MATERNAL PSYCHOSOCIAL FACTORS RELATED TO DURATION AND
EXCLUSIVITY OF BREASTFEEDING PRACTICES AMONG RURAL WOMEN:
THE HEALTHY MOMS AND BABIES STUDY

A Dissertation presented to the Faculty of the Graduate School
University of Missouri

In Partial Fulfillment
of the Requirements for the Degree

Doctorate of Philosophy

by
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The undersigned, appointed by the dean of the Graduate School, have examined the dissertation entitled

MATERNAL PSYCHOSOCIAL FACTORS RELATED TO DURATION AND
EXCLUSIVITY OF BREASTFEEDING PRACTICES AMONG RURAL WOMEN:
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presented by Tonya Eddy

a candidate for the degree of Doctor of Philosophy, and hereby certify that, in their opinion, it is worthy of acceptance.

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DEDICATION

I would first like to dedicate my work to my Heavenly Father, in whom all things are possible; even the completion of this academic pursuit. I am fully aware that He is the one who brought all others into my life who have helped me through the last several years.

I would also like to dedicate my work and my career to several other individuals. My husband, Alan, has demonstrated his unending dedication and support by taking over my household duties, listening to many hours of lecture on breastfeeding and proof-reading papers on topics of no interest to him. My mother, Sherry Darr, has given verbal and emotional support through many difficult semesters when I did not believe I had the capabilities to complete all of the responsibilities required of me. Additionally, she has placed her life on hold twice to come live with us as I worked on this dissertation. My fathers, Max Conley and William Young, did not survive to see my completion of this achievement – therefore I dedicate this to their memory in hopes that they are watching and are proud. Norma Eddy, my mother-in-law, has dedicated her life to ‘being there’ for my children when I could not. My children Austin, Cassie and Lexi, who have had to put up with me constantly working during family functions, school activities, and weekends when I would have rather been playing with them.

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Lastly, I dedicate this work to my students: past, present and future. I hope that watching me pursue my degree has not frightened you away from pursuing your own, but rather provided an incentive to you to pursue your dreams/goals in

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“Education is NEVER wasted”.

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ABSTRACT

Although many benefits of exclusive and long-term breastfeeding have been noted within research, rural populations continue to have rates that fall below the national goal for both exclusivity (25.5%) and duration (34.1%). Regardless, some women within this population are successful at breastfeeding both exclusively and for the recommended length of time. This study aimed at identifying antenatal psychosocial characteristics within a rural population that may be predictive of their breastfeeding exclusivity rates postpartum. A sample of 90 women in 27 rural counties completed instruments to measure self-esteem, breastfeeding self-confidence, partner/social support, depression, abuse and motivation during their third trimester of pregnancy and again around four months post-delivery. Mann-Whitney U, Fischer's exact test and Chi Square were used for analysis. Previous demographic findings associated with exclusivity were not supported within this sample, with age, income and educational level approaching but not achieving significance. Antenatal measurements of breastfeeding self-confidence and motivation were significantly associated with breastfeeding exclusivity. Women who were more confident in their ability to breastfeed and were more motivated were more likely to exclusively breastfeed through three months. The findings of this study may

assist in developing future nursing interventions to improve breastfeeding outcomes,
as psychosocial characteristics are potentially modifiable.

Chapter I

Introduction

Breastfeeding has long been considered the ideal feeding method for newborn infants. Breastfeeding has well-documented health advantages compared to formula feeding. Breastfeeding, especially exclusive breastfeeding for at least four months, enhances cognitive development (Brion et al., 2011; Guxens et al., 2011) and infant visual development (Singhal et al., 2007), while it decreases the risk for childhood obesity (Grummer-Strawn & Mei, 2004; Kersey et al., 2005), and gastrointestinal distress (Kramer et al., 2003; Pfluger, Winkler, Hummel, & Ziegler, 2010).

Breastfeeding, regardless of exclusivity, has been found to decrease antibiotic use in the first two years among children in daycare, while also providing protection to immunocompromised children cared for in a family setting (Dubois & Girard, 2005; Pfluger, Winkler, Hummel, & Ziegler, 2010). Breastfeeding's benefits for mothers include decreases in depression (Jones, McFall, & Diego, 2004), and postpartum hemorrhage by promoting involution of the uterus post-delivery (Lawrence & Lawrence, 1999). Breastfeeding promotes maternal/infant bonding, including greater sensitivity to infant cues and needs (Kim et al., 2011); in turn, improved bonding decreases risk of child maltreatment (Stronach et al., 2011).

Society, as a whole, benefits when more women breastfeed their children. The Women and Infant Children (WIC) program spends approximately \$850 million a year to provide formula for children whose mothers choose not to breastfeed. Funding for the formula comes in part from federal and state taxes (USDA, 2004). WIC's formula costs would decrease if more participants breastfed. The Department of

Health Services (DHS, 2010) supports breastfeeding not only for its health benefits to individuals, but also as a way to reduce healthcare costs by reducing illness and associated healthcare visits and hospitalizations.

Based on the identified benefits of breastfeeding, the American Academy of Pediatrics supports breastfeeding for a minimum of 12 months if both the mother and baby desire, and recommends breast milk as the exclusive form of nutrition for about the first six months of life (Eidelman & Schanler, 2012). The World Health Organization (WHO) also recommends exclusive breastfeeding for the first six months, with continued breastfeeding up to two years of age or longer (World Health Organization, 2011).

Overall, positive breastfeeding practices among U.S. women (e.g., breastfeeding initiation rates, exclusivity, and duration) are trending in an upwards direction. The Healthy People 2020 goal for breastfeeding initiation rates is 81.9%; data from the CDC 2014 Breastfeeding Report Card show 79.2% of U.S. women initiating breastfeeding. Six-month breastfeeding duration rates increased from 33% in 1999 to 49.4% (goal 60.6%), and one-year duration rates increased from 16% to 26.7% (goal 34.1%). Since 1999, women breastfeeding exclusively to three months increased from 30% to 40.7% (goal 46.2%), and those breastfeeding exclusively through six months rose from 10% to 18.8% (goal 25.5%; CDC, 2014).

Although statistics regarding breastfeeding disparities within rural populations are scarce, Sparks (2010) found that rural women are less likely to initiate breastfeeding (56%) than urban women (71%), more likely to be below the poverty threshold and more likely to participate in WIC. Similarly, Flower, Willoughby,

Cadigan, Perrin, and Randolph (2008) found that rural breastfeeding rates “lag behind national averages” (p. 1). In a study of over 1,200 singleton newborns, these researchers found that only 55% of rural women initiated breastfeeding (compared to 71% national average) and only 18% continued to breastfeeding at six months (compared to 35% national average). Reasons for non-initiation or early cessation of breastfeeding were identified by the researchers as WIC participation and early return to a job. Participants also reported feelings of not being supported and physical discomfort as additional reasons for not breastfeeding. Weiner and Weiner (2011), utilized data from the 2007 U. S. National Survey of Children’s Health to determine if women in rural Appalachia had different breastfeeding practices than women in more urban areas of Appalachia or the national average. Findings indicated a significant difference between the percentage of rural Appalachian women (57%, CI 0.554-0.598) and urban Appalachian women (71%, CI 0.702-0.728) who initiated breastfeeding. This secondary analysis did not seek to determine specific rationales from the sample for cessation or non-initiation of breastfeeding. These three studies indicate differences of breastfeeding outcomes between rural and urban populations, but offer little discussion on options to improve these outcomes.

The American College of Obstetricians and Gynecologists (ACOG), Committee on Healthcare of Underserved Women (2009) has reported that health disparities within rural women “may be amplified by additional barriers to care in rural areas” (pg. 762). As a case example of such potential disparities, breastfeeding rates in Missouri (a highly rural state) may be illustrative. Only 10 of 114 Missouri counties have areas of population over 500/sq mile, with nine of the ten counties in

the St. Louis and Kansas City areas. The remaining county contains the city of Springfield (OSED, 2009). Breastfeeding rates within Missouri are consistently below the national average in most categories, with initiation rates at 67.9%, six-month duration at 42.1%, one-year duration at 20.2%, at three-month exclusivity at 32.5% and at six month exclusivity at 14.1% (CDC, 2014).

To date, researchers have investigated several aspects of breastfeeding and the breastfeeding experience which may be relevant for rural women. Psychosocial factors (self-esteem, depression, self-confidence, and coping skills) have been linked to numerous health-related outcomes, including adolescent behavior (Carlson, 2006), pediatric mental health (Schaefer-McDaniel, 2009), perceived quality of life (Zidarov, Swaine, & Gauthier-Gagnon, 2009), cancer survival (Akechi et al., 2009), and potential work status (Sarda, Nicholas, Asghari, & Pimenta, 2009). Although it may not be possible to modify demographic risk factors associated with decreased breastfeeding activities (e.g. lower socioeconomic status or education; Barton, 2001; Dubois & Girard, 2003; Haas et al., 2006; Merewood et al., 2007), psychosocial factors are modifiable to some extent (Gijsbers et al., 2004; Mitra et al., 2004) and could prove to be a new avenue for intervention. However, we know little about whether differences exist in psychosocial factors (self-esteem, depression, self-confidence, and coping skills) between rural women within the United States (U. S.) who succeed in exclusive, long-term breastfeeding and those who do not. No research has been identified that describes potential correlations between psychosocial factors and exclusive, long-term breastfeeding in a rural population, especially within a U. S. sample.

To address this knowledge gap, this study measured psychosocial factors associated in previous research with antepartum intention to breastfeed, and postpartum initiation of breastfeeding among a sample of rural Midwestern U. S. women. The purpose of the study was to determine whether these psychosocial factors were also associated with successful duration and exclusivity of breastfeeding through three months, a benchmark timeframe identified by the Healthy People 2020 goals (USDHHS, 2009).

Neuman's Systems Theory served as this study's guiding framework. Neuman describes the client as a system affected by multiple stressors throughout the lifespan with defenses to help prevent negative effects (Freese et al., 1998). This study identified stressors and defenses associated with the breastfeeding actions of duration and exclusivity. Identifying stressors that negatively affect breastfeeding practices and client defenses that may have a positive effect on breastfeeding practices may help nurses develop specific interventions to improve breastfeeding outcomes. To assist nurses in strengthening client defenses, the defenses that are significantly correlated to improving breastfeeding outcomes must be identified.

This study used a series of quantitative instruments to determine correlations between psychosocial factors (self-esteem, self-efficacy, social support, partner support, motivation, depression and abuse) and breastfeeding actions (duration, exclusivity) in women residing within mid-Western counties designated as rural. Study subjects were mothers in their third trimester recruited from WIC and other prenatal care clinics in rural mid-Western counties. Women were contacted to complete the surveys during their third trimester, and participated through three

months postpartum. Although a few research studies have described relationships between psychosocial factors and the breastfeeding outcomes of initiation or duration, no research has described relationships among psychosocial factors in a population of rural Midwestern women and the breastfeeding outcome of exclusivity.

This study examined possible correlations between various psychosocial factors and breastfeeding duration and exclusivity among rural women. The aim was to identify psychosocial factors that may be predictive of exclusivity and overall breastfeeding duration in order to facilitate development of interventions to help this population improve its breastfeeding outcomes. The following definitions were used for the purposes of this study: *Intent* denotes a woman's pre-delivery expectation of breastfeeding. *Initiation* denotes a new mother breastfeeding her infant post-delivery. *Duration* denotes the length of time an infant is given breast milk as a nutritional source. *Exclusivity* denotes when an infant is given only breast milk as a nutritional source, either by breast or bottle.

Chapter II

Review of Related Literature

This chapter has four primary sections. The first section reviews breastfeeding history, covering trends in breastfeeding practices and research, including initiation, duration and exclusivity. The second section reviews research related to health disparities in rural populations. The third section describes research related to the psychosocial factors described in this study and findings discussing how these factors affect breastfeeding practices, demonstrating the lack of studies describing breastfeeding exclusivity among rural women in mid-Missouri or the United States as a whole. The final section describes Neuman's Systems Theory and how it guided this study.

Trends in Breastfeeding Outcomes

Before the 20th century, breastfeeding was the only viable method of nutrition for infants. No reliable formula capable of sustaining an infant existed. Yet some infants were not breastfed by their mothers. Women choosing not to breastfeed could hire wet nurses (lactating women who breastfeed another woman's infant). However, hiring a wet nurse was not financially possible for women of lower socioeconomic status. This trend began the socioeconomic rift between mothers who breastfed and those who did not (Doyle, 2011).

In about 1910, when a formula was developed that could sustain infants, many considered this new and potentially safe method of nutrition *modern* and *scientific*. A commonly held belief was that, 'Only those who could not afford formula would still

choose to breastfeed'. According to surveys, by the middle of the 20th century, as many as 80% of women fed their infants with formula (Fisher, 2011).

Early research assessing formula as a primary nutritional method compared it to breastfeeding. These studies often investigated newborn medical conditions such as hyperbilirubinemia, cleft-palate, or early neonatal weight loss (Hemingway, 1972; Heubel & Muhlberger, 1972; Kanaaneh, 1972; Schoyerer & Weidenbach, 1970). The intent of these studies was not to support breastfeeding, but rather to identify formulas that could sustain life in replacement of breast milk if it was thought that breastfeeding was impossible for the infant. These early studies also identified potential barriers to breastfeeding, such as cracked nipples, mastitis (Sandholm & Borglin, 1970), contraceptive use (Kaern, 1967; Sandholm & Borglin, 1970), or timing of initial breastfeeding (Eppink, 1969). The findings helped establish breastfeeding as a beneficial practice and bolstered a generation of women as they re-established breastfeeding as an accepted method of infant nutrition (Doyle, 2011).

A study completed during the 1970's noted women who did not graduate from high school were the most likely to breastfeed (74%). The lowest breastfeeding rates were among women who graduated from high school but did not attend college (44%). The breastfeeding rates of college-educated women (percentage not reported) fell between these two groups. The rate increase over high school graduates may have stemmed from learning about 1960s research on breastfeeding's benefits. Other characteristics linked to increased breastfeeding practices included women with lower-paying jobs and women in rural areas (64%) compared to those in more urban

areas (49%) (Hirschman & Sweet, 1974). These data support the observation that women with more financial resources during this time period often opted to use formula.

In the 1980's, trends reversed. Women who were more educated tended to breastfeed more often and for longer durations (Ryan & Martinez, 1989; Wright, Holberg & Taussig, 1998). Women with high-school education or less initiated breastfeeding at a rate of 43.8% compared to college-educated women who initiated at a rate of 67.8%. Women with lower incomes (less than 7,000/year) initiated at 34.2% compared to those with higher incomes (25,000/year or more), who initiated at 63.1%. The U.S. region containing Missouri (East South Central) had the lowest initiation rate (39%). Duration rates to six months demonstrated a similar pattern. The area containing Missouri was the lowest in the nation at 7.1%. The regional trends in six-month duration rates were consistent for income (lower a 5.6%, vs. higher at 12.5%), and education (high school or less at 5.7% vs. college educated at 15.3%; Ryan & Martinez, 1989).

During the 1990's, breastfeeding rates increased overall. According to the Healthy People 2000 report, although breastfeeding rates among populations described as having a health disparity related to breastfeeding also improved slightly overall, the disparity continued and in some cases increased. These identified populations included women of low socioeconomic status (CDC, 2001). Despite improvements, many populations continued to have lower-than-desired rates of initiation, duration and exclusivity. In one of the few studies of rural, low-income women in the U.S., Gielan, Faden and O'Campo (1992) found that only 27% of WIC-

eligible participants initiated breastfeeding, which fell far short of the national average of just over 50%. The Weiner and Weiner (2011) study noted a similar disparity in a sample of Appalachian women, with only 57% breastfeeding initiation in the low-income, rural sample compared to 77% breastfeeding initiation overall. The researchers also noted an association (OR=1.79, 95% CI) between breastfeeding initiation rates of women on government-assisted insurance and those with private insurance. Another study noted a disparity in breastfeeding initiation between rural (55%) women and overall breastfeeding initiation (71%). Together, these studies indicate a continuing disparity among low-income, rural women.

Since the 1990s, rates of breastfeeding initiation, duration and exclusivity have continued to rise, though some populations have increased slower than others. Within Missouri, Since the year 2000, the CDC Pregnancy Risk Assessment and Monitoring System (PRAMS) has evaluated breastfeeding initiation and one-month/two-month duration in selected states including Missouri (starting 2006) using a confidence limit of 95%. Missouri PRAMS (reporting data from 2009-2011) indicate the lowest rates of breastfeeding initiation within the state were noted in women younger than 20 years of age (64.9% compared to 77.1% in ages 20-29 and 82.9% in women age 30+), women with less than a high-school education (59.7% compared to 86.3% in women with higher than a high-school education), non-Hispanic African Americans (65.5% compared to 89.4% Hispanic and 78.4% white non-Hispanic), and women who are not married (66.9% compared to 85.7% married), (McBride, Mosley, Chitma-Matsiga, & Garikapaty, 2014). This data indicate several Missouri populations that would benefit from interventions to improve positive breastfeeding outcomes.

Health Disparities in the Rural Population

Health disparities are differences in the incidence, prevalence or outcome of health conditions that exist among specific populations characterized by age, gender, ethnic/racial group, income/social class, disability, location or sexual orientation (National Cancer Institute, 2011). The health of minority populations frequently is poorer than that of whites (Criccko-Lizza, 2007; Flores, 2009; Institute of Medicine, 2002; Taveras, Gillman, Kleinman, Rich-Edwards & Rifas-Shiman, 2010; Woo, Doolan, Morrow, Geraghty & Goodman, 2008). The health of women of low socioeconomic status is poorer than that of women of higher socioeconomic status (Landy, Sword & Ciliska, 2008; Woo et al., 2008). The health of people living in rural areas is poorer than peers living in more urban areas (Committee on Health Care for Underserved Women, 2009).

Several factors influence the existence of health disparities in certain populations. Factors include access to care, being uninsured or unable to pay for care, and lack of health-related knowledge (Cheng, Dreyer, Jenkins, 2009; Committee on Health Care for Underserved Women, 2009; Landy, Sword & Ciliska, 2008). As noted earlier, breastfeeding protects against several negative outcomes in children and adults, including oral disease (Cheng, Dreyer, & Jenkins, 2009), obesity (Woo et al., 2008), and antibiotic use in early childhood (Klennert, Price, Liu & Robinson, 2003; Pfluger, Winkler, Hummel, & Ziegler, 2010; Wood, 2003). Rural populations have been found to have an increased risk for these negative outcomes (Committee on Health Care for Underserved Women, 2009). Improving breastfeeding rates among at-risk populations likely would have a positive effect on these health disparities.

One potential rationale for disparities within a rural sample is a decrease in the

access to healthcare. In a survey of N = 538 rural Florida physicians, researchers found that many rural residents lived in counties without a hospital and that health providers often struggled to remain in the area due to financial constraints. Decreased access to hospitals and healthcare providers is a significant problem in rural settings, often compounded by transportation issues within some rural sub-populations (Gunderson, Menachemi, Brummel-Smith, & Brooks, 2006). It is likely that decreasing the access to healthcare within rural settings would further increase the health disparities noted within rural populations. Lack of access to resources to facilitate breastfeeding may compound the disparity between rural and urban breastfeeding rates noted within the described research.

Psychosocial Factors related to Breastfeeding Outcomes

This review of current research literature analyzes studies of maternal psychosocial factors that influence mothers' decisions related to infant feeding practices. The following section covers factors that this study measured: self-esteem, self-efficacy/self-confidence, motivation, depression and social/partner support.

Self-efficacy/self-confidence. Bandura (1986) describes self-efficacy as “an individual’s perceived ability to perform a specific task or behavior”. Self-efficacy and self-confidence both express a feeling of one’s own ability to accomplish an action, though self-confidence is also used to describe a more general feeling of overall confidence (Munroe-Chandler, Hall & Fishburne, 2008).

Several articles related to breastfeeding actions discussed breastfeeding self-confidence or self-efficacy, though did not utilized a rural sample from the United States (de Jager, Broadbent, Fuller-Tyszkiewicz, & Skouteris, 2014; McCarter-Spaulding & Gore, 2009; McFadden & Toole, 2006; O’Brien, Buikstra, & Hegney,

2008; O'Brien, Buikstra, Fallon, & Hegney, 2009; Papinczak & Turner, 2000). Findings demonstrated a significant positive correlation between maternal breastfeeding self-confidence/self-efficacy and the breastfeeding practices of intention (McFadden, & Toole, 2006), duration (Papinczak & Turner, 2000), and exclusivity (de Jager, et al., 2014). Findings showed that increasing levels of self-confidence increase the likelihood a woman intends to breastfeed, and breastfeed for a longer duration.

A quantitative study of new mothers (n=159) from a large hospital in Queensland, Australia, noted significant correlations between self-confidence and duration of breastfeeding to three months ($F=15.5, p < .01$). Data were gathered at delivery and postpartum at three and six months. A series of survey instruments measured demographic and social factors. Participants were from an urban setting, and only 6.8% had an income described as low (Papinczak & Turner, 2000). As in previous studies, exclusivity was not discussed, nor was this a U.S. rural sample.

Another Australian sample (N = 375) was utilized by O'Brien, Buikstra, & Hegney (2008) to describe several psychosocial factors and the relationship to duration of breastfeeding. In a study of an urban sample, the researchers found that a post-delivery measure of maternal breastfeeding self-efficacy was associated with duration of breastfeeding to six months ($OR = .95, 95\% CI = .93-.97, p < .001$). In a follow-up qualitative study, O'Brien, Buikstra, Fallon, & Hegney (2009) interviewed participants regarding what factors they perceived were the most important related to length of time breastfeeding. Breastfeeding self-efficacy was one of the five factors described by the participants as influential in their decision to breastfeed. The studies

measured many of the same psychosocial factors as the current study, although the sample was not rural and was not a United States sample.

McFadden and Toole (2006) completed a focus group study in the United Kingdom with a sample of socioeconomically deprived women. Participants were pregnant multiparous women who had at least one child at home under age four; they included some women who had breastfed and others who had bottle-fed previous children. Self-confidence was not a key theme. However, the authors wrote that women who either had not breastfed previous infants or who had breastfed only briefly “appeared tentative in their decision to breastfeed because they anticipated problems and lacked confidence in their ability” (p. 161). The research report did not mention exclusivity or describe population density in the sample area.

Two studies discuss self-efficacy related to breastfeeding practices (Mitra et al., 2004; Wilhelm, Stepens, Hertzog, Rodehorst, & Gardner, 2006). A self-administered, closed-ended questionnaire administered to 694 pregnant women in 18 Mississippi counties sought to determine factors related to intention to breastfeed in a low-income population. Self-efficacy had a significant positive correlation with intent to breastfeed ($\beta = .96$). Participants, 83% of whom intended to breastfeed, indicated that they would be proud of themselves if they could breastfeed. The authors argue that this finding is significant to practice because self-efficacy is one of the few modifiable variables associated with intention to breastfeed (Mitra et al., 2004). The report did not discuss initiation, duration, exclusivity or whether the sample area was rural or urban.

Wilhelm et al. (2006) developed an intervention to increase self-efficacy to potentially increase breastfeeding duration. Seventy-three breastfeeding women from

rural Midwestern hospitals were randomized into intervention and control groups for this longitudinal questionnaire study. The researchers sought to measure self-efficacy related to the action of breastfeeding using the Breastfeeding Self-efficacy tool (BSE). The intervention group breastfed longer post-intervention, though the findings did not reach significance. The intervention group had significantly higher ratings on the BSE prior to the intervention, which confounded the intervention's influence. This study investigated duration in a rural population, but did not discuss exclusivity.

An additional study by McCarter-Spaulding & Gore (2009) described a sample of black women of African descent in New England. In 125 women, self-efficacy was noted to be significantly associated with both duration of breastfeeding and a more exclusive pattern of breastfeeding at both one and six months ($p < .01$). Women were recruited post-delivery from a larger urban hospital and completed the Breastfeeding Self-Efficacy Scale – Short Form. As in previously described research, the sample was urban, although it was a U. S. sample.

In an internet survey study of women (N=174) from Australia, the U. S. and Europe who were six months to two years postpartum, researchers found that women who had higher Breastfeeding Self-Efficacy Scale – Short Form scores were more likely to exclusively breastfeed to six months ($p < .001$). The study measured multiple psychosocial characteristics. Although the sample included some U. S. women, it did not differentiate between urban and rural (de Jager, et al., 2014).

Although some of the studies describing self-efficacy and self-confidence regarding breastfeeding actions had samples from rural or U. S. populations, none had both characteristics. None of the studies used a population from the rural Midwestern U.S., and few discussed breastfeeding exclusivity.

Self-esteem. Three studies looked at the correlation between self-esteem and initiation and/or duration of breastfeeding (Damato, Dowling, Madigan, et al., 2005; Papinczak & Turner, 2000). Papinczak and Turner's (2000) longitudinal survey (described above) sought to determine psychosocial characteristics associated with initiation and duration of breastfeeding in an Australian population. The researchers found significant positive correlation between measured self-esteem and breastfeeding duration at six months ($F = 7.36, p < .01$). A slight, but not significant, correlation appeared between self-esteem and initiation or duration at three months. These findings could support the idea that women with higher self-esteem are more likely to breastfeed longer. However, the lack of significance at initiation and three months also could indicate that the significant value at six months relates to an increase in self-esteem in mothers who overcame breastfeeding barriers to breastfeed longer. As mentioned previously, the sample was urban, and only 6.8% of participants were low-income. Exclusivity of breastfeeding was not discussed.

In a retrospective study completed online using a sample of Australian, European and United States postpartum women ($N = 176$), de Jager, et al., (2014) also found that self-esteem was significantly associated with both exclusive breastfeeding through six months and duration of breastfeeding overall ($-6.8, p = .000$, effect size = .46). Populations were not described as either rural or urban, and the instruments were administered from six months to two years postpartum altering the potential for viewing the findings as potentially predictive psychosocial characteristics. Although the de Jager et al. study discussed exclusivity neither the de Jager et al. or the Papinczak and Turner's study utilized a U. S. sample.

In contrast to the previous studies, a third study found no significant link between self-esteem and duration in a population of 123 U.S. mothers with twins. The sample for this survey study was of women attending support meetings for mothers with twins. Participants completed Rosenberg's Self-Esteem scale by mail at one and six months post-delivery. No significant difference appeared in self-esteem levels between mothers who bottle fed and those who breastfed. Initiation of breastfeeding (89%) was higher than the national average (64.3%). It is possible that the mothers who volunteered for the study (123 of the 834 women invited to participate) had higher self-esteem than the others and so confounded the self-esteem results, though the authors did not discuss this. However, self-selection bias is plausible because the sample was of women seeking support in their community (Damato, Dowling, Madigan, et al., 2005). This study discusses duration of breastfeeding but not whether the sample is rural. Income was a variable of interest but was not significant. The authors state this was likely due to the homogeneity of the sample, which consisted primarily of higher educated, older Caucasian women.

A few limitations were mentioned in the self-esteem studies. The Papinczak and Turner (2000) study used research-developed questionnaires without discussing their validity or reliability; this omission could be due to the article's space limitation, though it is critical information with a new measurement tool. Damato et al. (2005) said the homogeneity of their sample limited generalizability. None of the articles discussed exclusive breastfeeding related to self-esteem, and no sample was identified as rural.

Motivation. Two articles discuss relationships between motivation and breastfeeding duration (Kools, Thijs, Kester & de Vries, 2006; Wilhelm et al., 2006).

In a randomized quantitative study of 373 delivered women from the Netherlands, various motivations correlated significantly with continued breastfeeding at three months (partner supportive, family/friends supportive, decision made pre-delivery, mother feels breastfeeding is best for infant). The researchers also described motivational determinants to breastfeeding duration, such as returning to work and perceived lack of support by partner (Kools et al., 2006). A finding described by the researchers as surprising was a significant positive correlation between the motivation to return to work in less than a month and the motivation to breastfeed, differing from other studies that indicate returning to work is correlated to early cessation of breastfeeding. The sample was not described as rural or urban, and socioeconomic factors were not discussed. While the study dependent variable in question was duration, exclusivity was not described.

Motivation was the independent variable in an intervention study of 73 breastfeeding mothers (Wilhelm et al., 2006). The investigators developed a motivational interviewing intervention to increase breastfeeding self-efficacy and increase breastfeeding duration. The intervention increased self-efficacy scores and duration slightly, though not significantly. The sample was rural, but the authors did not specify income level or discuss exclusivity of breastfeeding actions. None of the motivation studies included prenatal measurements of motivation to indicate a causal link to breastfeeding practices, and none looked at exclusivity of breastfeeding related to motivation.

Social support. Social support includes supportive actions from a person or group outside the maternal/partner dyad. Muller and Silva (2009) define breastfeeding social support as “a broad phenomenon that involves aspects of

encouragement, promotion, and protection of breastfeeding” (p. 651). Professionals including nurses, lactation consultants, and trained peer support personnel can provide support. However, for the purpose of this study social support will include only non-professionals that participants specify, according to the PPP instrument instructions. Many studies link non-professional social support to participants’ outcomes and actions throughout pregnancy and the postpartum period (Dyer, Hunter, Murphy, 2011; Emmanuel, Creedy, St. John, & Brown, 2011; Milgrom et al., 2008; Milgrom, Schembri, Ericksen, Ross, & Gemmil, 2011; Perrson, Fridlund, Kvist, & Dykes, 2010). Several of these studies include breastfeeding outcomes (Chapman, Morel, Anderson, Damio, & Perez-Escamilla, 2010; Grassley, 2010). Breastfeeding initiation and duration have been positively correlated to perceived social support (Giugliani et al., 1994).

A study including interviews of 220 women found that low-income women were more likely to initiate breastfeeding if they had higher levels of social support; this was true even when other medical and social factors mirrored their low-income bottle-feeding counterparts (Grossman, Fitzsimmons, Larsen-Alexander, Sachs & Harter, 1990). The sample was not identified as rural or urban. Additionally, another qualitative study describes the experiences of infants’ grandmothers as they provide support to new breastfeeding mothers (Reid, Schmied & Beale, 2010). Supportive actions range from giving advice, assistance with positioning, and techniques. The grandmothers say that their presence is essential to the mothers but that other obligations limit the amount of support they can offer.

Tarkka, Paunonen, and Laippala (1999) demonstrate the importance of social support in breastfeeding competence. A survey of 271 first-time Finnish mothers

found that the higher the mother's sense of social network the better she was able to cope with breastfeeding, which increased the duration. The sample was educated (64% higher academic level achieved) women living in Finland, though population density was not described. The authors did not describe the sample's demographics. They state that socioeconomic status was not a contributing factor, though slightly over half worked outside the home before delivery.

Another study of psychosocial factors recruited 78 women from central and southern Indiana WIC clinics who were exclusively breastfeeding at three months and followed them for an additional three months. Researchers found a high correlation between intention to exclusively breastfeed and success rate of exclusivity to six months, as well as a higher occurrence of exclusivity to six months in married women. The authors suggest that strengthening social support networks, especially those of unmarried women, might increase exclusivity rates among breastfeeding women who intend to breastfeed exclusively (Bai, Middlestadt, Peng & Fly, 2010).

Sullivan, Leathers, and Kelley (2004) completed a study using a sample of $N = 115$ urban, middle-class women did not note a significant association between perception of support and duration of breastfeeding (0.3 ± 0.6 SD). High levels of relationship distress and household responsibility were associated with early cessation, while higher levels of infant responsibility were associated with longer breastfeeding duration. Exclusivity was discussed as both prenatal intention and reported that some of the women within the duration group were exclusively breastfeeding, but statistics and analyses regarding exclusivity within the sample were not reported. The mixed results of studies regarding the association between social

support and breastfeeding outcomes and the lack of research describing a rural sample within the United States is a noticeable research gap.

Partner support. Studies show that the person a woman identifies as her partner (in Western society) is the primary influence on a pregnant or newly-delivered woman when it comes to breastfeeding practices (Bar-Yam & Darby, 1997; McClurg-Hitt & Olsen, 1994). Although some earlier studies consider partner support as part of a social support network (Tarkka & Paunonen, 1996), recent work describes partner support as an aspect of social support that exerts its own influence on breastfeeding outcomes (Persad & Mesinger, 2008; Razurel, Bruchon-Sweitzer, Dupanloup, Irion, & Epiney, 2011).

A qualitative focus group study aimed at identifying breastfeeding perceptions queried new mothers and their male partners. By itself, the partner's positive support of breastfeeding was not enough to guarantee its continuation, but a partner's negative attitude toward breastfeeding strongly affected decisions to cease breastfeeding (Avery & Magnus, 2011). This supports earlier work reporting that mothers' most frequently stated reason for bottle feeding over breastfeeding was the perception that their partner would prefer that she fed by bottle (Arora, McJunkin, Weher & Kuhn, 2000).

Persad and Mensinger (2008) found that partner support for breastfeeding predicted breastfeeding initiation in a sample of primiparous urban women. Of the 100 women they recruited, 79 reported their intention to breastfeed. The strongest predictor of intention was their perception of partner support for breastfeeding ($OR = 217.235, p = .001$). In a study of factors related to breastfeeding, Rose, Warrington,

Linder and Williams (2004) found significantly stronger partner support and partner knowledge of breastfeeding in their sample of urban women who breastfed exclusively.

A study of low-income women and their partners used an incentive based educational program to increase partners' breastfeeding knowledge. Participants in the study group were given prizes for participating in various educational meetings. The educational information improved maternal perception of partner support for breastfeeding, and increased the sample's breastfeeding duration. The sample of 55 women was randomly assigned either to the intervention or usual information groups, and various incentives encouraged them and their partners to participate. A significantly higher number of women in the intervention group chose to initiate breastfeeding, regardless of their pre-intervention plan (Sciacca, Dube, Phipps, & Ratliff, 1995). While the sample was identified as low-income, there was no description of rural vs. urban. Initiation and duration were described, but exclusivity was not discussed.

Abuse. While some literature has examined the role of partner support in breastfeeding, very little has examined partner abuse. Researchers have indicated a wide range of possible incidence data related to intimate partner violence (IPV) during pregnancy. The PRAMS study reports a range of occurrence from 2.8% to 6.5% of pregnant women reporting IPV (CDC, 2006), while a study by Gazmararian et al. (1996) indicates a range of possible violence during pregnancy between 0.9% and 20% dependent upon population and definition of 'violence'. A third study indicates IPV rates during pregnancy of up to 80% in rural U.S. populations (Bailey & Daugherty, 2007).

The small number of studies completed related to breastfeeding and IPV indicate that IPV could have a negative impact on breastfeeding outcomes. Silverman, Decker, Reed and Raj (2006) found a significant difference in initiation and duration at four weeks between women not reporting abuse and those reporting abuse either in the year before pregnancy (OR = 1.45), during pregnancy (OR = 1.35), and both in the year before pregnancy and during pregnancy (OR = 1.52). The PRAMS data results from 26 states in the U.S. indicates that women experiencing IPV are more likely to not initiate breastfeeding, or cease breastfeeding prior to 4 weeks post-partum.

In a study of 1200 Chinese women in Hong Kong, Lau & Chin (2007) found a significant difference in breastfeeding initiation rates and completely artificial feeding when comparing women who did not report IPV and those that did report IPV (42.3% vs. 28.4%, 95% confidence interval for initiation; 31.5% vs. 47.8%, 95% confidence interval for using completely artificial feeding, $p < .05$). The results of this study support the findings of other studies indicating a negative impact on breastfeeding outcomes in the presence of IPV. The generalizability of this study to a population within the United States is not clear.

Bullock, Libbus and Sable (2001) noted no significant difference in initiation or duration of breastfeeding between women screening positive for abuse and those not screening positive. In a sample of low-income, mid-Missouri women, screening positive for abuse on the Abuse Assessment Scale (AAS) was not significantly associated with infant feeding choice or the duration of breastfeeding. This finding may indicate that the maternal desire to provide for her infant can overcome the

barrier of an abusive relationship. Only two of the studies identified discussed breastfeeding duration, and no studies were found that discussed breastfeeding exclusivity.

Depression. Five studies described a correlation between maternal depression and breastfeeding practices (Cooke, Schmeid, & Sheehan, 2007; Jones, McFall, & Diego, 2004; Lee et al., 2005; McKee, Zayas, & Jankowski, 2004; Papinczak & Turner, 2000). Papinczak and Turner (2000) found that depression correlated significantly with breastfeeding. In their six-month longitudinal study of Australian mothers, participants who breastfed for six months had significantly lower scores on depression scales ($F=2.92$, $p < .05$) than mothers who stopped breastfeeding earlier.

In a study including 31 depressed, middle-class new mothers, researchers found that mothers who breastfed had infants with less agitated and reactive temperaments than those who formula-fed. Among depressed mothers, breastfeeding was identified as relaxing and a significantly positive interaction. These same depressed mothers were significantly less likely to continue to breastfeed for the duration of the study compared to the control group of women not identified as depressed. These findings illustrate complex relationships facing mothers as they decide to wean or continue breastfeeding (Jones, McFall, & Diego, 2004). Although mothers suffering from depressive symptoms would likely benefit from positive interactions during breastfeeding, they are more likely to stop breastfeeding (Hamdan & Tamim, 2012).

A quantitative questionnaire study described depression related to breastfeeding intention, initiation, and duration. The study of 449 Australian women found no significant relation between depression alone and breastfeeding practices.

The study's convenience sample was from an urban hospital, where participants completed a series of questionnaires, once prenatally and twice post-delivery. Although no significant relation emerged between depression and breastfeeding practices, women who were not able to reach their duration goal scored significantly higher on depression scales than women who were still breastfeeding or who intended to stop breastfeeding early. Being unable to attain a breastfeeding duration goal may be a risk factor for depression. Women who do not reach their breastfeeding goals may benefit from interventions that decrease feelings of failure (Cooke, Schmeid, & Sheehan, 2007)

Two articles discussed links between depression and breastfeeding intention (Lee et al., 2005; McKee, Zayas, & Jankowski, 2004). Lee et al. (2005) surveyed low-income pregnant women to determine whether significant differences existed among ethnicities related to several factors and intention to breastfeed. In 2,690 women of various ethnicities, the authors found no significant correlation between depressive symptoms and intention to breastfeed. No follow-up study was conducted to ascertain initiation percentage. This is a limitation, since the study had a strong sample size. It is possible that depressive symptoms do not signal intention prenatally but that, once the infant arrives, mothers' new sense of their role may change intention in women with depressive symptoms more often than in those without depression.

The last study to discuss correlations between depressive symptoms and breastfeeding practices focused on urban, low-income African American and Hispanic women. In a sample of 174 women using a mixed-method survey/interview design, the authors found no correlation between depressive symptoms and

breastfeeding practices. This was the only study found that discussed exclusivity (15% of sample at 2 weeks, 9% at 3 months), though it was not included as a separate factor in the regression analysis (McKay, Zayas, & Jankowski, 2004).

Neuman's Systems Theory

Because a breastfeeding mother's environment affects decisions regarding breastfeeding practices, this study employed Neuman's Systems Theory as a theoretical framework to guide the study's rationale and the interpretation of the data. The theory takes a holistic view of nursing to guide practice and research, describing a person's environment as a series of defensive lines and stressors that can affect the person's health negatively or positively (Freese et al., 1998).

According to Neuman's theory, internal and external stressors decrease a person's wellness. External stressors include factors such as air temperature, inappropriate nutrition or exposure to disease. Internal stressors include anxiety people experience in daily life or even the loss of energy the body requires to complete normal activities, which can be altered by disease processes or a change in body requirements (Freese et al., 1998; Gigliotti, 2002).

The client is at the system's core. Clients can be individuals, as in this study, or a family or population. A varying number (dependent upon the individual client) of concentric lines surround the core. These include the *normal line of defense*, the *flexible line of defense* and the *lines of resistance*. Each line consists of variables. The more developed or numerous these variables, the farther away from the core the lines are positioned. The figures below were developed from descriptions in the literature to better illustrate the model utilized in the study (See Figures 1 and 2) (Freese et al., 1998; Gigliotti, 2002).

Figure 1. Neuman's Systems Theory, stressors reach client with weak lines of defense.

Figure 2. Neuman's Systems Theory, stressors cannot reach client or stressor is weakened, causing less negative impact with strengthened lines of defense.

The normal line of defense develops using the core's moderately static features, such as coping mechanisms and lifestyle. The flexible line of defense uses more dynamic variables, such as social support and physiological strength. Factors in the flexible line of defense frequently alter during the core's life. The lines of resistance represent resources the core can use when coping with stressors. Resources

can vary in number or strength and can alter rapidly; these resources include factors like finances, the body's immune response and support from an individual (Freese et al., 1998; Gigliotti, 2002).

Stressors attempt to invade the system and reach the core/client. The system's defensive lines either weaken stressors or repel them. Stressors that reach the core create an imbalance that results in illness. Stressors that reach the core after defensive lines weaken them cause less imbalance and result in less severe illness. Neuman's theory works to add defensive lines and strengthen existing ones. The theory's primary goal is to prevent imbalance in the core/client (Freese et al., 1998; Gigliotti, 2002).

The current study of low-income rural women sought to identify potential psychosocial factors with significant association to positive breastfeeding behaviors, including exclusivity and increased duration. Various psychosocial factors reside in either the flexible line of defense or the normal line of defense, and sometimes their positions can change. Social support and self-esteem reside in the normal line of defense, as they are more static features of the core. Partner support lies within the flexible line of defense. Support from an individual is more dynamic and can change daily. The factor *depression* is a stressor.

By identifying psychosocial factors linked to positive breastfeeding actions in the understudied population of rural women, future researchers and clinicians could create population-specific interventions to develop or strengthen defensive lines that contain factors increasing positive breastfeeding outcomes. Understanding how these factors relate to breastfeeding practices could also inform policy and practice (Bai, Middlestadt, Peng, & Fly, 2010). The long-term goal is to increase positive

breastfeeding behaviors and decrease health disparities among rural women and children by promoting the Healthy People 2020 goals for breastfeeding duration and exclusivity.

Neuman (1982) believes that nursing considers the whole person. She views nursing as a “unique profession in that it is concerned with all of the variables affecting an individual’s response to stress” (p. 14). This study aimed to achieve this goal by improving client outcomes. Toward that end, this study analyzed a variety of factors that reflect the client as a whole, both psychological (self-esteem, self-efficacy and motivation) and social (social and partner support).

Although recent research describes a link between some factors and breastfeeding intention, initiation, and duration, few such studies were conducted with a low-income population, and even fewer were with rural U.S. samples. Exclusivity has rarely been identified as a variable of interest, even though it has been linked to significant positive health outcomes and is recommended by AAP (2005) and the World Health Organization (WHO, 2011). No studies were found that used a rural U.S. sample that was primarily low-income and that identified exclusivity as a variable of interest. This constitutes a gap in the available literature.

Chapter III

Design and Methods

This quantitative study utilized instrumentation to gather information from pregnant and post-partum rural women to identify potential predictors among measureable psychosocial factors related to breastfeeding outcomes – specifically duration and exclusivity. This chapter describes the study, including sample selection, design and data analysis. The study sought to identify psychosocial factors that may be predictive of positive breastfeeding outcomes including exclusivity and increased duration in rural women.

Research Question

Among a sample of rural, mid-Western women, was exclusivity of breastfeeding through three months postpartum predicted by antenatal measures of breastfeeding self-efficacy, self-esteem, partner support, social support, depression, abuse and motivation?

Hypotheses

1. Women who exclusively breastfeed through three months postpartum will have higher antenatal breast-feeding self-efficacy scores compared to women who are not exclusively breastfeeding through three months postpartum.
2. Women who exclusively breastfeed through three months postpartum will have higher antenatal self-esteem scores compared to women who are not exclusively breastfeeding through three postpartum.
3. Women who exclusively breastfeed through three months postpartum will have higher antenatal partner support scores compared to women who are not exclusively breastfeeding through three months postpartum.

4. Women who exclusively breastfeed through three months postpartum will have higher antenatal social support scores compared to women who are not exclusively breastfeeding through three months postpartum.
5. Women who exclusively breastfeed through three months postpartum will have lower antenatal depression scores compared to women who are not exclusively breastfeeding through three months postpartum.
6. Women who exclusively breastfeed through three months postpartum will have negative antenatal abuse scores compared to women who are not exclusively breastfeeding through three postpartum.
7. Women who exclusively breastfeed through three months postpartum will have higher antenatal motivation compared to women who are not exclusively breastfeeding through three months postpartum.

Sample

A convenience sample of women ($N = 106$) was recruited during the last trimester of their pregnancy to assure a final group of exclusive breastfeeding women of $n=30$, a sample size that would provide at least 80% power to detect the effect size of 0.7 in breast-feeding self-efficacy. Eligible participants were recruited from pregnant clients residing in rural counties within the mid-Western United States. Recruitment was completed through a variety of meaning including Women, Infant and Children (WIC) clinics throughout Missouri, other non-WIC clinics, and word-of-mouth. Eligible participants were: (1) English- or Spanish-speaking, (2) 18 years of age or older, (3) in their third trimester of pregnancy (≥ 27 weeks gestation), (4) residing in a rural county, and (5) intending to breastfeed after delivery. Exclusion criteria included women with multi-fetal pregnancies, women who were

developmentally disabled, and those who were opting to not keep the infant. It is recognized that individuals in the excluded populations may offer unique information that would add to the existing body of knowledge, but inclusion of them was outside the scope of the resources of this small study, which was designed to look at factors predictive of breastfeeding exclusivity and duration. However, addressing the gaps in the literature related to breastfeeding decisions in these populations may be promising avenues for future research projects that build on this study.

The Census Bureau's standards for designating counties rural or urban are those outlined by Randolph, Gaul and Slifkin (2002). Counties are designated as rural if they are not urban. Counties are defined as urban if their central city has a population of 50,000 or more, or an urbanized area outside the central city has a population of 50,000 or more with the metropolitan area containing 100,000 or more people. All counties in this study met this definition of rural (See Table 1).

Table 1

Participating counties, total population, population density, and number of participants at both baseline and follow-up data collection.

County (in alphabetical order)	Total County Population	Population Density (per square mile)	# Enrolled (n=106)	# Completed (n=90)
Adair	25,607	45.1	1	1
Andrew	17,291	40	*	
Atchison	5,685	10.4	*	
Barton	12,402	21	*	
Bollinger	12,363	20	10	9
Butler	42,794	61.6	5	5
Caldwell	9,424	22.1	1	1
Camden	43,862	67.1	7	5
Carroll	9,127	13.4	*	
Chariton	7,628	10.4	6	6
Cooper	17,601	31.2	4	4
Crawford	24,696	33.3	1	1
Gasconade	15,222	29.4	*	
Grundy	10,261	23.6	4	3
Henry	22,272	32	5	4
Howell	40,400	43.6	7	5
Johnson, IL	12,601	36.6	1	1
Johnson, MO	54,572	63.4	1	1
Linn	12,761	20.7	2	2
Macon	15,566	19.4	1	1
Maries	9,176	17.4	*	
McDonald	23,083	42.8	*	
Miller	24,748	41.8	1	0
Morgan	20,565	34.4	1	1
Newton	58,845	93.3	3	2
Oregon	10,881	13.8	1	1
Ozark	9,723	13.1	1	1
Pettis	42,205	61.9	20	17
Phelps	45,156	67.2	2	2
Pike	18,669	27.6	1	1
Pulaski	53,748	95.5	5	5
Randolf	24,441	52.7	1	1
Ripley	14,100	22.4	1	1
Saline	23,252	30.9	13	9
Scott	39,191	93.3	*	
Total			106	90

* Indicates
county agreeing
to allow
recruiting but
with no
participants

Procedures

Recruitment of sample. The investigator recruited the study sample from WIC and other clinics that care for pregnant women, and by word-of-mouth within the communities. Ninety WIC clinics within Missouri and 45 non-WIC clinics across the mid-Western U. S. within eligible rural counties were contacted by the investigator. If allowed, each clinic was sent an information sheet describing the study and the role of the WIC/provider staff. Once the clinic stated in writing that they were willing to participate as a recruitment site, the clinic and county were added as a recruitment site and recruitment flyers were mailed to the clinic. Out of the clinics invited, 27 WIC clinics and four non-WIC clinics agree to participate. No clinics outside the state of Missouri agreed to participate as a recruitment site. Recruitment within some clinic sites was also completed by the investigator when allowed by the participating clinic. A private room was available for women choosing to complete the surveys at the time of recruitment, or contact information was obtained and the woman contacted at a time of her choosing. Additionally, participants were encouraged to invite friends and family who met study requirements to leave contact information on the study phone.

Participating WIC or provider staff identified women ≥ 27 weeks gestation (considered third trimester) and provide them with an informational flyer with study and contact information for the PI. Potential participants choose to either complete the bottom portion of the flyer, returning it to the staff members or keep the flyer and leave contact information on the designated study telephone. WIC and clinic staff were not responsible for any screening or consenting procedures. The investigator collected contact information from all the sites a minimum of weekly utilizing a

method agreed upon by the participating clinic. Clinics chose to fax, mail, email or leave voicemails on the study phone with recruit contact information. All participating clinics received a thank-you gift at the completion of the study.

A Spanish-speaking interpreter was available to conduct all telephone contacts for potential participants who would prefer to complete the study in Spanish. These participants completed the same process as English speaking participants, with comparable scripts and survey instruments. The instruments selected for the study were available in Spanish versions that have completed validity and reliability measures within Spanish-speaking populations.

Three undergraduate research assistants were trained by the primary investigator to complete the consent process and T-0/T-1 surveys. These individuals completed the Health Sciences IRB training, and had access to the primary investigator at all times for any questions that arose as they complete the consent/surveys.

During the first contact with the participant, the investigator (or the trained interpreter/research assistants) determined the potential participant's eligibility. If she wished to participate, the investigator (or the interpreter/research assistants) completed the informed consent process. As this study represented minimal risk to participants and did not involve procedures which would normally require a written consent outside of a research process, the investigator obtained permission from the Institutional Review Board to use a Waiver of Documentation of Informed Consent. Waiving the requirement for a signed consent form also minimized barriers to participation for rural women who may otherwise need to travel/arrange for child care to meet with the researcher. Informed consent materials were read to participants so

that women of all literacy levels could participate, and their understanding of the study ascertained by asking if they have any questions and by using a “teach-back” process (asking women to tell the consenting personnel what they understand the study is about). A copy of the consent form was provided to all participants. A Spanish version of the consent form will be sent to participants completing the study in Spanish.

Baseline measurement. After eligibility was determined and consent obtained, the baseline measurement was obtained via telephone or by participant if initial contact was completed face-to-face at on-site clinic recruitments. The interviewer gathered initial demographic information and completed all four questionnaires (T0), recording participant responses on a paper copy of the measures, which did not contain any identifying information. The interviewer read all questionnaires aloud in phone contacts, and offered to read questionnaires during face-to-face recruitment to allow women of all literacy levels to participate. Approximate time to complete baseline measures was 30 minutes. Participants were offered a \$10 reimbursement for their time at the end of the baseline interview (WalMart gift card was sent to a mailing address of the participant’s choice).

Follow-up measurement. The investigator (or the interpreter/research assistants) contacted participants using the designated study phone at the end of their third month postpartum (T1) to assess breastfeeding actions (i.e., continuation of breastfeeding and exclusivity of breastfeeding). During the T1 interview the interviewer also read and completed the same questionnaires to the participant that were completed at the T0 meeting, again recording participant responses on a paper copy of the measures, which did not contain any identifying information., or into the

RedCap computerized data collection system. The T1 Follow-up data were collected and managed using REDCap electronic data capture tools hosted at the University of Missouri (Harris et al., 2009). REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies, providing 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources. The T1 interview took approximately 15 minutes. Participants were offered a \$10 reimbursement for study completion after the T1 interview. Participants who complete both survey sets (T0 and T1) were eligible to win one of five \$50 gift cards for Wal-Mart. Winners were drawn at random at the completion of the study from a pool of all eligible participants. Winners were re-contacted to verify address information and cards were mailed to addresses of choice.

Retention of participants. In an effort to increase retention, the investigator collected contact information not only for the participant but also for a safe alternate contact (someone who does not live with the participant but who always knows how to contact her; for example, a mother or grandmother). Participants were instructed to tell this individual about their study participation to facilitate any message relay. Providing alternate contact information was not an inclusion criterion, nor did it affect participants' eligibility for participation or time reimbursement.

Mid-point mail contacts also helped retain participants. The investigator sent study greeting cards to participants between survey times with instructions on how to

contact investigator with any contact information changes. Please see appendix G for copies of all cards utilized throughout the study timeframe. Spanish versions of the greeting cards were sent to Spanish-speaking participants.

Participants were contacted by telephone during the week after their due date to assess delivery date and status. Participants who deliver prior to 37 weeks (considered premature) or whose infants were born with complications and admitted to the neonatal intensive care unit were removed from study as these factors can negatively affect breastfeeding (Radtke, 2011; Rivera, Torres, Rodriguez, Motes de Longo, & Peralta, 2008). The investigator notified participants by phone if they were dropped from the study and sent them a thank-you card for their past participation. If a participant had not yet delivered by the time of this contact, status of delivery plans were assessed and a plan made for a contact at a later date to obtain delivery information.

After determining participants' delivery status, a 'Congratulations' card was sent to any delivered participant eligible to continue in the study. No fetal deaths were noted among participants, but plans were in place to provide a sympathy card to the mother and remove from the study to prevent any emotional trauma from continued contact with the investigator.

Participants were eligible to remain in the study through three months post-partum, regardless of breastfeeding status. Cessation of breastfeeding was not an exclusionary criteria for continuation in the study.

Instrumentation

Demographics. All measures are presented in the Appendices. General demographic information was collected at the T0 baseline interview, including age,

race/ethnicity, educational level, marital status, gestational age with estimated date of delivery (EDD), gravida, and income level. Participants were asked if they knew whether they were breastfed. Participants were also asked to provide a contact number for someone who can reach them if their contact information changes. At the T1 interview, partner demographics were reassessed as these may change during the timeframe of the study.

Prenatal Psychosocial Profile (PPP). The PPP is a measure of three psychosocial factors (social/partner support, self-esteem and stress). The PPP combines the Rosenberg Self-Esteem scale, the Support Behaviors Inventory, and stress-related items from the Daily Hassles Scale. It was developed for use with pregnant women, and researchers have used it with various samples of such women. Samples include a general representation of pregnant women (Curry, Durham, Bullock, Bloom, & Davis, 2006; Woods, Melville, Guo, Fan, & Gavin, 2010), low-income or primarily low-income pregnant women (Jesse & Reed, 2004; Jesse, Walcott-McQuigg, Mariella, & Swanson, 2005), and low-income, rural pregnant women and their partners (Yu, McElroy, Bullock, & Everett, 2011).

Format/length. The PPP is a 33-item survey utilizing a Likert-scale self-report format that establishes scores in three psychosocial categories: Self-esteem, stress and perceived support. The support section has subcategories of social support and partner support, which produce two numerical totals for every support item. Each section has 11 questions related to the section's psychometric concept. This instrument is estimated to take approximately five to ten minutes to complete. All sections are positively scored, with higher scores indicating higher levels of self-esteem, stress or perceived support (Curry, Campbell, & Christian, 1994). Both the

composite score and the subscale scores in the support category are used to evaluate self-esteem, stress, perceived level of support, and differences between perceptions of support by partner versus perception of overall support.

Norms. Maximum scores on the individual subscales represent the highest level of the construct that the instrument can measure. The maximum scores are 44 for the stress subscale, 66 for each section of the support subscale, and 44 for the self-esteem subscale. Although normal scores have not been identified for the PPP, its developers have conducted studies to determine a baseline for comparison among populations (Curry et al., 1994). Two studies of white, non-Hispanic, low-income women were conducted during development of the instrument. These studies have been used as the comparison group in most research utilizing the instrument (Curry, Burton & Fields, 1998; Jesse & Reed, 2004; Jesse, Walcott-McQuigg et al., 2005; McVeigh, 1995). Mean scores for the samples in these studies for each subscale were 19.69, SD=5.44 and 19.16, SD=4.99 (Stress), 53.37, SD=1.46 and 51.36, SD =2.62 (Partner Support), 50.33, SD=13.33 and 49.05, SD=12.64 (Social Support), and 34.41, SD=5.73 and 34.46, S=4.56 (Self-esteem) (Curry et al., 1994). Other studies noted the comparison scores for their control group and population of interest group. Heaman (2005) found that abused women, when compared to non-abused women in the same study, had higher stress (22.9 to 17.3) and lower self-esteem (31.5 to 35.3), partner support (45.8 to 56.6), and social support (49.6 to 56.4). Although the authors did not specify “normal” values, these mean scores offer some indication of an average score on each subscale.

Reliability/validity. The validity of the PPP and its subscales was established by administering multiple tests of the instrument’s four concepts (self-esteem, partner

support, social support and stress). Curry, Campbell and Christian (1994) determined that the construct validity of the stress subscale (the only section of the instrument developed by the authors) when compared to other instruments measuring stress was .71. Internal consistency reliability of the support subscale was reported by the authors as .90 or higher. The Rosenberg Self-Esteem scale, when utilized with pregnant women, has appropriate face validity and internal consistency .84 to .87. The 10-item scale plus a question developed by the instrument author forms the self-esteem section of the PPP. The authors also note that test-retest supported temporal reliability of the instrument as a whole and the psychosocial constructs the instrument measures are not expected to remain stable over time.

An instrument's validity also can be noted by analyzing studies in which it was used to collect data. Curry, Durham et al. (2006) used the PPP to measure stress in pregnant women, finding significant differences between the stress levels of participants in a telephone support intervention group and those in a control group. The intervention group had lower scores on the PPP's stress subscale. This finding supports the hypothesis of the study and is in the direction of a predicted change in stress after an intervention directed at lowering stress. Measurement of the construct in an appropriately predicted direction denotes support for the validity of the stress subscale of the PPP.

In a study of psychosocial factors in abused pregnant women, the three subscales were used to ascertain potential correlations among the constructs and preterm delivery. As reported earlier, abused women scored higher on the subscale for stress, and lower on the subscales for self-esteem, partner support and social support (Heaman, 2005). Another study had related findings for psychosocial factors

related to depressive symptoms (Jesse, Walcott-McQuigg et al., 2005). The authors hypothesized that women scoring higher on the PPP stress subscale or lower on the self-esteem and support subscales than a control sample would be more likely to exhibit depressive symptoms during pregnancy. Data gathered using the PPP supported this hypothesis, indicating support for the measure's validity.

One study used the PPP to observe any correlation between spirituality and psychosocial factors in pregnant women (Jesse & Reed, 2004). As hypothesized, higher levels of spirituality were positively correlated to higher support and self-esteem scores, as well as lower stress scores.

These studies used the PPP in varied populations of pregnant women. All study the hypotheses were supported using the PPP, which supports its validity as a measure of the psychosocial factors of stress, self-esteem, social support, and partner support during pregnancy.

Strengths/weaknesses. A strength of the PPP is its high reliability ratings of each of the subscales in the population of interest (.70 to .90; Curry et al., 1994). High reliability is essential in measures for longitudinal research in order to determine changes in the population related to variables of interest.

A weakness of the instrument is its intended population, which is limited to pregnant women. However, many psychosocial measures are designed for use with very specific populations. The PPP also has been found to lack sensitivity in populations of pregnant adolescents, which require more specificity to measure psychosocial factors in pregnancy (Kaiser, 2002). The instrument's brevity, which makes it ideal for research or clinical use, is a hindrance when attempting to measure subtle differences.

Breastfeeding Self-Efficacy Scale – Short Form (BSES– SF). Researchers developed the BSES-SF from the BSES to measure self-efficacy in women related to their breastfeeding activities. The scale was shortened from 33 items to 14 items to increase the ease of data collection for researchers and participants. The original form was noted to have item redundancy, addressed by deleting several items (Dennis, 2003). It has been used with U.S. populations including African Americans (McCarter-Spaulding & Dennis, 2010; McCarter-Spaulding & Gore, 2009) and adolescents (Dennis, Heaman & Mossman, 2011; Mossman, Heaman, Dennis & Morris, 2008), and with populations in Canada (Dennis, 2003; McQueen, Dennis, Stremler & Norman, 2011), the United Kingdom (Gregory, Penrose, Morrison, Dennis & MacArthur, 2008) and Poland (Wutke & Dennis, 2007). It has been found to be reliable in predicting which mothers are at-risk for early cessation of breastfeeding (Dennis, 2003; Gregory et al., 2008; Wutke & Dennis, 2007).

Format/Length. The BSES-SF is a 14-item self-report instrument using a 5-point Likert scale to measure positively worded statements of participant confidence related to breastfeeding activities from ‘1- *not at all confident*’ to ‘5- *always confident*’. Scores can range from 14 to 70. It is designed to be completed in 5 minutes or less, with higher scores indicating a higher breastfeeding self-efficacy perception. (Dennis, 2003; McQueen et al., 2011)

Norms. McQueen et al (2011) write that the BSES-SF has no specific norm values yet, but that lower values indicate lower levels of breastfeeding self-efficacy. In a study of women initiating breastfeeding at a hospital in Ontario, BSES-SF scores at 48 hours post-partum indicated significantly higher levels of perceived self-efficacy among participants who continued to breastfeed at 4-weeks over those who

had ceased breastfeeding earlier ($51.43, \pm 8.5$ compared to $39.63, \pm 17.44$). The study found statistically significant differences in scores within the 4-week completion in groups that were exclusively breastfeeding ($62.02, \pm 5.65$), high-level breastfeeding ($53.00, \pm 4.24$), and partial-level breastfeeding (53.88 ± 6.01) (Kingston, Dennis, & Sword).

Reliability/validity. The BSES-SF has an internal consistency Chronbach's alpha of 0.94, indicating acceptable internal consistency (Dennis, 2003; McCarter-Spaulding & Gore, 2009). Its predictive validity is confirmed by a positive relationship between self-efficacy scores and infant-feeding behaviors (Dennis, 2003; Kingston et al., 2007). Validity and reliability have been found consistent among various populations (Gregory et al., 2008).

Strengths/weaknesses. A strength of the BSES-SF is its potential for use in both research and clinic. Beyond its ability to identify women at risk for early breastfeeding cessation (Dennis, 2003; McQueen et al., 2011), the instrument's items can isolate individuals' particular needs (McQueen et al., 2011). For instance, a mother scoring the question, 'I can always recognize when my infant is full' with a 1 or 2 can be supplied with information to help her recognize signs of a satisfied infant. The BSES-SF also can measure interventions' success by indicating whether a mother's self-efficacy improves in the identified area (Dennis, 2003).

Although researchers have used the BSES-SF successfully in multiple populations to predict which mothers are at risk for early breastfeeding cessation, the tool's ability to predict potential for exclusive breastfeeding has not been tested. Although not reported, there is a potential for less descriptive data with utilization of the BSES-SF compared to the original BSES due to item deletion.

Abuse Assessment Screen (AAS). In 1989 the Nursing Research Consortium on Violence and Abuse developed the AAS to screen women for intimate partner violence (Parker & McFarlane, 1991). The instrument was designed to screen for a broad spectrum of violence, including physical, emotional and sexual abuse (Rabin, Jennings, Campbell, Bair-Meritt, 2009) in research and clinic settings.

Format/length. The AAS is a five-question instrument developed to be administered by providers rapidly and easily with every client contact opportunity. The AAS is a nonjudgmental, gentle approach to assist care providers in identifying women who may be victims of abuse (Parker & McFarlane, 1991). The instrument begins with a more general question about any abusive encounters during the client's life and narrows questioning to identify the specific type and timing of the abusive actions. The AAS screen for emotional, sexual and physical abuse, including hitting, slapping and kicking with yes/no answer format. If a question of abuse is answered positively, the questions seek information on the abuser's identification and location of abuse if physical. In 2008 the instrument was modified to include non-lethal strangulation as physical abuse (Laughon, Renker, Glass, & Parker, 2008).

Norms. The anticipated normal result should be a questionnaire without any positive responses, as any form of abuse should be recognized as abnormal. Any question answered with a 'yes' is indicative of abuse, and should be followed by intervention on the part of the surveyor (Parker & McFarlane, 1991). A positive response on questions two through four are indicative of more recent or ongoing abuse, and interventions should be more directly related to assuring as safe an environment as possible for the client.

Reliability/validity. The validity of the AAS has been established through comparison with other instruments. The AAS has been shown to have a positive correlation with longer, more in-depth questionnaires such as the Conflict Tactics Scale (McFarlane & Parker, 1994; McFarlane, Parker, Soeken, & Bullock, 1992). In a study adding the AAS into routine prenatal care as compared to routine prenatal care without the AAS, women were more likely to disclose abuse using the AAS compared to the interview only group (41% vs. 14%, 95% CI) and more likely to disclose abuse within the last year (15% vs. 3%). The screen is not intended to replace the provider interview, but is intended to facilitate another opportunity for the client to disclose abuse (Norton, Piepert, Zierler, Lima, & Hume, 1995). Comparable findings have been noted within studies having Spanish-speaking populations (Diaz-Olavarrieta et. al, 2009).

Strengths/weaknesses. A primary strength of the AAS is the brevity of the instrument, making it easy to complete in an office setting or add to existing provider interview questions. Lengthier instruments measuring abuse may discourage clients or providers from completing the instrument with every client/provider interaction, which is the recommended protocol (Parker & McFarlane, 1991).

Another identified strength of the instrument could also be a limitation dependent upon the intended use of the instrument; the instrument focuses on actual abuse instead of the threat of abuse. Dunn and Oths (2004) state this as a strength when used as a research instrument, allowing more focus when physical abuse is the intended variable. As a screening instrument the lack of discussion on threat of abuse could be perceived as a limitation, not allowing an opportunity for early discussion between the client and the provider if physical abuse is not actually occurring.

Edinburgh Postnatal Depression Scale (EPDS). The EPDS was developed to determine presence of depressive symptoms in post-partum women during the previous seven-day period. It is a self-report scale that the client/participant completes in approximately 5 minutes, such as when she is in a waiting-room before a healthcare visit (Cox, Holden, & Sagowsky, 1987).

Format/length. The mother scores the 10-question EPDS, which covers symptoms associated with post-partum depression. The mother indicates her perception of how much she has or has not felt the symptom within the previous seven-day period. The scale uses an ‘always, most of the time, sometimes, or never’ system that is quantified into scores of 0-3. Individual item scores are tallied to produce a scale total. Scores on the scale range from 0-30, with higher scores indicating more depressive symptoms (Cox et al., 1987).

Norms. The original author identified a threshold score of 12/13 as indicative of needing further evaluation of depressive symptoms (Cox, Holden, & Sagowsky, 1987). This score has been positively correlated to providers’ description of clients as depressed (Cox, Holden, & Sagowsky, 1987; Logston & Meyers, 2010). The instrument’s authors suggest that if more sensitivity is required, the threshold score should be lowered to 10/11 (Cox, Holden & Sagowsky, 1987).

Reliability/validity. During development of the EPDS, the authors determined its face validity. After evaluating the instrument, a series of validity studies were conducted. Cox, Holden, and Sagowsky (1987) found that the EPDS has a sensitivity of 86%, a specificity of 78% and a positive predictive value of 73%. The standard $\alpha = 0.87$. The EPDS was also noted to have a sensitivity of 73%, indicating the proportion of women above the threshold value of the instrument who were then found to meet

Research Diagnostic Criteria (RDC) for depression. Spanish version of the EPDS has been found to have a sensitivity of 84% and a specificity of 84% with a 95% CI (Reuland, Cherrington, Watkins, Bradford, Blanco, & Gaynes, 2009).

The authors established reliability and further validation of the instrument by a repeated-measures use in the validation studies. Respondents completed the EPDS at baseline and again at 11 weeks. Women who continued to meet the RDC for depression continued to have above-threshold scores on the EPDS. Women whose EPDS scores had dropped below the threshold no longer met criteria for depression.

Strengths/weaknesses. A primary strength of the EPDS is its widespread use with this study's population for more than two decades. In addition to its use with postpartum populations, the EPDS has been used with adolescents (Logsdon & Meyers, 2010), rural populations in Canada (Ross et al, 2011) and developing countries (Fernandes et al., 2011), new fathers (Conde, Figueiredo, & Bifulco, 2011), pre-natal women (Figueiredo & Conde, 2011; Flynn, Sexton, Ratliff, Porter, & Zivin, 2011), Australia (Milgrom, Erikson, Negri, & Gemmill, 2005), Bangladesh (Gausia, Fisher, Algin, & Oosthuizen, 2007), and others.

However, in adolescents, when compared to longer screening instruments, the EPDS is less sensitive as scores increase, with sensitivity decreasing from 0.8 with a score of 4 to 0.5 with a score of 6. Therefore, when using the EPDS in an adolescent population, the threshold score should be lowered to improve its sensitivity (Logsdon & Meyers, 2010). This study was not conducted using adolescents, therefore EPDS's weakness with this group will not decrease the validity of the data.

Analysis

The data were entered into a statistical software package (SPSS) for analysis. The entered values were verified against the original written paper copy to identify possible data entry errors.

The research questions involved the comparison of exclusive and non-exclusive breastfeeding groups with respect to each of a number of psychosocial outcomes. Demographic characteristics were examined using descriptive statistics (e.g. means, frequencies and standard deviations). Chi-square and Fisher's exact test were used to assess for associations between demographic characteristics and breastfeeding outcomes (exclusivity and duration) when the demographic characteristic could be described dichotomously. Chi-square was attempted first for these analyses, and Fisher's exact test was utilized if the Chi-square assumptions were not met by the data due to sample size. Fisher's exact test is more accurate with smaller sample sizes (McDonald, 2009). When the demographic variable was not dichotomous (age), non-parametric methods were utilized for analysis. Similarly, the hypotheses were tested using non-parametric methods when the independent variable was an instrument score (i.e. BSES-SF and EPDS), and Fisher's exact test when the independent variable was dichotomous (i.e. motivation and abuse) All data analyses were conducted using SPSS 19 (IBM, 2010).

Statistical significance was estimated using the conventional $p < 0.05$ criteria and results were presented as point estimates along with 95% confidence intervals. Select tabular results were described.

Power. Anticipated N of the sample was derived based on the reported power of the BSES-SF. We anticipated that the sample size of 30 per group would provide at

least 80% power to detect the effect size of 0.7 in BSES-SF scores between two groups (continue to exclusively breastfeed through three months vs. not exclusively breastfeeding through three months) with a level of significance of 0.05 using a two sample t-test. Based on the DATA2010 information, approximately 24% of low-income women exclusively breastfeed through three months (the four-month benchmark established for this study) (CDC, 2009). Utilizing this information, the desired sample size was 125 participants.

Protection of human subjects. The protection of human participants is a significant concern in any study utilizing a human sample. Approval was obtained for this study from the University of Missouri Health Sciences IRB and the Missouri Division of Health and Senior Services (MoDHSS) IRB. During subject recruitment (T0 baseline data collection), the investigator informed potential participants of the study's purpose and methods, and read aloud the consent form to account for issues with literacy. The investigator stressed that participation was voluntary, could be stopped at any time, and would not affect the care provided to them or their infants by WIC or their individual healthcare providers. Potential participants were also informed that the researcher is a nurse, mandated to report child abuse, which was a limitation to participants' confidentiality if abuse of a child were in question. This information was also reviewed with clients before the T1 data collection interviews. During the informed consent process, the investigator provided the opportunity for the participant to ask questions and ascertained their understanding of the study using a "teach-back" process.

Upon successful recruitment, participants were assigned a unique numeric identifier known only to the PI. A data key linking the numeric ID to contact

information was maintained by the PI in a secured location separate from other research information. Contact information was collected and maintained solely for the purpose of follow-up interviews. The data key, consent forms and all contact information regarding study subjects were maintained separately in locked file cabinets within the PI's locked office. The PI maintained the only key to the file cabinets. Data were stored in a separate locked cabinet. A locking briefcase was purchased for use during the transporting of information. Upon completion of the study, all contact information and the data key were shredded, with the exception of any documentation required by the IRB to be retained. Any identifying data maintained due to IRB requirements were kept in the locked file cabinets mentioned above. Data without identifiers were maintained for possible future research use. Per University of Missouri policy, the data will be kept for a minimum of 7 years (The Curators of the University of Missouri, 2011).

Although it was not expected that any harm will come to study participants, participants may experience psychological stress related to the study measures and thinking about stress, partner support, depression or abuse. For women in an abusive relationship, if the abusive partner discovers she has revealed the abuse to a researcher, she could potentially be at risk for further abuse. All possible methods of maintaining participant privacy and safety were utilized. The voluntary nature of study participation was emphasized during the informed consent process, and all study interviews took place in the safe and private setting of the participants' own choosing. Participants were only contacted using the contact information they provided (telephone number and address).

Additionally, a small potential existed for mental strain related to some survey

questions, especially those associated with depression and abuse. The EPDS and the AAS were the instruments most associated with a potential for mental strain. These instruments were completed at the end of each interview session. Participants scoring higher than a 10 on the EPDS (the minimum identified at-risk value) or otherwise disclosing significant distress to the researcher were provided with the toll-free Access Crisis Intervention line for Missouri (<http://dmh.mo.gov/mentalillness/progs/acimap.htm>), staffed 24/7 by mental health professionals who can connect the participant to further help and resources if needed. Abusive partners may become angry if they are aware that their partner has disclosed violence to others. Therefore, to protect participants, materials sent to the participant ('Welcome' cards and other reminder notices) and all telephone communication utilized the study's 'Healthy Moms and Babies' title. No reference to any abuse screening was made in these materials. All participants who disclose intimate partner abuse were given the toll-free phone number for the National Domestic Violence Hotline, which is staffed 24/7 by domestic violence advocates who can create a plan for safety with the participant and/or refer her to local resources for help.

Chapter IV

Results

This chapter is divided into two sections; demographic characteristics of the sample, and findings from the hypothesis testing for each independent variable related to the dependent variable of exclusivity of breastfeeding. The independent variables of interest are the Breastfeeding Self-Efficacy Scale – Short Form (BSES-SF) scores, Edinburgh Postnatal Depression Scale (EPDS) scores, Prenatal Psychosocial Profile (PPP) Self-Esteem scores, PPP-Partner support scores, PPP-Other support scores, Abuse Assessment Screen (AAS) results and Motivation scores completed during the baseline surveys pre-delivery. A description of these instruments can be found in chapter 3.

Demographics

All participants (N = 106) were females pregnant in their last trimester of pregnancy upon completion of the T0 survey set. Two participants were noted to be ineligible after delivery due to the infant requiring care in the neonatal intensive care unit. An additional 16 were lost to follow-up due to contact number changes, leaving a total of 90 participants who completed the study with both sets of data collection. Distribution of ethnicity, income level, educational level, parity and partner status is available in Table 2. The dependent variable of exclusive breastfeeding through three months postpartum was coded as dichotomous ‘exclusive’ or ‘not exclusive’. Work status, income level (WIC eligible) and educational level (‘ $\leq$ high school graduate’ or ‘any college+’) were analyzed for associations with breastfeeding exclusivity using Chi-Square tests. None of the variables were noted to have significant association to breastfeeding exclusivity, although income level and educational level were observed

to be approaching significance (4.229, df =1, $p = .062$ and 3.878, df =1, $p = .069$ respectively) (Table 3). Fischer's exact test was utilized to analyze partner status, partner support specific to breastfeeding and parity. No variable was noted to have significant correlation to breastfeeding exclusivity (Table 3). The non-parametric Mann-Whitney U test was performed to compare the distribution of age by breastfeeding exclusivity status, with no significant differences found (Table 3), though findings were approaching significance ($p = .053$).

Table 2

Characteristics of Sample at Baseline and Follow-up Data Collection, N (%)

	Enrolled (T0 Baseline; n = 106)	Completed (T1: through 3 months PP; n = 90)	Missouri Demographics (Rural Counties, if available)
Low Income (WIC eligible):	92 (86.8%)	76 (84.4%)	
Currently Employed:			
Full-time	33 (31.1%)	30 (33.3%)	
Part-time	19 (17.9%)	17 (18.9%)	
No	54 (50.9%)	43 (47.8%)	
Ethnicity:			
Caucasian	91 (85.8%)	77 (85.6%)	94.7%
African American	3 (2.8%)	3 (3.3%)	3.0%
Hispanic	10 (9.4%)	8 (8.9%)	2.7%
Am. Indian/Other	2 (1.9%)	2 (2.2%)	2.2%
Parity:			
Primipara	52 (49.1%)	41 (45.6%)	
Multipara	54 (50.9%)	49 (54.4%)	
Relationship:			
Married	51 (48.1%)	47 (52.2%)	
Partnered, not married	40 (37.7%)	28 (31.1%)	
Single	9 (8.5%)	9 (10.0%)	
Divorced/Separated	6 (5.7%)	6 (6.7%)	
Education:			
Not completed HS	18 (17.0%)	14 (15.6%)	
HS Degree or GED	30 (28.3%)	23 (25.6%)	
Some College	30 (28.3%)	27 (30.0%)	
Trade School/ Comm. College Grad.	12 (11.3%)	12 (13.3%)	
College Grad.+	16 (15.1%)	14 (15.6%)	

Table 3
Analysis of Sample Characteristics related to Breastfeeding Exclusivity through 3 Months

Characteristic	Test used for analysis	Exclusive <i>p</i> = (N=30)	Non-exclusive (N=60)	Test Value (df)
Age (Mean; Median; Std. Deviation)	Mann-Whitney U	26.13 .053 (26.00; ± 5.043)	24.03 (24.00; ± 4.669)	
Income (WIC eligible)	Chi-Square			4.229 (1)
Yes		.062		
No		22 8	54 6	
Work status	Chi-Square			2.157(2)
Full-time		.340		
Part-time		13	16	
No		6	13	
		11	26	
Education	Chi-Square			3.878 (1)
$\leq$ High School Grad		.069		
Some college +		8	29	
		22	31	
Partner status	Fischer's exact test			2.222 (1)
Single		.262		
Partnered		1	8	
		29	52	
Partner supportive of BF (N = 81)	Fischer's exact test			0.552 (1)
Yes		.703		
No		28	45	
		2	5	
Parity	Fischer's exact test			0.201 (1)
Primiparous		.823		
Multiparous		13	29	
		17	31	

To help determine if results within this sample are related to the exclusivity of the sample, the demographic analyses were repeated using ‘breastfeeding duration’ through three months as the dependent variable, dichotomized to ‘still breastfeeding, yes/no’. Work status, income level (WIC eligible) and educational level (‘ $\leq$ high school graduate’ or ‘any college+’) were again analyzed for associations with breastfeeding exclusivity using Chi-Square tests, age using the non-parametric Mann-Whitney U, and partner status, partner support specific to breastfeeding and parity

were analyzed utilizing Fischer's exact test. Results are described in Table 4. Only presence of a partner was noted to be a significant indicator of breastfeeding duration (6.049, $df = 1$, $p = .03$).

Table 4
Analysis of Sample Characteristics related to Breastfeeding Duration through 3 Months

Characteristic	Test used for analysis	Still Breastfeeding $p =$ (N=45)	Not Breastfeeding (N=45)	Test Value (df)
Age (Mean; Median; Std. Deviation)	Mann-Whitney U	23.89 .111 (24; ± 4.519)	25.58 (26; ± 5.110)	
Income (WIC eligible) Yes No	Chi-Square	.144 35 10	41 4	3.045 (1)
Work status Full-time Part-time No	Chi-Square	.294 18 10 17	12 9 24	2.448 (2)
Education $\leq$ High School Grad Some college+	Chi-Square	1.00 18 27	19 26	0.046 (1)
Partner status Single Partnered	Fischer's exact test	.030* 1 44	8 37	6.049 (1)
Partner supportive of BF (N = 81) Yes No	Fischer's exact test	1.00 41 4	32 4	0.111 (1)
Parity Primiparous Multiparous	Fischer's exact test	.833 20 25	22 23	0.179 (1)

Hypothesis Testing

The level of significance for all hypothesis testing was $p \leq .05$. For hypotheses one through five, the non-parametric test Mann-Whitney U was utilized for analysis.

The Mann-Whitney U is better able to handle smaller samples and categorical data

compared to the Kolmogorov-Smirnov test. For hypotheses six and seven, Fisher's exact test was used as both hypotheses utilized dichotomous variables.

Hypothesis one – Women who exclusively breastfeed through three months postpartum will have higher antenatal breast-feeding self-efficacy scores compared to women who are not exclusively breastfeeding through three months postpartum. Results from the Mann-Whitney U test were statistically significant, indicating a difference between the prenatal BSES-SF scores of women who exclusively breastfed and the scores of women who did not exclusively breastfeed ($p = .029$).

Hypothesis two – Women who exclusively breastfeed through three months postpartum will have higher antenatal self-esteem scores compared to women who are not exclusively breastfeeding through three postpartum. Results from the Mann-Whitney U test were not statistically significant ($p = .718$), indicating that no association between prenatal self-esteem scores and breastfeeding exclusivity was observed.

Hypothesis three – Women who exclusively breastfeed through three months postpartum will have higher antenatal partner support scores compared to women who are not exclusively breastfeeding through three months postpartum. Results from the Mann-Whitney U test were not statistically significant ($p = .342$), indicating no difference between prenatal perceived partner support scores based on breastfeeding exclusivity status.

Hypothesis four – Women who exclusively breastfeed through three months postpartum will have higher antenatal social support scores compared to women who are not exclusively breastfeeding through three months postpartum. Results from the

Mann-Whitney U test were not statistically significant ($p = .237$), indicating no observed difference between prenatal perceived support-from-others scores by breastfeeding exclusivity status.

Hypothesis five – Women who exclusively breastfeed through three months postpartum will have lower antenatal depression scores compared to women who are not exclusively breastfeeding through three months postpartum. Results from the Mann-Whitney U test were not statistically significant ($p = .550$), indicating no difference between prenatal depression (EPDS) scores by breastfeeding exclusivity status.

Hypothesis six - Women who exclusively breastfeed through three months postpartum will have negative antenatal abuse scores compared to women who are not exclusively breastfeeding through three postpartum. No significant association between prenatal presence/history of abuse and breastfeeding exclusivity was noted when tested using Fisher's exact test (2.813, $df = 1$, $p = .103$). During the baseline data collection, 23 of the 106 enrolled participants screened positive for either past or current abuse (21.7%). Of these 23 enrolled participants, seven screened positive for current physical/sexual abuse within the last year (6.6% of enrolled participants, 30.4% of participants screening positive overall). Of these seven participants, six described a recent/current partner as the abuser, while the seventh stated she was involved in an altercation with a friend that was not partner-related for a final of 5.7% of the baseline sample screening positive for intimate partner violence within the last year (Table 5).

Table 5

Breastfeeding Exclusivity through 3 Months association with Prenatal Measure of Abuse

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.813 ^a	1	.094	.103	.083
Continuity Correction ^b	1.953	1	.162		
Likelihood Ratio	2.695	1	.101		
Fisher's Exact Test					
Linear-by-Linear Association	2.781	1	.095		
N of Valid Cases	90				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6.00.

b. Computed only for a 2x2 table

Hypothesis seven – Women who exclusively breastfeed through three months postpartum will have higher antenatal motivation compared to women who are not exclusively breastfeeding through three months postpartum. The association between antenatal motivation levels and breastfeeding exclusivity was tested using Fisher's exact test. Results were statistically significant (5.760, $df = 1$, $p = .017$), indicating that prenatal motivation scores are associated with breastfeeding exclusivity post-delivery. Therefore, the hypothesis was supported (Table 6).

Table 6

Breastfeeding Exclusivity through 3 Months with Prenatal Measure of Motivation

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.760 ^a	1	.016	.017*	.013
Continuity Correction ^b	4.410	1	.036		
Likelihood Ratio	7.140	1	.008		
Fisher's Exact Test					
Linear-by-Linear Association	5.696	1	.017		
N of Valid Cases	90				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.00.

b. Computed only for a 2x2 table

Chapter V

Discussion

The current study measured prenatal and postnatal characteristics of a rural population sample to identify potential characteristics predictive of exclusive breastfeeding. In This chapter describes the findings of the research in relation to current literature. The demographics of the sample are discussed relative to previous samples in research and to rural Missouri overall, hypotheses results are described, implications for use in the profession of nursing are noted as are future areas for research, and strengths/limitations of the study are identified.

Demographics

The analysis of the demographics of the current study note that while the racial and ethnic distribution of the sample is comparable to that of both rural Missouri overall and that of the participating counties, the sample is predominantly low-income (WIC program eligible) well-above the average low-income population for Missouri or for the participating counties (84% low-income in final study sample vs. 18.2% low-income in rural Missouri counties and participating counties). Specific demographic data are outlined in Table 2. There are several likely reasons for the high participation of low-income women. The majority of recruitment sites were Women's, Infants' and Children's clinics, where participants must meet eligibility requirements at or below 185% of poverty level (Missouri Department of Health and Senior Services – WIC guidelines, 2015). Therefore, the number of women who were given information regarding the opportunity to participate may have been relatively larger within the low-income population. Additionally, the perception that participation in a research study may be time-consuming has been noted to influence

decisions to participate or not (Janson, Alioto, & Boushey, 2001). As WIC participants must meet low-income criteria for eligibility, they may be less likely to have a full-time job outside the home. Within the current sample, 79% of the non-WIC participants were holding a full-time job compared to 25% of the WIC participants, a difference reaching significance (15.268, $df = 1$, $p < .001$).

Within the current study, there were no demographic variables noted to have an association with exclusive breastfeeding through three months, and only partner support was noted to be significantly associated with duration through three months. Several demographic characteristics that have traditionally been associated with poorer breastfeeding outcomes were not noted to be so associated within this study sample, such as age, income, parity, education and presence of a partner. Age was noted to be approaching significance within this study sample. In many previous studies maternal age has been positively associated with breastfeeding outcomes (Cameron, et al., 2015; Lutsiv et al., 2013; Oakley, Henderson, Redshaw & Quigley, 2014). These studies utilized non-U. S. samples, whose populations may vary from a sample using women in the U. S. Conversely, Bailey and Wright (2011) did not find a significant association in their study of demographic characteristics associated with breastfeeding initiation in rural Appalachian women, one of the few studies found using a U. S. sample. This may indicate that there exists differences between U. S. women and women in other countries that would make generalization of research more difficult.

Education and income were also noted to be approaching significance within the sample of this study. These findings do not support past demographic characteristic associations, as most past research has reported that higher levels of

maternal education (Cameron et al., 2015; Mangrio, Hanson, Lindström, Köhler, & Rosvall, 2011; Oakley et al., 2014) and income (Almquist-Tangen et al., 2013; Bailey, & Wright, 2011; McDonald et al., 2012) are associated with improved breastfeeding outcomes. Few of these studies discussed exclusivity or rural populations. Only the Bailey and Wright study was conducted using a U. S. sample of women as the current study. Partner status and parity were also not noted to be significantly associated with breastfeeding exclusivity through three months within the current study, though partner status was significantly associated with duration through three months. In previous research, positive breastfeeding outcomes were noted to have an association with partner status (Bailey, & Wright, 2011; Cameron et al., 2015; Sparks, 2010), but parity has mixed research results with some findings indicating a positive association (Cameron et al., 2015; Sparks, 2010) and others indicating a negative association (Lutsiv et al., 2013) with increase parity. The small number of research studies recently completed within the U. S. or a rural population makes it difficult to draw appropriate conclusions as to how the current study demographic findings would compare to the general U. S. population. More research is needed in both the U. S. and rural samples to further define demographic characteristics.

Health Disparities and Breastfeeding in the Low-income Population

The study sample rural characteristic placed it in a population at risk for health disparities as discussed in Chapter 2 of this study, but as 84% of this sample was also noted to be low-income, the sample was also at risk for disparities related to income level. The potential for health disparity in a population increases when that group has multiple risk-factors, as is the case with rural women of low socio-

economic status, or rural minority women (Committee on Health Care for Underserved Women, 2009).

Belonging to a low-income population decreases access to health resources. Current healthcare trends to allocate more financial responsibility to clients could increase the disparity in low-income populations. Chernew et al. (2008) found that even slight increases in insurance co-pays decreased the ability of people in low-income households to access care and pay for medications. This inability to access care can increase health disparities and undermine interventions directed at improving identified disparities in at-risk populations. Flores (2009) writes that improving breastfeeding duration and exclusivity in minority and low-income populations is one of three primary interventions that would do the most to improve health disparities in these groups. One aim of this study was to further explain the discrepancy between breastfeeding rates in the general population and the target population of rural women (including low SES and minority). The over-sampling of low-income women within this study may help provide needed information to develop interventions specific to the population.

Demographic variations. While explanations for the variations within the sample of the current study may not be reported within other research, one potential answer lay in the changes made within the WIC program itself. During 2011, after research indicated that the current WIC policies were potential barriers to long-term and exclusive breastfeeding, the WIC program developed new, more breastfeeding friendly policies including a decrease in the amount of formula provided to breastfeeding mothers and an increase in healthy foods allotted in the WIC food package to promote breastfeeding nutrition (Special Nutrition Programs, 2011).

Additional breastfeeding support and education is also available within most WIC clinics. Appropriate research evaluation related to the impact of these changes has not been completed beyond the initial studies completed by the USDA which found a small but statistically significant increase in the duration of breastfeeding after the implementation of the new policy. As the majority of the sample within the current study were WIC participants, it is possible that the demographic variations from past research may be indicative of an overall improvement in WIC participant breastfeeding outcomes.

Hypotheses Findings

Self-efficacy – *Women who exclusively breastfeed through three months postpartum will have higher antenatal breast-feeding self-efficacy scores compared to women who are not exclusively breastfeeding through three months postpartum.*

Findings supported the rejection of the null hypothesis related to self-efficacy, meaning that women who had higher measures of self-efficacy related to breastfeeding during their baseline survey completion were more likely to breastfeed exclusively after delivery ($p = .029$). Women in the current study completed the Breastfeeding Self-Efficacy Scale – Short Form to obtain a measure of the level of their perceived self-effectiveness related to breastfeeding actions. Higher scores equated to higher perceived self-efficacy. These findings support previous research that indicates a positive association between self-efficacy and breastfeeding outcomes.

In a study of 555 mother/infant dyads in Tyrol, Austria, Karall et al. (2015) found that decreased perception of self-efficacy was a significant rationale given by mothers for early cessation of breastfeeding (OR = 3.42, CI 95% 1.48-7.94). While

the current study supports this finding, the measurement methods for self-efficacy were different between the two studies. In the Tyrel study self-efficacy was determined by a single question of ‘why did you stop breastfeeding’. If women noted reasons for cessation such as feeling their baby would be better off formula feeding or if they were not doing well with breastfeeding, the authors described the woman as having decreased self-efficacy.

Additional past research also supports the findings of the current study (de Jager, et al., 2014; Henshaw et al., 2015). These studies used similar instrumentation, but populations were not described as either rural or urban, were not differentiated by income, and in the de Jager et al. study the instruments were administered from six months to two years postpartum altering the potential for viewing the findings as potentially predictive psychosocial characteristics. The current study measured the psychosocial characteristics prenatally to develop interventions that could be administered during or before pregnancy to improve breastfeeding outcomes.

Self-esteem – *Women who exclusively breastfeed through three months postpartum will have higher antenatal self-esteem scores compared to women who are not exclusively breastfeeding through three months postpartum.* The current study was unable to reject the null hypothesis related to self-esteem scores and exclusivity of breastfeeding, demonstrating there was not a statistically significant difference between the baseline scores of women who were still breastfeeding exclusively through three months and the baseline scores of those women who were not breastfeeding exclusively through three months. Previous research results related to the association between self-esteem and positive breastfeeding outcomes have been mixed. A study of pregnant women in North Carolina found that there was no

association with pre-delivery measurements of self-esteem (Students t value $p = 0.25$). The current research supports this finding regarding a lack of association between self-esteem and breastfeeding outcomes. Both studies utilized the Rosenburgh Self-Esteem scale, which is the scale utilized within the Prenatal Psychosocial Profile as the measure of self-esteem. The authors of the North Carolina study also completed measurements prenatally in an attempt to identify possible predicting characteristics within their sample, comparable to the current study (Mehta, Siega-Riz, Herring, Adair, & Bentley, 2011).

Some studies have noted an association with self-esteem and breastfeeding outcomes. In a focus-group qualitative study by Wade, Haining, and Day (2009) participants noted that the focus groups improved their self-esteem, one of the factors associated with participants increasing both the initiation and the six-week duration of breastfeeding. In two urban studies reported in one article by Britton and Britton (2008), researchers found a significant association between high levels of maternal self-concept and breastfeeding exclusivity compared to mothers exclusively formula feeding. It is clear that these findings are contradictory to those from the current study. It is possible that the instrumentation may have an impact on the findings, as the two studies utilizing the Rosenburgh instrument did not find an association, while the other studies did. The Britton and Britton study utilized the Tennessee Self-Concept scale. While closely associated, it is possible that self-concept and self-esteem may differ enough to make direct comparison difficult between the studies.

Partner support – *Women who exclusively breastfeed through three months postpartum will have higher antenatal partner support scores compared to women who are not exclusively breastfeeding through three months postpartum.* As with self-

esteem, the current study was unable to reject the null hypothesis for this analysis. Baseline scores for perceived partner support were not statistically different for women who were still breastfeeding exclusively through three months and those who were not. Overall, the research findings related to the associations between partner support and breastfeeding outcomes are mixed, comparable to the research related to many of the other psychosocial factors described in the current study. In a study by McQueen, Sieswerda, Montelpare, and Dennis (2015) in Ontario, Canada, researchers found that partner support (measured by a questionnaire developed by the authors) was associated with breastfeeding initiation (OR = 1.4, CI 95%, 1.2-1.6), but not exclusivity. These findings are similar to the current study that found no association between partner support and exclusive breastfeeding, although not in a U. S. sample.

Other research supports an association between overall perceived partner support and breastfeeding outcomes. Qualitative studies of urban African-American women (Furman, Banks, & North, 2013) and Swedish women (Hildingsson, Tingvall, & Rubertson, 2008) found a theme of ‘lack of support from the partner at home’ and ‘dissatisfied with partner’s support’ were reasons for early cessation of breastfeeding. The studies were qualitative, compared to the quantitative nature of the current study, and did not describe rural samples within the U. S.

As an additional measure beyond overall partner support, the current study also asked about the maternal perception of partner support specific to breastfeeding. Analysis of partner support specific to mom’s breastfeeding choice as opposed to general support was noted more often in more current breastfeeding research. Participants were asked to rate their perception of their partner’s support (if participant previously stated having a partner) of their breastfeeding decision as ‘very

supportive', 'somewhat supportive', 'neither supportive nor unsupportive', 'somewhat unsupportive' and 'very unsupportive'. Results of the current study indicated no association between the perception of partner's breastfeeding support antepartum and postpartum breastfeeding exclusivity comparable to the findings related to overall perceived support. This finding also varies from previous research. In an Australian study of 699 couples researchers noted that there was significant improvement in maternal breastfeeding initiation and continuation to six weeks (OR = 1.46, CI 95%, 1.01-2.13) after an intervention to improve partner support of breastfeeding (Maycock et al., 2013), while a study of mid- to high-income Taiwanese mothers also found significant associations between a partner's support specific to breastfeeding and a mother's decision to continue to breastfeed after returning to work. Neither of these studies utilized a rural sample or described exclusivity. The overall importance of the partner to a woman's support system within a rural setting, where other support-givers (family or healthcare) may be scarcer, may supersede the importance of specific support of breastfeeding and may explain the variation of the sample within the current research from other research that indicates partner support of breastfeeding is significantly associated with breastfeeding outcomes. Additional information related to reasons for early cessation and methods of overcoming perceived barriers is needed to determine if the variations from past research found within this sample are due to the complex relationships of couples within a rural setting or possible new resources available within the population such as the previously described changes in the WIC program.

Social support – *Women who exclusively breastfeed through three months postpartum will have higher antenatal social support scores compared to women who*

are not exclusively breastfeeding through three months postpartum. The null hypothesis was again retained, noting the prenatal baseline measurement of perceived social support was not associated with whether or not a woman was still exclusively breastfeeding through three months postpartum. Social support is frequently divided within the literature as either peer support (family and friends) or support from healthcare providers (nurses, physicians, social workers, lactations consultants). The current study did not differentiate between sources of social support, but allowed the participants to define ‘other support’ as she desired. The finding of no significant association between maternal perception of social support and breastfeeding exclusivity is in contrast from findings in other research. A maternal perception of higher levels of social support (specifically in the workplace) has previously been noted to have a positive impact on breastfeeding after returning to work (3.52, $p = .05$) and breastfeeding exclusivity (Spearman 0.402, $p = .03$) in a sample of lawyers (Alvarez, Serwint, Levine, Bertram, & Sattari, 2015). These findings did not support the findings of the current study, where an association between social support and exclusive breastfeeding was not found. This sample was high-income, while the current study had a predominantly low-income sample. The type of jobs held by the participants in the current sample were not analyzed, but often the jobs associated with low-income women are jobs that are not as supportive of frequent breaks such as what would be required for breastfeeding (Daly, Pollard, Phillips, & Binns, 2014; Ware, Webb, & Levy, 2014). It is likely that having to return to a work environment that was not supportive of breastfeeding may have contributed to participants within the current sample either not initiating breastfeeding or early cessation of breastfeeding.

In the previously discussed Wade, Haining, and Day (2009) qualitative focus group study, peer support was noted by the participants to be integral in finding a way to continue to breastfeed. In a qualitative study of 23 mothers in a neonatal intensive care unit in Chicago, Illinois, researchers found that 74% of the participants listed peer support as the most important factor related to their development of a maternal identity – and specifically mentioned the peer breastfeeding counselors as integral figures in this development (Rossman, Greene, & Meier, 2015). Interventions specifically aimed at improving social support have been found to have positive results with breastfeeding outcomes. Rios-Ellis, Nguyen-Rodriguez, Espinoza, and Garcia-Vega (2015) developed an intervention incorporating peer-educator social support within a Latin community in Los Angeles that significantly increased both intention to breastfeed exclusively and delay to first-food introduction. Although other research has supported an association between social support and positive breastfeeding outcomes, the current study did not find an association.

Depression – *Women who exclusively breastfeed through three months postpartum will have lower antenatal depression scores compared to women who are not exclusively breastfeeding through three months postpartum.* Again, the null hypothesis was retained, meaning that a woman’s baseline measure for depression is not associated or predictive of whether or not she will exclusively breastfeed through three months within this study sample. Previous research has yielded mixed results as to the association between depression and breastfeeding outcomes. Dennis, Gagnon, Van Hulst, and Dougherty’s (2014) study notes an association between EPDS scores >10 and not exclusively breastfeeding in 1184 Canadian women. Conversely, Cameron, et al., (2015) found no significant association between depression measures

and breastfeeding exclusivity in their New Zealand study. De Jager et al.'s (2014) retrospective study of 174 women from Europe, Australia and the US demonstrated that the association between lower depression scores and exclusive breastfeeding were approaching significance (1.9, $p = .057$). It is possible that within the current sample there were not enough women demonstrating higher depression scores to effectively measure an association.

Abuse - *Women who exclusively breastfeed through three months postpartum will have negative antenatal abuse scores compared to women who are not exclusively breastfeeding through three postpartum.* The null hypothesis related to abuse was retained. Current research related to the association between abuse and breastfeeding outcomes is sparse, especially in rural U. S. samples. The findings of the small amount of research available is often mixed. Within the studies completed there is a variance in variables measured, with some studies specifying partner violence while others measure abuse including all family members. Some research measures current abuse (within the last year) while other studies utilize any history of abuse in their analysis. In a quantitative study ($N=2621$) of women in Australia, no association between IPV and breastfeeding initiation or duration was noted. Although these findings support the current study, there are obvious differences between the samples of the two studies including income level and education (James, Taft, Amir, & Agius, 2014). Within a sample of 212 Midwestern WIC participants, Bullock, Libbus, and Sable (2001) also found a lack of association between IPV and breastfeeding utilizing the AAS to indicate abuse. The current study utilized a comparable sample and the same instrument to indicate abuse, supporting the findings of this earlier research study.

In contrast to the current study, Sipsma et al. (2013) found that in 225 Connecticut adolescents a lower incidence of intimate partner violence was associated with longer breastfeeding rates (1.77, CI 95%, 1.21-2.60). Additionally, in a qualitative case-study report of three women's experiences with breastfeeding after sexual abuse, Klingelhauser (2007) described the angst felt by these women as they attempted to 'do what they knew was right' and breastfeed despite negative feelings during the breastfeeding process including feelings of guilt for perpetuating sexual assault onto their infants. These qualitative descriptors of the thoughts behind breastfeeding decisions in a survivor of abuse are important for those who want to support women during the postpartum period.

Some studies have identified that a history of abuse or IPV may also have a positive effect on some women's breastfeeding outcomes. Prentice, Lu, Lange, and Halfon (2002) noted that women who reported childhood sexual abuse were twice as likely to initiate breastfeeding over those not reporting child abuse, possibly due to the need to be a 'better parent' than their own parent. Wood and Esterik (2010) identified similar findings in a multiple case-study qualitative report of six breastfeeding women who reported childhood abuse. Two women within the study reported that, although there were barriers, breastfeeding provided a sense of healing from their childhood sexual abuse experience.

The current study did not differentiate between IPV and abuse by non-partners. The initial question on the AAS inquired about a history of emotional, physical or sexual abuse ever. While the screening instrument does not ask the participant to clarify the abuser in the first question, frequently during the survey the information about the abuser would be offered, and recorded. There were 23 women

of the initial 106 participants who identified a history of abuse, while six of these stated abuse within the last year by a partner. The research above indicates that, while there may not be enough evidence to conclusively support that history of abuse negatively impacts breastfeeding outcomes, abuse (whether IPV or other) may play a significant role in the decisions a woman makes regarding breastfeeding and how her breastfeeding experience is perceived. Further research is needed to determine how best to support these women regardless of their feeding choices.

Motivation – *Women who exclusively breastfeed through three months postpartum will have higher antenatal motivation compared to women who are not exclusively breastfeeding through three months postpartum.* The null hypothesis related to motivation was rejected. Within this study sample of rural Missouri women there was an association between baseline measures of motivation and whether or not the woman chose to continue to exclusively breastfeed through three months. Research tends to support this finding. Tenefeld, Finnegan, and Hill (2011) study of low-income women in Chicago noted a significant association between women who stated a strong antenatal desire to breastfeed exclusively and those who were successful in exclusive breastfeeding (OR = 3.85, $p \leq .001$). The low-income sample in the Tenefeld study is comparable to the predominantly low-income sample in the current study, although not rural.

In a qualitative study of breastfeeding infants within the NICU, mothers described personal motivation as a primary reason for their continuation to breastfeed through the barrier of NICU admission. These mothers stated that their motivation was doing what was best for their baby, and a hope that after the baby was discharged breastfeeding would be less stressful and return to a normal pattern (Boucher, Brazal,

Graham-Certosini, Carnaghan-Sherrard, & Feeley, 2011). Kools, Thijs, Kester, and Vries (2006) completed a survey study of 341 urban women to determine characteristics associated with breastfeeding duration through three months. Findings indicated that all determinants had a Cronbach's alpha above .7, designating significant association. The findings of all of these studies are supported by the findings of the current study, that motivation is associated with breastfeeding exclusivity through three months.

Strengths/Limitations

The current study demonstrates several strengths and limitations. One strength is the demographic nature of the sample. The ethnic demographic make-up of the sample of the current study is similar to that of rural Missouri with the exception of a slightly higher percentage of Hispanic participants than the general rural Missouri Hispanic population (Table 4.1). Having a comparable representation in the sample is desirable within a study to promote generalizability of the findings (Polit & Beck, 2010). Another strength of the sample is the representation of 27 rural counties from all areas across Missouri, increasing the applicability of the findings to women in numerous rural counties throughout Missouri. Rural populations across the Midwest may also have both similarities and differences in resources related to proximity to urban areas, income level of the specific county and specific resources within the county (physical and community personnel) that may affect the applicability of this study.

Retention of the sample from baseline data collection through follow-up is another strength of the current study. Eighty-five percent of the women who completed enrollment and baseline data also completed follow-up survey data (N =

106 at baseline and N = 90 at follow-up). Lyles et al. (2007) identified a ‘best-practices’ goal of 70% retention within studies involving human subjects interventions. Dumville, Torgerson and Hewitt (2006) recommend achieving a retention of 95% in randomized control trials for minimal effect to group characteristics within the assigned groups, while stating that studies with attrition more than 20% may have serious analysis concerns. The sample from the current study exceeds the ‘best-practices’ goal. While it does not meet the ideal recommendation of 95%, this study’s retention rate is above the 20% benchmark. It should be noted that the current study is neither an intervention study nor a randomized control trial.

Another strength of the study was the variety of options in data collection methods. Women were offered multiple ways to complete the surveys including face-to-face options and phone completion to prevent the participant from having to travel – occasionally difficult in rural locations. During the follow-up survey completion women were also offered the option to complete the surveys on their own time via an electronic device. It should be noted that no participants chose this method, although it was available.

There are also limitations noted within the current study. One study limitation is related to the sample size. Although the breastfeeding exclusive sample was large enough to meet minimum power requirements for analysis, it is possible that some of the findings that were approaching significance would have reached significance with a larger sample size (N). The sample of the current study was a convenience sample of women who volunteered to allow the investigator to contact them. The sample was neither randomly selected nor randomized to categories within the study as

participants self-selected if they were going to remain exclusively breastfeeding or not. It is possible that women who chose not to volunteer their contact information would have different results on prenatal baseline measurements, altering the findings of this study. People who suffer from depression are often fatigued and lack energy (National Institute of Mental Health, 2015). This lack of motivation may decrease a person's interest in participating in a research study. The self-selection of the participant to the exclusive or non-exclusive group is not an identified weakness, but one of the driving assumptions of the study to determine possible characteristics of these women who decide to exclusively breastfeed.

Although 27 counties across Missouri were represented, many clinics contacted as potential recruitment sites decided not to allow recruitment. Within Missouri, 98 WIC clinics representing all eligible rural counties were contacted and invited to participate. Only 27 WIC clinics agreed to allow the investigator to recruit within their clinic. It is possible that women participating in the WIC clinics not allowing recruitment may have access to different resources (or number of resources) that would impact their breastfeeding outcomes.

WIC clinics agreeing to allow recruitment were not always able to find women willing to volunteer contact information. Eight WIC clinics who agreed to allow recruiting did not have any participants in the study. Barriers to recruitment in these counties may have included the small population size of the county. As an example, one clinic reported that during the recruitment timeframe of the study (April 2014 to May 2015) there were only three eligible women receiving WIC, none of whom were interested in participating. The lack of representation from each participating county could potentially impact the generalizability of the sample,

though the counties providing participants seem to be sufficient to deliver an adequately representative statewide sample.

An additional weakness of the study was the lack of non-WIC recruitment sites, resulting in a predominantly low-income sample. Throughout the Midwestern United States, 45 non-WIC clinics were invited to participate in the study as a recruitment site. Only four non-WIC sites (three clinics and a breastfeeding support counselor) agreed to allow recruitment, all of which were located in Missouri. While low-income women undoubtedly could benefit from interventions to improve breastfeeding outcomes, the small sample size of non-WIC participants (14/90 = 15%) did not provide enough power to complete analyses that may have indicated if differences existed due to income level (although even with the smaller sample the association between income and breastfeeding exclusivity was approaching significance), or draw conclusions as to whether income provides a significant line of defense to protect from stressors that could impact breastfeeding outcomes. One potential rationale for the lack of non-WIC recruitment sites willing to participate would be time constraints. Non-WIC clinics contacted frequently noted they felt the time required to inform their clients about the study would be problematic for their staff. The Missouri Department of Health and Senior Services lists research as one of its core functions (Missouri Department of Health & Senior Services – Public Health Works, 2015), which may explain why WIC clinics, also frequently very busy work facilities, may have been more willing to assist in recruitment.

Due to this study's relatively small resources, it did not address the issues of low-income rural adolescents or women who do not speak English or Spanish.

Adolescent and other-language speaking mothers likely have unique breastfeeding issues that are worthy of future investigation.

Implications for Nursing

To accomplish the Healthy People 2020 goals for promoting breastfeeding duration and exclusivity, nurses must seek to develop patient-specific interventions to improve breastfeeding outcomes. The holistic nature of nursing care situates nurses in an exemplary position to identify and utilize population knowledge to improve population health. The findings of this study, that both motivation and breastfeeding self-confidence measured during pregnancy are associated with breastfeeding exclusivity within a rural population, can assist nurses to identify and develop interventions to improve both motivation and self-confidence. Only by understanding the complex nature of the factors behind a woman's breastfeeding decisions can we hope to strengthen existing defenses to support the breastfeeding woman and promote positive breastfeeding outcomes.

The holistic nature of nursing noted by Neuman (1982) in her theory will facilitate the use of the information from this study. Nurses strive to assist our clients in developing stronger support systems and methods to alleviate or decrease negative stressors that may impact health. Increasing motivation and breastfeeding self-confidence within women with a prenatal intention to breastfeed may increase the number of women who are able to fulfil their prenatal goal. Understanding the importance of helping women feel more confident in their ability to breastfeed and helping them to maintain motivation for breastfeeding can be accomplished with nursing interventions. The Informational/Motivational/Behavioral skills (IMB) model developed by Fisher and Fisher (2002) is a triangular method of education that

includes: providing information to client (Informational), providing motivation counseling specific to the desired behavior change (Motivational), and demonstrating to the client the skills he/she will need to complete the behavior change desired (Behavioral Skills). This educational method has been demonstrated to improve outcomes in populations that are resistant to lifestyle change for various reasons (Aronowitz & Munzert, 2006; Kalichman, Picciano, & Roffman, 2008). The previously discussed continuing low breastfeeding outcomes within rural populations would establish this population as one that may benefit from the IMB educational model. Nurses within rural communities should develop educational information for their clients that is specific for their community and available resources, utilize a method of maintaining/improving motivation for breastfeeding throughout the pregnancy and first six months post-partum, and assist the pregnant woman (frequently accomplished within support group sessions including both first-time and previously breastfeeding women) who is intending to breastfeed as she develops skills that will be required during the breastfeeding experience (i.e. how to express milk, how to properly latch an infant, what to do when you want to go out to eat with or without the baby, how to accomplish returning to work/pumping). Studies show that utilizing this triangular method of education may be successful in achieving positive healthy lifestyle changes when other educational methods have not proven successful (Fisher, Fisher, Williams & Malloy, 1994; Mayberry & Osborn, 2014; Scott-Sheldon, et al., 2010). The IMB model seems an option for nurses who want to improve breastfeeding rates within a rural population.

The identified significant association between motivation and exclusive breastfeeding has an additional implication for nursing practice. The measure for

motivation was a single question in 5-response Likert format, asking if a woman felt (1) very motivated, (2) somewhat motivated, (3) neither motivated nor unmotivated, (4) somewhat unmotivated or (5) very unmotivated to breastfeed. The inclusion of this single question in the systematic assessment of pregnant women may provide key information to nurses related to a woman's need for additional information or support to achieve her breastfeeding goals.

Implications for Research

The current study indicates several areas for future research that may prove beneficial. The primary aim of this study was to identify characteristics that were associated with breastfeeding exclusivity in order to promote development of interventions that could be implemented within the rural population to improve breastfeeding outcomes. Motivation and self-efficacy were noted to both be associated with breastfeeding exclusivity within this rural population. Therefore, future research should include intervention studies to identify specific interventions to improve motivation and self-confidence during the prenatal period. Utilization of the IMB model to educate prenatal women on breastfeeding skills should be researched to support (or not) the inclusion of this educational method in rural clinics.

To more appropriately define both the barriers that rural women face related to breastfeeding and the methods utilized to overcome these barriers, a qualitative analysis including both participants within the rural populations who were successful at achieving exclusive breastfeeding through three months and participants who were not should be conducted. Identifying specific methods utilized by women within a rural population who were successful at exclusively breastfeeding through three

months may help develop new interventions or promote the use of interventions that have already been developed.

In addition to research further describing how rural women overcome barriers, further information on specific barriers of women who were not successful at achieving exclusive breastfeeding would be valuable. Are there barriers within a rural population that have not yet been noted in research? What role does societal views play on breastfeeding outcomes in a rural setting? These questions would also benefit from a qualitative method to produce more robust information related to the barriers faced by breastfeeding women in a rural setting.

Conclusions

Breastfeeding trends continue to rise slowly within the United States, with women in rural areas lagging behind. Interventions are needed to improve the breastfeeding rates within this population. The current study aimed at finding modifiable characteristics around which nursing interventions could be developed to improve breastfeeding outcomes, focusing on exclusivity. Both antepartum breastfeeding self-efficacy and maternal motivation to breastfeed were noted to be significantly associated with postpartum breastfeeding exclusivity through three months. Nursing implications include identification of women who may need extra support or education to promote self-efficacy and motivation. Future research should focus on identification of methods used by women within this population who are successful at breastfeeding, identification of barriers specific to rural populations, and studies to assess efficacy of interventions developed using the Information-Motivation-Behavioral Skills model of education. Improving breastfeeding outcomes

has the potential to improve the health of both mothers and infants. All efforts to support mothers who choose to breastfeed and enable them to breastfeed for as long as they desire should be made.

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Appendix A.
Demographic Questionnaire for Baseline (T0) Data Collection

Study ID _____

Date _____

Introductory Script:

Now I need to ask some questions about you, your partner, your living situation, and some general health questions. This interview will take about 30 minutes. If you do not understand any question, please ask me to explain or repeat the question. At times, some questions may sound alike, but they still need to be answered. Are you ready to begin?

I. About You: First, let's talk about you. . .

1. How old are you? ____
 - a. (DOB: mm/dd/yr _____)
2. How would you describe your ethnic/racial background?
 - a. African/ African American/ Black
 - b. Native Hawaiian/Pacific Islander
 - c. Asian
 - d. White/Caucasian
 - e. American Indian/Alaska Native
 - f. Other _____
3. Do you consider yourself Hispanic or Latino(a)?
 - a. Yes
 - b. No
4. What is your marital status?
 - a. Single
 - b. Partnered, but not married
 - c. Married
 - d. Divorced
 - e. Widowed
 - f. Other _____
5. Do you have health insurance?
 - a. Yes

If yes, what carrier? _____

 - b. No
6. Are you currently employed?
 - a. Yes, full time-
 - b. Yes, part time-

If yes, Describe (type of work, number of jobs, length of time employed)

 - c. No, not employed at all
 - d. I am a homemaker
 - e. I am in job training

Describe (type of training, length of time employed)

7. Did you work before this pregnancy?

- a. Yes, full time-
- b. Yes, part time-

If yes, Describe (type of work, number of jobs, length of time employed)

- c. No, not employed at all

8. Do you receive financial assistance from the State, Federal government, or other?

- a. Yes

If yes, what kind? _____

- b. No

9. Are you currently in school?

- a. Yes, full time
- b. Yes, part time
- c. No

9a. If yes, what grade?

- d. 10th-12th
- e. Community college or trade school
- f. College or university
- g. Other _____

10. What is the highest level of education you completed?

- a. 1st- 6th grade
- b. 7th-9th grade
- c. 10th-12th grade
- d. High School graduate/GED
- e. Some college or trade school
- f. Trade School/Community College graduate
- g. College graduate
- h. Postgraduate
- i. Other

II. About your health: The next few questions ask about your health, both before and during this pregnancy.

11. How would you describe your physical health before this pregnancy?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

12. How would you describe your physical health during this pregnancy? (Prompt: "Have you had any problems related to the pregnancy?")

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

13. How would you describe your mental health before this pregnancy?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

14. How would you describe your mental health during this pregnancy?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

15. Are you currently taking any prescription or over-the-counter medications?

- a. Yes

If yes, please list (med/dose):

- b. No

16. Have you smoked during this pregnancy?

- a. Yes- How many cigarettes/day? _____
- b. Yes, but I quit. When _____
- c. No

17. Did you smoke before this pregnancy?

- a. Yes- How long? _____ How many cigarettes/day?
- b. Yes, but I quit. When _____
- c. No

III. Prenatal Health Information: Now we have some questions about your pregnancy.

18. Was this a planned pregnancy?

- a. Yes (*Skip to #20*)
- b. No

19. Do you feel this pregnancy was a result of forced sex or not allowed to use birth control?

- a. Yes
- b. No

20. For you, is this pregnancy now. . .

- a. Wanted
- b. Unwanted
- c. I am ambivalent

21. What is your expected due date? (mm/dd/yr) _____

22. Have you ever been pregnant before?
- a. Yes
 - i. # of pregnancies _____
 - ii. # of pre-term births _____
 - iii. # of term births _____
 - iv. # ending in abortion/miscarriage _____
 - v. # of live children _____
 - b. No, this is my first pregnancy.

23. Are you intending to breastfeed your infant?
- a. Yes
 - b. No

24. When did you begin prenatal care?
- (mm/dd/yr of first appointment) _____
- a. First trimester
 - i. Before 8 wks
 - ii. 8-12 wks
 - iii. 12-16 wks
 - b. Second trimester
 - i. 16-20 wks
 - ii. 20-24 wks
 - iii. 24-28 wks
 - c. Third trimester

25. Where do you go for prenatal care?
- a. Private practice
 - b. Midwife
 - c. Clinic
 - d. Other _____

26. How often are your prenatal appointments?
- a. Every month
 - b. Every two weeks
 - c. Every week

27. Have you ever missed a prenatal appointment?
- a. Yes
How many: _____
 - b. No

IV. About Your Current Partner: Now I have some questions about your partner relationships.

28. Do you have a current partner?
- a. Yes (*if client reports a current partner, continue with this section*)
If yes, what is your relationship with him/her? Circle all that apply.
 - i. Father of baby
 - ii. Spouse

- iii. Ex-Spouse
 - iv. Boyfriend
 - v. Ex- Boyfriend
 - vi. Girlfriend
 - vii. Ex-Girlfriend
 - viii. Other _____
- b. No (*if no, skip to # 40—but modify wording to match scenario*)
- i. I have no contact with the father of my baby
 - ii. I have contact with the father of my baby, but we aren't together
- c. What is his/her name? _____
29. How long have you and your current partner been together?
- a. _____ weeks
 - b. _____ months
 - c. _____ years
- 28a. Are you living with this partner now?
- i. _____ yes
 - How long? a. _____ weeks
 - b. _____ months
 - c. _____ years
 - ii. _____ no
- 28b. Have you ever lived with this partner?
- i. _____ yes
 - How long? a. _____ weeks
 - b. _____ months
 - c. _____ years
 - ii. _____ no
- 28c. If you lived with this partner in the past, but not now, why not?
- a. abuse/fighting
 - b. not able to afford it
 - c. Other _____
30. How old is your current partner? _____
- a. (DOB: mo/dd/yr _____)
31. How would you describe your current partner's ethnic/racial background?
- a. African/ African American/ Black
 - b. Native Hawaiian/Pacific Islander
 - c. Asian
 - d. White/Caucasian
 - e. American Indian/Alaska Native
 - f. Other _____
32. Does he/she consider him/herself Hispanic or Latino(a)?
- a. Yes
 - b. No
33. Is your current partner employed?
- a. Yes, full time-
 - b. Yes, part time-

If yes, Describe (type of work, number of jobs, length of time employed)

- c. No, not employed at all

34. Is your partner currently in school?

- a. Yes, full time
- b. Yes, part time
- c. No
- d. Don't know

If yes for either, what grade?

- e. 7th-9th
- f. 10th-12th
- g. Community college or trade school
- h. College or university
- i. Other _____

35. What is the highest level of education your partner has completed?

- a. 1st- 6th grade
- b. 7th- 9th grade
- c. 10th-12th grade
- d. High school graduate/GED
- e. Some college or trade school
- f. Trade School/ Community College graduate
- g. College graduate
- h. Postgraduate
- i. Other _____
- j. Don't know

36. How would you describe your partner's health?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

37. How would you describe your partner's mental health?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

38. For your current partner, is this pregnancy now. . .

- a. Wanted
- b. Unwanted
- c. He/she is ambivalent

39. If you have previous children, is your current partner involved in the raising of your children? (*if first pregnancy, can ask if intends to be involved*)

- a. Yes,

If yes, how much? _____

- b. No

40. Does your partner smoke?
a. Yes-How long? _____ How many cigarettes/day? _____
b. No

NOTE: If current partner is FOB, skip #40-54.

V. About FOB: We also need to gather some information about the father of your baby. Some of these questions will be similar to other ones we have asked.

41. What is the FOB name? _____
42. Have you ever lived with this partner?
i. _____ yes
How long? a. _____ weeks
b. _____ months
c. _____ years
ii. _____ no
- 42 . If you lived with this partner in the past, but not now, why not?
a. abuse/fighting
b. not able to afford it
c. Other _____
43. Do you have a relationship with the FOB?
a. Yes
b. No
- 44 How old is your baby's father? _____
(DOB: mo/d/yr _____)
45. How would you describe your his ethnic/racial background?
a. African/ African American/ Black
b. Native Hawaiian/Pacific Islander
c. Asian
d. White/Caucasian
e. American Indian/Alaska Native
f. Other _____
46. Does he consider himself Hispanic or Latino(a)?
a. Yes
b. No
47. Is he employed?
a. Yes, full time-
b. Yes, part time-
If yes, Describe (type of work, number of jobs, length of time employed)

c. No, not employed at all
d. Don't know

48. Is he currently in school?

- a. Yes, full time
- b. Yes, part time
- c. No
- d. Don't know

If yes for either, what grade?

- e. 7th-9th
- f. 10th-12th
- g. Community college or trade school
- h. College or university
- i. Other _____

49. What is the highest level of education he has completed?

- a. 1st- 6th grade
- b. 7th- 9th grade
- c. 10th-12th grade
- d. High school graduate/GED
- e. Some college or trade school
- f. Trade School/ Community College graduate
- g. College graduate
- h. Postgraduate
- i. Other _____
- j. Don't know

50. How would you describe his physical health?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

51. How would you describe his mental health?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

52. How long were you and your baby's father together?

- a. _____ weeks
- b. _____ months
- c. _____ years

53. Is your baby's father involved in the raising of your children? (*if first pregnancy, can ask if intends to be involved*)

- a. Yes,
If yes, how much? _____
- b. No

54. Does the father of your baby smoke?

- c. Yes-How long? _____ How many cigarettes/day? _____
- d. No

VI. About your family/household:

54. Where do you live now?

- a. In your own apartment or rental house where you pay rent
- b. In your own apartment or rental house where you pay at least some of the rent
- c. In a house where you pay a mortgage
- d. In a transitional housing program
- e. In a motel
- f. In a homeless shelter
- g. In a domestic violence shelter
- h. On the street/in your car/camping out
- i. Other (*please specify* _____)

55. Who do you live with? (*please mark all that apply*)

- a. Alone
- b. Your partner
- c. Children under the age of 18
- d. Adult relatives/family
- e. Friends/roommate
- f. Ex-partner
- g. Other (*please specify* _____)

56. Please share some information on all of the other people who live with you.

Initials	Gender (circle)	Age (DOB mm/dd/yy)	*Relationship to You	Residence type
1.	F M			Temp Perm
2.	F M			Temp Perm
3.	F M			Temp Perm
4.	F M			Temp Perm
5.	F M			Temp Perm
6.	F M			Temp Perm
7.	F M			Temp Perm
8.	F M			Temp Perm

* i.e. biological child, step-child, foster/adopted child, other relative's child, relative, neighbor, friend

57. Who do you consider to be your main support during your pregnancy? (*Check all that apply*)

- a. Family member (Who? _____)
- b. Current partner
- c. Father of baby
- d. Friends
- e. Health care providers
- f. Church
- g. Other _____

How do they support you? (Money, child care, food, _____)

58. Will someone be helping you take care of your baby once your baby is born?

- a. Yes. (Who and what relation to you? _____)
- b. No

59. Do you know if you were breastfed?

- a. Yes
- b. No

60. How motivated do you feel to breastfeed?

- a. Very motivated (5)
- b. Somewhat motivated (4)
- c. Neither motivated nor un-motivated (3)
- d. Somewhat unmotivated (2)
- e. Very unmotivated (1)

Appendix B.

Demographic Questionnaire for Follow-up (T1) Data Collection

Study ID _____

Date _____

Introductory Script:

Now I need to ask some questions about you, your partner, your living situation, and some general health questions. This interview will take about 30 minutes. If you do not understand any question, please ask me to explain or repeat the question. At times, some questions may sound alike, but they still need to be answered. Are you ready to begin?

I. About You: First, let's talk about you. . .

43. Has your marital status changed from our last interview?

- a. Yes
- b. No (*skip to #3*)

44. What is your marital status now?

- g. Single
- h. Partnered, but not married
- i. Married
- j. Divorced
- k. Widowed
- l. Other _____

45. Has your work status changed since our last interview?

- a. Yes
- b. No (*skip to #5*)

46. Are you currently employed?

- a. Yes, full time-
- b. Yes, part time-

If yes, Describe (type of work, number of jobs, length of time employed)

-
- c. No, not employed at all
 - d. I am a homemaker
 - e. I am in job training

Describe (type of training, length of time employed)

47. Do you receive financial assistance from the State, Federal government, or other?

- a. Yes

If yes, what kind? _____

- b. No

II. About your health: The next few questions ask about your health, both before and during this pregnancy.

48. How would you describe your physical health since this pregnancy? (Prompt: "Have you had any problems since our last interview?")
- Excellent
 - Good
 - Fair- Please describe _____
 - Poor- Please describe _____
49. How would you describe your mental health since our last interview?
- Excellent
 - Good
 - Fair- Please describe _____
 - Poor- Please describe _____
50. Are you currently taking any prescription or over-the-counter medications?
- Yes
If yes, please list (med/dose):

 - No
51. Have you smoked since this pregnancy?
- Yes- How many cigarettes/day? _____
 - Yes, but I quit. When _____
 - No

III. Post-partum Health Information: Now we have some questions about you since your pregnancy.

52. Did you breastfeed your baby at all after delivery?
- Yes
 - No (*skip to question 14*)
53. Are you still breastfeeding your baby?
- Yes
 - No (*skip to question 14*)
54. Has your baby ever had nutrition other than breastmilk since delivery?
- Yes
 - No (*skip to question 14*)
55. How many times has your baby had formula in the last month?
- None
 - 1-5 times/month
 - 6-10 times/month
 - 11-30 times/month
 - 31+ times/month

IV. About Your Current Partner: Now I have some questions about your partner relationships.

56. Has your partner changed since our last interview?
- Yes
 - No (*skip to question 28*)
57. Do you have a current partner?
- Yes (*if client reports a current partner, continue with this section*)
If yes, what is your relationship with him/her? Circle all that apply.
 - Father of baby
 - Spouse
 - Ex-Spouse
 - Boyfriend
 - Ex- Boyfriend
 - Girlfriend
 - Ex-Girlfriend
 - Other _____
 - No (*if no, skip to # 40—but modify wording to match scenario*)
 - I have no contact with the father of my baby
 - I have contact with the father of my baby, but we aren't together
 - What is his/her name? _____
58. How long have you and your current partner been together?
- _____ weeks
 - _____ months
 - _____ years
- 16a. Are you living with this partner now?
- _____ yes
 How long?
 - _____ weeks
 - _____ months
 - _____ years
 - _____ no
- 16b. Have you ever lived with this partner?
- _____ yes
 How long?
 - _____ weeks
 - _____ months
 - _____ years
 - _____ no
- 16c. If you lived with this partner in the past, but not now, why not?
- abuse/fighting
 - not able to afford it
 - Other _____
59. How old is your current partner? _____
- (DOB: mo/dd/yr _____)
60. How would you describe your current partner's ethnic/racial background?
- African/ African American/ Black
 - Native Hawaiian/Pacific Islander
 - Asian

- d. White/Caucasian
- e. American Indian/Alaska Native
- f. Other _____

61. Does he/she consider him/herself Hispanic or Latino(a)?

- a. Yes
- b. No

62. Is your current partner employed?

- a. Yes, full time-
- b. Yes, part time-

If yes, Describe (type of work, number of jobs, length of time employed)

-
- c. No, not employed at all

63. Is your partner currently in school?

- a. Yes, full time
- b. Yes, part time
- c. No
- d. Don't know

If yes for either, what grade?

- e. 7th-9th
- f. 10th-12th
- g. Community college or trade school
- h. College or university
- i. Other _____

64. What is the highest level of education your partner has completed?

- a. 1st- 6th grade
- b. 7th- 9th grade
- c. 10th-12th grade
- d. High school graduate/GED
- e. Some college or trade school
- f. Trade School/ Community College graduate
- g. College graduate
- h. Postgraduate
- i. Other _____
- j. Don't know

65. How would you describe your partner's health?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

66. How would you describe your partner's mental health?

- a. Excellent
- b. Good
- c. Fair- Please describe _____
- d. Poor- Please describe _____

67. For your current partner, is this pregnancy now. . .
- a. Wanted
 - b. Unwanted
 - c. He/she is ambivalent
68. If you have previous children, is your current partner involved in the raising of your children? (*if first pregnancy, can ask if intends to be involved*)
- a. Yes,
If yes, how much? _____
 - b. No
69. Does your partner smoke?
- a. Yes-How long? _____ How many cigarettes/day? _____
 - b. No

VI. About your family/household:

70. Have you moved or has your household changed since our last interview?
- a. Yes
 - b. No (*skip to question 32*)
71. Where do you live now?
- f. In your own apartment or rental house where you pay rent
 - g. In your own apartment or rental house where you pay at least some of the rent
 - h. In a house where you pay a mortgage
 - i. In a transitional housing program
 - j. In a motel
 - k. In a homeless shelter
 - l. In a domestic violence shelter
 - m. On the street/in your car/camping out
 - n. Other (*please specify* _____)
72. Who do you live with? (*please mark all that apply*)
- a. Alone
 - b. Your partner
 - c. Children under the age of 18
 - d. Adult relatives/family
 - e. Friends/roommate
 - f. Ex-partner
 - g. Other (*please specify* _____)

73. Please share some information on all of the other people who live with you.

Initials	Gender (circle)	Age (DOB mm/dd/yy)	*Relationship to You	Residence type
1.	F M			Temp Perm
2.	F M			Temp Perm
3.	F M			Temp Perm
4.	F M			Temp Perm
5.	F M			Temp Perm
6.	F M			Temp Perm
7.	F M			Temp Perm
8.	F M			Temp Perm

* i.e. biological child, step-child, foster/adopted child, other relative's child, relative, neighbor, friend

74. Who do you consider to be your main support since your pregnancy? (*Check all that apply*)

h. Family member (Who? _____)

i. Current partner

j. Father of baby

k. Friends

l. Health care providers

m. Church

n. Other _____

How do they support you? (Money, child care, food, _____)

75. Is anyone helping you take care of your baby?

o. Yes. (Who and what relation to you? _____)

p. No

Appendix C.

Prenatal Psychosocial Profile (PPP)

HEALTHY MOMS & BABIES

PPP

Study ID # _____

Date _____

Baby's Age _____

Interview _____ Months

We all have some kind of "picture" of ourselves we carry with us. The following is a list of statements that people have used to describe themselves. I would like you, to tell me, how much you agree or disagree with how each statement describes you.

	Strongly Agree	Agree	Disagree	Strongly Disagree	
P3A. Feel that you're a person of worth, at least on an equal basis with others.	1	2	3	4	A20A
P3B. Feel that you have a number of good qualities.	1	2	3	4	A20B
P3C. All in all, feel that you are a failure.	1	2	3	4	A20C
P3D. Feel you are able to do things as well as most other people.	1	2	3	4	A20D
P3E. Feel you do not have much to be proud of.	1	2	3	4	A20E
P3F. Take a positive attitude toward yourself.	1	2	3	4	A20F
P3G. On the whole, feel satisfied with yourself.	1	2	3	4	A20G
P3H. Wish you could have more respect for yourself.	1	2	3	4	A20H
P3I. Feel useless at times.	1	2	3	4	A20I
P3J. At times, think you are no good at all.	1	2	3	4	A20J
P3K. Feel like you have control over your life.	1	2	3	4	A20K

HEALTHY MOMS & BABIES

PPP

Study ID # _____

Date _____

Baby's Age _____

Interview _____ Months

The next set of questions asks how satisfied you are with the amount of support you receive from your partner and/or from other people.

On a scale of 1 to 6, with 1 being very dissatisfied and 6 being very satisfied, I want you to tell me how satisfied you are with the support you receive from Your Partner and/or, then also, from Other People.

		PARTNER							OTHER PEOPLE						
		Very Dissatisfied		Very Satisfied				Very Dissatisfied		Very Satisfied					
		(Circle One)							(Circle One)						
P2A.	Shares similar experiences with me.	P2A	1	2	3	4	5	6	P2AOP	1	2	3	4	5	6
P2B.	Helps keep up my morale.	P2B	1	2	3	4	5	6	P2BOP	1	2	3	4	5	6
P2C.	Helps me out when I'm in a pinch.	P2C	1	2	3	4	5	6	P2COP	1	2	3	4	5	6
P2D.	Shows interest in my daily activities and problems.	P2D	1	2	3	4	5	6	P2DOP	1	2	3	4	5	6
P2E.	Goes out of the way to do special or thoughtful things for me.	P2E	1	2	3	4	5	6	P2EOP	1	2	3	4	5	6
P2F.	Allows me to talk about things that are very personal and private.	P2F	1	2	3	4	5	6	P2FOP	1	2	3	4	5	6
P2G.	Lets me know I am appreciated for the things I do for him/her.	P2G	1	2	3	4	5	6	P2GOP	1	2	3	4	5	6
P2H.	Tolerates my ups and downs and unusual behaviors.	P2H	1	2	3	4	5	6	P2HOP	1	2	3	4	5	6
P2I.	Takes me seriously when I have concerns.	P2I	1	2	3	4	5	6	P2IOP	1	2	3	4	5	6
P2J.	Says things that make my situation clear and easier to understand.	P2J	1	2	3	4	5	6	P2JOP	1	2	3	4	5	6
P2K.	Lets me know that he/she will be around if I need assistance.	P2K	1	2	3	4	5	6	P2KOP	1	2	3	4	5	6

HEALTHY MOMS & BABIES

PPP

Study ID # _____

Date _____

Baby's Age _____

Interview _____ Months

This set of questions is concerned with the kinds of stress you might be experiencing. I would like you to answer as to what extent the following items are a current stress or hassle for you. Your choices are: No Stress, Some Stress, Moderate Stress or Severe Stress.

	No Stress	Some Stress	Moderate Stress	Severe Stress	
P1A. Financial worries (e.g., food, shelter, health care, transportation).	1	2	3	4	A18A
P1B. Other money worries (e.g., bills, etc...).	1	2	3	4	A18B
P1C. Problems related to family (e.g., partner, children, etc...).	1	2	3	4	A18C
P1D. Having to move, either recently or in the future.	1	2	3	4	A18D
P1E. Recent loss of loved one (e.g., death, divorce, long distance).	1	2	3	4	A18E
P1F. Current pregnancy.	1	2	3	4	A18F
P1G. Current abuse (e.g., sexual, emotional or physical).	1	2	3	4	A18G
P1H. Problems with alcohol and/or drugs.	1	2	3	4	A18H
P1I. Work problems (e.g., being laid off, etc...).	1	2	3	4	A18I
P1J. Problems related to friends.	1	2	3	4	A18J
P1K. Feeling generally "overloaded".	1	2	3	4	A18K

Appendix D.

Breastfeeding Self-efficacy Scale – Short Form (BSES-SF)

Please score the following statements related to how confident you are with breastfeeding on a scale from 1-5, with 1 = not at all confident, 2 = almost never confident, 3 = somewhat confident, 4 = almost always confident and 5 = always confident.

I can always:

B1) Determine that my baby is getting enough milk

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B2) Successfully cope with breastfeeding like I have with other challenging tasks

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B3) Breastfeed my baby without using formula as a supplement

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B4) Ensure that my baby is properly latched on for the whole feeding

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B5) Manage the breastfeeding situation to my satisfaction

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B6) Manage to breastfeed even if my baby is crying

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B7) Keep wanting to breastfeed

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B8) Comfortably breastfeed with my family members present

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B9) Be satisfied with my breastfeeding experience

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B10) Deal with the fact that breastfeeding can be time-consuming

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B11) Finish feeding my baby on one breast before switching to the other breast

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B12) Continue to breastfeed my baby for every feeding

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B13) Manage to keep up with my baby's breastfeeding demands

1	2	3	4	5
Not at all confident		Somewhat confident		Always

B14) Tell when my baby is finished breastfeeding

1	2	3	4	5
Not at all confident		Somewhat confident		Always

Appendix E.

Edinburgh Postnatal Depression Scale

Edinburgh Postnatal Depression Scale 1 (EPDS)

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today. An example would be:

(Example Question) I have felt happy:

- ☐ Yes, all the time
- ☒ Yes, most of the time
- ☐ No, not very often
- ☐ No, not at all

If select 'Yes, most of the time' it would mean that most of the time over the last week you have felt happy. I will read the question and the answer choices, if you would please tell me which choice best shows your answer:

E1) I have been able to laugh and see the funny side of things

- (0)_ As much as I always could
- (1)_ Not quite so much now
- (2)_ Definitely not so much now
- (3)_ Never

E2) I have looked forward with enjoyment to things

- (0)_ As much as I ever did
- (1)_ Rather less than I used to
- (2)_ Definitely less than I used to
- (3)_ Hardly at all

E3) I have blamed myself unnecessarily when things went wrong

- (3)_ Yes, most of the time
- (2)_ Yes, some of the time
- (1)_ Not very often
- (0)_ No, never

E4) I have been anxious or worried for no good reason

- (0)_ No, not at all
- (1)_ Hardly ever
- (2)_ Yes, sometimes
- (3)_ Yes, very often

E5) I have felt scared or panicky for no very good reason

- (3)_ Yes, quite a lot
- (2)_ Yes, sometimes
- (1)_ No, not much
- (0)_ No, not at all

E6) Things have been getting on top of me

- (3)_ Yes, most of the time I haven't been able to cope at all
- (2)_ Yes, sometimes I haven't been coping as well as usual
- (1)_ No, most of the time I have coped quite well
- (0)_ No, I have been coping as well as ever

E7) I have been so unhappy that I have had difficulty sleeping

- (3)_ Yes, most of the time
- (2)_ Yes, sometimes
- (1)_ Not very often
- (0)_ No, not at all

E8) I have felt sad or miserable

- (3)_ Yes, most of the time
- (2)_ Yes, quite often
- (1)_ Not very often
- (0)_ No, not at all

E9) I have been so unhappy that I have been crying

- (3)_ Yes, most of the time
- (2)_ Yes, quite often
- (1)_ Only occasionally
- (0)_ No, never

E10) The thought of harming myself has occurred to me

- (3)_ Yes, quite often
- (2)_ Sometimes
- (1)_ Hardly ever
- (0)_ Never

Administered/Reviewed by _____ Date _____

1 Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item

Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

2 Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

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authors, the title and the source of the paper in all reproduced copies.

No, most of the time I have coped quite well

Edinburgh Postnatal Depression Scale ¹ (EPDS)

Postpartum depression is the most common complication of childbearing. ² The 10-question Edinburgh

Postnatal Depression Scale (EPDS) is a valuable and efficient way of identifying patients at risk for “perinatal”

depression. The EPDS is easy to administer and has proven to be an effective screening tool.

Mothers who score above 13 are likely to be suffering from a depressive illness of varying severity.

The EPDS

score should not override clinical judgment. A careful clinical assessment should be carried out to confirm the

diagnosis. The scale indicates how the mother has felt *during the previous week*. In doubtful cases it may

be useful to repeat the tool after 2 weeks. The scale will not detect mothers with anxiety neuroses, phobias or

personality disorders.

Women with postpartum depression need not feel alone. They may find useful information on the web sites of

the National Women’s Health Information Center <www.4women.gov> and from groups such as Postpartum

Support International <www.chss.iup.edu/postpartum> and Depression after Delivery

<www.depressionafterdelivery.com>.

SCORING

QUESTIONS 1, 2, & 4 (without an *)

Are scored 0, 1, 2 or 3 with top box scored as 0 and the bottom box scored as 3.

QUESTIONS 3, 5-10

(marked with an *)

Are reverse scored, with the top box scored as a 3 and the bottom box scored as 0.

Maximum score: 30

Possible Depression: 10 or greater

Always look at item 10 (suicidal thoughts)

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names of the authors, the title, and the source of the paper in all reproduced copies.

Instructions for using the Edinburgh Postnatal Depression Scale:

1. The mother is asked to check the response that comes closest to how she has been feeling

in the previous 7 days.

2. All the items must be completed.

3. Care should be taken to avoid the possibility of the mother discussing her answers with others. (Answers come from the mother or pregnant woman.)
4. The mother should complete the scale herself, unless she has limited English or has difficulty with reading.

¹ Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item

Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786.

² Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

Appendix F.

Abuse Assessment Screen (AAS)

A1) Have you ever been emotionally or physically abused by your partner or someone important to you?

1- Yes

2- No

A2) Within the last year, have you been hit, slapped, kicked, punched, choked or otherwise physically hurt by someone?

1- Yes

2- No

A2a - If yes, who _____

A3) Since you have been pregnant have you been hit, slapped, kicked, punched, choked or otherwise physically hurt by someone?

1- Yes

2- No

A3a - If yes, who _____

A4) Within the last year, has someone forced you to have sexual activities?

1- Yes

2- No

A4a - If yes, who _____

A5) Are you afraid of your partner or anyone listed above?

1- Yes

2- No

Appendix G.

Study Cards

Welcome!!

I thank you for agreeing to participate in the Healthy Moms & Babies Study. Your participation will help make future babies healthier.

Please contact me at 660-631-4718 if you have any change of contact information. This is a message phone, checked frequently.

I will be contacting you after your delivery to complete the next telephone survey.

Tonya Eddy

Congratulations!!

Happy Birthday to your baby!

This is a reminder that I will be contacting you for our last telephone survey in four months.

Please contact me at 660-631-4718 if you have any change of contact information. This is a message phone, checked frequently.

Thank you, again, for your help.

Tonya Eddy

Hello, Again!!

Happy 1 month Birthday to your baby!

This is a reminder that I will be contacting you for our last telephone survey in about 3 months.

Please contact me at 660-631-4718 if you have any change of contact information. This is a message phone, checked frequently.

Thank you, again, for your help.

Tanya Esby

Hello, again!!

Happy 3-month Birthday to your baby!

This is a reminder that I will be contacting you for our last telephone survey in one month.

Please contact me at 660-631-4718 if you have any change of contact information. This is a message phone, checked frequently.

Thank you, again, for your help.

Tanya Esby

Appendix H.

Consent for Participation

Waiver of Documentation of Consent **IRB USE ONLY** Approval Date: March 18, 2015 Expiration Date: April 9, 2016

WAIVER OF DOCUMENTATION OF CONSENT

INVESTIGATOR'S NAME: TONYA EDDY

PROJECT # 1210613

Study Title: Maternal Psychosocial Factors Related to Duration and Exclusivity of Breastfeeding Practices among Rural Women in the Midwest: The Healthy Moms and Babies Study

1. I would like to ask you to participate in a study that involves research.
2. Participation is voluntary and your decision not to participate will not involve any penalty or loss of benefits.
3. For this study, women will be contacted two times by phone to complete several surveys read to them by the study staff. One contact will take place today while you are still pregnant, and the other telephone contact will be near the end of your third month after having your baby. Each contact will take between 30 and 45 minutes. You will also be contacted briefly around the time of your delivery to see how your delivery went, and I will be sending you cards with my contact information in them in case you need to reach me with updated safe contact information for you. I will only contact you at the phone numbers that you give me, at the times you tell me are best for you. I will send your reminder cards to the address that you want me to use.
4. The purpose of our study is to find possible characteristics that may be linked to breastfeeding actions. We hope that finding out this information may help make moms and babies healthier.
5. We are asking approximately 135 subjects to participate in this study.
6. The study staff may withdraw you from the study at any time after explaining to you the reason for withdrawal. You may also withdraw from the study at any time with no consequences.
7. While on the study, you may feel some depression from some of the questions in the surveys, possibly questions associated with depression or abuse. You should discuss these feelings with the investigator, who may direct you to consult with your care provider or help you find someone to talk to.
8. If you agree to take part in this study, you need to know that, as a nurse, the investigator is required by state law to report child abuse or elder abuse. I am not asking you questions about child or elder abuse in this study. To the extent possible, I would discuss any report I am required to make with you prior to doing so.
9. If you agree to take part in this study, you may expect to benefit from taking part in this research to the extent that you are contributing to medical knowledge. There are no direct benefits to participation in this study.
10. You may choose to not participate with no fear of losing any WIC or other benefits. If you choose to participate but change your mind later, you may do so without fear of losing

any WIC or other benefits. You may also choose to participate, but may choose to not answer any question that you do not want to answer.

11. If you choose to participate, any information that you may give to the study staff will be kept confidential. All of your contact information is kept separate from the survey information. No names are on the surveys. Only the primary investigator has access to your contact information.

12. There is no cost to you to participate in this study.

13. There is a \$10 WalMart gift card that will be given to you each time you complete the survey sets (total 2 gift cards), and you will be eligible for a drawing of one-of-five \$50 WalMart gift cards if both survey sets are completed for participation in this study.

14. It is not the policy of the University of Missouri to compensate clinical research subjects in the event the research results in injury. The University of Missouri, in fulfilling its public responsibility, provides medical, professional, and general liability insurance coverage for any injury in the event such injury is caused by the negligence of the University of Missouri, its faculty or staff. The University of Missouri also will provide facilities and medical attention to subjects who suffer injuries while participating in research projects at the University of Missouri.

15. If you have any questions regarding your rights as a participant in this research and/or concerns about the study, or if you feel under any pressure to enroll or to continue to participate in this study, you may contact the University of Missouri Health Sciences Institutional Review Board (which is a group of people who review the research studies to protect participants' rights) at (573) 882-3181.

16. If you have any problems or questions, you may contact Tonya Eddy at 660-631-4718.

17. I would be happy to answer any questions that you may have.

18. A copy of this script will be given to you to keep.

Consent form has been read to the subject and subject has verbally agreed to participate:

Signature of Investigator

VITA

Tonya Eddy was born June 8, 1969 in Stuttgart, Arkansas. She graduated in 1989 from State Fair Community College to begin her nursing career, and earned her Baccalaureate degree in Nursing in 2001 from the University of Missouri, followed by her Master's degree in 2004. She started her doctoral degree in the fall of 2005, and completed the pursuit December 2015.

Tonya has been involved in nursing since 1989, working in multiple specialty areas from obstetrics to gerontology. She has been a nurse educator since 2004, teaching in accelerated, RN to BSN completion and traditional programs. Tonya hopes to continue to facilitate the growth of nursing students through education while collaborating on research projects to further the nursing profession.