them to yourself and your family and then circle the rating that best fits.

5 = STRONGLY AGREE with the statement.
4 = AGREE with the statement.
3 = NEITHER AGREE NOR DISAGREE with the statement.
2 = DISAGREE with the statement.
1 = STRONGLY DISAGREE with the statement.

	Strongly Disagree				Strongly Agree
I could trust my family to seek my best interests.	1	2	3	4	5
Individuals in my family were blamed for problems that were not their fault.	1	2	3	4	5
Pleasing one of my parents often meant displeasing the other.	1	2	3	4	5
I received the love and affection from my family I deserved.	1	2	3	4	5
No matter what happened, I always stood by my family.	1	2	3	4	5
At times, it seemed one or both of my parents disliked me.	1	2	3	4	5
Love and warmth were given equally to all family members.	1	2	3	4	5
At times, I was used by my family unfairly.	1	2	3	4	5
I felt my life was dominated by my parents' desires.	1	2	3	4	5
Individuals in my family were willing to give of themselves to benefit the family.	1	2	3	4	5
I continue to seek closer relationships with my family.	1	2	3	4	5
I often felt deserted by my family.	1	2	3	4	5

Participant #_____._____

Please respond to statements **13-24** as they apply to ***one*** relationship in your life.

- If you are MARRIED, rate the statements as they apply to your relationship with your spouse.
- If you are WIDOWED, rate the statements as you recall they applied to your relationship with your spouse.
- If you are DIVORCED OR SINGLE, rate the statements as they apply to your closest relationship excluding parents or children.

In reading the following statements, apply them to yourself and the appropriate relationship and then circle the rating that best fits.

5 = STRONGLY AGREE with the statement.
4 = AGREE with the statement.
3 = NEITHER AGREE NOR DISAGREE with the statement.
2 = DISAGREE with the statement.
1 = STRONGLY DISAGREE with the statement.

	Strongly Disagree				Strongly Agree
I try to meet the emotional needs of this person.	1	2	3	4	5
I do not trust this individual to look out for my best interests.	1	2	3	4	5
When I feel hurt, I say or do hurtful things to this person.	1	2	3	4	5
This person stands beside me in times of trouble or joy.	1	2	3	4	5
Before I make important decisions, I ask for the opinions of this person.	1	2	3	4	5
There is unequal contribution to the relationship between me and this individual.	1	2	3	4	5
When I feel angry, I tend to take it out on this person.	1	2	3	4	5
We are equal partners in this relationship.	1	2	3	4	5
We give of ourselves to benefit one another.	1	2	3	4	5
I take advantage of this individual.	1	2	3	4	5
I am taken for granted or used unfairly in this relationship.	1	2	3	4	5
This person listens to me and values my thoughts.	1	2	3	4	5

Participant #_____._____

Trauma

Below is a list of problems and complaints that people sometimes have in response to stressful life experiences. Please read each one carefully, put an "X" in the box to indicate how much you have been bothered by that problem *in the last month*.

No.	Response:	Not at all (1)	A little bit (2)	Moderately (3)	Quite a bit (4)	Extremely (5)
1.	Repeated, disturbing *memories, thoughts,* or *images* of a stressful experience from the past?					
2.	Repeated, disturbing *dreams* of a stressful experience from the past?					
3.	Suddenly *acting* or *feeling* as if a stressful experience *were happening again* (as if you were reliving it)?					
4.	Feeling *very upset* when *something reminded* you of a stressful experience from the past?					
5.	Having *physical reactions* (e.g., heart pounding, trouble breathing, or sweating) when *something reminded* you of a stressful experience from the past?					
6.	Avoid *thinking about* or *talking about* a stressful experience from the past or avoid *having feelings* related to it?					
7.	Avoid *activities* or *situations* because *they remind you* of a stressful experience from the past?					
8.	Trouble *remembering important parts* of a stressful experience from the past?					
9.	Loss of *interest in things that you used to enjoy?*					
10.	Feeling *distant* or *cut off* from other people?					
11.	Feeling *emotionally numb* or being unable to have loving feelings for those close to you?					
12.	Feeling as if your *future* will somehow be *cut short*?					
13.	Trouble *falling* or *staying asleep*?					
14.	Feeling *irritable* or having *angry outbursts*?					
15.	Having *difficulty concentrating*?					
16.	Being *"super alert"* or watchful on guard?					
17.	Feeling *jumpy* or easily startled?					

Participant #_____._____

DIRECTIONS: This questionnaire is comprised of a variety of traumatic events which you may have experienced. For each of the following "numbered" questions, indicate whether or not you experienced the event. If you have experienced one of the events, circle "Yes" and complete the "lettered" items immediately following it that ask for more details. If you have not experienced the event, circle "No" and go to the next "numbered" item.

No Yes **1. Have you been in or witnessed a serious industrial, farm, or car accident, or a large fire or explosion?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the event? _____

No Yes **2. Have you been in a natural disaster such as a tornado, hurricane, flood or major earthquake?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the event? _____

Participant #_____._____

No Yes **3. Have you been a victim of a violent crime such as rape, robbery, or assault?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the crime? _____

No Yes **4. As a child, were you the victim of either physical or sexual abuse?**

a. How old were you when it began? _____

b. How old were you when it ended? _____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. Check all categories that describe the experience…

❑ physical abuse

❑ sexual abuse

No Yes **5. <u>As an adult</u>, have you had any unwanted sexual experiences that involved the threat or use of force?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **<u>was</u>** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **<u>is</u>** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

No Yes **6. <u>As an adult</u>, have you ever been in a relationship in which you were abused either physically or otherwise?**

a. How old were you when it began? _____

b. How old were you when it ended? _____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **<u>was</u>** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **<u>is</u>** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

Participant #_____._____

No Yes **7. Have you witnessed someone who was mutilated, seriously injured, or violently killed?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

No Yes **8. Have you been in serious danger of losing your life or of being seriously injured?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the event? _____

No Yes **9. Have you received news of the mutilation, serious injury, or violent or unexpected death of someone close to you?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. What relation was this person to you? _____

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

No Yes **10. Have you ever had any other very traumatic event like these?**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

g. What was the event? _____

No Yes **11. Have you had any experiences like these that you feel you can't tell about (note: you don't have to describe the event).**

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd ____ 3rd ____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

Participant #_____._____

If you answered "Yes" to one or more of the questions above, which was the **MOST** traumatic thing to have happened to you? Fill in the number of the question (e.g., #2 for natural disaster). _____

Did you answer **Yes** to more than one question above while thinking about the same event?

Yes❑ No❑

If yes, which items refer to the same event? _____

_____

If you answered "No" to all questions, describe briefly the most traumatic thing to happen to you._____

a. How many times? once ❑ twice ❑ three + ❑

b. How old were you at that time(s)? 1st ____ 2nd____ 3rd____

c. Were you injured?

Not at all ---------- Severely

1 2 3 4 5 6 7

d. Did you feel your life was threatened?

Not at all ---------- Extremely

1 2 3 4 5 6 7

e. How traumatic **was** this for you at that time?

Not at all ---------- Extremely

1 2 3 4 5 6 7

f. How traumatic **is** this for you now?

Not at all ---------- Extremely

1 2 3 4 5 6 7

Participant #_____._____

How often have you experienced each of the following in the last two months?

	Never			Always
1. Headaches	0	1	2	3
2. Insomnia (trouble getting to sleep)	0	1	2	3
3. Weight loss (without dieting)	0	1	2	3
4. Stomach problems	0	1	2	3
5. Sexual problems	0	1	2	3
6. Feeling isolated from others	0	1	2	3
7. "Flashbacks" (sudden, vivid, distracting memories)	0	1	2	3
8. Restless sleep	0	1	2	3
9. Low sex drive	0	1	2	3
10. Anxiety attacks	0	1	2	3
11. Sexual overactivity	0	1	2	3
12. Loneliness	0	1	2	3
13. Nightmares	0	1	2	3
14. "Spacing out" (going away in your mind)	0	1	2	3
15. Sadness	0	1	2	3
16. Dizziness	0	1	2	3
17. Not feeling satisfied with your sex life	0	1	2	3
18. Trouble controlling your temper	0	1	2	3
19. Waking up early in the morning and can't get back to sleep	0	1	2	3
20. Uncontrollable crying	0	1	2	3
21. Fear of men	0	1	2	3
22. Not feeling rested in the morning	0	1	2	3
23. Having sex that you didn't enjoy	0	1	2	3
24. Trouble getting along with others	0	1	2	3
25. Memory problems	0	1	2	3
26. Desire to physically hurt yourself	0	1	2	3
27. Fear of women	0	1	2	3
28. Waking up in the middle of the night	0	1	2	3
29. Bad thoughts or feelings during sex	0	1	2	3
30. Passing out	0	1	2	3
31. Feeling that things are "unreal"	0	1	2	3
32. Unnecessary or over-frequent washing	0	1	2	3
33. Feelings of inferiority	0	1	2	3
34. Feeling tense all the time	0	1	2	3
35. Being confused about your sexual feelings	0	1	2	3
36. Desire to physically hurt others	0	1	2	3
37. Feelings of guilt	0	1	2	3
38. Feelings that you are not always in your body	0	1	2	3
39. Having trouble breathing	0	1	2	3
40. Sexual feelings when you shouldn't have them	0	1	2	3

Participant #_____._____

PCI

a. In the past month, what has been the most stressful aspect of your partner's pregnancy for you? _____

_____

_____

_____

b. How stressful has your partner's pregnancy been over the past month? *(Circle one)*

0	1	2
Not at all stressful	Somewhat stressful	Very stressful

Following is a list of things that expecting parents sometimes do to try and manage the strains and challenges of being pregnant. Sometimes our attempts to manage a stressful situation of to feel better are successful, but other times they are not successful. For each item, please circle the number that best describes how often you have tried it ***over the last month*** *as a way of managing the strains and challenges of being pregnant, even if it wasn't successful.* ***In the past month,*** *how often have you done each of these things to try and manage the strains and challenges of your partner's pregnancy:*

***In the past month*, how often have you**	***Never***	***Almost Never***	***Sometimes***	***Fairly Often***	***Very Often***
1. Imagined how the birth will go?	0	1	2	3	4
2. Talked to people about what it is like to raise a child?	0	1	2	3	4
3. Compared your partner to other to women having a more difficult pregnancy?	0	1	2	3	4
4. Taken out your frustrations on other people?	0	1	2	3	4
5. Asked doctors or nurses about the birth?	0	1	2	3	4
6. Read from the bible or a book of prayers?	0	1	2	3	4
7. Tried to keep feelings about your partner's pregnancy to yourself?	0	1	2	3	4
8. Reminded yourself that you've been through worse times in your life?	0	1	2	3	4
9. Tried to focus on what is important in life?	0	1	2	3	4
10. Slept in order to escape problems?	0	1	2	3	4
11. Thought about what it will be like after the baby comes?	0	1	2	3	4
12. Planned how you will handle the birth?	0	1	2	3	4
13. Spent time or talked with someone who just had a baby?	0	1	2	3	4
14. Made plans to get baby clothes or supplies?	0	1	2	3	4
15. Tried to focus in the positive parts of your partner's pregnancy rather than the negative parts?	0	1	2	3	4
16. Prayed for strength or courage to get through the pregnancy?	0	1	2	3	4
17. Gotten advice and understanding from someone about your partner's pregnancy? ***If so, from whom?***_____	0	1	2	3	4

Participant #_____._____

18. Tried not to think about the birth?	0	1	2	3	4
19. Spent time with other people who's partner is pregnant or talked with them?	0	1	2	3	4
20. Told yourself that things could be worse?	0	1	2	3	4
21. Had an alcoholic drink to feel better?	0	1	2	3	4
22. Felt lucky to be able to experience your partner's pregnancy?	0	1	2	3	4
23. Planned how you or someone else will take care of the baby?	0	1	2	3	4
24. Imagined or pretended being the parent of a newborn?	0	1	2	3	4
25. Tried to avoid reading or hearing stories about childbirth?	0	1	2	3	4
26. Wished that the birth was already over?	0	1	2	3	4
27. Tried to make yourself feel better with food?	0	1	2	3	4
28. Planned changes in the number of hours that you work, or in things that you do at work? ***If so, please specify changes:***_____ _____	0	1	2	3	4
29. Smoked a cigarette to feel better?	0	1	2	3	4
30. Thought about other people who are doing better during their partners' pregnancies than you?	0	1	2	3	4
31. Tried to stay away from other people?	0	1	2	3	4
32. Gone for a walk or gotten some exercise to feel better?	0	1	2	3	4
33. Prayed that the birth will go well?	0	1	2	3	4
34. Talked to family or friends about what the birth will be like?	0	1	2	3	4
35. Felt that your partner being pregnant has made your life better?	0	1	2	3	4
36. Prayed that the baby will be healthy?	0	1	2	3	4
37. Wished that your partner wasn't pregnant?	0	1	2	3	4
38. Tried to keep your feelings about the pregnancy from interfering with things you had to do?	0	1	2	3	4
39. Felt that having a baby was fulfilling a lifetime dream or goal?	0	1	2	3	4
40. Used a drug to feel better?	0	1	2	3	4
41. Gone to church, synagogue, a mosque, or other place to pray?	0	1	2	3	4
42. Read or watched something about childbirth that told what it would be like?	0	1	2	3	4

BLANK COVER SHEET