

MATERNAL PERCEPTIONS OF FATHER INVOLVEMENT, CO-PARENT
RELATIONSHIP QUALITY, MATERNAL ANXIETY AND STRESS

By

Victoria Corrine Burdo

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Directors of Thesis: Kate Harcourt, Ph.D., CFLE and Jacquelyn Mallette, Ph.D., CFLE

Major Department: Human Development and Family Science

Using a sample of 58 expecting mothers and 75 mothers this study examined maternal perceptions of father involvement and the association between perceived paternal involvement during pregnancy and the quality of the co-parent relationship using quantitative methods. Further, this study examined whether relationship status moderates this association. Additionally, the association between prenatal father involvement and maternal stress and anxiety (both prenatally and postnatally) was assessed. All items were assessed online using self-reporting surveys. Regressions indicated that prenatal father involvement impacted co-parent relationship quality and that relationship status moderated this association. Also, regressions indicated that perceived father involvement was not associated with prenatal anxiety but was associated with postnatal stress. Findings from this study provide evidence that maternal perceptions and relationship status can impact maternal experiences with the co-parenting relationship and stress.

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Victoria Corrine Burdo

APPROVED BY:

CO-DIRECTOR OF

THESIS: _____

Kate Taylor Harcourt, PhD

CO-DIRECTOR OF

THESIS: _____

Jacquelyn Mallette, PhD

COMMITTEE MEMBER: _____

Sharon Ballard, PhD

COMMITTEE MEMBER: _____

Alan Taylor, PhD

CHAIR OF THE DEPARTMENT OF

HUMAN DEVELOPMENT & FAMILY SCIENCE: _____

Sharon Ballard, PhD

DEAN OF THE

GRADUATE SCHOOL: _____

Paul J. Gemperline, PhD

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CHAPTER 1: INTRODUCTION

The role of a father is often misunderstood during pregnancy, as the role of the father is typically thought of as beginning post-delivery (Bond, Heidelbaugh, Robertson, Alio & Parker, 2010). However, current research finds the role of a father to be a crucial component of positive pregnancy outcomes (Adamsons, 2013; Henderson & Redshaw, 2013; Lewis, Lee, & Simkhada, 2015). For example, mothers are less likely to experience antenatal depression and anxiety when the father is involved (Cheng et al., 2016). Even with recent acknowledgement regarding the importance of father involvement during pregnancy (Malette, Futris, Brown, & Oshri, 2015), the topic remains a severely under researched area of study (Lewis et al., 2015). One reason for this may be societal gender norms that place the caregiving responsibility on the mother (Stamps, 2002). Also, mothers tend to be the central focus during pregnancy, labor, and delivery (Poh, Koh, & He, 2014), limiting the amount of research devoted to the father's role during this time.

The limited amount of literature on this topic indicates that men have an impact on pregnancy (Cheng et al., 2016). The current study expands on this finding by examining maternal perceptions of prenatal father involvement and experiences with maternal anxiety and stress. Men can have a positive, negative, direct, or indirect influence on the pregnancy and reproductive health outcomes of their partner and infant (Dudgeon & Inhorn, 2004). Male involvement during the prenatal period is beneficial for a variety of reasons including, the reduction of maternal anxiety and depression (Cheng et al., 2016), mothers seeking prenatal care earlier in their pregnancy, decreased or terminated risk behaviors (Kaye et al., 2014; Martin, McNamara, Milot, Halle, Hair, 2007), the mother feeling more in control of the labor process (Sapkota, Kobayashi, Kakehashi, Baral, Yoshida, 2012), the stage being set for later father

involvement, and improved relationship quality between the co-parents (Cabrera, Fagan, & Farrie, 2008; Mallette et al., 2015).

Overall, research consistently edifies the benefits and needs of father involvement during pregnancy (Porrett, Barkla, Knights, Costa, & Harmen, 2012), yet, actual involvement of fathers during pregnancy remains low (Mullany, 2006). Possible reasons for this include work responsibilities, social stigma, cultural expectations (Lewis et al., 2015), being shy or embarrassed (Mullany, 2006), unwelcoming healthcare professionals and/ or facilities (Kaye et al., 2014), and cohabitation status (Cabrera et al., 2008). The family is a system of interrelated parts and each part has an essential role within the whole (Bowen, 1978). Thus, paternal involvement has the potential to affect many aspects of the family. Understanding the factors that impact involvement while aiming to better integrate fathers in the pregnancy experience could be beneficial to the mother, as fathers can serve as a supportive resource during stressful experiences of pregnancy (Henderson & Redshaw, 2013).

This study examines the association between perceived paternal involvement during pregnancy and the quality of the co-parent relationship. Further, we examined whether relationship status moderates this association. Additionally, the association between prenatal father involvement and maternal stress and anxiety (both prenatally and postnatally) was assessed. This study adds to the current literature on father involvement by identifying implications for increasing father involvement during pregnancy. Conceptual definitions used throughout the study include:

- **Prenatal Father Involvement:** The biological father's involvement in the co-parent relationship with tasks that prepare for the infant's arrival (e.g., attending doctor visits, buying things for the infant, and selecting a name).

- **Co-parenting Relationship:** Biological parents' involvement in and division of prenatal tasks and caregiving responsibilities, regardless of romantic relationship status.
- **Co-parent Relationship Quality:** The mother's beliefs about her co-parent relationship as well as the biological father's ability to be a caregiver and parent.
- **Maternal Anxiety:** Concerns associated with pregnancy, labor, delivery and the future care of an infant.
- **Maternal Stress:** The mother's appraisal of her confidence, control, and ability to cope with demands of her present circumstance

CHAPTER 2: LITERATURE REVIEW

Father involvement during pregnancy is defined by a variety of actions, and can occur even before pregnancy confirmation, through purchasing the pregnancy test, being present for the test and results, or by being aware of their partner's menstrual cycle. During pregnancy, fathers can give advice to their partner (e.g., avoid lifting heavy things; attend regular prenatal checkups, etc.), assist midwives, massage their wives, and provide transportation to medical visits (Carter, 2002). Fathers may prepare for the pregnancy and the infant's arrival by buying clothing and/or toys and reading books (Adamsons, 2013). Fathers may have greater interest in being involved prenatally when they are present during prenatal checkups and ultrasounds (Henderson & Redshaw, 2013) and participate in body-mediated-moments (e.g., when the father engages with the fetus using the mother's body to mediate their interaction; Draper, 2002). In addition to building their connection to the fetus, men may take on roles that are atypical of male gender norms, such as engaging in more household chores (Sevil & Ozkan, 2009), and being the provider and caregiver for their pregnant partner (Adamsons, 2013). Increased prenatal involvement may also set the stage for greater father involvement after the child is born (Cabrera et al., 2008; Mallette et al., 2015).

The current study defines prenatal father involvement as the biological father's involvement in the co-parent relationship with tasks that prepare for the infant's arrival (e.g. attending doctor visits, buying things for the infant, and selecting a name). This definition of father involvement is useful, as the definition focuses on the co-parent relationship instead of the parent's interpersonal relationship. This is important, as the two relationships are very different and therefore involvement in tasks and responsibilities may look different for each relationship (Kuersten-Hogan, 2017). Co-parenting differentiates the role as a parent from other roles within

a dyad (Claridge & Chaviano, 2014) as the focus is on parental tasks and responsibilities rather than the romantic or interpersonal relationship of the dyad (Kuersten-Hogan, 2017). There are interpersonal components with co-parenting, however.

Co-parenting and Pregnancy

Co-parenting is a process that begins during pregnancy and relates to parenting decisions and care for the child (Darwiche, Favez, Simonelli, Antonietti, & Frascarolo, 2015; Varga, Gee, Rivera, & Reyes, 2017). Each member of the dyad individually and conjointly determines tasks, caregiving responsibilities, expectations, and goals that are suitable for him/her (McHale et al., 2004). Therefore, the development of an effective co-parenting relationship is a pivotal task for first time expectant parents (Schoppe-Sullivan & Mangelsdorf, 2013).

The term co-parenting relationship is used in this study to describe biological parents' involvement in, and division of, prenatal tasks and caregiving responsibilities, regardless of romantic relationship status. A healthy co-parent relationship is important for parents to develop prenatally as co-parenting characteristics extend beyond pregnancy into the postnatal period (McHale et al. 2004). Therefore, supportive co-parenting characteristics during the prenatal period may be maintained postnatally (Altenburger, Schoppe-Sullivan, Lang, Bower, & Kamp Dush, 2014). The present study aims to examine the mother's perception of the biological father's involvement with co-parenting tasks and caregiving responsibilities prenatally, examining these maternal perceptions will contribute to the literature on father involvement and co-parenting during pregnancy. To better understand the prenatal co-parent relationship and impact on pregnancy outcomes, there are a variety of factors (e.g., relationship status, living arrangements with the biological father, and intentionality) that should be considered, as they have the potential to impact the co-parent relationship and pregnancy outcomes.

Pregnancy occurs in a variety of relationship contexts as individuals may be married, cohabitating, divorced, or single. Each of these contexts have an impact on the transition to parenthood, pregnancy, pregnancy outcomes, and the co-parent relationship. Co-parent relationships and pregnancy outcomes may differ within these contexts as fathers may have a greater opportunity to be involved with prenatal tasks and caregiving responsibilities in certain relationship contexts. For example, a study by Luo, Wilkins and Kramer (2004) assessed pregnancy outcomes of various relationship statuses (married, never married, divorced and widowed) and living arrangements (living together as a couple or alone). Mothers that were found to have the worst outcomes e.g., low birth weight, preterm birth, the need for newborn placement in neonatal intensive care, and an unsubstantial maternal diet during pregnancy (Farbu, Haugen, Meltzer, & Brantsæter, 2014; Raatikainen, Heiskanen, & Heinonen, 2005), were those who lived alone (Luo et al., 2004). The study found modest differences in outcomes of mothers that were cohabitating versus those that were married.

Modest differences in outcomes may have to do with the cohabitating couples basis for cohabitation. Couples may be intentional when choosing to cohabit, or they may choose to cohabit for convenience purposes. Intentionality may mean that couples possess pro-marriage attitudes whereas couples that cohabited for convenience may have less of a long-term perspective leading to the couple being less dedicated to one another (Stanley, Rhoades & Markman, 2006). Therefore, the functionality (division of prenatal tasks and caregiving responsibilities) of the co-parent relationship may vary depending on the dyads relationship status and intentionality. For example, individuals in certain relationship contexts (e.g., intentionally married or cohabitating) may be more susceptible to a functional co-parent

relationship as they may share many of the same goals and expectations regarding tasks and caregiving responsibilities (McHale et al., 2004; Stanley et al. 2006).

Co-parenting Relationship Quality and Father Involvement

The current study defines co-parent relationship quality as the mother's beliefs about her co-parent relationship as well as her perception of the biological father's ability to be a caregiver and parent. Regardless of a couple's relationship status, co-parenting relationship quality is important for the continuation of a co-parent relationship (Cutrona, Hessling, Bacon, & Russell, 1998; Kalil, Ziol-Guest, & Coley, 2005) and positive maternal outcomes (i.e., lower levels of pregnancy related anxiety and lower perceived stress levels postnatally). Co-parenting is not attached to a couples' quality or degree of intimacy (Feinberg, 2002; Gee & Rhodes, 2003; Moore & Florsheim, 2001), but co-parenting is acknowledgement and respect of what the other parent does in the co-parent relationship (i.e., choosing a name for the baby, buying things for the child, acknowledging them as a good parent, and/or their ability to communicate about the child; Abidin & Brunner, 1995; Luz, George, Vieux, & Spitz, 2017; Schoppe-Sullivan, Mangelsdorf, Frosch, & McHale, 2004). Thus, a father's level of involvement may be influenced by the way the mother perceives him (Varga et al., 2017).

Consequently, because the father's drive for involvement may be driven by the mother's perceptions of his involvement (Varga et al., 2017), he may be discouraged to be involved if the co-parent relationship is undermining. The infant's well-being can also be at risk as the perceptions a mother holds regarding the father's involvement and attitudes can impact the mothers' decisions about certain aspects of infant care, if the mother does not feel supported by the father then she may be less inclined to make decisions that could benefit the infant's overall

health and well-being (i.e., whether to breastfeed or bottle-feed; Arora et al., 2000). However, when a co-parent relationship is supportive the father may be more inclined to be involved.

Regarding the impact of partner support on the co-parent relationship, the family stress theory can be applied. The family stress theory describes how families experience stress based on their resources and perception of the stressor (McCubbin & Patterson, 1983). Thus, the family stress theory supports the thought that positive maternal viewpoints and support of the father's co-parenting skills can serve as protective factors for a quality co-parent relationship (Durtschi, Soloski & Kimmes, 2017), with maternal positive regard and support serving as resources (McCubbin & Patterson, 1983). Also, the perceived quality of the co-parent relationship could serve as a resource for mothers leading to lower reports of pregnancy related anxiety and postnatal perceived stress. Thus, examination of maternal perceptions of involvement may help to elucidate their impact on pregnancy decisions and outcomes. Specifically, for this study, we examined biological father's contributions to the co-parent relationship and the mother's beliefs about the co-parent relationship prenatally to assess the quality of the co-parent relationship.

Maternal Anxiety and Perceived Stress

The quality of co-parent relationships can influence rates of maternal anxiety and perceived stress. Mothers often rely on their partner as a major source of support and if that partner is unavailable and/or relationship strain is present, the mother may be more apt to experience anxiety or stress. Distress is said to occur when an individual perceives a situation as surpassing his or her ability to cope due to the extreme nature of the present situation and can produce negative outcomes such as anxiety. Experiencing maternal anxiety and stress may be influenced by pregnancy intention and relationship quality (Gurung, Dunkel-Schetter, Collins, Rini, & Hobel, 2005; Tremblay & Soliday, 2012). This may be because of a relationship between

pregnancy intention and the formation of a co-parent relationship (Bronte-Tinkew & Horowitz, 2010). For example, parents that intended their pregnancy may have shared expectations and goals for their child, whereas parents with an unintended pregnancy may not share the same goals and expectations.

Also, perceptions of the co-parent relationship and a father's level of involvement during pregnancy and within the first few months of an infant's life outside of the womb may influence maternal anxiety and perceived stress (Arora, McJunkin, Wehrer, & Kuhn, 2000; Fagan & Lee, 2010; Kaye et al., 2014). Maternal anxiety and stress are likely to form from negative maternal perceptions, as women formulate many aspects of the transition to parenthood, including their own and the fathers' roles as parents (Ayers & Pickering, 2012). Thus, if expectations are very high or unrealistic, the mother may be dissatisfied with the father's completion of tasks or overall involvement (Curran, Hazen, & Mann, 2009), creating the potential for anxiety and stress to ensue.

Maternal anxiety includes concerns for one's health, the health of the fetus/infant, fear of labor and delivery, loss of control, and fulfilling the maternal role (Areskog, Uddenbert, & Kjessler, 1981; Beck et al., 1980). Figueiredo et al. (2008) found that postnatal anxiety develops when partner relationships are substandard. Thus, a lack of perceived paternal involvement both prenatally and postnatally could poorly impact the co-parent relationship quality and lead to maternal anxiety and stress (Stapleton et al., 2012). The current study defines maternal anxiety as concerns associated with pregnancy, labor, delivery and the future care of an infant.

Maternal stress postnatally arises from concerns about not possessing the skills to be a competent parent. These concerns may be related to the new responsibilities and tasks that are included in the maternal role such as feeding, changing, and monitoring an infant (Liu, Chen,

Yeh, & Hsieh, 2012; Ryan, Tolani, & Brooks-Gunn, 2009). Maternal stress can lead to dissatisfaction and feeling overwhelmed in her role. The current study defines maternal stress as the mother's appraisal of her confidence, control, and ability to cope with demands of her present circumstance (Mulsow, Caldera, Pursley, Reifman, & Huston, 2002). A co-parent relationship can create a positive appraisal for the mother as demands can be shared. Thus, she may perceive herself to be confident, in control, and better able to cope with demands. However, if the co-parent relationship is substandard then the mother may negatively appraise herself (Ryan, Tolani, & Brooks-Gunn, 2009). Also, factors such as maternal age, socioeconomic status (SES), and social support can impact a mother's appraisal of her confidence, control, and ability to cope (Alderdice, & Lynn, 2009).

The family stress theory and family systems theory can be used to explain discrepancies in maternal wellbeing (Claridge, 2017; McCubbin & Patterson, 1983). The family stress theory posits that adaptation or maladaptation (i.e., a healthy versus unhealthy outcome) occurs depending on one's perception of an event and resources; while the family systems theory assumes that outcomes are not the result of a single individual's actions but rather interactions between the individual and other subsystems lead to outcomes (Cox & Paley, 1997). The current study will compare study findings regarding maternal experiences and attitudes to the 2015 North Carolina Pregnancy Risk Assessment Monitoring System (PRAMS) survey results dataset (PRAMS, n.d.). The PRAMS survey collects data from mothers regarding their maternal attitudes and pregnancy experience (PRAMS, n.d.).

Theoretical Framework

Family stress theory (Fagan & Lee, 2010; Poncelet, 1983) provides a framework for understanding how individuals and families experience normative and non-normative stressors

during their transition to parenthood, during pregnancy and postnatally (Poncelet, 1983). Reuben Hill, developed the ABC-X model to explain the family stress process (McCubbin & Patterson, 1983). Each letter in the model explains a different part of the family stress process: (A) Stressor, (B) Resources, (C) Perception of Stressor, (X) Crisis (McCubbin & Patterson, 1983). This model is important in the stress process as individual and family experiences may differ depending on the perception of the event and the resources available (McCubbin & Patterson, 1983).

Pregnancy being a normative, and in some cases non-normative, stressor can have varied outcomes depending on the resources available to the mother. A resource could include the social support of the child's other parent. The social support available to the mother will impact how she perceives the demands of her current circumstance; thus, impacting the degree of anxiety or stress the mother may experience.

Family systems theory views the family as a system where individuals are understood by examining them as a unit rather than as a single individual. Individuals within this theory and these units are viewed as being connected emotionally. When thinking about emotional connections the concepts differentiation, triangulation and emotional processes arise. Differentiation, triangulation, and emotional processes are all concepts within the family systems theory. Differentiation is a balance between being an individual and interdependent on another (Bowen, 1978). When one is not well differentiated they have been found to not adapt as well to stressful experiences. Triangulation occurs when a dyad is experiencing tension and anxiety, and a third party is brought into the system to relieve some of the tension and anxiety. Emotional processes refer to the way that an individual or family reacts to stress; these emotional processes are said to be transmitted across generations (Haefner, 2014).

Both theoretical frameworks examine attributes of individuals, families, and dyads. Each framework provides concepts that explain why some thrive and others have difficulty adapting to new experiences. Thus, these frameworks have been selected to support the examination and explanation of varied experiences during pregnancy regarding perceived father involvement, co-parent relationship quality, and maternal outcomes.

Present Study

The present study utilizes the family stress and family systems theories to examine and explain the relationships between perceived prenatal father involvement, co-parent relationship quality, relationship status, maternal prenatal anxiety, and postnatal stress. Relationship status was examined as a moderator for the relationship between father involvement and co-parent relationship quality. Below are the research questions (RQ) addressed in this study and corresponding hypotheses (H).

- RQ1: Does perceived prenatal father involvement impact the co-parenting relationship quality?
- H1: The researcher hypothesized that perceived prenatal father involvement will positively impact co-parenting relationship quality.
- RQ2: Does relationship status moderate the relationship between prenatal father involvement and co-parenting relationship quality?
- H2: The researcher hypothesized that relationship status will moderate the relationship between prenatal father involvement and co-parenting relationship quality.
- RQ3: Is there a relationship between prenatal father involvement and prenatal maternal anxiety during pregnancy?

- H3: The researcher hypothesized that if the mother perceives the father to be involved prenatally then the mother will report less prenatal anxiety.
- RQ4: Is there a relationship between prenatal father involvement and postnatal maternal stress?
- H4: The researcher hypothesized that if the mother perceived the father to be involved prenatally then the mother will report less postnatal stress.

CHAPTER 3: METHODS

Study Design and Procedure

The current study involves human subjects; therefore, the study was submitted to the institutional review board (IRB) for approval to conduct the study (see Appendix A). The study is quantitative in design and used Likert scales to measure perceived father involvement in the co-parent relationship, co-parent relationship quality, maternal anxiety prenatally and maternal stress postnatally. The study employed the use of Qualtrics, a software that allowed participants to complete the survey online at their convenience. Before beginning the survey, the participant was asked to complete an informed consent.

Multiple counties were selected for recruitment to allow for the potential of a higher sample size. Urban and rural areas were examined, this variation is beneficial as SES and access to services may vary greatly by location (urban or rural), and such variation allows for the examination of variables such as SES. SES was measured using annual income before taxes as a proxy. The researcher completed a general search for relevant locations (hospitals, pregnancy centers, local physician offices, childcare centers, and pregnancy support groups) using databases, search engines, and social networking sites such as the Department of Health and Human Services (DHHS) website, Google, and Facebook.

The researcher searched the DHHS database to populate a complete directory of childcare centers by county. The researcher personally developed a directory of locations other than childcare centers by county using Google to search for relevant locations. Once locations were identified they were compiled into Excel and were organized by county. The Excel document included site contact information (location name, phone number, address, and email address).

The researcher also searched various social networking sites such as Facebook, Meetup Group, and Twitter to locate relevant support groups. An excel document was created to design a directory for these social network sites. The directory included group name, administrator name and page URL. After IRB approval, the researcher emailed the location a letter (see Appendix B) informing them of the study and requesting their participation. The email also informed the location that the researcher would be contacting them in a few days to provide additional information, answer any questions, and request participation.

Requesting participation from social networking sites included joining relevant pregnancy support groups and organization pages. Next, the researcher contacted the page administrator to describe the study and request participation from their support group or organization. If the page administrator agreed to have their group or organization participate the researcher requested that the support group administrator, make a public post (see Appendix B) describing the study and its aims. The post included eligibility criteria, the anonymity of the study, and included a direct link to the survey. The post was public and allowed social network site users to share the post to their personal page. Allowing users to share the post to their personal page potentially increased the sample size as the survey was available to a greater number of individuals than just those that are a member of the support group or organization page.

When the mother began the Qualtrics survey, she was first asked to complete an informed consent form. After the mother provided consent she was directed to complete the Prenatal Father Involvement scale and the Parenting Alliance Inventory. Mothers that completed the Prenatal Father Involvement Scale that had given birth completed the scale retrospectively. The Parenting Alliance Inventory assessed the co-parent relationship quality; therefore, mothers only

reported on their co-parent relationship with their child's biological father. In addition to the above scales, mothers also completed the Prenatal Anxiety Scale or the Postnatal Maternal Stress Scale. The scale completed was dependent upon the mother's pregnancy status (e.g., if the mother indicated that she had given birth she was directed to complete the Perceived Stress scale).

Eligibility. Eligible participants were female and 18 years of age or older. The female was pregnant or the mother of an infant (i.e., given birth within the past six months). Mothers were not excluded based on parity, relationship status, SES, ethnicity, sexual orientation, education level, or absence of the other parent. If a mother identified as being in a same-sex relationship, her data would be gathered but not analyzed. However, no mothers identified being in a same-sex relationship. Data would have been gathered from these women to prevent exclusion of those in same-sex relationships from participating. However, their data was selected to not be analyzed as much of the literature that was reviewed focused on heterosexual couples. Also, the Prenatal Father Involvement scale items focus on father involvement and was not adjusted to account for same-sex interactions. If the other parent was identified as being absent the mother was still eligible to participate in the study. These mothers identified that the other parent was not involved on surveys pertaining to the other parent's involvement. Mothers identified that the child's biological father was not involved by selecting "Never" on the Prenatal Father Involvement Scale or by selecting "Strongly Disagree" on the parenting alliance inventory. Mothers were literate in the English language and had internet access for successful completion of the online measures that were utilized in this study.

Sample. The sample consisted of 58 expecting mothers and 75 current mothers recruited from three counties (i.e., Johnston County, Pitt County and Wake County). Eighty six percent of

mothers reported their ethnicity as white. Mothers that indicated currently being pregnant included 34.9% of the sample and 43.4% indicated that it has been more than six months since they gave birth. A little less than half (47.4%) of mothers reported that this was their second pregnancy and 78.5% of the mothers reported that their pregnancy was intended. When asked their highest level of education received 36.1% reported having a bachelor's degree, 18.7% have a master's degree and 4.2% have a doctorate. When asked their total annual income before taxes 87.3% of the sample reported their total annual income as being \$20,000 or more. When asked to describe their child's other parent's presence 93.9% reported that the child's other parent is present and residential and 82.8% identified being married. Because the sample was gathered on social networking sites, purposive and snowball sampling extended the sample beyond the three recruitment counties. Of the sample, 54.7% identified as living outside of the three counties. Also, comments reported by mothers on social networking sites indicated that some mothers may reside outside of the state or country. The sample was obtained from pregnancy support groups and local organization social network sites. Demographics were obtained using multiple choice survey items (see demographic items in Appendix C).

Measures

Variables. This study examined four research questions. Perceived father involvement was examined as an independent variable to identify if perceived father involvement had an impact on co-parent relationship quality. Relationship status was examined as a moderator for the relationship between father involvement and the co-parent relationship quality. A relationship was examined between perceived father involvement and maternal anxiety prenatally. A relationship was also examined between perceived father involvement and perceived stress postnatally.

Demographic variables. SES of the mother was examined using annual income before taxes as a proxy. To provide a description of the sample, the location where the mother resides was examined as well as the location where she received pregnancy related services. Parity and education level of the mother was also examined as demographic variables.

Control variables. The current study controlled for education level, SES, and pregnancy intention. The inclusion of controls was determined using the Pearson Correlation procedure.

Scales. The current study used Likert scales to obtain data. There were four Likert scales used in this study. The Likert scales utilized include: Prenatal Father Involvement, Parenting Alliance Inventory, the Pregnancy Related Anxiety Scale, and the Perceived Stress Scale. Each scale is explained in greater detail below to include scale reliability, validity, scale items, and what the scale assessed.

Prenatal father involvement. Prenatal father involvement was assessed using the Prenatal Father Involvement Scale (Malette et al., 2015). The Prenatal Father Involvement Scale is a 7-item scale. Each item is scaled from *1=Never* to *5=Always* ($\alpha = .96$; Malette et al., 2015). Sample items from the scale include: “Before your child was born how often did the father buy things for the baby?” and “Before your child was born how often did the father learn about how to take care of the baby?”

Parenting alliance inventory. Co-parent relationship quality was assessed using the Parenting Alliance Inventory (Abidin & Brunner, 1995). The Parenting Alliance Inventory is a 20-item scale. Each item is scaled from *5= Strongly agree* to *1= Strongly Disagree* ($\alpha = .97$; Abidin & Brunner, 1995). Sample items from the scale include: “I believe my child’s other parent is a good parent,” and “My child’s other parent and I communicate well about our child.”

Prenatal maternal anxiety. The 10-item Pregnancy Related Anxiety scale ($\alpha = .78$; Rini, Dunkel-Schetter, Wadhwa, & Sandman, 1999) was used to measure prenatal anxiety. The Pregnancy Related Anxiety scale asks participants to provide answers to the items using a four-item scale $1=Never$ or *not at all* to $4=A$ lot of the time or very much. Sample items include: “I am confident of having a normal birth,” and “I am concerned (worried) about taking care of a new baby (Rini, Dunkel-Schetter, Wadhwa, & Sandman, 1999).”

Postnatal maternal stress scale. The 10-item Perceived Stress Scale (PSS; Karam et al., 2012) was utilized in the present study to measure postnatal anxiety. The PSS asks participants to rate their answers on a scale from $0=Never$ to $4=Very$ Often ($\alpha = .92$; Glynn, Schetter, Hobel & Sandman, 2008). Some of the scale items include: “In the last month how often have you felt nervous or stressed? In the last month, how often have you felt that things were going your way?” and “In the last month how often have you found that you could not cope with all of the things that you had to do?”

Analyses

The current study used IBM SPSS to conduct all analyses. To examine the relationship between perceived paternal involvement during pregnancy and co-parent relationship quality, a regression was utilized. To examine whether relationship status moderated this relationship, hierarchical multiple regression was employed. Additionally, the relationship between father involvement and maternal stress and anxiety (both prenatally and postnatally) was assessed using regressions. The current study controlled for education level, SES, and pregnancy intention. Parity was considered as a variable to be controlled for but was not selected as only six mothers identified that this was their first pregnancy, therefore parity was not found to be highly correlated with the variables under examination. Measures were reverse scored and computed to

create a single variable and missing data were accounted for before running the analyses by scanning the data for missing data and inputting -99. Finally, all variables were examined using mean scores.

CHAPTER 4: RESULTS

Preliminary Analyses

Prior to testing specific hypotheses, descriptive statistics and correlation matrix (see Table 1) for outcome variables were computed and assessed and preliminary assumption testing was conducted to check for normality, homoscedasticity, linearity and multicollinearity. All analyses met the assumptions. Each research question and hypothesis controlled for education, pregnancy intention, and SES. Control variables were identified using a bivariate Pearson Correlation.

Table 1

Correlation Matrix and Descriptives

	1	2	3	4	5	6	7	8
Father Involve	--	.71**	.03	-.35**	-.30**	.28**	.06	-.28
Coparent Quality	.71**	--	.04	-.35**	-.40**	.38**	-.19	-.33**
Prenatal Anxiety	.03	.04	--	. ^c	-.07	-.04	. ^c	-.10
Maternal Stress	-.35**	-.35**	. ^c	--	.14	.25**	.14	.24
SES	-.30**	-.40**	-.07	.14	--	-.29**	.18	.36**
Preg. Intention	.28**	.38**	-.04	-.25**	-.29**	--	-.20*	-.25*
Parity	.06	-.19	. ^c	.14	.18	-.20*	--	.14
Education	-.28	-.33**	-.10	.24	.36**	-.25*	.14	--
N	173	167	57	106	165	163	105	166
Min-Max	1.0-5.0	1.0-5.0	1.0-3.6	1.0-4.0	.00-1.0	.00-1.0	.00-1.0	.00-1.0
Mean(SD)	3.89(.87)	4.37(.77)	1.95(.64)	2.31(.07)	.13(.33)	.79(.41)	.15(.36)	.28(.45)
Skewness	-.94	-2.03	.46	.35	2.26	-1.40	1.96	.97
Kurtosis	.64	4.61	-.29	-.26	3.1	-.03	1.89	-1.07

Note. ** $p > .01$; * $p > .05$

Co-parenting Relationship Quality

A multiple regression model was implemented to first establish a relationship between prenatal father involvement and the outcome variable (co-parenting relationship quality; see Table 2). The results of the regression were significant explaining 58.3% of variance ($R^2 = .58$, $F(4,111) = 38.72$, $P < .001$). Analyses indicated that perceived prenatal father involvement ($\beta = .56$,

$p < .001$) was a significant predictor of co-parent relationship quality. Thus, our hypothesis was supported. Variables controlled (see Table 4) for in the analyses include education ($\beta = -.06$, $p > .05$), pregnancy intention ($\beta = .18$, $p < .001$), and SES ($\beta = -.21$, $p < .01$).

Table 2

Co-parenting Relationship Quality ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	23.745	3	7.915	18.958	.000 ^b
Residual	46.759	112	.417		
Total	70.503	115			
2 Regression	41.071	4	10.268	38.724	.000 ^c
Residual	29.432	111	.265		
Total	70.503	115			

- a. Dependent Variable: Mean Parenting Alliance Inventory
- b. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES
- c. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES, Mean Father Involvement

Table 3

Co-parenting Relationship Quality Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.580 ^a	.337	.319	.64613	.337	18.958	3	112	.000
2	.763 ^b	.583	.567	.51493	.246	65.345	1	111	.000

- a. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES
- b. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES, Mean Father Involvement

Table 4.

Co-parenting Relationship Quality Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	4.104	.151		27.210	.000
Pregnancy Int.	.547	.154	.284	3.546	.001
SES	-.815	.187	-.360	-4.354	.000
Education	-.269	.148	-.151	-1.822	.071
2 (Constant)	2.305	.253		9.113	.000
Pregnancy Int.	.347	.125	.180	2.763	.007
SES	-.475	.155	-.210	-3.066	.003
Education	-.099	.119	-.056	-.830	.408
Father Involve	.490	.061	.556	8.084	.000

- a. Dependent Variable: Mean Parenting Alliance Inventory

Co-parenting Relationship Quality and Relationship Status

A hierarchical multiple regression model (see Table 5) was implemented to test the hypothesis that relationship status will moderate the relationship between prenatal father involvement and co-parenting relationship quality. Variables controlled for (see Table 7) include education, pregnancy intention, and SES. Control variables were entered in block one of the analysis. Next, in block two, the predictor father involvement and the interaction term (Relationship Status) were entered. To create the interaction term the variables relationship status and father involvement were centered and then were computed to create the interaction term. The results of the regression were significant ($R^2 = .593$, $F(5, 156) = 45.48$, $p < .001$) accounting for 59.3% of the variance. Thus, our hypothesis was supported as relationship status ($\beta = .22$, $p < .001$) does moderate the relationship between prenatal father involvement ($\beta = .52$, $p < .001$) and co-parenting relationship quality.

Table 5

Co-parenting Relationship Quality and Relationship Status ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	25.847	3	8.616	19.182	.000 ^b
Residual	70.964	158	.449		
Total	96.811	161			
2 Regression	57.420	5	11.484	45.479	.000 ^c
Residual	39.391	156	.253		
Total	96.811	161			

- a. Dependent Variable: Mean Parenting Alliance Inventory
- b. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES
- c. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES, Mean Father Involvement, Relationship Status

Table 6.

Co-parenting Relationship Quality and Relationship Status Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.517 ^a	.267	.253	.67018	.267	19.182	3	158	.000
2	.770 ^b	.593	.580	.50250	.326	62.519	2	156	.000

- a. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES

- b. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES, Mean Father Involvement, Relationship Status

Table 7

Co-parenting Relationship Quality and Relationship Status Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	4.137	.132			31.315	.000
Pregnancy Int.	.492	.135	.262		3.639	.000
SES	-.581	.173	-.253		-3.353	.001
Education	-.328	.128	-.190		-2.553	.012
2 (Constant)	2.490	.223			11.185	.000
Pregnancy Int.	.245	.104	.130		2.359	.020
SES	-.219	.136	-.095		-1.607	.110
Education	-.130	.098	-.075		-1.326	.187
Relationship Stat	.421	.116	.216		3.634	.000
Father Involve	.460	.052	.520		8.827	.000

a. Dependent Variable: Mean Parenting Alliance Inventory

Prenatal Anxiety

A multiple regression model (see Table 8) was implemented to first establish a relationship between perceived prenatal father involvement and the outcome variable (prenatal anxiety). The results of the regression were not significant and indicated 1% of variance ($R^2=.01$, $F(1,52)=.001$, $P>.05$). Thus, our hypothesis was not supported as the predictor perceived father involvement was not found to significantly impact prenatal anxiety ($\beta=-.01$, $p>.05$). Variables controlled for (see Table 10) in the analyses include education ($\beta=-.09$, $p>.05$), pregnancy intention ($\beta=-.06$, $p>.05$), and SES ($\beta=-.04$, $p>.05$).

Table 8

Prenatal Anxiety ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.328	3	.109	.257	.856 ^b
Residual	22.554	53	.426		
Total	22.883	56			
2 Regression	.329	4	.082	.190	.943 ^c
Residual	22.554	52	.434		
Total	22.883	56			

a. Dependent Variable: Mean Prenatal Anxiety

- b. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES
- c. Predictors: (Constant), Dichotomous Education Variable, Pregnancy Intention, SES, Mean Father Involvement

Table 9

Prenatal Anxiety Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.120 ^a	.014	-.041	.65234	.014	.257	3	53	.856
2	.120 ^b	.014	-.061	.65858	.000	.001	1	52	.973

a. Predictors: (Constant), Dichotomous Education Variable , Pregnancy Intention, SES

b. Predictors: (Constant), Dichotomous Education Variable , Pregnancy Intention, SES, Mean Father Involvement

Table 10

Prenatal Anxiety Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	2.062	.186		11.090	.000
Pregnancy Int.	-.086	.201	-.060	-4.29	.669
SES	-.072	.284	-.040	-.255	.800
Education	-.129	.219	-.090	-5.89	.558
2 (Constant)	2.076	.450		4.612	.000
Pregnancy Int.	-.086	.203	-.060	-4.23	.674
SES	-.076	.306	-.042	-.248	.805
Education	-.130	.223	-.091	-5.83	.563
Father Involve	-.004	.105	-.005	-.034	.973

a. Dependent Variable: Mean Prenatal Anxiety

Postnatal Stress

A multiple regression model (see Table 11) as implemented to first establish a relationship between perceived prenatal father involvement and the outcome variable (postnatal stress). The results of the regression were significant explaining 20% of variance ($R^2=.20$, $F(4,54)=3.32$, $P<.05$). Analyses indicated that perceived father involvement was found to significantly impact postnatal stress ($\beta=-.36$, $p<.05$). Thus, our hypothesis was supported. Variables controlled for (see Table 13) in the analyses include education ($\beta=.08$, $p>.05$), pregnancy intention ($\beta=-.12$, $p>.05$), and SES ($\beta=-.08$, $p>.05$).

Table 11

Postnatal Stress ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	2.947	3	.982	2.043	.118 ^b
Residual	26.441	55	.481		
Total	29.388	58			
2 Regression	5.803	4	1.451	3.322	.017 ^c
Residual	23.584	54	.437		
Total	29.388	58			

a. Dependent Variable: Mean Perceived Stress

b. Predictors: (Constant), Dichotomous Education Variable, SES, Pregnancy Intention

c. Predictors: (Constant), Dichotomous Education Variable, SES, Pregnancy Intention, Mean Father Involvement

Table 12

Postnatal Stress Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.317 ^a	.100	.051	.69336	.100	2.043	3	55	.118
2	.444 ^b	.197	.138	.66087	.097	6.541	1	54	.013

a. Predictors: (Constant), Dichotomous Education Variable, SES, Pregnancy Intention

b. Predictors: (Constant), Dichotomous Education Variable, SES, Pregnancy Intention, Mean Father Involvement

Table 13

Postnatal Stress Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	2.622	.285		9.206	.000
Pregnancy Int.	-.506	.278	-.258	-1.817	.075
SES	-.050	.275	-.024	-.182	.856
Education	.188	.229	.116	.824	.414
2 (Constant)	3.625	.477		7.600	.000
Pregnancy Int.	-.227	.287	-.116	-.791	.433
SES	-.172	.266	-.083	-.646	.521
Education	.124	.219	.077	.566	.573
Father Involve	-.311	.122	-.364	-2.558	.013

a. Dependent Variable: Mean Perceived Stress

CHAPTER 5: DISCUSSION

Overall this study explored maternal perceptions of father involvement to examine the impact of father involvement on co-parent relationship quality (and relationship status as a potential moderator), prenatal anxiety, and postnatal stress. Study findings indicated that prenatal father involvement impacted co-parent relationship quality and that relationship status moderated this association. Co-parent relationship quality has been identified in previous findings as a variable that can impact the rate of father involvement and serve as a safeguard for father involvement (Feinberg, 2002). Thus, factors impacting rates of father involvement, such as relationship status, are important to examine. The finding that co-parent relationship quality is moderated by relationship status aligns with the family stress theory, such that certain relationship contexts may be more conducive to managing the experience of stress and strain during pregnancy and parenting (Patterson, 1988). Previous literature indicates that parents who are not in a relationship and/ or identify as being unmarried are more likely to report hardships than those currently in a relationship and/or married (Edin & Nelson 2013; McLanahan & Beck, 2010). Perceived father involvement was not associated with prenatal anxiety but was associated with postnatal stress. Findings with regards to prenatal anxiety did not support all previous findings; this inconsistency may be due to the differences in the demographics (education, pregnancy intention, and SES) of this study from previous studies (Jamison et al., 2017; Tremblay & Soliday, 2012). Our findings regarding postnatal stress are supported in the literature with co-parenting being identified as a potential protective factor against parental stress (Durtschi et al., 2017). Below hypotheses, findings, and secondary findings are expanded upon.

Co-parenting Relationship Quality

The hypothesis that perceived prenatal father involvement will positively impact co-parenting relationship quality was supported with father involvement being a significant predictor of co-parent relationship quality. These findings align with the literature that indicate increased paternal involvement in the prenatal relationship as being linked with more positive co-parenting behaviors (Durtschi et al., 2017; Luz et al., 2017). Sample demographics may also explain the hypothesis being supported as the sample included mostly college educated mothers and mothers identified as being in a relationship. Education and relationship status are notable as the literature has indicated differences in the experiences of these populations compared to mothers that have a lower education level and are single. These differences may exist due to personal characteristics of each population of mothers. For example, mothers with college education have been found to encourage father involvement with caregiving tasks and responsibilities, and parents in relationships have been reported to share similar parenting views (McHale et al., 2004; Stanley et al. 2006). Both encouraging paternal involvement, and a shared parenting philosophy have been identified as being related with maternal satisfaction as the father is involved in the co-parenting process and thus mother's perceptions of the co-parent relationship are positive (Abidin & Brunner, 1995; La Lima, 2012).

These findings suggest that mothers who encourage father involvement are more likely to have partners that are involved and share a parenting philosophy, and are more likely to report satisfaction with paternal involvement (De Luccie, 1995). Thus, since our sample consisted of predominantly college educated mothers and mothers in relationships they may have encouraged father involvement and may have shared parenting philosophies with their child's father. Given the findings of our study one could assume that our sample has positive perceptions of the

father's involvement and the coparent relationship quality. This assumption is supported by literature that indicates that when paternal involvement meets the mother's expectations the mother will likely perceive the father as being involved and will report satisfaction with the father's involvement as well as the co-parenting relationship. Whereas, if the mother does not believe that the father is meeting her expectations she may possess negative perceptions of the father and the co-parent relationship (Curran, Hazen, & Mann, 2009).

Exploration of control variables (education, pregnancy intention, and SES) secondary to the above hypothesis indicated that pregnancy intention and SES were significant in the association between co-parent relationship quality and perceptions of prenatal father involvement, but education was not identified as significant in the association. The study's findings, for the above hypothesis and variables controlled for, align with the family stress theory and family system theory. Findings and literature reviewed indicate that families that report having access to various resources (father involvement, financial resources, relationship context, and college education) have different experiences and perceptions of the stressor (pregnancy) and co-parenting relationship than expecting parents with less access to resources (McCubbin & Patterson, 1983; Stright & Bales, 2003). The findings of this study contribute to existing literature as they support the idea that prenatal father involvement impacts co-parent relationship quality, but they also edify the differences in experiences depending on maternal resources.

Co-parenting Relationship Quality and Relationship Status

Next, the hypothesis that relationship status will moderate the relationship between prenatal father involvement and co-parent relationship quality was supported with relationship status being a significant moderator of prenatal father involvement and co-parent relationship quality. Additionally, father involvement was identified as a significant predictor. Relationship

status has been identified as a significant predictor of father involvement and co-parent relationship quality in the literature. For example, parents that are in romantic relationships may have supportive co-parenting behaviors, while challenges with co-parenting skills and behaviors have been reported as prevalent after relationship disintegration as well as in families that are unmarried (Claridge & Chaviano, 2014; Jamison et al., 2017; Maccoby, Depner, & Mnookin, 1990). These challenges cause some family therapists to feel as though co-parenting practices cannot be developed until parental relationship obstacles have been resolved (Feinberg, 2002). These views may exist as the interpersonal relationship of the dyad has been found to impact the mother's perception of the father and his overall involvement in the co-parent relationship (Durtschi et al., 2017).

Maternal perceptions have also been identified as being affected by resources (e.g., financial and social support) that are available to the mother. Relationship context is notable when discussing maternal resources, as access to resources may vary within certain relationship contexts. Some relationship contexts may allow for access to social and financial support, while other relationship contexts may not (Child Trends, 2015; Jamison et al., 2017). For example, Jamison et al. (2017) conducted a study with couples in different relationship contexts and applied the family stress theory to explain the differences in mother's experiences. Jamison et al. further conceptualized the different experiences in this study as being "discrete, ongoing family strain, or daily hassels" using the Family Adjustment and Adaptation Response Model. The Family Adjustment and Adaptation Response Model is a model that distinguishes between resiliency as a capacity and a process (Patterson, 2002). Using this model, Jamison et al. was able to examine different relationship contexts and explain different experiences of individuals

within different relationship contexts. Jamison et al. was then able to explain how those experiences may affect the co-parenting relationship.

Experiences because of one's relationship context may explain why some individuals thrive and others are unable to do so. Given that most of our sample reported being in a relationship, and that the father resided in the same household as the mother, it may be that fathers had increased opportunities for father involvement and that the family had a greater access to resources (e.g., financial and social support) compared to other relationship contexts (Bronte-Tinkew & Horowitz, 2010; Jamison et al., 2017), thus leading to relationship status moderating the relationship between father involvement and co-parent relationship quality.

Variables that were controlled for produced findings secondary to the hypothesis examined. Secondary findings indicated that pregnancy intention was significant in the association, however, education and SES were not found to be significant. Pregnancy intention may be significant in the association as individuals in a relationship may share similar views and/or willingness to communicate and compromise with their interest in becoming a parent and parenting goals (Schoppe-Sullivan & Mangelsdorf, 2013; Stanley et al., 2006; Luz et al., 2017). Therefore, with relationship status moderating this association it may be that SES and education are not significant in the association as many of the participants indicated that they were in a relationship, highly educated and that they made over 20,000 dollars after taxes. These findings contribute to existing literature by further supporting relationship context and its role in moderating the relationship between prenatal father involvement and co-parent relationship quality. But also, these findings identify the significance of pregnancy intention which could be considered for further examination in future studies across relationship contexts as this study consisted of predominantly married individuals.

Prenatal Anxiety

The hypothesis regarding prenatal father involvement and maternal prenatal anxiety was not supported. Father involvement was not indicated as a significant predictor of prenatal anxiety and variables controlled for (education, pregnancy intention, and SES) were not found to be significant in the association. These findings conflict with some previous findings that have found father involvement to impact rates of anxiety during pregnancy (Cheng et al., 2016; Rini, Schetter, Hobel, Glynn, & Sandman, 2006). However, the current study's findings do align with Gurung et al. (2005) who also found that involvement of the expecting father was not a significant predictor of prenatal anxiety. Gurung et al. examined other variables (e.g., maternal attitudes towards pregnancy) that were found to impact maternal anxiety. Maternal attitudes during pregnancy were identified by Gurung et al. as being impacted by maternal age, education, yearly earnings, and relationship context. The same study also indicated that mastery (the thought that the pregnancy experience and pregnancy outcomes are under one's control) significantly influenced rates of maternal anxiety at various stages of pregnancy. There are additional variables that may also impact rates of prenatal anxiety such as pregnancy risk, parity and pregnancy intention (Tremblay & Soliday, 2012). Therefore, the hypothesis that if the mother perceives the father to be involved prenatally then the mother will report less prenatal anxiety may not have been supported due to experiences that are personal to the mother with her pregnancy experience and demographic characteristics (e.g., parity and pregnancy intention) of the sample under study. Future research should continue to examine this hypothesis with additional variables, to better understand the nuances of the relationship.

Postnatal Stress

Lastly, the hypothesis that if the mother perceived the father to be involved then the mother will report less postnatal stress was supported with father involvement being a significant predictor of postnatal stress. This finding is supported by Nomaguchi, Brown, and Leyman (2017) who indicated that paternal engagement with children and assistance with caregiving tasks and responsibilities reduces maternal stress. Thus, when mothers receive social support they are less likely to experience maternal stress (Letourneau, Stewart, & Barnfather, 2004). Social support may vary depending on the mother's relationship status (Ryan et al., 2009). Demographics of the sample under examination indicated that most of the mothers in this study were identified as being in a relationship. Relationship status is important to note as Ryan et al. (2009) shared that the absence of a coparent may increase the stressors of parenting for the mother. Ryan et al. further indicated differences in parenting stress existed based on the father's residential status. Ryan et al. found that fathers that resided in the same household as the mother provided a greater amount of support than non-residential fathers, it was also noted that fathers identified as being involved romantically with the mother provided the most support. Since most of our sample indicated being in a relationship, and that the father is residential, they may feel supported in the coparent relationship and therefore experienced lower rates of stress. After all, if the mother perceives the father to be involved with caregiving tasks and responsibilities the mother will report less stress (Nomaguchi et al., 2017).

Our study's findings further support the family systems theoretical framework which understands individuals by examining the system. Thus, maternal stress is explained by examining the system to explain maternal stress rather than solely examining the mother to explain her experience with postnatal stress (Bowen, 1978). The family stress theory can also be

applied to explain maternal stress as mothers may experience stress differently given the resources that they may have available to them (e.g., paternal involvement). Variables that were controlled for (education, pregnancy intention, and SES) and examined secondary to the hypothesis were not found to be significant in the association. These covariates may not have been identified as significant due to sample demographics indicating that most mothers were college educated, intended their pregnancy and received \$20,000 or more before taxes.. These findings contribute to the literature as they support existing findings, provide examples of postnatal stress given prenatal father involvement, but also provide a platform for additional variables to be further examined in relationship to the association.

Limitations

The findings in this study must be understood in light of its limitations. Due to the online nature of the survey participants were limited as not all individuals that were invited to participate may have decided to participate. Also, not all invited individuals may have had access to the internet. Additionally, with the survey being disseminated online, participants were not able to be screened. Therefore, the assumption is that the inclusion criteria was met; however, anyone could have completed the survey. The study is limited as the data was self-reported. Another limitation is that the interviewer was not present while participants were completing the survey. This is a limitation as participant questions regarding survey items were unable to be clarified. Another limitation is the potential for participants to develop response fatigue and with online surveys there is no undisclosed location guaranteed for survey completion. Response fatigue and the lack of a guaranteed privileged location for survey completion may have affected the respondent's honesty. Respondents may have been pressured to answer questions in a certain manner depending on who they were surrounded by at the time of survey completion. Thus, due

to the online nature of the survey the participants may not have answered all survey items honestly.

There are limitations that go beyond survey implementation. Additional limitations are encompassed in survey design, recruitment, and analyses. First, the demographic study lacked important demographic questions (mother's age, father's age, father's educational attainment, and preexisting maternal mental health conditions). Knowing the mothers age, father's age, father's educational attainment and preexisting mental health conditions could have helped us to further understand relationships among variables and in general would have provided us with a better understanding of our participant's demographics. Another limitation of the demographic survey was that certain demographic questions had answer choices that were not expansive. Particularly, four questions were asked that provided the answer choice "Other," but did not provide the participant with a method (i.e., text box) to define "Other." These questions included "What county do you reside in?" "What county do/did you receive prenatal services in?" "Please specify your ethnicity?" and "How many months has it been since you've given birth?" Thus, the data that was defined as "Other" was unable to be analyzed further and those variables were unable to be controlled for. Due to this informational gap, we lack the means to identify the effect of other counties, ethnicities, and months since birth on the relationships examined. Another demographic question that could have benefitted from an expansive answer choice was the question to determine SES. Limiting the data to either over or under 20,000 dollars after taxes is not the best representation of socioeconomic group variation.

Additionally, the survey was limited in design as it did not seek to understand what involvement of fathers in a household with multiple children may look like. This limitation was brought to the researcher's attention as one of the participants commented "My husband was

very involved in my first pregnancy, and now he is still very involved, but his involvement is more so in caring for other children in the household rather than completing pregnancy related items.”

Recruitment limitations included limiting survey participation to those that are literate in the English language. Limiting our survey to only individual’s literate in the English language does not allow us to observe how findings may have varied if the survey were provided in other languages.

Analyses limitations include only analyzing the data of heterosexual couples. This is a limitation as we were unable to compare perceptions of involvement and outcomes of opposite sex and same sex couples.

Future Directions and Implications

Future work may consider including a more expansive demographic section to better identify and analyze aspects of the sample. Also, future work may consider adjusting the inclusion criteria to include participants that are literate in languages other than English and should examine perceptions and outcomes of mothers in same sex couple relationships to compare them with perceptions and outcomes of mothers in opposite sex couple relationships.

Several implications can be drawn from this study to understand father involvement, co-parent relationship quality, prenatal anxiety and postnatal stress. Specifically, we have expanded our knowledge of group differences and needs with a review of present literature and the study findings. Findings and the literature indicate that father involvement in addition to pregnancy intention and SES have a significant impact on co-parent relationship quality (Durtschi et al., 2017; Luz et al., 2017; Schoppe-Sullivan & Mangelsdorf, 2013). This knowledge is beneficial for individuals working with pregnant women, expecting fathers, and parents of an infant.

Professionals can use these findings and the present literature to understand which groups of parents may need resources. Further, professionals can understand the type of resources that may be needed for certain groups. Understanding resources that are needed to thrive can assist professionals to develop programs to educate and help expecting groups of parents improve their co-parent relationship quality and rates of maternal anxiety and stress.

For instance, practitioners could use the maternal anxiety findings to educate themselves on the symptoms of maternal anxiety during pregnancy. Also, practitioners can research and develop methods to reduce maternal anxiety. Specifically, methods may need to be developed when serving first time mothers or mothers with a high-risk pregnancy. Practitioners should also discuss maternal anxiety with their patients that may be at risk to experience anxiety, or have expressed that they are feeling anxious, as practitioners have medical knowledge and experience with these pregnancies. Thus, practitioners can validate anxious women's feelings by explaining that they are normal, and many women experience them, but also practitioners may be able to assist these women to develop coping mechanisms to feel less anxious.

Therapists can also use these findings to assist pregnant clients and couples as they transition to parenthood. Therapists serve a variety of clients in various relationship contexts (married, cohabitating, separated, single, etc). Therefore knowledge of the importance of maintaining a quality co-parent relationship with the child's other parent could be useful when serving expecting clients. Additionally, knowledge of what co-parenting relationship quality is versus relationship quality is important for therapists to understand so that they can educate their clients as their clients may not understand that there is a difference. Educating clients to understand this difference could also help reduce postnatal stress as couples could be able to develop effective co-parenting characteristics prenatally that will extend postnatally.

Family life educators could benefit from knowledge of this study as they can apply the information obtained from this study to develop programming initiatives for the community. Initiatives can be designed to help families thrive at their optimal level during pregnancy and their transition to parenthood. Family life educators understand that each individual in the family has a role that effects the family system as a whole, but also, they understand that families may differ depending on the resources that they have available to them. Therefore, family life educators can take their knowledge and findings from this study to develop programs focused on prenatal father involvement during pregnancy, co-parent relationship quality, maternal anxiety and postnatal stress to improve maternal experiences during pregnancy.

Conclusion

The literature reviewed, and findings from the current study, provide takeaway messages that maternal experiences are influenced by the support that they receive from their child's father as well as their access to resources. Also, it can be said that individual experiences may impact maternal reports of prenatal anxiety, rather than their reports of paternal involvement. Maternal anxiety encompasses concerns associated with pregnancy, labor, delivery and the future care of the infant. Therefore, it may be that mothers individual experiences (pregnancy risk, pregnancy intention, and parity) affect reports of maternal anxiety more so than reports of paternal involvement. Thus, a mother experiencing their first pregnancy may be more likely to experience anxiety than a mother who is experiencing her second pregnancy (Tremblay & Soliday, 2012).

Overall, this study contributes to the areas of maternal wellbeing, pregnancy, and father involvement as the findings allow us to further understand variables that impact father involvement, coparent relationship quality, maternal stress and anxiety. The findings also identify areas that need further examination to better understand these relationships.

Additionally, the findings contribute to the literature as they identify areas where programming could be beneficial for mothers and fathers during pregnancy and the transition to parenthood to aid them with improving co-parent relationship quality, identifying methods for mothers to reduce their anxiety, and assist fathers to help reduce experiences with postnatal stress.

These findings show that father involvement can be a significant predictor of some associations (i.e., co-parent relationship quality and maternal stress). However, father involvement was not a predictor of maternal anxiety. This study examined and identified additional predictor variables in these associations (i.e., relationship status, pregnancy intention, SES, and education) and further explained the associations examined. Variables examined and our theoretical lens allowed us to further understand predictors of co-parent relationship quality, maternal anxiety and postnatal stress. Additionally, these findings provided information regarding limitations of the study, areas for future research and provided us implications for the future.

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APPENDIX A: IRB APPROVAL



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building · Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-
2284 · www.ecu.edu/ORIC/irb

Notification of Initial Approval: Expedited

From: Biomedical IRB

To: [Victoria Burdo](#)

CC: [Kate Harcourt](#)

Date: 3/8/2018

Re: [UMCIRB 18-000221](#)

Pregnancy: Father Involvement and Outcomes

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 3/8/2018 to 3/7/2019. The research study is eligible for review under expedited category #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.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description
Compiled Scales	Surveys and Questionnaires
Copy of Thesis Proposal	Study Protocol or Grant Application
Demographic Survey	Surveys and Questionnaires
Email Participation Request (Participant)	Recruitment Documents/Scripts
Hotline Resource Page	Additional Items
Letter Participation (Location)	Recruitment Documents/Scripts
Letter Participation (Participant)	Recruitment Documents/Scripts
Location Flyer	Recruitment Documents/Scripts
Location Flyer	Recruitment Documents/Scripts
Phone Script (Location)	Recruitment Documents/Scripts
Social Media Flyer	Recruitment Documents/Scripts
Survey Consent Paragraph	Consent Forms

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

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418

APPENDIX B: LOCATION PARTICIPATION REQUEST FORMS

Location Email

Hello,

My name is Victoria Burdo and I am a graduate student at East Carolina University. I study Human Development and Family Science and I am conducting research for my thesis. Your location serves the population of interest for my study; therefore, I would like to request permission to recruit participation from eligible individuals that seek services at [INSERT LOCATION NAME]. Below I will further explain my study, and in a week or so I will be contacting [INSERT LOCATION NAME] via phone to request participation.

The population of interest for my study includes expectant mothers and/or current mothers of an infant that is six months of age or younger. Eligible participants will anonymously complete a brief online survey that will take 15 minutes or less to complete.

It is hoped that data gathered from the study will assist us in better understanding the quality of parent's caregiving relationship during pregnancy, rates of maternal anxiety, and stress given the mother's view of the biological father's level of involvement in that caregiving relationship. [INSERT LOCATION NAME], and [INSERT LOCATION NAME]'s participants will remain anonymous and will not be mentioned in the study. Only data gathered regarding the study aims will be reported. Should your location agree to participate there are two methods of recruitment.

(1) A package of letters, explaining the study with instructions explaining where and how to complete the study, can be mailed to [INSERT LOCATION NAME] or personally delivered (depending on location of site). Then, I would like to request that [INSERT LOCATION NAME] provide eligible mothers with the letters.

(2) The letter can also be sent to the director/ Supervisor of [INSERT LOCATION NAME] via email and they can email the letter to eligible participants.

[INSERT LOCATION NAME] may select a preferred method of recruitment, or both.

Please take some time to consider [INSERT LOCATION NAME]'s interest in participating in this study and I look forward to speaking with you in a week!

Sincerely,

Victoria C. Burdo

Location Phone Script

Hello,

My name is Victoria Burdo and I am a graduate student at East Carolina University. I study Human Development and Family Science and I am conducting research for my thesis. Your location serves the population of interest for my study, therefore I would like to request permission to recruit participation from eligible individuals that seek services at [INSERT LOCATION NAME].

May I further explain my study, and how [INSERT LOCATION NAME] can assist me?

IF THE LOCATION SAYS YES

The population of interest for my study includes expectant mothers and/or current mothers of an infant that is six months of age or younger.

Eligible participants will anonymously complete a brief online survey that will take 15 minutes or less to complete.

It is hoped that data gathered from the study will assist us in better understanding the quality of parent's caregiving relationship during pregnancy, rates of maternal anxiety, and stress given the mother's view of the biological father's level of involvement in that caregiving relationship.

[INSERT LOCATION NAME], and [INSERT LOCATION NAME]'s participants will remain anonymous and will not be mentioned in the study. Only data gathered regarding the study aims will be reported.

Should your location agree to participate there are two methods of recruitment.

(1) A package of letters, explaining the study with instructions explaining where and how to complete the study, can be mailed to [INSERT LOCATION NAME] or personally delivered (depending on location of site). Then, I would like to request that [INSERT LOCATION NAME] provide eligible mothers with the letters.

(2) The letter can also be sent to the director/ Supervisor of [INSERT LOCATION NAME] via email and they can email the letter to eligible participants.

[INSERT LOCATION NAME] may select a preferred method of recruitment, or both.

Would [INSERT LOCATION NAME] be interested in allowing eligible individuals that seek services at [INSERT LOCATION NAME] to participate?

If so, does [INSERT LOCATION NAME] have a preferred method of recruitment?

REGARDLESS OF IF THE LOCATION IS INTERESTED IN HEARING ABOUT THE RESEARCH, OR DECLINES, SAY:

Thank you for your time and patience.

IF THEY AGREE TO PARTICIPATE SAY:

Thank you for your time and patience. I look forward to working with [INSERT LOCATION NAME] and appreciate their clients/ customers participation.

Participant Letter

To whom it may concern,

I am writing to you to request your participation in a brief survey. You are being invited to participate in a research study titled “Maternal Perceptions of Father Involvement, Co-parent Relationship Quality, Maternal Anxiety and Stress” being conducted by Victoria Burdo, a graduate student at East Carolina University in the Human Development and Family Science department. It is hoped that this information will assist us in better understanding the quality of parent’s caregiving relationship during pregnancy, rates of maternal anxiety, and stress given the mother’s view of the biological father’s level of involvement in that caregiving relationship.

The survey is very brief and will only take about 15 minutes to complete. If you would be interested in participating you have three options to participate: (1) you may list your email on the line below and return this document so that the link can be emailed to you, (2) you can email burdov13@students.ecu.edu and request that the link be emailed to you (3) you can type the survey link into a web browser and complete the survey immediately. Your participation in the survey is completely voluntary and all of your responses will be kept confidential. You may choose not to answer any or all questions, and you may stop at any time. No personally identifiable information will be associated with your responses to any reports of these data.

The ECU Institutional Review Board has approved this survey. There is no penalty for not taking part in this research study. Please email Victoria Burdo at burdov13@students.ecu.edu for any research related questions or the Office of Research Integrity & Compliance (ORIC) at 252-744-2914 for questions about your rights as a research participant. Thank you very much for your time and cooperation participation is very important to us.

Sincerely,

Victoria Burdo

Survey Link:

Participant Email: _____

Participant Email

To whom it may concern,

I am writing to you to request your participation in a brief survey. You are being invited to participate in a research study titled “Maternal Perceptions of Father Involvement, Co-parent Relationship Quality, Maternal Anxiety and Stress” being conducted by Victoria Burdo, a graduate student at East Carolina University in the Human Development and Family Science department. It is hoped that this information will assist us in better understanding the quality of parent’s caregiving relationship during pregnancy, rates of maternal anxiety, and stress given the mother’s view of the biological father’s level of involvement in that caregiving relationship.

The survey is very brief and will only take about 15 minutes to complete. Please click the link below to go to the survey site (or copy and paste the link into your Internet browser). Your participation in the survey is completely voluntary and all of your responses will be kept confidential. You may choose not to answer any or all questions, and you may stop at any time. No personally identifiable information will be associated with your responses to any reports of these data.

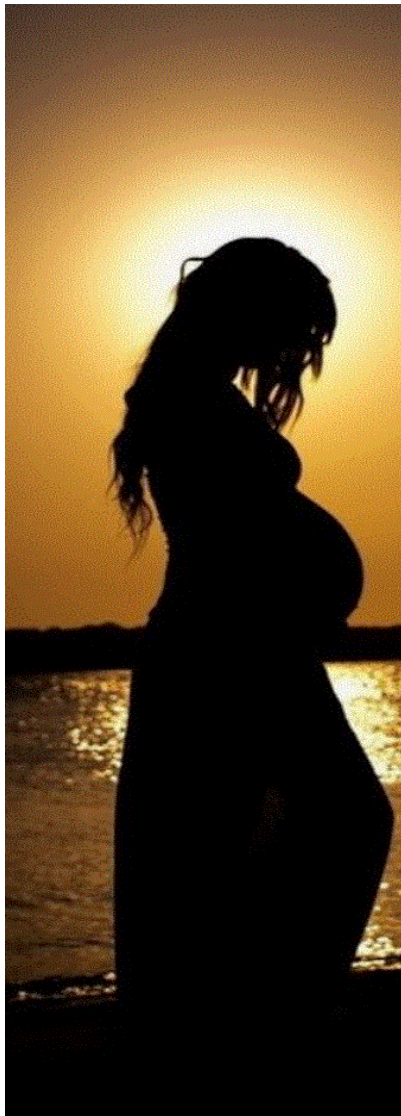
The ECU Institutional Review Board has approved this survey. There is no penalty for not taking part in this research study. Please email Victoria Burdo at burdov13@students.ecu.edu for any research related questions or the Office of Research Integrity & Compliance (ORIC) at 252-744-2914 for questions about your rights as a research participant. Thank you very much for your time and cooperation participation is very important to us.

Sincerely,

Victoria Burdo

Survey Link:

Location Flyer



Calling all moms and moms to be!

If you are currently pregnant, or have given birth in the past six months, you are being invited to participate in a research study conducted by Victoria Burdo, a graduate student at East Carolina University.

The goal of the study is to better understand the quality of parent's caregiving relationship during pregnancy and rates of maternal anxiety, and stress, given the mother's view of the biological father's level of involvement during the prenatal period.

To participate in the study you simply complete a survey. The survey is very brief, anonymous, and will only take about 15 minutes to complete.

Your participation in the survey is completely voluntary and all of your responses will be kept confidential. You may choose not to answer any or all questions, and you may stop at any time. No personally identifiable information will be associated with your responses to any reports of these data.

If you would like to participate please request access to the survey by emailing burdov13@students.ecu.edu, or type the URL below into a search bar:

Survey Link:

Social Media Post



Calling all moms and moms to be!

If you are currently pregnant, or have given birth in the past six months, you are being invited to participate in a research study conducted by Victoria Burdo, a graduate student at East Carolina University.

The goal of the study is to better understand the quality of parent's caregiving relationship during pregnancy and rates of maternal anxiety, and stress, given the mother's view of the biological father's level of involvement during the prenatal period.

To participate in the study you simply complete a survey. The survey is very brief, anonymous, and will only take about 15 minutes to complete.

Please click the link below to go to the survey site (or copy and paste the link into your Internet browser).

Your participation in the survey is completely voluntary and all of your responses will be kept confidential. You may choose not to answer any or all questions, and you may stop at any time. No personally identifiable information will be associated with your responses to any reports of these data.

APPENDIX C: SURVEY ITEMS

Welcome to the research study!

We are interested in understanding maternal perceptions of father involvement, co-parent relationship quality, maternal anxiety, and stress. You will be presented with information relevant to maternal perceptions of father involvement, co-parent relationship quality, maternal anxiety and stress and you will be asked to answer some questions about it. Please be assured that your responses will be kept completely confidential.

The study should take you around 15 minutes to complete. Your participation in this research is voluntary. You have the right to withdraw at any point during the study, for any reason, and without any prejudice. If you would like to contact the Principal Investigator in the study to discuss this research, please e-mail Victoria Burdo at burdov13@students.ecu.edu.

By clicking the button below, you acknowledge that your participation in the study is voluntary, you are 18 years of age, and you are aware that you may choose to terminate your participation in the study at any time and for any reason. There is no penalty for not taking part in this research study.

Please note that this survey will be best displayed on a laptop or desktop computer. Some features may be less compatible for use on a mobile device.

- I consent, begin the study
- I do not consent, I do not wish to participate

Block 7

Please rate the involvement of your child's biological father during your pregnancy. If you have already given birth please think back to your child's biological father's involvement during your pregnancy.

Never Rarely Sometimes Often Always

- Go with you to your doctor visits (e.g., OB/GYN)
- Talk about plans for the baby with you.
- Buy things for the baby
- Talk with you about the baby's name
- Learn about how to take care of your new baby
- Speak to the baby while in your belly
- Feel the baby move in your belly

Please rate the statements below based on your interactions with your child's biological father. If you are currently pregnant, please try to select the statement that best fits your current interactions with the child's biological father. Should you feel that a statement does not apply to you, you may select neither agree nor disagree.

*Strongly disagree Somewhat disagree Neither agree nor disagree Somewhat agree
Strongly agree*

- My child's other parent enjoys being alone with our child.
- During pregnancy, my child's other parent expressed confidence in my ability to be a good parent
- When there is a problem with our child we work out a good solution together.
- My child's other parent and I communicate well about our child.
- My child's other parent is willing to make sacrifices to help take care of our child.
- Talking to my child's parent about our child is something that I look forward to.
- My child's other parent pays a great deal of attention to our child.
- My child's other parent and I agree on what our child should and should not be permitted to do.
- I feel close to my child's other parent when I see him/her play with our child.
- My child's other parent knows how to handle children well
- My Child's other parent and I are a good team.
- My child's other parent believes I am a good parent
- My Child's other parent makes my job of being a parent easier.
- My child's other parent sees our child in the same way I do.
- My child's other parent and I would basically describe our child in the same way
- If our child needs to be punished, my child's other parent and I usually agree on the type of punishment
- I feel good about my child's other parent's judgement about what is right for our child.
- My child's other parent tells me I am a good parent.
- My child's other parent and I have the same goals for our child.

Block 2

Is your total annual income before taxes \$20,000?

- Under \$20,000
- Over \$20,000

Are you biologically a female?

- Yes
- No

What is the highest degree or level of education you've received? If currently enrolled please list your highest degree received.

- Some high school, no diploma
- High school graduate, diploma or the equivalent (for example: GED)
- Some college credit, no degree
- Trade/technical/vocational training
- Associate degree
- Bachelor's degree
- Master's degree
- Professional degree
- Doctorate

Please specify your ethnicity.

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other
- Hispanic or Latino

Are you currently pregnant?

- Yes
- No

Please rate the statements below based on your pregnancy experience.

Never Rarely Sometimes Often

- I am confident of having a normal childbirth.
- I think my labor and delivery will go normally.
- I have a lot of fear regarding the health of my baby.
- I am worried that the baby could be abnormal.
- I am afraid that I will be harmed during delivery.
- I am concerned (worried) about how the baby is growing and developing inside me.
- I am concerned (worried) about losing the baby.
- I am concerned (worried) about having a hard or difficult labor and delivery.
- I am concerned (worried) about taking care of a new baby.
- I am concerned (worried) developing medical problems during my pregnancy.

Please rate the below questions based on your experiences within the past month.

Never Almost Never Sometimes Fairly Often Very Often

- In the last month, how often have you been upset because of something that happened unexpectedly?
- In the last month, how often have you felt that you were unable to control the important things in your life?
- In the last month, how often have you felt nervous and “stressed”?
- In the last month, how often have you felt confident about your ability to handle your personal problems?
- In the last month, how often have you felt that things were going your way? 6. In the last month, how often have you found that you could not cope with all the things that you had to do?
- In the last month, how often have you been able to control irritations in your life?
- In the last month, how often have you felt that you were on top of things?
- In the last month, how often have you been angered because of things that were outside of your control?
- In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Which pregnancy is this?

- First
- Second
- Third
- Fourth
- Fifth
- Sixth or more

What stage of pregnancy are you in?

- First Trimester
- Second Trimester Third
- Trimester

Was your pregnancy intended?

- Yes No
-

Which county do you reside in?

- Pitt
- Johnston
- Wake
- Other

How many months has it been since you gave birth?

- 1 Month - 2 Months
- 3 Months - 4 Months
- 5 Months - 6 Months
- Other

Which county do/did you receive prenatal services in?

- Pitt
- Johnston
- Wake
- Other

How would you best describe your relationship?

- Married (opposite sex couple)
- Married (same sex couple)
- Never married, but in a relationship (opposite sex couple).
- Never married, but in a relationship (same sex)
- Single
- Divorced
- Widowed

How would you describe your child's other parent's presence? *Residential means that your child's biological father resides in the home with you.*

- Present (residential)
- Present (non-residential) Not
- present

How many children do you have?

- One
- Two
- Three
- Four
- Five
- Six or More

Block 4

Hotline Resources

OptionLine Pregnancy Helpline 1-866-942-6466 (24/7)

Crisis Pregnancy Helpline 1-800-672-2296 (24/7)

Substance Use Helpline 1-800-662-4357 (24/7)

National Domestic Violence Hotline 1-800-799-7233 (24/7)

National Child Abuse Hotline 1-800-422-4453 (24/7)

S.A.F.E. (Self Abuse Finally Ends) 1-800-366-8288

Suicide Hotline 1-800-273-8255 (24/7)

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