

FEMALE FRIENDSHIPS AND SOCIAL SUPPORT DURING THE PERINATAL PERIOD

By

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Abstract: Pregnancy can be a positive yet stressful life transition for women as all domains of their life are changing in preparation for motherhood. With this period being so challenging, Perinatal Mood and Anxiety Disorders (PMADs) are a common pregnancy complication. Social support has been reported to buffer negative health outcomes for mother and baby during pregnancy, but little research reports on the different relationships and forms of support present in mothers' social networks during pregnancy. In particular, female friendships are an underexamined social support relationship that could have an association with mental health outcomes during this time. The current study examines the protective effect of female friendships (conceptualized as non-maternal relatives and friends) for perinatal mental health and infant birthweights. Data were collected from 38 women from a diverse community sample experiencing low-income and unemployment during pregnancy. Participants completed an adapted version of the Norbeck Social Support Questionnaire, Edinburgh Postnatal Depression Scale, and Perinatal Anxiety Screening Scale at 30-weeks gestation, and self-reported infant birthweight at 6-weeks postpartum. Descriptive statistics were conducted to describe the prevalence and characteristics of female friendships and linear regressions and moderation analyses were conducted to examine associations with maternal and infant health outcomes. The current study was the first to examine the presence and support provided by female friendships during pregnancy. Thirty-eight percent of women reported a female friendship among their top four supporters during pregnancy. Findings suggest that female friendships were not a protective factor against negative health outcomes, which may be attributed to similarities in other aspects of women's social support network (i.e., types of social support, similar supporters listed among women with and without female friendships). A salient predictor of differences among women with and without female friendships is women with female friendships cohabitating with an unmarried partner and having more children. Despite not being able to provide evidence that female friendships buffered against perinatal and infant health outcomes, the current study was able to provide unique characterizations of women's relationships during pregnancy.

TABLE OF CONTENTS

Chapter	Page
I. Introduction	1
Overview	1
II. Review of the Literature	3
Life Changes during Pregnancy	3
Perinatal and Postpartum Mood Disorders	4
Social Support	8
Female Friendships	16
Current Study	20
III. Methodology	22
Participants	22
Study Design and Procedures	22
Measures	24
Supplementary Measures	25
Statistical Analyses	26
IV. Findings	28
Aim 1	28
Aim 2	30
Aim 3	31

Chapter	Page
Aim 4	31
Supplementary Analyses	31
V. Conclusions	33
Social Support During Pregnancy and Prevalence of Female Friendships	33
Implications	38
Strengths and Limitations	38
Conclusions	39
References	56
Appendix	73

LIST OF TABLES

Table	Page
1. Descriptive characteristics of participant's relationships	41
2. Independent sample t-test comparing characteristics of support between women with and without female friendships	42
3. Correlations between perinatal and social support outcomes	43
4. Linear regression analysis summary for social support predicting infant birthweight	44
5. Linear regression analysis summary for social support predicting perinatal depression	45
6. Linear regression analysis summary for social support predicting perinatal anxiety	46
7. Female friendship moderating the relationship between social support during pregnancy and perinatal anxiety	47
8. Female friendship moderating the relationship between social support during pregnancy and perinatal depression	48
9. Female friendship moderating the relationship between social support during pregnancy and infant birth weight	49

LIST OF FIGURES

Figure	Page
1. Frequencies of education statuses among women with and without female friendships	50
2. Frequencies racial and ethnic identities in women with and without female friendships	51
3. Frequencies of relationship status in women with and without female friendships	52
4. Frequencies of number of children in women with and without female friendships	53
5. Average scores on different types of social support among women with and without female friendships	54
6. Average scores on perinatal health outcomes among women with and without female friendships	55

CHAPTER I

INTRODUCTION

Overview

Pregnancy and the transition to motherhood, although often considered positive life events, may also be challenging and stressful, contributing to increased risk for perinatal psychopathology, including prenatal and postpartum anxiety and depression (Dunkel-Schetter, Sagrestano, Feldman, & Killingsworth, 1996). However, there is evidence that social support can act as a buffer to stressful life events and may be beneficial for physical and mental health outcomes (Cohen & Syme, 1985; Holt-Lunstad, Smith, & Layton, 2010). Notably, the presence of frequent and high-quality social support during pregnancy has been shown to reduce risk for perinatal depression and anxiety, and is also associated with other important perinatal health outcomes, including a reduced risk for Caesarean sections and healthy infant birth weights and APGAR scores at birth (Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Hodnett, 2003). In the postpartum, mothers reported better overall physical and psychological outcomes, including lower rates of postpartum depression, when they were satisfied with their social support in the postpartum period (Collins et al., 1993).

In much of the literature, social support is typically evaluated as a broad measure of perceived support that does not explicitly specify the type or relationship of support being provided. It is often presumed that the concept of social support encapsulates partners, family members, friends, community members, and colleagues, resulting in the majority of research focused on broad social networks with few specifics about the various sources of social support

(Dunkel-Schetter et al.,1996; Holt-Lunstadt et al., 2010). Still, there is some evidence to suggest that women who experienced birth complications reported having less emotional and practical support during their pregnancies (Zachariah, 2009), and that social support contributions from engaged partners, medical providers, and family members may be beneficial for maternal mental health and other perinatal outcomes, including the health and development of infants (Negron, Martin, Almog, Balbierz, & Howell, 2013; Stapleton, Dunkel Schetter, Rini, Hobel, Westling, Glynn & Sandman, 2012). Yet, little is known about the specific impact of social support from non-relative friendships during pregnancy and postpartum, and out of all social support relationships, same-sex female friendships seem to be one of the most understudied. The current study examines the role of non-relative female friendships during pregnancy and the association between social support and perinatal outcomes, including symptoms of postpartum depression and anxiety and infant birth weight.

CHAPTER II

Review of the Literature

Life Changes during Pregnancy

Pregnancy and motherhood are a unique and challenging transitional period characterized by marked changes in all aspects of women's lives (Barclay, Everitt, Rogan, Schmeid, & Wyllie, 1997; Darvill, Skirton, & Farrand, 2010; Weaver & Ussher, 1997). Beginning in the early stages of pregnancy, women grapple with changes in their identities that are uniquely related to motherhood (Weaver et al., 1997). The physical and mental exhaustion of the early postpartum months can leave women feeling unprepared for motherhood and concerned that their expectations of motherhood and their maternal identity have shifted from their original perceptions (Barclay et al., 1997; Deutsch, Ruble, Fleming, Brooks-Gunn & Stangor, 1988). With an infant's constantly changing needs, women's caregiving skills and maternal identity must evolve quickly and accordingly. This continuous shift in responsibilities attending to a highly dependent infant creates an exceedingly stressful, yet often rewarding, situation for many mothers. The narrative of mothering as a solely pleasurable and positive life event can complicate women's feelings of stress or even make them feel like a bad mother.

Moreover, basic life changes within women's environments, including loss of sleep, lack of control, change in finances, and less time to self, are stressors associated with their new routines (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983). Professional changes during pregnancy and the postpartum can contribute not only to financial strain but may also alter women's daily context of socialization and sense of independence (Beck, 2002). Financial strain

has been identified as a salient stressor during pregnancy and postpartum and, as more families are dual-income households, more women are feeling increased pressure to return to work after a short leave, and many experience a lack of support in the transition from new motherhood to working mother (Ferrante, 2018; Grote & Bledsoe, 2007; Seguin, Potvin, St-Denis, & Loiselle, 1995). Additionally, the demands of caring for a newborn often isolate women in their homes and contribute to increased feelings of loneliness (Barclay et al, 1997; Beck, 2002). The culmination of these new stressors can become emotionally and mentally exhausting for mothers.

Perinatal Mood and Anxiety Disorders

Given the increased stressors surrounding motherhood, it is not surprising that perinatal mood and anxiety disorders (PMADs) are the most common complication of pregnancy and childbirth, affecting an estimated 1 in 7 women (March of Dimes, 2017; Mathematica, 2019; Postpartum Support International (PSI), 2019). PMADs are a broad category of psychopathology that includes depression, anxiety, obsessive-compulsive disorder, bipolar disorder, posttraumatic stress disorder, and psychosis during pregnancy or the postpartum. Among the perinatal mood and anxiety disorders, depression and anxiety are the most common (Brynes, 2018; O'Hara & McCabe, 2013), with estimates that 10 – 20% of mothers experience prenatal and/or postpartum depression (see O'Hara & McCabe, 2013 for review) and 2-39% experience prenatal and/or postpartum anxiety (see Leach, Poyser, & Fairweather-Schmidt, 2017 for review). According to the Diagnostic and Statistics Manual-5 (DSM-5), Major Depressive Disorder with peripartum onset is the only psychological disorder associated with pregnancy or postpartum (American Psychiatric Association (APA), 2013). Although the DSM-5 indicates that the onset of depressive symptoms must occur within four weeks after birth (APA, 2013), there is currently no consensus on the postpartum time frame utilized by researchers (see O'Hara & McCabe for

review, 2013). The broader literature suggests that any psychopathology during the first 6 to 12 months should be categorized as a PMAD (Brynes, 2018; Segre & Davis, 2013; see O'Hara & McCabe, 2013 for review), although some professionals use different timeframes based upon the purposes of their study (i.e., shorter timeframes for biological studies, and longer for social and treatment studies). Recent literature from the National Institute of Health (2020), has provided evidence for a longer time frame for symptom onset, suggesting that onset of postpartum depression could be possible during the first three years of the child's life (Putnik et al., 2020).

Despite several effective screening tools and knowledge of symptoms, PMADs often go undiagnosed, untreated, and dismissed as the "baby blues" (United States Department of Health and Human Services, 2006; March of Dimes, 2017; Yonkers & Chantilis, 2010). A general misunderstanding of symptoms and normalization of stress during motherhood seems to be contributing to the underdiagnosis of PMADs (Yonkers & Chantilis, 1995). PMAD symptoms often include feelings that are normative to new motherhood, such as feeling tired every day, changes in sleep patterns, feeling like a bad mom, and difficulty bonding with the baby (O'Hara & McCabe, 2013; March of Dimes, 2017). However, symptoms of prenatal and/or postpartum depression and anxiety differ from normative symptoms of perinatal adjustment in their duration, severity, and level of impairment. Whereas the baby blues present and remit within the first few weeks of birth, symptoms of prenatal and/or postpartum depression or anxiety can persist for months and cause significant distress (O'Hara & McCabe, 2013). Prenatal and postpartum psychopathology symptoms can manifest mentally (i.e., obsessive thoughts, low mood, and loneliness) and physically (i.e., fatigue, changes in appetite), which can make caregiving tasks and daily functioning even more challenging in addition to caring for a new infant (Beck, 2002;

O'Hara & McCabe, 2013). With these symptoms often being mistaken as the baby blues, mothers could be at an increased risk for not receiving proper treatment.

Untreated PMADs in the United States are associated with significant morbidity and mortality for women and their families. A recent US study estimated that the total societal costs of untreated PMADs from pregnancy through five years postpartum is \$14.2 billion, with \$2.9 billion dollars spent in just maternal healthcare costs (Luca, Garlow, Staatz, Margiotta, & Zivin, 2019). Women with perinatal depression and anxiety are more likely to have low-weight babies compared to women without perinatal depression and anxiety (Bhagwanani, Seagraves, Dierker, & Lax, 1997; United States Department of Health and Human Services, 2006). The presence of PMADs can also impact maternal-child communication and children's health outcomes. Mothers who have increased levels of postpartum stress are less likely to respond to their infant's cues, and in response, infants become less responsive and less clear in their cues – creating a cyclical response loop that may contribute to insecure attachment and disrupt social-emotional development (Crnic, Greenberg, Ragozin, Robinson, & Basham, 1983). PMADs have also been associated with internalizing and externalizing psychopathology and negative emotionality (see Goodman, Rouse, Connell, Broth, Hall & Heyward, 2011 for review), decreased cardiovascular functioning (Gump et al., 2009), and increased rates of gastrointestinal and lower respiratory infections in infants (Ban, Gibson, West, Tata, 2010). Long-term, the literature suggests that postpartum depression increases the likelihood of recurrent episodes of depression and increased negative emotionality, suggesting that mothers and their children will chronically experience and be exposed to negative affect (O'Hara & McCabe, 2013). In severe cases, PMADs can increase the risk for perinatal suicide and infanticide (Davidson, Sampson, & Davidson, 2017), and

notably, suicide is one of the leading causes of maternal mortality (Palladino, Singh, Campbell, Flynn & Gold, 2011).

Perinatal mood and anxiety disorders are also seen cross-culturally as the transition to motherhood presents new life and child-related stressors to all women. Extant literature has demonstrated that the transition to motherhood can increase the likelihood of developing mental health disorders in high-income Western cultures (Kettenun & Hintikka, 2017; see O'Hara & McCabe for review, 2031) and these findings have also showed similar trends in low-middle and low-income countries. A systematic review conducted by Fisher and colleagues (2012) of 13 studies in 17 low-middle and low-income countries found that socioeconomic hardship was a common factor that exposed women to increased risk for perinatal mental health disorders in. The prevalence of studies suggesting that perinatal mental health disorders are common in countries across the socioeconomic spectrum suggests that these stressors and symptoms, as well as their relationship to income, transcend most cultures globally. Experiencing financial hardship seems to be a common mechanism that increases the likelihood of PMADs across cultures and socioeconomic status (Fisher et al., 2012; Ward, Kanu, & Robb, 2017). Findings from cross-cultural research suggest that depressive and anxious symptoms during pregnancy and postpartum are common human experiences.

With PMADs being such a prevalent global public health concern, there is significant need to promote protective factors that may prevent or minimize the impact of symptoms of depression and anxiety. Social support is a known protective factor during stressful and transitional life events, such as pregnancy and motherhood (Crnic et al., 1983; Dunkel-Schetter et al., 1996), and may be a particularly salient protective factor against psychopathology and stress during this time (March of Dimes, 2017; O'Hara & Swain, 1996; United States

Department of Health and Human Services, 2006). The African proverb, *it takes a village*, references the need for a supportive social network to facilitate all aspects of childcare, for both caregiver and child. Most commonly, social support during pregnancy is provided by a combination of partners, family, friends, and healthcare providers (Negron et al., 2013). To prepare for the demands of motherhood, pregnant women and new mothers often seek guidance and support from their social network (Deutsch et al., 1988). This sense of support from their social network increases the likelihood of positive mental health outcomes (Dunkel-Schetter et al., 1996) and reduces symptoms of perinatal and postpartum psychopathology (Collins, Dunkel-Schetter, Lobel, & Scrimshaw, 1993; Gjerdingen, McGovern, Pratt, Johnson, & Crow, 2013; Negron et al., 2013).

Social Support

As a construct, social support can be defined as interpersonal relationships that impact an individual's functioning and provides care through several facets of support, such as practical, informational, and emotional support (Barker, 2007; Costello, Pickens, & Fenton, 2001; Wills, 1991). High quality and frequent social support have been associated with increased survival—an effect that is comparable to quitting smoking (Holt-Lunstad, Smith, & Layton, 2010). Specifically, social and emotional support has been associated with increased physical health outcomes in adults (Reblin & Uchino, 2008). Conversely, poor social support and feelings of isolation have been known to have negative health implications, including increased risk for cardiac diseases and poorer overall health (Gouin, Zhou, & Fitzpatrick, 2015). Poor social support is associated with increased chronic illnesses, higher risk for mortality, and increased suicidal ideation and behaviors (see Tay, Tan, Diener, & Gonzalez, 2013 for review). In addition, some of the literature suggests that negative social support (e.g., insults, selfish actions,

being let down by others) and conflict may counteract the impact of positive social support (Lincoln, 2000).

The literature has conceptualized the role of social support as a buffer to stress and, in turn, a protective factor against negative health outcomes. The direct-effect hypothesis suggests that social support enhances health and well-being due to the implicit assumption that people will provide help in difficult situations (Cohen & Syme, 1985). The sense of belonging to a social network may also contribute to feelings of safety and support during stressful life experiences (Cohen & Syme, 1985). This sense of belongingness and support is even more prevalent within groups of women. Current literature already suggests that women rely heavily on their social network during stressful situations and life transitions. Taylor and colleagues (2000) modified the well-known “fight or flight” response to be more inclusive of how women integrate relationships into their coping style. Whereas men typically rely on aggression or withdrawal (fight or flight) to cope with stressful situations, women are more likely to “tend and befriend” during stressful times by nurturing and engaging in social activities (Taylor et al., 2000). With evidence that women integrate relationships into their coping styles, it suggests that social support is an essential factor in women’s stress-reduction, and in turn, likely beneficial for mental and physical health.

With social support being an important factor in women’s stress-reduction strategies, research has examined woman’s social support during pregnancy and postpartum. The current literature suggests that social support during pregnancy and postpartum has mental and physical health benefits for both women and their babies. Women with higher quality social support during pregnancy report lower levels of postpartum depression and have infants with higher birth weights and APGAR scores compared with women with less quality social support (Collins et

al., 1993). The presence of social support during labor (friends, relatives, or even randomly assigned female volunteers has been shown to decrease the length of labor and infant intensive care hospitalizations compared to women who were alone during labor (Dunkel-Schetter et al., 1996; Pascoe & French, 1993). These findings underscore the importance and flexibility of women receiving support from non-relatives during intensely stressful times and further warrant examining women's friendships during pregnancy and postpartum.

Social support during pregnancy has been associated with better infant and child development outcomes, both in the early postpartum and more long-term (Abernethy, 1973; Crockenberg, 1981; Moss, Rousseau, Parent, St Laurent, Saintonge, 1998; Shin et al., 2019; Weinraub & Wolf, 1983). Postpartum social support is positively related to infant's responsiveness to mother at four-months old and cognitive development at two-years-old (Crnic et al., 1983; Shin et al., 2019). However, a lack of social support and experiencing relationship conflict are known risk factors for negative maternal and infant health outcomes (Howard et al., 2013; March of Dimes, 2017; Webster, Linnane, Dibley, Hinson, Starrenburg, & Roberts, 2000). Women with poor social support have increased rates of postpartum depression and perinatal complications (Gremigni, Mariani, Marracino, Tranquilli, & Turi, 2011; Zachariah, 2009), but it should also be noted that the presence of social conflict during pregnancy is an even stronger predictor of perinatal depressive symptoms than the absence of social support (Westdahl et al., 2007). Women who experienced domestic violence during their pregnancy had increased rates of postpartum depression and negative emotionality expressed among their infants (Levondosky, Leahy, Bogat, Davidson, & von Eye, 2007).

Although the literature suggests that social support is an important factor among pregnant women and new mothers, the variable itself has received criticism for how it is measured.

Researchers have critiqued how social support has become a “fuzzy variable” by being defined, measured, and operationalized inconsistently throughout the literature (Arora, Rutten, Gustafson, Moser & Hawkins, 2006; Collins et al., 1993; Dunkel-Schetter et al., 1996; Holt-Lundstad et al., 2010; Norbeck & Tilden, 1983). Social support can be conceptualized as emotional, practical/tangible, or informational support (Barker, 2007), and additionally, “negative support” or relationship conflict (Westdahl et al., 2007). However, the literature often measures social support using a global social support variable that simply indicates an individual’s perceived social support across all domains, providing little to no information about *what type* of support they are receiving or whether support in a particular domain is most salient for health (Holt-Lundstad et al., 2010). Additionally, research often fails to identify *who* is providing the support, instead only noting the presence or absence of a large network of relationships, without reference to the specific relationships that may be most important for feelings of support. Thus, there are significant limitations to the conclusions that can be made, and ultimately the understanding of what the construct of social support represents. In the current study, social support can be operationalized as the participant’s top four supporters and the practical, emotional, financial, health-related, physical support, and feelings of love and conflict received from these relationships before and during pregnancy.

A small, but growing, body of literature is examining different domains of women’s social support and their relationship to mental and physical health outcomes. The three most commonly examined domains of social support are practical, informational, and emotional support (see Gjerdingen, Froberg, & Fontaine, 1991 for review; Reblin et al., 2008). First, practical support, also termed instrumental or tangible support, refers to direct support provided to an individual, such as financial assistance, assistance with daily tasks or health services, and

physical aid (Barker, 2007, Tan et al., 2013). Women who experience domestic violence and receive practical support from friends have decreased symptoms of anxiety and increased self-esteem, suggesting that having friends provide guidance or direct assistance is beneficial or protective for mental health (Levendosky, Bogat, Theran, Trotter, von Eye, & Davidson, 2004). Second, informational support refers to the transfer of knowledge, skill, or referral for help from one individual to another, which can include health-related information (Barker 2007, Tan et al., 2013). Providing informational support to women within the first 6 months of a breast cancer diagnosis has been shown to increase health-related quality of life and self-efficacy (Arora et al., 2006). Third, emotional support refers to providing help for emotional needs, distress, or personal challenges (Cobb, 1978; Barker 2007; Tan et al., 2013). Women recently diagnosed with breast cancer that had emotional support from their friends and family are known to be associated with greater individual well-being and health-related quality of life (Arora et al., 2006; Bloom, Stewart, Johnston, Banks, & Fobair, 2001). With regard to these findings, it could be hypothesized that practical, informational, and emotional support are measured most commonly in women's research because of their similarities to Taylor and colleague's (2000) tend and befriend coping style, as tending lends itself to the practical and informational support, and befriending provides emotional support. Importantly, these domains of support have a common theme of nurturing others through guidance, care, and service.

Within recent decades, Heh and Fu (2003), Zachariah (2009), and Negron and colleagues (2013) are the only studies to examine different domains of social support and their associated pregnancy outcomes. Pregnant women who were provided informational support from healthcare providers about symptoms of postpartum depression (i.e., a phone call about depressive symptoms and a three-page pamphlet) were less likely to have depressive symptoms (Heh & Fu,

2003). Women who experienced prenatal complications reported significantly less support, specifically less emotional and tangible support (i.e., aid, affect, and affirmations) (Zachariah, 2009). Similarly, practical support (i.e., help with caregiving and daily household tasks) during the postpartum was found to be an important factor in positive emotional and physical well-being of new mothers (Negron et al., 2013). Although these studies identified the particular domains of social support, they did not examine which relationships provided different forms of support.

There are several important relationships for women during pregnancy and postpartum, including partners, family members, and health professionals. The literature has established that the social support contributions of engaged partners are associated with lower depression and anxiety symptoms during pregnancy (Cairney, Boyle, Offord, & Racine, 2003; Rini, Dunkel-Schetter, Hobel, Glynn, & Sandman, 2006; Ross, Goldberg, Tarasoff, & Guo, 2018; Stapleton, Dunkel-Schetter, Rini, Hobel, Westling, Glynn & Sandman, 2012). Practical, tangible, and emotional support from partners have been shown to buffer symptoms of postpartum depression and increase mental health outcomes during pregnancy (see Gjerdingen, Froberg, & Fontaine, 1991 for review; Negron et al., 2013). In a study conducted by Cairney and colleagues (2003), single mothers reported higher depression and lower perceptions of social support compared to married mothers. Conversely, mothers with unsupportive partners reported significantly higher rates of depression compared to single mothers, indicating that unhelpful or negative support has negative implications for mental health (Bilszta, Tang, Meyer, Milgrom, Ericksen, & Buist, 2008). These findings suggest that women without partners can fare better than women with unsupportive partners, even though male partners are common sources of support during pregnancy. However, it is also common that other women or female relatives provide social

support during pregnancy. Thus, although not all women have supportive partners, or even any partner, it is likely that most women will have support from other women (Negron et al., 2013).

Additionally, the literature on women's social support during pregnancy tends to have a common theme of homophily, and with the exception of male partners, women are historically the ones to care for other women during pregnancy, childbirth and postpartum. The literature has examined this support from other women through two main contexts: familial support and professional support. Family social support is typically provided by mothers, sister, aunts, and godmothers, and these women often provide emotional and informational support to pregnant women and new mothers (Negron et al., 2013). Familial support has been significantly correlated with infant APGAR scores and birthweight (Ramsey, Abell, & Baker, 1986; Smilkstein, Helsing-Lucas, Ashworth, Montano, & Pagel, 1984). Although female relationships were not their primary variable of interest, Kalil and colleagues (1993) found that women who had female relatives and friends that provided emotional support during pregnancy had lower levels of perinatal anxiety.

Similarly, women have historically comprised the majority of perinatal healthcare providers. Currently, 57% of practicing obstetrics and gynecology practitioners in the United States are women (American Association of Medical Colleges, 2017; Yee & Miller, 2018) and professions that provide women support during and after birth (i.e., doulas and birth attendants, lactation consultants, and nannies) are almost exclusively women (Rochman, 2013). Doulas are birth attendants who provide emotional and informational support as well as advocate for the mother's well-being during pregnancy, labor, and the postpartum (DONA International, 2019). Having a supportive healthcare professional or doula present during labor is associated with higher levels of satisfaction with the birth experience, reduced pregnancy complications, and

increased perceptions of emotional and practical support (Gjerdingen, McGovern, Pratt, Johnson, & Crow, 2013; see Hodnett et al., 2013 for review).

Additionally, lactation consultants, doulas, home visitors, and nannies have primarily been women helping other women during motherhood (La Leche League International, 2019; Women's History Network, 2010). For example, La Leche League International, an international breastfeeding organization led solely by women with personal breastfeeding experience (La Leche League International, 2019), counsel women on breastfeeding skills and barriers, with the intention of providing professional, practical, and emotional support through the breastfeeding process. Women with increased breastfeeding support from peers and their mothers were more likely to breastfeed longer compared to women who have less support (Arlotti, Cottrell, Lee, Curin, 1998). Doulas have also had a central role in providing social support during pregnancy and labor. Their primary focus is to ensure mothers' safety and comfort throughout pregnancy and labor are prioritized as well as provide physical, emotional, and informational support about the transition to parenthood (Gruber, Cupito, & Dobson, 2013). Studies have shown that the presence of doulas decrease the likelihood of low birth weights and birth complications and increase breastfeeding initiation (Gruber et al., 2013; Thomas, Ammann, Brazier, Noyes, & Maybank, 2017). Additionally, home visitors, which are typically women, provide emotional and informational support to new mothers during pregnancy and postpartum. Women enrolled in home visiting programs report lower rates of postpartum depression compared to women who are not enrolled in these programs (Mersky & Janczweski, 2018). Nannies also support mothers as they attend to infants' demands and facilitate caregiver respite. These female caregiver roles are an important aspect of women's social support as they help women navigate the transition to motherhood. Thus, women's relationships with other women, whether professional or personal,

are an important aspect of social support during the postpartum. Seattle-based Program for Early Parenting Support (PEPS), creates a unique environment for parents with similar age children as they attend weekly meetings for companionship and support. PEPS aims to provide social, emotional and informational support to parents (PEPS, 2021). A sample of 160 parents that participated in PEPS reported a 21% increase in social support, 10% increase in emotional support, and 8% increase in informational support since participating in the program (PEPS, 2019). Although this program is a paid social support group that operates on a sliding scale, participants are likely financially stable parents with expendable incomes, which draws a conclusion between access to additional social support as a financial privilege.

Female Friendships

Despite evidence that female relatives and healthcare providers are beneficial to women, little research examines female friendships as sources of support to women. Non-relative friendships providing emotional support has long been associated with greater individual well-being, health-related quality of life, overall life satisfaction, lower levels of depression and anxiety, and greater abilities to cope with stress (Arora et al., 2006; Bloom, Stewart, Johnston, Banks, & Fobair, 2001; Carmichael, Reis, & Duberstein, 2015; Huxhold, Miche, & Schuz, 2013). Research suggests that friendships reduce stress and increase emotional well-being in women, which could be an important contribution to women's overall health (Taylor et al., 2000; Carmichael, et al., 2015; Cohen et al., 1985). For example, women recently diagnosed with breast cancer who receive emotional support from friends, compared to support coming from family members, have increased positive health outcomes (Arora et al., 2006). Whereas familial support is often expected to be unconditional, friendship support may be unexpected, yet highly impactful (Arora et al., 2006). Moreover, it is possible that family support may include more

negative support and conflict compared to friendships. Given that women have positive outcomes from their friendships, further research into female friendships is warranted.

Within recent decades, the media and academia alike have conveyed the complexity of female friendships as a safe space to share problems, feelings, thoughts, and triumphs (Fuller, 2018; Schaefer, 2018). Research on women who have experienced domestic violence (Norgen et al., 2013), lesbian mothers (Goldberg, Frost, Manley, & Black, 2018) and working mothers (Hennekam, 2016) all suggest that many women seek out the comfort and support of other women during stressful situations, and there is evidence that women experience greater professional success and increased well-being when they have fulfilling female friendships (see Cerulo & Mazur, 2019 for review). From an academic perspective, adolescent girls are also more likely to enroll in and obtain a higher grade in advanced level STEM classes, have higher levels of self-esteem, and better coping skills if they had supportive female friendships (Hartup & Stevens 1999; Reigel-Crumb, Farkas, & Miller, 2006). A recent study conducted by Yang, Chawla, and Uzzi (2019) further elucidate this notion, examining the professional implications of having a predominantly female social support system. Controlling for academic performance and personal characteristics, female graduate students with a social network of mostly women were found to be more successful professionally, and more likely to be hired into leadership positions (Yang et al., 2019). Of note, it appears that most of the literature on women's friendships have been conducted in samples of women with social and economic privilege.

Conversely, within the fields of social and evolutionary psychology women's relationships with one another have been characterized by competition and conflict. Within these fields, friendships have been conceptualized as opportunities to offer allegiances and provide safety to increase survival but same-sex peers can also be seen as competition for mates and

resources (Benenson, 2013). Beginning in childhood and continuing through adulthood, extant literature suggests that girls and women are more likely to compete with same-sex peers and are less likely to engage in cooperative group activities (Barbu, Cabanes G, Le Maner-Idrissi, 2011; Benenson, 2013; Lever, 1978). Girls and women use social exclusion and covert competition to form friendships and allegiances through more subtle and indirect acts of aggression (Benenson, 2008). It is also hypothesized that female friendships guide the transition from childhood into childbearing years as women begin to depend on relationships outside of their family of origin as she looks for a mate (Benenson, 2013). Although these relationships act as an early guide in forming close relationships, female friendship can be fragile. Hostility has been studied as a factor that can negatively impact the level of trust in female friendships leading to more fragile bonds (Merrie, Bradshaw, Jackson, & Kelly, 2019).

Although literature has suggested that conflict in women's relationships can negatively impact their friendships, some forms of conflict and negative communication styles can actually be beneficial in female friendships suggesting some of the unique nuances in women's relationships. For example, it is hypothesized that jealousy and co-rumination between female friends can help maintain relationships and these seemingly negative strategies can also be associated with positive friendship outcomes (Krems, Williams, Aktipis, & Kenrick, 2020; Rankin, A., Swearingen-Stanborough, C., Granger, D. A., & Byrd-Craven, J., 2018). Further, Benenson (2013) highlights how women cooperate and support one another in their close relationships yet compete with women outside their social support circle. Women tend to have a few close and trusted relationships that provide beneficial social support in the forms of emotional support, allegiance, and protection against other female competitors, as well as practical support through assisting with low-cost childcare (Benenson, 2013). More research is

needed to examine the nuances and unique characteristics of female friendship throughout the lifespan.

Female friendships during the perinatal period have yet to be examined, specifically (Arora et al., 2006; Cairney, Boyle, Offord, & Racine, 2003; Gremigni, Mariani, Marracino, Tranquilli, & Turi, 2011). Friendships have important effects on adjustment and psychological well-being across the lifespan; therefore, the transition to motherhood is a particularly important time to examine women's social support (Graber, Turner, & Madill, 2016; Helgeson & Lopez, 2010). Although female family members are the main providers of practical and emotional support during pregnancy and postpartum, women also actively seek support from female friends and other mothers to discuss their feelings and experiences in motherhood (Negrón et al., 2013).

Emerging literature suggests that women seek informational support from other women and mothers to help prepare for and create expectations about motherhood (Deutsch et al., 1988). Workplaces that have a strong presence of working-mother role models and mentors increase pregnant coworkers' maternal identity and confidence about being able to balance work and family (Hennekam, 2016; Mäkelä, 2009; Millward, 2006). Working mothers are able to have discussions about both family and professional life, as well as observe other women model these behaviors (Hennekam, 2016). Similarly, online relationships among mothers (i.e., "mommy groups") have become increasingly prevalent, supportive, and informational communities (Friedman, 2016). Evans and colleagues (2012) analyzed the content of messages on a postpartum depression support group and found that most of the posts were authored by mothers in search of emotional support (i.e., giving hope, affection, and empathy), and other group members responding with informational support (i.e., peer experts: providing information, sharing anecdotes, and explaining medical information) and practical support (i.e., help with

daily activities, referrals for providers, infant caregiving advice, and self-care tips). The evidence strongly suggests that female friendships are important and even actively sought out by women during pregnancy and postpartum, yet little literature exists examining the role of female friendships during pregnancy (Deutsch et al., 2018). Thus, these gaps in the literature suggest important directions for research to obtain a more complete understanding of female friendships during pregnancy and postpartum as it relates to maternal and infant outcomes.

Current Study

The current study will be the first to examine the role of female friendships on women's social support during pregnancy, and whether the social support provided by female friendships is associated with better perinatal outcomes, including lower levels of depression and anxiety, and higher infant birth weights. The current study utilized data from 38 women to assess the proportion of women reporting female friendships in their social support network during pregnancy, the type of the social support female friendships provide, and the extent to which overall social support is associated with symptoms of depression and anxiety during pregnancy and infant birth weights at 6-weeks postpartum. The following hypotheses will be examined:

1. Women who report having female friends among their primary social support network during pregnancy will report higher levels of overall support, including practical, emotional, and informational support.
2. Female friends will provide more practical and emotional support, and less negative support, than other sources of support.
3. Overall social support during pregnancy will be negatively associated with symptoms of depression and anxiety in the postpartum, and positively associated with infant birthweight.

4. The presence of female friendships in the primary social network will moderate the associations between overall social support during pregnancy, symptoms of depression and anxiety in the postpartum, and infant birthweight
 - a. The negative association between overall social support during pregnancy and symptoms of depression and anxiety in the postpartum will be larger for women who report female friendships
 - b. The positive association between overall social support during pregnancy and infant birthweight will be larger for women who report female friendships

CHAPTER III

METHODOLOGY

Participants

Participants include 38 pregnant women from a community sample recruited from an OB/GYN clinic at a large Southwestern hospital system and online. The average age of participants was 26.85 years, $SD = 5.97$. The sample was comprised of white (38.5%) and Black or African American (20%), Native American (13.8%), Hispanic (10.8%), Biracial (10.8%), Multiracial (4.6%), and Asian (1.5%) participants. Most participants had high school (35.4%) or some college (36.9%) education. Most of the participants were married (35.9%) or single (32.8%) with nearly a quarter of the sample (26.6%) cohabitating with someone they were not married to. Eight-nine percent of the sample made equal to or less than \$40,000 annually and 67.2% earned \$20,000 or less annually. Approximately 63% of the participants were unemployed during pregnancy.

Study Design and Procedure

The study received approval from the author's university Institutional Review Board. Study inclusion criteria included participants being at least 18 years old and speaking English fluently and all participants provided written informed consent. Participants were recruited at approximately 28-weeks gestation to enroll in the study. Participants are asked to complete self-report surveys at 30-weeks gestation on their social support and mental health. At 6 weeks postpartum, participants are asked to complete self-report surveys on infant birthweight. Participants were compensated \$10 for each survey completed.

Measures

Demographics. A demographic questionnaire was utilized to obtain descriptive information about our sample, including age, gender, ethnicity, race, income, marital status, length of relationship with partner, and education level.

Social Support. Social support is measured using an adapted version of the Norbeck Social Support Questionnaire ((NSSQ); Levendosky et al., 2004; Norbeck, Lindsey, & Carrieri, 1981; Norbeck, Lindsey, & Carrieri, 1983). The NSSQ is a 9-item self-report questionnaire that assesses both the network size and level of support within an individual's social network. The adapted NSSQ assesses the top four supportive people in participants' social networks as well as their perceived overall support and support specific to pregnancy and postpartum. The individuals are listed by name, gender, and relationship to the participant as well as how frequently they have contact with each of the four supporters in person, via phone, and via texting/social media. Female friendships were defined as any female non-maternal figure relationship (i.e., biological mother, maternal figure, aunt, or grandmother) such as friend, sister, or cousin. The adapted NSSQ assesses social support on seven domains: Practical Aid, Emotional Support, Perceived Love, Physical Support, Financial Support, Health Support, and Negative Support/Conflict. Respondents indicated their perceived level of support on a 5-point Likert Scale from 0 meaning "Not at all" to 4 meaning "Very Supportive." Total sum scores for each type of support will be calculated by summing the supporter ratings within each type of support. Higher scores reflect more of that type of support.

Perinatal Depression. The Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) is a 10-item self-report questionnaire that assesses maternal depression within the past 2 weeks. Respondents indicate how severely certain emotions or behaviors were

occurring, such as being able to laugh, feeling sad or miserable, and difficulty sleeping. Each item provides four responses with answers ranging from 0 to 3 according to the severity. Answers are summed with a total score ranging from 0 to 30 with higher scores indicating more severity. Any score of ten or higher could indicate possible depression.

Perinatal Anxiety. The Perinatal Anxiety Screening Scale (PASS; Somerviller et al., 2015) is a 31-item self-report measure that assess anxiety during pregnancy and into the postpartum. Participants will indicate the frequency of anxious feelings, such as feeling overwhelmed, concerns about repetitive thoughts, and feeling agitated. Responses are recorded using a 5-point Likert scale with 0 meaning “Not at all” to 3 meaning “Almost Always.” Answers are summed and a higher score indicates more distress.

Birth Outcomes. Infant birthweight was collected from maternal self-report.

Supplementary Measures

Couple Satisfaction Index. The Couple Satisfaction Index (CSI; Funk & Rogge, 2007) is a 32-item scale that assesses satisfaction with a current romantic relationship on a 6-point Likert scale. Respondents reported their overall contentment in their current relationship across domains such as happiness, feelings of connectedness, and enjoying their partners company. The measure demonstrated excellent internal consistency, $\alpha = .98$ (Funk & Rogge, 2007). Answers are summed and higher scores indicate higher couple satisfaction.

Perinatal Obsessive Compulsive Disorder Questionnaire. The Perinatal Obsessive Compulsive Disorder Questionnaire is a 24-item measure that was published from OCD Center of Los Angeles (2019) as a screening tool for perinatal or postpartum Obsessive Compulsive Disorder (OCD). To date, there is not a validated to measure to assess perinatal or postpartum OCD. Respondents indicate yes/no to each symptom and receive one point for each OCD

symptom. The final question examines how many hours per days the respondent has obsessions or acts on compulsions. This item is not included in the final scoring. All other items are totaled and a higher score indicates more OCD symptoms.

PTSD Checklist for DSM-5 for Civilians. The PTSD Checklist for DSM-5 for Civilians (PCL-5-C; Weathers, Litz, Keane, Palmieri, Marx, & Schnurr, 2013) is a 20-item measure examining PTSD symptoms in civilians. Respondents endorse their PTSD symptoms within the past month on a 5-point Likert scale with “0” meaning Not at All and “4” meaning Extremely. Answers are summed and higher scores indicate more PTSD symptoms. Initial research suggests that scores between 31-33 indicate possible PTSD (Weather et al., 2013).

Adverse Childhood Experiences. Adverse Childhood Experiences Questionnaire (ACEs; Felitti et al., 1998) is a 10-item measure of the cumulative impact of multiple exposures to trauma. The questionnaire assesses adversity related to abuse and maltreatment such as physical abuse, verbal abuse, sexual abuse, experiencing interpersonal violence, incarceration, mental illness, and the disappearance of a parent through divorce, death or abandonment. Respondents indicate yes/no to these exposures and receive one point for each type of trauma endorsed with a higher score indicating more childhood adversity.

Statistical Analyses

The following statistical analyses were conducted to characterize female friendships during pregnancy and examine their causal relationships between perinatal outcomes:

Aim 1. Descriptive statistics were conducted to investigate women’s social support during pregnancy, particularly the presence of female friendships defined as sisters, cousins and friends. Chi-squared tests and independent samples t-tests were conducted to examine differences in

demographic variables (e.g., age, race, education, marital status) between groups of women with and without female friendships

Aim 2. It is hypothesized that women who report having female friends among their primary social support network during pregnancy will report higher levels of overall support, including practical, emotional, physical, and perceived love support. Independent samples t-tests will be conducted to compare levels of overall support and individual types of support (i.e., practical, emotional, physical, and perceived love) between women with and without female friendships.

Aim 3. It is hypothesized that overall social support during pregnancy will be negatively associated with symptoms of depression and anxiety in the postpartum, and positively associated with infant birth weight. Pearson's correlations and linear regression analysis examined the association between social support during pregnancy and each perinatal outcome, controlling for race, education, and marital status.

Aim 4. It is hypothesized that the presence of female friendships in the primary social network will moderate the associations between overall social support during pregnancy, symptoms of depression and anxiety in the postpartum, and infant birthweight. The associations between social support and perinatal outcomes will be greater for women with female friendships. Linear regression analysis was conducted to examine the association between social support (X), female friendship (M), their interaction (XM) and each perinatal outcome, controlling for race, education, and marital status.

CHAPTER IV

FINDINGS

Aim 1

Descriptive statistics were used to determine the prevalence of non-maternal figure female friendships during pregnancy. Thirty-seven percent of the sample ($n = 14$) reported receiving support from at least one non-maternal figure female friend (i.e., female friend, sister, or cousin) with 8% ($n = 3$) receiving support from two or more female friends. Out of the 20 female friends listed across participants, 13 were sisters, 6 were female friends (a seventh friend was listed but the participant did not report that individual's gender), and 1 was a female cousin. Every participant reported receiving support from at least one female relative (i.e., mother, maternal figure, aunt, grandmother) and 34% ($n = 13$) reported a maternal figure among their top four supporters. Surprisingly, some mothers (26%, $n=10$) listed a child or step-child as one of their top supporters. When children were listed as supporters, 60% of them were daughters. Six percent of the sample ($n = 2$) reported that two of their four top supporters were maternal figures, suggesting that half of their most intimate support comes from maternal figures. No participants listed work/school associates, neighbors, health care providers, counselor/therapists, or clergy members as supporters despite being listed as options on the Norbeck Social Support Questionnaire.

The majority of all top supporters during pregnancy were identified as being women (62%), and the remaining 38% of top supporters were male, primarily partners and fathers. Of note, eight-percent of the sample ($n = 3$) listed only female supporters, including maternal

figures, sisters, cousins, friends, and daughters, and all of these participants reported being single or divorced. Of all the women that listed children as supporters, 56% were single or divorced, 33% were married, and 11% were cohabitating. Despite women being listed more often than men as supporters, 73% of participants ($n = 24$) listed male partners as one of their top supporters. When comparing the top three supporters, women most commonly rated partners the most supportive relationship followed by maternal figures and female friendships, respectively. Notable trends in Table 1 show that female friendships were listed in the second, third, and fourth rankings, but never as the number one supporter. Only partners/spouses, parental figures, and other children were ranked in the number one supporter position. More characteristics about the relationships women identified among their top four supporters are included in Table 1 and the proportion of different supporters are included in Figures 1-8.

Contrary to hypotheses, there were few differences in demographic variables that emerged in comparisons between women with and without female friends as top supporters. All women reported their current male partners were the biological fathers of their children and planned to co-parent with them. Findings from an independent samples t-test did not indicate any differences in age, $t(28) = -.324, p = .748$, and chi-squared tests did not indicate statistically significant differences in education ($\chi^2(5, N = 38) = 7.684, p = .660$), race ($\chi^2(5, N = 30) = 4.501, p = .480$), or marital status ($\chi^2(5, N = 38) = 7.886, p = .640$). See Figures 4 - 8.

Notably, there were differences in the number of children between women with and without female friendships. Independent samples t-test showed that women with female friendships had statistically significantly more children ($M = 2.13, SD = 1.89$) compared to women without female friendships ($M = 1.91, SD = .83$), $t(18) = -.48, p < .05$. Twenty-eight percent of women with female friendships had four or more children. See Figure 6. Additionally,

a significant difference was found in the length of the relationship with their number one supporter, with women with female friendships having statistically significantly shorter relationships with number one supporters ($M = 7.0$ years, $SD = 7.5$ years) compared to women without female friends listed as top supporters ($M = 15.6$ years, $SD = 10.3$), $t(28) = 1.81, p < .05$. The most commonly listed individuals in the number one supporter role were male partners and maternal figures. Women without female friendships more frequently listed maternal figures as their number one supporter compared to women with female friendships more frequently listing their partner in the top position. There was not a statistically significant difference in the length of relationships with the other three supporters, and no differences were found in the average length of relationships across all four supporters between women with and without female friendships. More characteristics about the lengths of women's relationships are included in Table 1.

Aim 2

The findings from independent samples t-tests did not support the second hypothesis that women with female friendships would report higher levels of social support during pregnancy. There were no statistically significant differences in overall support ($t(28) = -.380, p = .707$), practical support ($t(28) = -.604, p = .550$), emotional support ($t(28) = -.591, p = .560$), or physical support ($t(28) = -.579, p = .567$). There was also not a statistically significant difference between perceived love ($t(28) = -.151, p = .881$) or negative support ($t(27) = 1.783, p = .086$). Descriptive statistics and results of all independent t-tests can be found in Table 2. Additionally, both groups of women had the highest social support scores for perceived love, followed by practical support, emotional support, and health support. Differences in types of support in general and pregnancy-related support are reported in Figure 8.

Aim 3

The findings from Pearson's correlations and linear regressions did not support the third hypothesis that social support during pregnancy would be negatively associated with symptoms of depression and anxiety in the postpartum, and positively associated with infant birth weight. Social support during pregnancy was not a significant predictor of postpartum depression ($F(1, 33) = 1.506, p = .215$), postpartum anxiety ($F(1, 35) = .469, p = .498$), or infant birthweight ($F(1, 15) = .008, p = .930$) controlling for race, education, and marital status. Correlations are reported in Table 3. Results of the regression analyses are reported in Table 4, Table 5, and Table 6.

Aim 4

The results did not support the fourth hypothesis that women with female friendships would report higher levels of social support and have babies with higher birthweights. Moderation analyses were conducted to examine whether female friendships moderated the relationship between overall social support during pregnancy and perinatal health outcomes. All results from moderation analyses can be found in Tables 7 – 9.

Supplementary Analyses

Additional descriptive analyses were completed on important psychosocial variables, including mental health, history of adversity, and pregnancy intentions, to further characterize the sample. Notably, there were no statistically significant differences on any psychosocial variable in comparisons between women with and without female friendships among their top supporters. Aligning with national estimates (see O'Hara & McCabe, 2013 for review), approximately 18% of the sample had Edinburgh Postnatal Depression Scores above the clinical cut-off. With regard to anxiety symptoms, 56.3% of the sample had minimal anxiety, 28% had

mild-moderate anxiety, and 16% had severe anxiety on the Perinatal Anxiety Screening Scale. See Figure 5. On average, participants reported 5 symptoms of perinatal Obsessive-Compulsive Disorder on a questionnaire describing OCD symptoms. Every participant endorsed experiencing 1 or more traumatic events, with 75% of participants having experienced 1-2 traumatic events in their lifetime on PCL-5- for Civilians. Participants reported an average of 17 post-traumatic stress symptoms with 9% of the sample being in the clinically significant range for PTSD symptomology. The sample had an average of 2.83 adverse childhood experiences, $SD = 2.53$, ranging from a minimum of 0 and maximum of 9 adverse experiences. Finally, 57% of the pregnancies within the sample were unintended, and 91% of women with unintended pregnancies were not using birth control when they got pregnant.

CHAPTER V

CONCLUSIONS

The current study was the first of its kind to describe the female friendships within women's immediate social support network during pregnancy. Our findings suggest that over one-third of women have a non-maternal figure female friend in her top four supporters during pregnancy, but that maternal figures were key supporters during pregnancy regardless of friendship status, as every participant listed a female relative within their top four supporters. The majority of women also reported that male romantic partners (primarily the child's father) were their number one supporter, regardless of the presence of female friendships. However, results did not support hypotheses that women with female friendships receive more social support or that these relationships buffered health outcomes for mother or baby. Although female friendships were not a significant protective factor, the findings did provide novel descriptions of who women from diverse, low-income communities depend on during pregnancy.

Social Support During Pregnancy and Prevalence of Female Friendships

The present study investigated the composition of women's social support network during pregnancy with the particular aim of examining the presence of female friendships. Broadly, women's top four supporters were comprised of mostly women, but some men, primarily the romantic partner and father-figures, were also common supporters. None of the participants listed a supporter that identified outside of the gender binary. Participants listed male partners and maternal figures as the most common supporters regardless of friendships status. Extant literature aligns with these findings as research has suggested that partners and maternal

figures are highly common and instrumental in providing emotional, practical, and financial support during pregnancy (Agampodi, Rheinländer, Agampodi, Glozier, & Siribaddana, 2017; Deutsch et al., 2018; Negron et al., 2013; Rini et al., 2006). The findings are also consistent with widespread cultural representations of partners and mothers being primary supporters pregnant and postpartum women in the media, films, and storytelling. For example, Mexican women receive extra support from female relatives in the first 40 days postpartum, *cuarentena*, as they solely focus on caring for their newborn infants (Waugh, 2011). The African proverb, *it takes a village*, also highlights the need for social support and community following birth to help care for mother and baby. Films and media often reflect such traditions and show mothers and partners helping women prepare for motherhood during pregnancy and then being present with mom and baby in the early postpartum (i.e., *Teen Mom*, *What to Expect When You're Expecting*, *Knocked Up*, *Jane the Virgin*). The present findings offer quantitative evidence of maternal and partner support that support these cultural norms and media representations.

The current study also documents understudied forms of social support during pregnancy, such as support from female friends and children. Negron and colleagues (2013) identified that pregnant women often sought emotional and practical support from their female friends, but did not document that women's own children may serve as sources of support during pregnancy. Receiving support from children, particularly daughters, has been reported in certain familial contexts, such as single parent and low-income households (Nixon, Greene, & Hogan, 2015; Weiss, 1979). Broadly, the literature on children from lone parent and low-income households suggests that they are often given increased responsibility in the household, taking on managerial tasks and household chores, as well as childcare duties (Nixon et al., 2015; Weiss, 1979). A similar phenomenon has been documented among women who experience depression, where

their children are not only assigned more household tasks but also take on additional roles as providers of emotional and practical support (Brawer, 2018).

The findings from the current study are one of the first to quantitatively measure the presence of female friendships in women's innermost circles alongside family members, with approximately one-third of the sample reporting a non-maternal figure female friend as one of their important sources of social support during pregnancy. Partners/spouses, parental figures, and other children were the only relationships to be ranked as more important supporters than female friends, confirming their status as the closest members in a social network, followed by female friendships. Overall, these results help to confirm that female supports, specifically mothers, sisters, aunts, godmothers, and female friends, are common supporters during pregnancy (Kalil et al., 1993; Negron et al., 2013).

Women without female friendships relied heavily on their mothers and partners for support. Our findings suggest that women without female friendships are more likely to solely rely on their family members (i.e., parental figure, brother, grandmother, or their own children) compared to women with female friendships. Maternal figures were the most commonly reported female supporter for women without female friendships. The most prominent male supporters listed were the participant's male partners (all were biological fathers to the pregnancy) and fathers. It could be postulated that married pregnant women could have access to a larger social network (i.e., mother-in-law, father-in-law, sister-in-law) that could provide support during pregnancy, reducing the need to elicit support from non-family members.

With more than two-thirds of the sample reporting that their support system was entirely comprised of maternal figures and male partners, there was little variability in the relationships to examine differences in the types of support received or perinatal outcomes based on the

presence of female friendships. Specifically, there was not a marked difference between the type of support received overall between women with and without female friendships, nor were there differences in perinatal health outcomes. Female friendships were not associated with higher levels of emotional, practical, and physical support during pregnancy as hypothesized, nor were there differences in negative support or conflict between women with and without female friendships. Moreover, female friendships do not appear to play an integral role for maternal or infant health outcomes, as female friendship was not a significant protective factor against maternal anxiety or depression, nor was it associated with infant birthweight. As male partners and maternal figures were most commonly two of the four individuals listed in a woman's social support network, it is logical that women with and without female friendships are receiving similar amounts and types of social support regardless of the other two individuals listed.

With no significant differences in either social support or conflict across groups, it appears that there were no clear advantages or disadvantages to having female friendships within the social support network during pregnancy. Consistent with research suggesting that women will actively seek out emotional and practical forms of support during pregnancy (Deutsch et al., 1988; Heh & Fu, 2003; Negron et al., 2013; Zachariah, 2009), it seems that women with female friendships received similar types and amounts of pregnancy-related social support as women without female friendships, suggesting that women may seek out that support from female friends if other family members are not available. Further, findings from the present study did not identify differences in levels of relationship conflict between women with and without female friendships. Research from social and evolutionary psychology suggest that women can view each other as a threat to their resources and reproduction, which increases competition and conflict within female relationships and reduces the quality of their relationships (Merrie et al.,

2019; Cowan & Ullman, 2006). However, this does not appear to be in play in the current sample. It is possible that pregnancy may be a special time that buffers perceptions of threat between women. Literature on chacma baboons mate-guarding and reproductive suppression provides insight into changes in competition amongst females during pregnancy. Female aggression seems to be highest when animals are attempting to mate and it could be hypothesized that pregnant women may no longer be perceived as competition for reproduction, at least temporarily during the course of the pregnancy (Baniel, Cowlshaw, & Huchard, 2018). Additionally, with the majority of supporters being women for all participants, it may be that conflict or negative support among women occurs at similar levels regardless of familial status, or at least is not exacerbated by female friendships. It should be noted, however, that the participants reported on types and amounts of support generally, and did not report on the extent to which particular supporters provided various types and amounts of support.

The most notable difference between women with and without female friendships was that women with female friendships had approximately 1 more child on average than women without female friendships. This finding speaks to the previously mentioned African proverb, *it takes a village*, suggesting that women with more children are more likely to rely on a wider social network that includes non-maternal female relationships for support. Additionally, women with female friendships were also more likely to cohabit with an unmarried partner than women without female friendships, although there were no differences in the length of relationship with their partner. Although all of the women in the sample were characterized as low income, it is possible that women with female friendships in the current sample experienced a history of greater financial and household instability. According to Life History Theory (LHT), women that have experienced instability, poverty, and adversity are more likely to engage in

quicker reproductive cycles such as engaging in sex at a younger age and having more partners, and are likely to have more children, compared to slow strategists that sexually mature later and have long-term partners (Ellis & Essex, 2007; Kruger & Fisher, 2008). Although Life History Theory does not have literature directly addressing contraception use, the overall theory suggests that women who experience more instability are more likely to allocate their energy to increasing their reproductive efforts (Kruger & Fisher, 2008), and based on the current study, may be more likely to find support from other women as potential caregivers and supporters.

Of note, with participants largely reporting unemployment, coming from low-income communities, and reporting moderate exposure to ACES, financial instability and adversity are likely highly influential factors in the impact of women's friendships. Ward, Kanu, and Robb (2017) identified financial stress as one of the most salient stressors and predictors of postpartum depression. Literature on ACEs and social support can offer additional insight into the limitations of social support as a protective factor in individuals experiencing more adversity. Appleton, Kiley, Holdsworth, and Shell (2019) found that social support buffered negative mental health outcomes only among women with low (0 events) and moderate (1–3 events) ACEs but not among women with high ACEs (4+ events). Their work suggests that there is a specific threshold at which social support is no longer able to mitigate the effects of adversity on mental health outcomes. Although the current sample of pregnant women had a moderate number of ACEs, an average of 2-3 events in our sample, the pairing of moderate ACEs with financial instability and unemployment during pregnancy could be too significant for social support to mitigate. Thus, socioeconomic status is an important factor to examine when discussing social support and its relationship to health outcomes, and should be closely examined in future research.

Implications

Results of the current study lays a foundation for describing female friendships during pregnancy and may be a guide to future research, clinical, and policy work. The evaluation of female friendships has long been understudied and undervalued in research and clinical work. Although the present work was not able to determine female friendships as a protective factor, these relationships were the most common non-familial supporter following maternal figures and male partners. Clinical and policy implications of this research suggest that financial support and community resources that provide basic needs to pregnant women may be helpful for reducing financial instability and potentially increasing mental health outcomes. From a research perspective, social support and female friendships should be investigated across all income levels to see if there are differences in health outcomes.

Strengths and Limitations

The current study was the first-known study to examine the presence and impact of female friendship during pregnancy. Findings also provide additional insight into who supports women during their pregnancies, as few studies have examined the composition of women's social support during pregnancy. Other notable strengths include utilizing longitudinal methodology with data during pregnancy and the postpartum to examine the interplay between variables during an important, transitional developmental period. Additionally, the sample was racially diverse and highlights several underrepresented populations such as Latinx women, Black women, low SES groups, and women with moderate exposure to ACEs.

Despite these strengths, the present study has several limitations. First, the given sample size was small and did not have sufficient power for some of the analyses. This is particularly relevant for the regression and moderation analyses given the sample attrition related to

postpartum outcomes. Our results are also limited by the limited representation of Asian and Native American women. With these cultures emphasizing collectivism, a larger response set from these groups could have influenced the study's findings on female friendships. Future studies could also collect more information about relationships such as when, how, and why a particular friendship was started and maintained, as a way to further describe the nature and implications of female friendships. It could be likely that the current study did not find any results related to female friendships because of the participants experiencing high rates of low-income and unemployment. Future research could build upon the work of Appleton and colleagues (2019) to further understand the relationship between social support, socioeconomic statuses, and health outcomes. An examination of the threshold of social support as it relates to financial-related stress during pregnancy would be beneficial to see if these constructs were associated with pregnancy health outcomes. Given that the current study did not find differences in social support during pregnancy between women with and without social support, it could be postulated that there were not any differences in social support because the amount and type of support provided during pregnancy is quite limited compared to the postpartum. Future studies should examine social support during the postpartum as new mothers typically need the most support as they adjust to caring for their infant. With the postpartum having more opportunities for caregiving (e.g., helping mother with health and household tasks, caring for infant, etc.) compared to pregnancy, there could be significant differences in social support in women with and without female friendships. Finally, our data is limited by the sole use of self-report measures for all our variables; multi-informant and observational data about participants social networks may reflect different patterns.

Conclusions

The present study was the first of its kind to describe the presence female friendships during pregnancy and their impacts on perinatal mental health and infant birth outcomes. Findings suggest that out of the top four supporters during pregnancy, every participant listed a female relative, male partners were the most common number one supporter, and over one-third of women have a non-maternal figure female friend. One of the most salient findings regarding differences between women with and without female friendships were that women with female friendships had more children and were more likely to cohabit with an unmarried partner. Although female friendships were not a significant protective factor for perinatal or infant health outcomes, the findings did provide unique characterizations of women's relationships during pregnancy.

Table 1

Descriptive characteristics of participant's relationships

	Common Supporters	
	Female Friendships (<i>n</i> =14)	No Female Friendships (<i>n</i> =24)
Important Person 1	Partner/Spouse (<i>n</i> = 5) Mother/Mother Figure (<i>n</i> = 1) Other – Daughter (<i>n</i> = 1), Son (<i>n</i> = 1)	Partner/Spouse (<i>n</i> = 8) Mother/Mother Figure (<i>n</i> = 5) Father/Father Figure (<i>n</i> = 1) Other – Daughter (<i>n</i> = 1), Grandmother (<i>n</i> = 2), Son (<i>n</i> = 1)
Important Person 2	Sister (<i>n</i> = 4) Mother/Mother Figure (<i>n</i> = 2) Partner/Spouse (<i>n</i> = 1) Cousin (<i>n</i> = 1) Female Friend (<i>n</i> = 1) Other – Grandmother (<i>n</i> = 1)	Partner/Spouse (<i>n</i> = 6) Mother/Mother Figure (<i>n</i> = 4) Father/Father Figure (<i>n</i> = 1) Other – Daughter (<i>n</i> = 4), Stepson (<i>n</i> = 1), Grandmother (<i>n</i> = 1)
Important Person 3	Female Friend (<i>n</i> = 4) Sister (<i>n</i> = 3) Mother/Mother Figure (<i>n</i> = 1) Father/Father Figure (<i>n</i> = 1) Other – Aunt (<i>n</i> = 1), Daughter (<i>n</i> = 1)	Mother/Mother Figure (<i>n</i> = 6) Father/Father Figure (<i>n</i> = 3) Brother (<i>n</i> = 3) Other – Daughter (<i>n</i> = 1), Nephew (<i>n</i> = 1), Stepson (<i>n</i> = 1)
Important Person 4	Sister (<i>n</i> = 5) Female Friend (<i>n</i> = 2) Partner/Spouse (<i>n</i> = 1) Mother/Mother Figure (<i>n</i> = 1) Other – Aunt (<i>n</i> = 2), Son (<i>n</i> = 1), Daughter (<i>n</i> = 1)	Mother/Mother Figure (<i>n</i> = 1) Father/Father Figure (<i>n</i> = 1) Brother (<i>n</i> = 1) Other – Children (<i>n</i> = 2), Daughter's father (<i>n</i> = 1)
	Average Length of Relationships	
	Female Friendships	No Female Friendships
Important Person 1	<i>M</i> = 7.0 years, <i>SD</i> = 7.5 years	<i>M</i> = 15.6 years, <i>SD</i> = 10.3 years
Important Person 2	<i>M</i> = 16.7 years, <i>SD</i> = 10.3 years	<i>M</i> = 13.5 years, <i>SD</i> = 12.2 years
Important Person 3	<i>M</i> = 18.8 years, <i>SD</i> = 8.3 years	<i>M</i> = 22.9 years, <i>SD</i> = 11.1 years
Important Person 4	<i>M</i> = 12.2 years, <i>SD</i> = 10.1 years	<i>M</i> = 23.4 years, <i>SD</i> = 12.0 years

Table 2

Independent sample t-test comparing characteristics of support between women with and without female friendships

	Female Friendships		No Female Friendships		<i>t</i> (28)	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Emotional Support	17.15	4.22	16.30	3.45	-.59	.56
Practical Support	17.90	2.75	17.30	2.11	-.60	.55
Physical Support	14.70	5.64	13.60	4.51	-.58	.57
Negative Support	4.69	.85	7.81	6.24	1.78	.09
Overall Support	93.60	23.71	96.45	16.93	-.38	.63
Perceived Love	18.30	3.30	18.50	3.49	-.15	.88

Note. *n* = 30.

Table 3*Correlations between perinatal outcomes and social support*

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Perinatal Depression	7.53	5.99	—				
2. Perinatal Anxiety	21.17	16.90	.77*	—			
3. Birthweight	110.78	22.50	-.10	-.01	—		
4. Total Support	88.38	27.09	-.20	.14	.06	—	
5. Total Support during Pregnancy	70.51	23.45	-.22	-.12	-.10	.97*	—

Note. * $p < 0.001$

Table 4

Linear regression analysis summary for social support predicting infant birthweight

	<i>B (SE)</i>	<i>β</i>	<i>p</i>
Support during Pregnancy	.17 (.37)	.16	.65
Race ^a	14.67 (15.89)	.31	.37
Education ^b	10.28 (17.78)	.20	.57
Marital Status ^c	.75 (15.26)	.02	.96

Note. Independent variable = Birthweight (grams). ^a Reference group = White. ^b Reference group = High School Education. ^c Reference group = Married.

Table 5

Linear regression analysis summary for social support predicting perinatal depression

	<i>B (SE)</i>	<i>β</i>	<i>p</i>
Support during Pregnancy	-.10 (.05)	-.35	.06
Race ^a	1.91 (2.28)	.14	.41
Education ^b	-4.36 (2.34)	-.34	.0
Marital Status ^c	.48 (2.27)	.04	.84

Note. Independent variable = Birthweight (grams). ^aReference group = White. ^bReference group = High School Education. ^cReference group = Married.

Table 6

Linear regression analysis summary for social support predicting perinatal anxiety

	<i>B (SE)</i>	<i>β</i>	<i>p</i>
Support during Pregnancy	-.19 (.14)	-.24	.20
Race ^a	2.43 (6.63)	.06	.72
Education ^b	-11.36 (6.78)	-.31	.10
Marital Status ^c	.78 (6.60)	.20	.91

Note. Independent variable = Birthweight (grams). ^aReference group = White. ^bReference group = High School Education. ^cReference group = Married.

Table 7

Female friendship moderating the relationship between social support during pregnancy and perinatal anxiety

	<i>B</i> (SE)	<i>p</i>
<i>Predictors</i>		
Female Friendship	-46.72 (27.86)	.11
Social Support during Pregnancy	-.41 (.27)	.14
[Female Friendship X Social Support]	.64 (.36)	.27
<i>Covariates</i>		
Race	-5.31 (7.24)	.47
Education	-.91 (3.43)	.79
Marital Status	3.98 (3.59)	.28

Note. ^a Female Friendship (1 = yes; 0 = no) ^b Reference group = White. ^c Reference group = High School Education. ^d Reference group = Married.

Table 8

Female friendship moderating the relationship between social support during pregnancy and perinatal depression

	<i>B(SE)</i>	<i>p</i>
<i>Predictors</i>		
Female Friendship	-12.97 (13.60)	.35
Social Support during Pregnancy	-.07 (.10)	.47
[Female Friendship X Social Support]	.18 (.18)	.33
<i>Covariates</i>		
Race	.21 (.53)	.69
Education	-.51 (1.33)	.13
Marital Status	1.98 (1.26)	.28

Note. ^aFemale Friendship (1 = yes; 0 = no) ^bReference group = White. ^cReference group = High School Education. ^dReference group = Married.

Table 9

Female friendship moderating the relationship between social support during pregnancy and infant birth weight

	<i>B(SE)</i>	<i>p</i>
<i>Predictors</i>		
Female Friendship	54.44(90.47)	.61
Social Support during Pregnancy	.78(2.01)	.74
[Female Friendship X Social Support]	-1.01(1.23)	.51
<i>Covariates</i>		
Race	-6.47 (35.67)	.87
Education	-6.71 (19.59)	.76
Marital Status	15.00 (22.64)	.58

Note. ^aFemale Friendship (1 = yes; 0 = no) ^bReference group = White. ^cReference group = High School Education. ^dReference group = Married.

Figure 1

Proportion of all Support Relationships Identified Women with and without Female Friendships

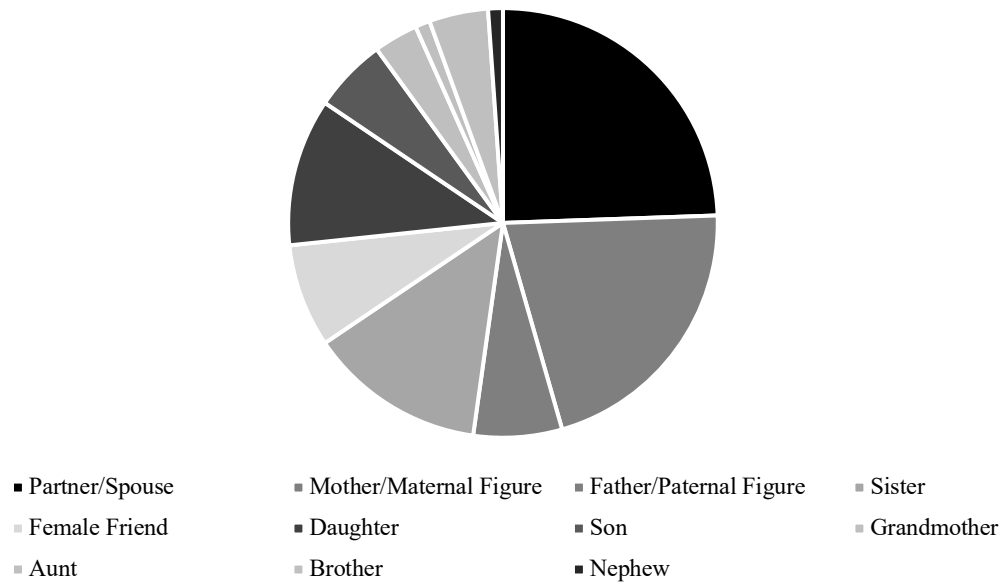
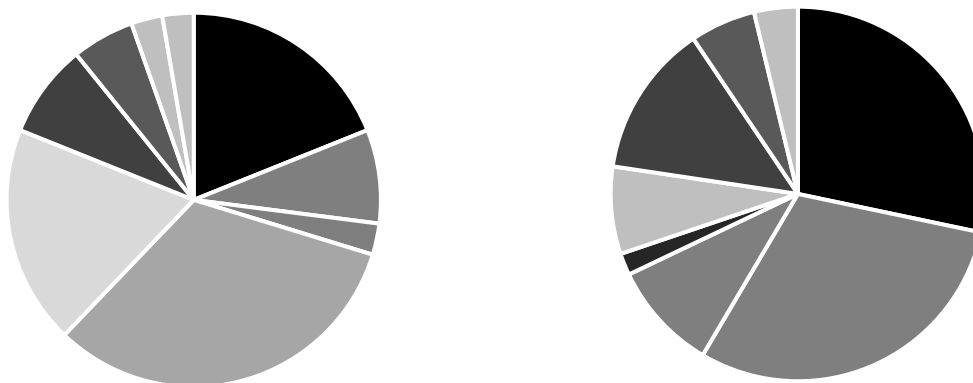


Figure 2

Proportion of Support Relationships Identified in Women with and without Female Friendships



Note. Sample with female friendships (left), $n = 14$; Sample without female friendships (right), $n = 24$

- | | | | |
|------------------|--------------------------|--------------------------|---------------|
| ■ Partner/Spouse | ■ Mother/Maternal Figure | ■ Father/Paternal Figure | ■ Sister |
| ■ Female Friend | ■ Daughter | ■ Son | ■ Grandmother |
| ■ Aunt | ■ Brother | ■ Nephew | |

Figure 3

Frequencies of education statuses among women with and without female friendships

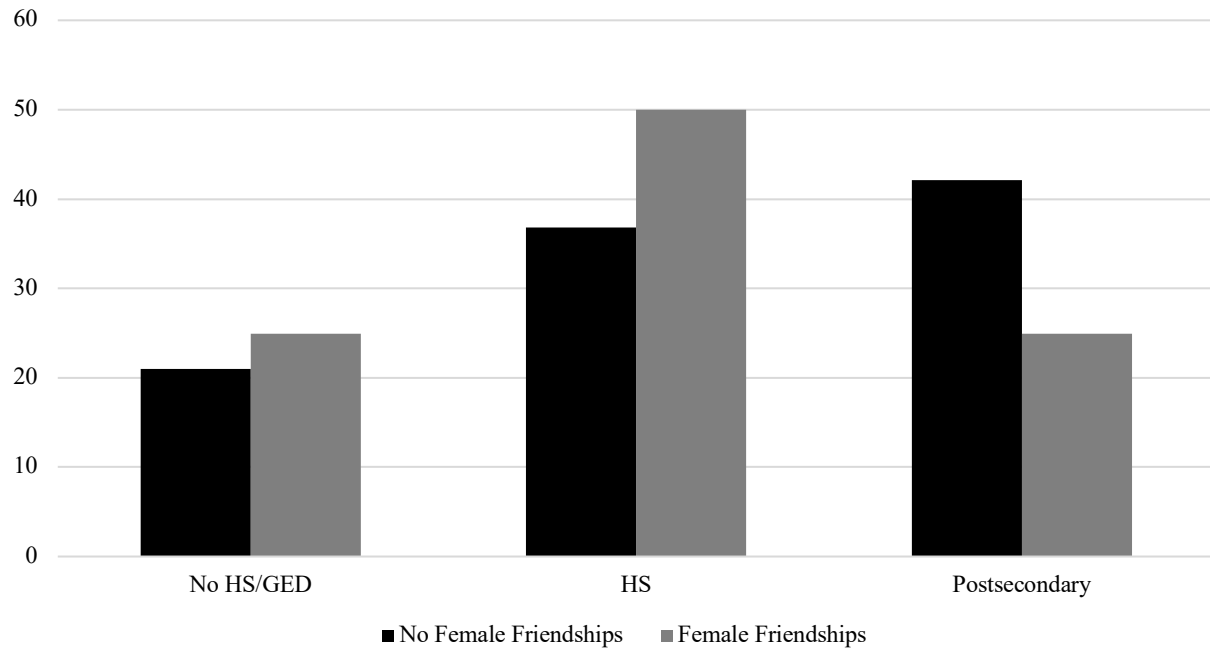


Figure 4

Frequencies of racial and ethnic identities among women with and without female friendships

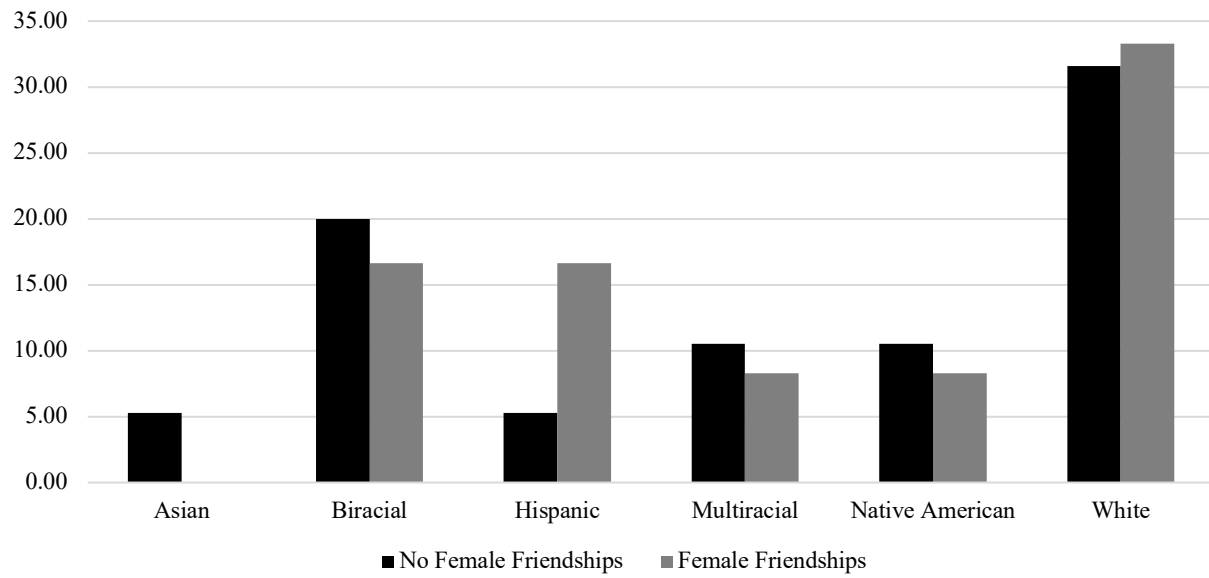


Figure 5

Frequencies of relationship statuses among women with and without female friendships

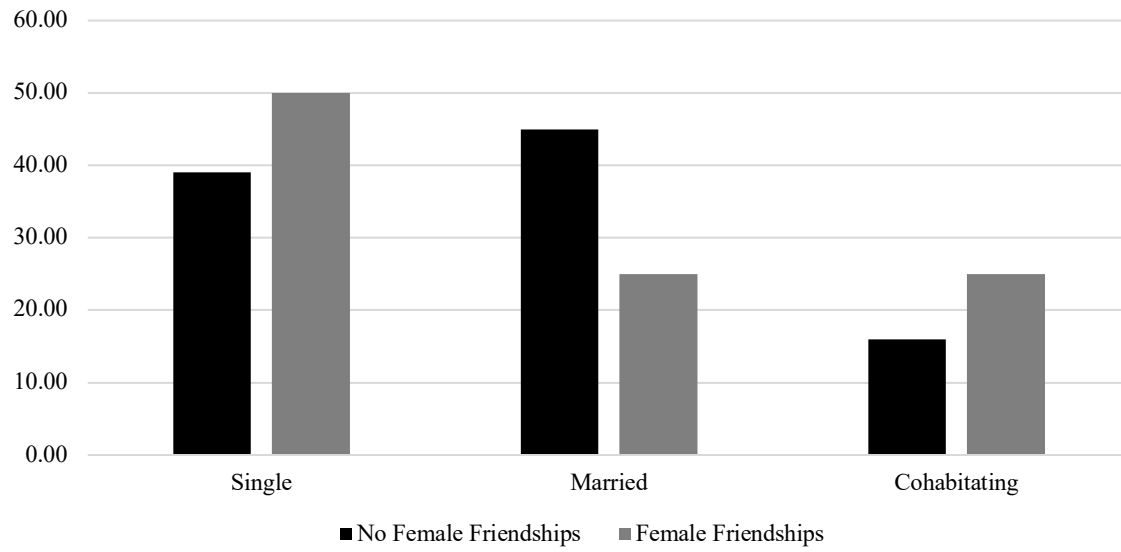


Figure 6

Frequencies of the number of children among women with and without female friendships

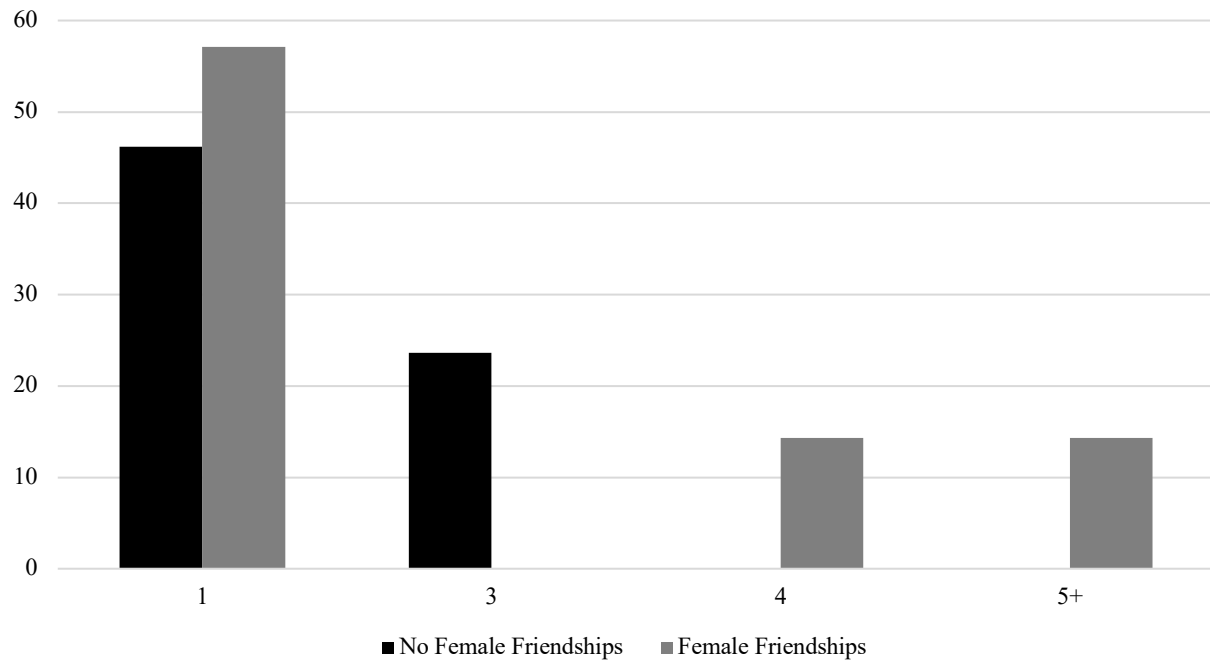
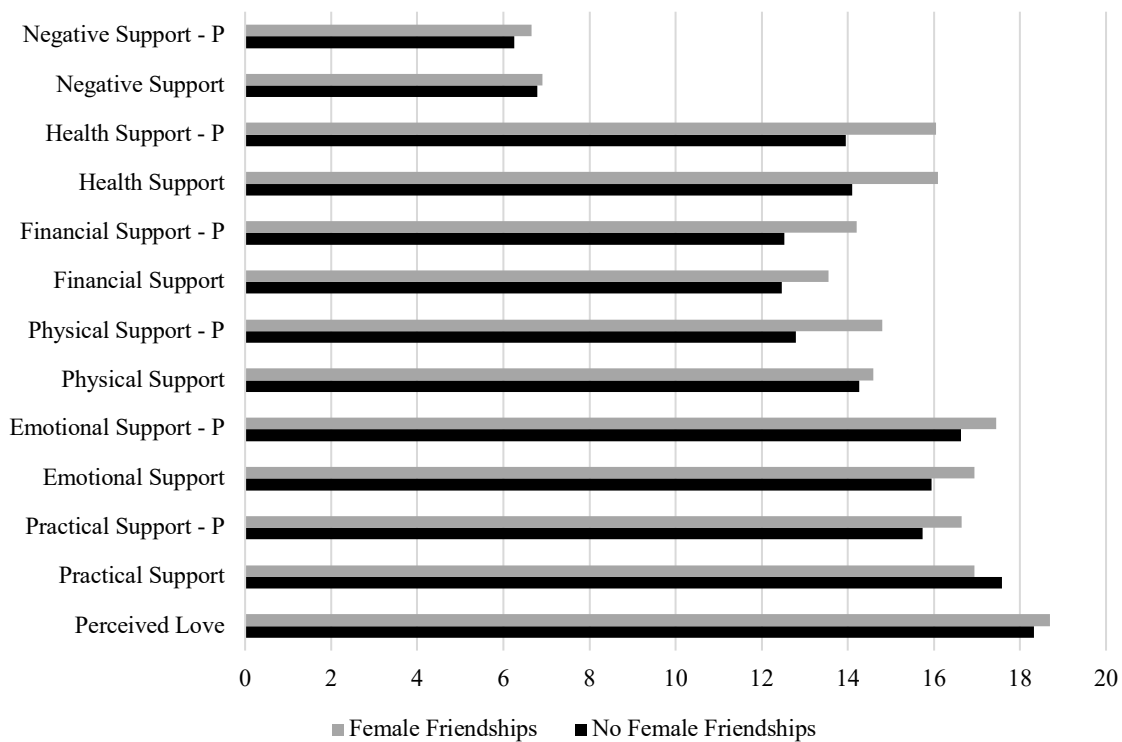


Figure 7

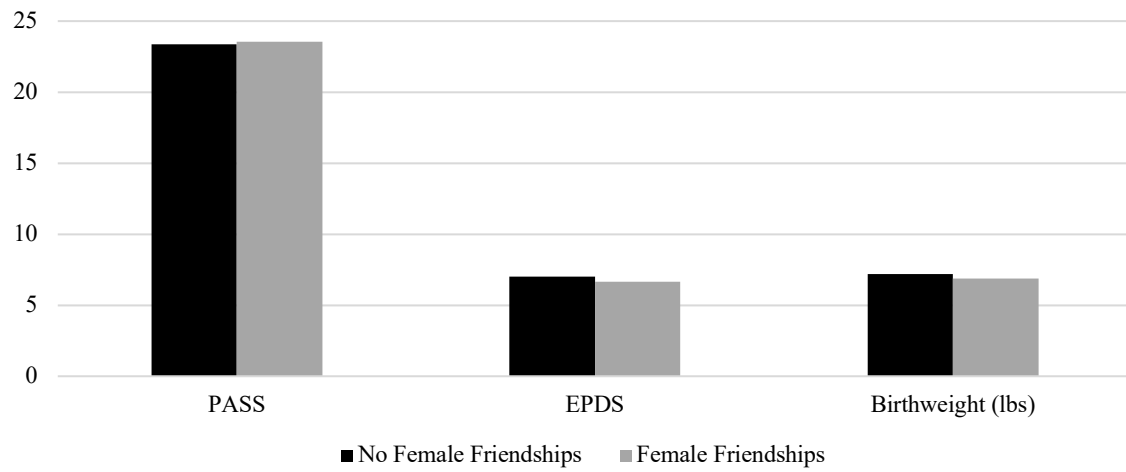
Average scores on different types of social support among women with and without female friendships



Note. P = Support During Pregnancy

Figure 8

Average scores on perinatal health outcomes among women with and without female friendships



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APPENDIX

Adapted Norbeck Social Support Questionnaire

How many people do you have in your life right now who you would think of as very important to you?

Of those people, list the top 4 people that you are closest with.

First Name or Initials	Relationship and Gender	Length of Relationship
1. _____	1. _____	1. _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____
4. _____	4. _____	4. _____

Relationship Categories:

Partner/Spouse	Mother	Father	Sister	Brother	Cousin	Friends
Work/School associates	Neighbors	Health Care Providers	Counselor/Therapist	Minister/Priest/Rabbi	Other	

How many days per week do you have contact with this person:

In Person	Via phone	Texting or Social Media
1. _____	1. _____	1. _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____
4. _____	4. _____	4. _____

Question 1: How much advice and guidance about pregnancy did you get from this person?
(Practical Aid)

1. _____
2. _____
3. _____
4. _____

5-point Likert Scale

0 = Not at all
4 = Very supportive

Question 2: How much emotional support about pregnancy did you get from this person?
(Emotional Support)

1. _____
2. _____
3. _____

4. _____

Question 3: How much does this person make you feel liked or loved?

1. _____
2. _____
3. _____
4. _____

5-point Likert Scale

0 = Not at all

4 = Very liked or loved

Question 4: How much does this person criticize, or seem intrusive, or create conflict, or disappoint you? (Negative Support)

1. _____
2. _____
3. _____
4. _____

Question 5: How much help do you get from this person with physical tasks during your pregnancy (e.g. lifting heavy items, putting on shoes)? (Physical Support)

1. _____
2. _____
3. _____
4. _____

Question 6: How much does this person help you financially? (Financial Support)

1. _____
2. _____
3. _____
4. _____

Question 7: How much help do you get from this person with maintaining your health during your pregnancy (e.g. going to doctor's appointments, picking up medications, diet/exercise, going to birthing classes)? (Health Support)

1. _____
2. _____
3. _____
4. _____

Scoring: Separate mean scores for emotional support, practical aid, physical, and negative support were calculated by summing the ratings given to each supporter and dividing by the total number of supporters. Higher scores on emotional, physical, and practical aid are positive; higher scores on negative are negative.



Oklahoma State University Institutional Review Board

Date: 11/26/2018

Application Number: AS-18-103

Proposal Title: SLleep & Mother-Baby Regulation (SLBMR) (formerly named; Sleep, Inflammation, and Psychopathology in the Perinatal Period)

Principal Investigator: LUCIA CICIOLLA
Co-Investigator(s): Jennifer Byrd-Craven, Ph.D.
Faculty Adviser:
Project Coordinator: Mira Armans, Samantha Addante
Research Assistant(s):

Processed as: Full Board

Status Recommended by Reviewer(s): Approved

Approval Date: 11/26/2018

Expiration Date: 11/25/2019

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any recruitment, consent and assent documents bearing the IRB approval stamp are available for download from IRBManager. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be approved by the IRB. Protocol modifications requiring approval may include changes to the title, PI, adviser, other research personnel, funding status or sponsor, subject population composition or size, recruitment, inclusion/exclusion criteria, research site, research procedures and consent/assent process or forms.
2. Submit a request for continuation if the study extends beyond the approval period. This continuation must receive IRB review and approval before the research can continue.
3. Report any unanticipated and/or adverse events to the IRB Office promptly.
4. Notify the IRB office when your research project is complete or when you are no longer affiliated with Oklahoma State University.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact the IRB Office at 223 Scott Hall (phone: 405-744-3377, irb@okstate.edu).

Sincerely,
Oklahoma State University IRB

VITA

Gina Erato

Candidate for the Degree of

Master of Science

Thesis: FEMALE FRIENDSHIPS AND SOCIAL SUPPORT DURING THE PERINATAL
PERIOD

Major Field: Clinical Psychology

Biographical:

Education:

Completed the requirements for the Master of Science in Psychology at Oklahoma State University, Stillwater, Oklahoma in May 2021.

Completed the requirements for the Master of Science in your Clinical Psychology at Oklahoma State University, Stillwater, Oklahoma in May 2021. Completed the requirements for the Bachelor of Arts in Psychology and Italian Studies at University of Wisconsin-Milwaukee, Milwaukee, WI in May 2016.

Experience:

Graduate Research Assistant – Child Adaptation and Maternal Psychopathology Lab, Oklahoma State University, Stillwater, Oklahoma

Clinical Research Coordinator – Pediatric Gastroenterology, Children’s Hospital of Wisconsin, Milwaukee, Wisconsin

Professional Memberships:

International Congress for Infant Studies, Psychology Graduate Student Association, OSU Psychology Department Student Diversity Committee