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Predictors of Sustained Breastfeeding in Low-income Mothers

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I am submitting herewith a thesis written by Rebecca Gayle Renegar entitled "Predictors of Sustained Breastfeeding in Low-income Mothers." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Child and Family Studies.

Heidi Stolz, Major Professor

We have read this thesis and recommend its acceptance:

Hillary Fouts, Amy Rauer

Accepted for the Council:

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Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

Predictors of Sustained Breastfeeding in Low-income Mothers

A Thesis Presented for the
Master of Science
Degree
University of Tennessee, Knoxville

Rebecca Gayle Renegar

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Abstract

Despite recent increases in breastfeeding initiation in the U.S., exclusive breastfeeding rates at six months remain below Healthy People 2020 goals, especially for mothers who are young, less educated, low-income, or racial minorities. Demographic factors and some aspects of parenting identity, such as parenting self-efficacy and maternal role satisfaction, have been studied in relation to breastfeeding; however, little research has explored the roles of parental identity or the couple relationship in breastfeeding outcomes, especially in lower-income populations. Framed in role theory, this study examined data from lower-income women ($N = 70$) to investigate whether various parenting identity factors (parenting self-efficacy, maternal role satisfaction, and maternal role salience) or couple-related factors (relationship quality, couple conflict, and co-parenting alliance) predicted sustained breastfeeding. Results indicated that there were no differences between mothers who sustained breastfeeding and those that did not on the basis of demographics, parenting identity, or aspects of the couple-relationship. Mothers who reported their infants were born prematurely were less likely to sustain breastfeeding than mothers who had full-term infants. Despite non-significant results in the present study, disparities in breastfeeding rates exist along sociodemographic lines and measures should be in place to support mothers in meeting breastfeeding goals.

Keywords: breastfeeding, co-parenting, couple conflict, efficacy, infant health, low-income mothers, nutrition, relationship quality, role salience, role satisfaction

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CHAPTER 1: INTRODUCTION

Breastfeeding is often recognized as the healthiest option for both mothers and children (Stuebe & Schwarz, 2010). To promote breastfeeding rates in the United States, the U.S. Department of Health and Human Services (USDHHS, 2018) partnered with the Office of Disease Prevention and Health Promotion to create scientifically based health objectives, including specific breastfeeding targets, called the Healthy People initiative. These breastfeeding goals were guided by the recommendations of the World Health Organization (WHO, 2019) and the American Academy of Pediatrics (AAP, 2012) who both suggest a minimum of six months exclusive breastfeeding and continued breastfeeding beyond six months with the addition of complementary foods. Healthy People 2020 goals include: 81.9% of infants ever breastfed, 60.6% of infants breastfed at six months, 34.1% of infants breastfed at one year, 46.2% of infants exclusively breastfed at three months, and 25.5% of infants exclusively breastfed at six months (USDHHS, 2018).

Despite overall increases in breastfeeding within the U.S., breastfeeding targets are not being met equally by all populations. Specifically, the Centers for Disease Control (CDC; 2019) reports that the following populations have not met the 2020 target rates: women who identify as Black, have not attended college, are under 30, live at or below the federal poverty level, or are unmarried. To address these disparities, it is important to identify structural, intra-personal, and relational predictors of sustained breastfeeding so that we can understand the nuances affecting breastfeeding outcomes and plan and implement effective programmatic efforts.

When examining breastfeeding outcomes, researchers often report differences in terms of sociodemographic factors (Meedya, Fahy, & Kable, 2010). In addition, some elements of parenting identity, such as self-efficacy, have been studied in relation to breastfeeding (e.g.,

Bartle & Harvey, 2017; Glassman, McKearney, Sanslaw, & Sirota, 2014), although directionality of the relationship between the parental role and breastfeeding is not always clear (Chong, Biehle, Kooiman, & Mickelson, 2016). Despite theoretical support for a connection between breastfeeding and the parental role (Bulcroft, Forste, & White, 1993), research exploring maternal role satisfaction is limited (e.g., Cooke, Sheehan, & Schmied, 2003; Isabella & Isabella, 1994), and no studies focusing on maternal role salience, were located.

Another area that warrants further exploration is the role of the couple relationship. In a small sample of mothers likely to breastfeed (i.e., older, middle- and upper-class mothers), women identified their partners as both a primary support when breastfeeding beyond six months and a primary constraint when breastfeeding less than one month (Guyer, Millward, & Berger, 2012). Partner involvement and support is a frequently studied topic in breastfeeding outcomes (e.g. Hansen, Tesch, & Ayton, 2018; Mannion, Hobbs, McDonald, & Tough, 2013; Thomas, O’Roirdan, & Furman, 2017); however, research focusing specifically on the relationship between partners is limited (e.g., Falceto, Guigliani, & Fernandes, 2004; Gibson-Davis & Brooks-Gunn, 2007; Tombeua Cost et al., 2018). Therefore, the purpose of this study is to examine predictors of sustained breastfeeding in low-income mothers, with a specific focus on parenting self-efficacy, maternal role satisfaction, maternal role salience, and the couple relationship.

Theoretical Framework

This study considers behavioral influences from both the individual and dyadic level. Role theory will be utilized to examine how aspects of the mother’s role (e.g., self-efficacy, satisfaction, salience) influence behavior. Because the individuals comprising the family system are continually changing, both individual traits as well as dyadic and group dynamics need to be

considered when studying families (Rodgers, 1964). Therefore, Family Development theory will be used as lens through which to understand how couple-level interactions influence individual behavior.

Role Theory

Identity theory, or role theory, was developed from the symbolic interactionism framework (Stryker, 1980). Stryker proposed that individuals ascribe to many roles yet choose the most important role to fulfil with their behavior reflecting the specific role they are choosing to enact. Age, relationship status, and socioeconomic status (SES) can all affect role salience (Stryker, 1968), and role salience can increase when role behaviors are successfully performed and positively reinforced by significant others (Ervin & Stryker, 2001; Stryker & Burke, 2000). According to Stryker, roles become aligned with behavioral expectations that can vary within cultural or social situations. For example, mothers' behaviors with their infants (e.g., responsiveness, play, feeding) are likely to align with the norms of their culture or the social group (e.g., family, friends) with whom they are interacting (Bulcroft et al., 1993; DeVane-Johnson, Woods-Giscombé, Thoyre, Fogel, & Williams, 2017; White, Klein, & Martin, 2015).

Stryker (1980) also suggested individuals may adopt others' (or society's) identification of them by internalizing and enacting the behaviors that are expected of that assigned role. For instance, when women see that others (e.g., peers, significant others) place a high value on behavior specific to a role (e.g., breastfeeding mother) they would be more likely to enact or internalize that role (Bulcroft et al., 1993). Bulcroft et al. (1993) further suggested that role-related behaviors that have high levels of investment (i.e., require significant time and energy to enact or are integral to the role being enacted), are more likely to be performed when a role has

greater salience. Roles that are successfully enacted may therefore be more salient or more central to an individual's identity.

Maternal role attainment is a term suggested by Mercer (1986), based on her refinement of Rubin's (1984) work on maternal identity. This end state is characterized by the successful transition to the role of mother and is attained when the woman achieves a "sense of harmony, confidence, satisfaction in the maternal role, and attachment to her infant" (Mercer, 2004, p. 227). Mercer's (1986) work on maternal role attainment indicates that both greater satisfaction with the role of mother as well as higher levels of self-esteem and efficacy are related to what the author describes as appropriate maternal behaviors. This concept is also evident in the work of Tsushima and Burke (1999) who stated that mothers who lack a fully developed maternal identity will suffer from lower self-efficacy and enact less desirable parenting strategies. Stryker and Burke (2000) reinforced this idea with the statement that "self-efficacy especially may reflect successful role performance...feelings of authenticity may result from the ability to verify personal identities across roles and situations" (p. 293). Ervin and Stryker (2001) discussed the incorporation of self-esteem and identity theory and suggested that, in addition to a global sense of self-efficacy, role specific self-efficacy can be ascribed to each of an individual's identities (e.g., parenting self-efficacy, breastfeeding self-efficacy) and will directly impact performance of that role. Thus, we anticipate that women who place less value on the role of mother (i.e., low maternal role salience), take less enjoyment in mothering (i.e., low maternal role satisfaction), or report lower levels of parenting self-efficacy would be less likely to sustain breastfeeding than mothers with higher levels of maternal role salience, maternal role satisfaction, or parenting self-efficacy.

Role theory provides an opportunity to study the individual or internal motivations for behavior attached to a role with considerations for the meanings assigned to roles, feelings of self-efficacy, role salience, and role satisfaction. However, family development theory allows for examination of the potential impact of external influences including the couple or co-parenting relationships, complementary roles, and times of transition.

Family Development Theory

Family Development theory (FDT) takes a multi-level approach, focusing on individuals, relationships, families, and the institution of the family (White, Klein, & Martin, 2015). The family is comprised of individuals continually interacting with each other; therefore, it can be studied by looking at “the ways individuals or sets of individuals relate to one another within families, which becomes a system of dynamic interaction between actors” (Waller & Hill, 1951, p. 25). In addition, the family operates as an interdependent system, which means that changes in one aspect of the family will inevitably result in changes in other parts (Waller & Hill, 1951).

FDT also considers changes over time, called family time, including major transitions between life stages as well as ongoing changes in the individual, interactions between individuals, family structure, family roles, and social norms (White et al., 2015). Family time was originally based around events of the family life cycle and development tasks (Duvall & Hill, 1948) with specific attention given to the transition to parenthood which occurs both at an individual level (e.g., as a woman becomes a mother) and at the relationship or family level (e.g., as the couple become parents; White et al., 2015). The concept of critical role transitions was introduced by Rapport (1962) who hypothesized that a critical event (e.g., new parenthood) would result in a period in which the family and family members would experience first disarray and then reorganization of behaviors and interactions following the event.

If significant changes are occurring in families at the individual, dyadic, and group level during the transition to parenthood (Rempel & Rempel, 2011), it would make sense that this can be both an exciting and difficult time (Cowan & Cowan, 2003). Using these concepts, we would expect that a child's birth affects the interactions between parents, and these changing interactions between parents (e.g., conflict, co-parenting) will result in changes in family dynamics (e.g., parent-child relations). In addition, family development theory guides us to examine both individual and group level influences on behavior.

CHAPTER 2: REVIEW OF LITERATURE

Benefits of Breastfeeding

Three separate review articles have recently examined and summarized benefits for mothers and infants. Although some benefits (e.g., cognitive, socio-emotional) are not well-supported in the literature (Schulze & Carlisle, 2010), and there is not enough evidence to draw conclusions about all health outcomes (e.g., maternal cardiovascular disease, overall infant mortality; Ip et al., 2009), there remains “compelling evidence for differences in health outcomes” for breastfeeding mothers and infants (Stuebe & Schwarz, 2010, p. 160).

Stuebe and Scharz (2010) examined 50 epidemiological, case-control, and long-term nationally funded research studies (e.g., Women’s Health Initiative), including 12 meta-analyses of breastfeeding outcomes, and found evidence that infants who were breastfed had a fewer reported infections (e.g., gastrointestinal, respiratory infections), reduced the risk of obesity, diabetes, and cancer later in life, and reduced likelihood of sudden infant death syndrome (SIDS) in the first year of life. The authors also found evidence, including an analysis of 47 studies, that showed a reduced risk of breast cancer in mothers for each year of breastfeeding. Ip, Chung, Raman, Trikalanios, and Lau (2009) conducted a review that focused on fifteen specific outcomes and represented more than 400 individual studies (75 primary studies and 28 systematic reviews) and found similar conclusions. The authors reported a lowered risk of gastrointestinal and respiratory infection in infants as well as lower risks of obesity, diabetes, and SIDS. Benefits for mothers included decreased risks of diabetes and cancer. Similar results were reported by Schulze and Carlisle (2010); benefits included lower rates of illness for infants and lowered risk of cancer for mothers.

The benefits of breastfeeding are highest for infants who are exclusively breastfed longer than three months (Stuebe & Schwarz, 2010) and include a dose-effect, meaning longer breastfeeding is associated with increased benefits (Shulze & Carlisle, 2010). This supports both the American Academy of Pediatrics (AAP, 2019) and World Health Organization's (WHO, 2019) recommendation of a minimum of six months exclusive breastfeeding (until complementary foods can be introduced) and continued breastfeeding beyond the six-month mark.

Breastfeeding is promoted by most medical practitioners and health organizations and these "promotion efforts emphasize all of the positive outcomes associated with breastfeeding" (Shulze & Carlisle, 2010, p. 712). However, some researchers contend that the cognitive and psychological benefits of breastfeeding are over-stated (Shulze & Carlisle, 2010; Oster, 2019). Despite the promotion of breastfeeding, differences exist in breastfeeding rates within the U.S., especially along demographic lines. There is also some evidence that children who are breastfed are also raised in higher SES homes, which may be a significant contributing factor to outcomes often associated with breastfeeding (Oster, 2019).

Current Breastfeeding Rates

Among infants born in the United States in 2016 (the last year for which data are available) 83.8% were ever breastfed; 86.6% of White infants and 82.9% of Hispanic infants compared to 74% of Black infants. The percentage of infants who were exclusively breastfed at six months of age (as recommended by the AAP) dropped to 29.1% for White infants, 20.4% for Hispanic infants, and 20.7% for Black infants (CDC, 2019).

It is also important to note that breastfeeding varies significantly by state with the lowest rates of breastfeeding reported in the southeastern states. Since 2010, Tennessee has been ranked

in the bottom ten states for any and exclusive breastfeeding (CDC, 2019). However, from 2015 to 2016, breastfeeding rates saw significant increases within the state. For example, the percentage of infants ever breastfeed increased from 75.5% to 82.2%. Exclusive breastfeeding rates at six months saw smaller gains increasing from 22.7% to 24.5% in this timeframe (Tennessee Department of Health, 2020). Despite these increases, Tennessee breastfeeding rates remain below the national average, and three out of four mothers are not exclusively breastfeeding to six months, as recommended by the AAP (2012). Data for specific demographic groups is not available at the state level.

Predictors of Sustained Breastfeeding

Despite promotion of breastfeeding by medical and health organizations, breastfeeding remains a parenting choice that is influenced by many factors. Breastfeeding studies have identified numerous factors related to sustained breastfeeding and the cessation of breastfeeding. In the first few weeks after birth, mothers often identify specific breastfeeding challenges such as sore nipples, latching difficulty, and concerns over milk supply as reasons for cessation (Cooke et al., 2003; Hornsby, Gurka, Conaway, & Kellams, 2019; Rozga, Kerver, & Olson, 2015). Concerns over supply, lack of support, and returning to work are common challenges reported by mothers after six weeks (Mannion et al., 2013; Rollins et al., 2016). A review of breastfeeding literature from 2000 to 2009 identified structural factors that influence breastfeeding such as demographics (e.g., age, income, education, and relationship status) and modifiable factors such as breastfeeding intention, self-efficacy, and support (Meedya et al., 2010). Breastfeeding outcomes are often measured by breastfeeding initiation rates (i.e., whether breastfeeding begins soon after birth; Hornsby et al., 2019; Wojcicki et al., 2010), exclusive breastfeeding rates (i.e., whether breastfeeding is supplemented with formula; de Jager, Broadbent, Fuller-Tyszkiewicz,

and Skouteris, 2014; Glassman et al., 2014; Isabella & Isabella, 1994), or duration of sustained breastfeeding (i.e., whether breastfeeding is continued beyond an established time; Chong et al., 2016; Sullivan, Leathers, and Kelley, 2004; Tombeau Cost et al., 2018).

Parenting identity. One modifiable factor that has been examined in relation to breastfeeding outcome is the parenting identity. Two key aspects – parenting self-efficacy and maternal role satisfaction – have been shown to be related to breastfeeding outcomes although the direction of the relationship is unclear. Several studies reported a positive relationship between self-efficacy and breastfeeding. Shepherd, Walbey, and Lovell, (2017) examined the extent to which maternal emotions, including self-efficacy, played a role in breastfeeding outcomes. The authors reported that self-efficacy, as well as feelings of pride, were positively associated with exclusive breastfeeding beyond six weeks. This connection between efficacy and breastfeeding has also been studied in different racial groups. Glassman et al. (2014) reported that although exclusive breastfeeding rates decreased between birth and 4-6 weeks, urban Latina mothers reporting higher self-efficacy were more likely to be exclusively breastfeeding at the second time point. Alghamdi, Hroodynski, & Stommel (2017) reported differences in self-efficacy between racial groups but concluded that these differences did not predict whether mothers were engaging in any breastfeeding. Hispanic mothers, despite having lower self-efficacy scores than Black or White mothers, were more likely to breastfeed; a result the authors attributed to differences in cultural norms, specifically that there is an expectation of breastfeeding for Hispanic mothers (Alghamdi et al., 2017). However, as Alghamdi et al. (2017) did not examine within groups differences, it is unclear whether self-efficacy may have predicted breastfeeding within a specific racial group.

Ervin and Stryker (2001) suggested that levels of self-efficacy can be specific to roles and influence role behaviors. To examine this concept some researchers have narrowed their focus to self-efficacy that is directly related to breastfeeding. For example, Pollard and Guill (2009) asked mothers specific questions regarding their ability to cope with breastfeeding challenges and soothe their baby with breastfeeding as well as their confidence that their baby is getting enough milk. The authors reported that baseline breastfeeding self-efficacy scores, obtained within 48 hours of delivery, directly predicted whether mothers were engaged in any breastfeeding at six months. Similarly, Chong et al. (2016), who tested the relationship between breastfeeding duration, breastfeeding self-efficacy, and maternal mental health, reported that mothers with higher prenatal breastfeeding self-efficacy scores tended to breastfeed longer than mothers with lower prenatal breastfeeding self-efficacy scores. This correlation between breastfeeding self-efficacy and breastfeeding outcomes is evident in other studies as well (e.g., de Jager et al., 2014; Kilci & Coban, 2016).

It is possible that the relationship between breastfeeding and self-efficacy is bi-directional. When discussing the results of their study, Chong et al. (2016) hypothesized that the timing of the efficacy measure – before or after breastfeeding is initiated – is meaningful. The results of their study indicated that self-efficacy measured prenatally predicted breastfeeding outcomes, but efficacy measured at one-month post-partum seemed to be influenced by actual breastfeeding experiences. Mannion et al. (2013) also suggested that early positive breastfeeding experiences would lead to higher self-efficacy scores.

Although not as widely studied as self-efficacy, maternal role satisfaction, or the way a woman feels about being a mother (Mercer, 1986), has been studied in regard to breastfeeding. The Maternal Breastfeeding Evaluation Scale (MBFES) was created to evaluate “the mother’s

perception of success” with breastfeeding (Leff, Gagne, & Jefferis, 1994, p. 106). Leff et al. stated that, in the creation and testing of the measure, successful breastfeeding was positively associated with confidence in the maternal role. The MBFES was used by Cooke et al. (2003) in their attempt to describe the breastfeeding experiences of mothers in the first three months. Mothers who experienced breastfeeding problems in the first two weeks (e.g., fussy baby, poor latch, sore nipples, etc.) were more likely to report lower levels of maternal role satisfaction than mothers who did not have early problems (Cooke et al., 2003). Isabella and Isabella (1994) examined maternal role satisfaction in a small sample of White mothers. The authors reported that mothers with higher maternal role satisfaction were more likely to be breastfeeding in some capacity at one-month post-partum and also reported less frequent formula use than mothers with lower maternal role satisfaction. Hauck and Reinbold (1995) also identified breastfeeding as an important element influencing maternal role satisfaction in a study of Australian mothers.

Similar to self-efficacy, the direction of the relationship between maternal role satisfaction and breastfeeding is unclear. While some research reports that breastfeeding difficulties (Cooke et al., 2003) or success (Leff et al., 1994) alter maternal role satisfaction, others suggest that maternal role satisfaction has the ability to influence breastfeeding outcomes (Isabella & Isabella, 1994). Mercer’s (2004) review of maternal role attainment literature touched on this bi-directionality. The reviewed studies, the majority of which examined mothers longitudinally in the first year after their child’s birth, indicated that early difficult parenting experiences can shape a mother’s satisfaction with her role; however, there was also support for maternal identity predicting future parenting experiences.

Another potential aspect of parenting identity that may be a factor in breastfeeding outcomes is maternal role salience, or the importance a woman places on her role of mother

(Stryker, 1968). In an unpublished paper, Bulcroft et al. (1993) presented an integrative model of breastfeeding decisions and behaviors in which the propositions of role theory are heavily emphasized. Bulcroft et al. proposed that women who (a) have clear expectations of their role of mothering and breastfeeding (i.e., social and cultural behavior expectations), (b) receive positive reinforcement for their role, and (c) place importance on the role of mother and the related behavior of breastfeeding, will be more likely to invest the time and energy needed for breastfeeding. This concept was also presented by Stryker (1980), who hypothesized that commitment to fulfilling a role is tied to role salience. Despite this, no relevant articles were identified that examined maternal role salience and breastfeeding.

Meedya et al.'s (2010) review recognized psychosocial factors, including efficacy and support, as modifiable factors influencing breastfeeding. Similarly, Bulcroft et al. (1993) emphasized the maternal role as a significant factor in breastfeeding decisions. Therefore, it is important to examine the relationship between breastfeeding and these modifiable psychosocial factors (i.e., self-efficacy, maternal role salience, maternal role satisfaction) in order to inform meaningful breastfeeding intervention.

Relationship Factors

Breastfeeding is most often studied as an individual (i.e., mother) or dyadic (i.e., mother and child) behavior; however, there is empirical support for a spill-over model in which marriage quality and conflict impact parenting involvement and the parent-child relationship (Erel & Burman, 1995), especially during times of transition (Grych, 2002). Grych proposed such a model, which associates marital or intimate relationship stress with negative impacts on parenting behaviors. Similarly, it has been shown that better relationship quality is associated with more positive parenting behaviors (Jessee et al., 2010). Below I review relationship quality

and relationship conflict, both of which have been related to parenting behaviors and may impact breastfeeding behaviors as well.

Relationship quality. A mother's level of satisfaction with her romantic relationship has been shown to influence parenting behaviors (Jessee et al., 2010) and feelings about the mothering role (Malette, Futris, Brown, & Oshri, 2015). For example, mothers who are in supportive relationships have more positive perceptions of mothering than those who are not in supportive relationships (Malette et al., 2015) and marital quality has been shown to be positively related to maternal sensitivity (Jessee et al., 2010). Because relationship quality has been shown to predict mothering behaviors, it follows that it may also influence breastfeeding behaviors. This assumption was supported in a small sample of 32 married White mothers; Isabella and Isabella (1994) reported that pre-natal marital quality was the only measure that predicted breastfeeding at the nine-month time point. This hypothesis was also tested by Gibson-Davis and Brooks-Gunn (2007), who studied the impact of interpersonal relationships on breastfeeding. After controlling for a host of demographic factors (e.g., age, income, education) and paternal factors (e.g., paternal emotional support, father involvement), the authors reported that married mothers were most likely to initiate breastfeeding, followed by cohabiting mothers and single mothers. In addition, although they were not able to specify a mechanism, the authors suggested that the quality of the romantic relationship experienced by unmarried mothers may be related to their breastfeeding decisions.

The connection between relationship quality and breastfeeding is not well understood, and results from research studies are conflicting. There is some evidence that breastfeeding is associated with lower relationship quality, as in the longitudinal study of 222 mothers by Tombeau Cost et al. (2018). In this study, mothers who indicated they were breastfeeding at

three months also reported a decrease in their relationship satisfaction at six months. Similarly, Falceto et al. (2004) reported that women who had previously breastfed had the lowest levels of relationship satisfaction when their child was four years old, although post-hoc testing indicated there was not a significant connection between breastfeeding and relationship quality.

Conversely, Papp (2012), using longitudinal data from the Study of Early Childhood Care and Youth Development, reported that breastfeeding duration predicted relationship quality trajectory for mothers. Specifically, after controlling for earlier reported marital quality, sustaining breastfeeding for at least four months predicted a greater increase in relationship quality over time than for mothers who did not breastfeed at least four months.

Relationship conflict. Marital quality often reflects the “goodness of the relationship” (Norton, 1983, p. 143) from a partner’s self-report. This measure may not capture negative aspects of the relationship, such as conflict, which is commonly experienced regardless of relationship quality (Falceto et al., 2004). The measure of conflict frequency could indicate stress within the relationship, which has been shown to impact breastfeeding behaviors (Kitsantas, Gaffney, Nirmalraj, & 2019). Kitsantas et al., using the 2000-2009 PRAMS data, examined the effect of partner-related stressors (such as high levels of conflict) on breastfeeding outcomes. The authors reported that mothers were less likely to initiate breastfeeding and more likely to end breastfeeding by the time their child was four weeks old when they reported the presence of conflict. Relationship conflict can also result in feelings of distress, a topic studied by Sullivan et al. (2004). The authors reported that higher levels of relationship-related distress predicted a greater likelihood of breastfeeding cessation. Despite limited literature, the available studies all indicate that conflict or distress are related to earlier cessation of breastfeeding.

Co-parenting

Notwithstanding the romantic relationship, mothers and fathers engage in co-parenting, or the “jointly determined goals, co-parenting support, [and] joint parental involvement” (Abass-Dick & Dennis, 2018) required for raising children, to differing degrees regardless of their relationship status. A review of the literature conducted by Davidson and Ollerton (2020) identified four ways partners support breastfeeding including responsiveness with a specific focus on co-parenting. In a qualitative study of Canadian breastfeeding families, Rempel and Rempel (2011) also contend that fathers play a role in breastfeeding by being part of a parenting team. Many breastfeeding studies that include fathers tend to focus on the father’s breastfeeding views and knowledge (e.g., Hansen et al., 2018; Thomas et al., 2017) or support (e.g., Godbout, Goldsberry, & Franklin, 2014; Mannion et al., 2013) and articles examining the role of co-parenting in infant feeding, including breastfeeding, are limited (Thullen, Majee, & Davis, 2016).

Only two articles were identified that focused on breastfeeding and co-parenting. Thullen et al. (2016), in a sample of cohabiting and married biological parents, examined how co-parenting related to feeding decisions in the first three years of the child’s life. The authors reported that mothers typically took the lead in breastfeeding decisions, often without discussion with or input from the father. They also discuss that breastfeeding creates unique challenges for co-parenting that need to be examined further. Abass-Dick and Dennis (2018) examined parental perceptions of a co-parenting breastfeeding intervention. In this intervention, parents received a co-parenting workbook for joint use, access to videos and websites featuring strategies for co-parenting and father support of breastfeeding, as well as emails about common breastfeeding issues sent separately to mothers and fathers. Although this study did not test if the intervention had a measurable effect on breastfeeding initiation or duration, it did report that both

parents viewed the intervention positively. In addition, fathers appreciated being treated as an equal member of the breastfeeding team and having access to information related to their role in breastfeeding. The connection between breastfeeding outcomes and co-parenting, an important element of the interparental relationship, remains understudied. However, the inclusion of fathers and a focus on co-parenting or team parenting is a growing trend in breastfeeding interventions (Abbass-Dick & Dennis, 2018).

Demographics

In addition to individual, relationship, and co-parenting factors, demographic characteristics are often examined in breastfeeding research. Despite recent increases in overall breastfeeding in the U.S., certain populations fail to meet Healthy People 2020 goals or AAP recommendations (AAP, 2019; CDC, 2019). Specific reasons for cessation of breastfeeding for these groups are still not well understood (Hornsby et al., 2019) and studies often lack comparison or control groups, which limits the ability of researchers to make direct comparisons within groups (DeVane-Johnson et al., 2017).

Researchers that include mothers who are younger, lower-income, or identifying as racial minorities indicate that these individuals may have different influences on breastfeeding behavior than higher SES or White mothers. For example, young low-income mothers name their mother, rather than a partner, as their main support person and are likely to be influenced by live-in or close friends and relatives (Callan & Dolan, 2013; Hardison-Moody, MacNeil, Elliott, & Bowen, 2018). In general, adolescent mothers are less likely to plan to breastfeed than older mothers, with adolescent Black mothers having the lowest rates of breastfeeding intention. In addition, Alghamdi et al. (2017), whose study focused on racial/ethnic minorities, found that in

their population, there was no association between the generally acknowledged breastfeeding predictors of maternal knowledge of breastfeeding or efficacy and actual breastfeeding rates.

Research also shows different reasons for breastfeeding cessation in these populations. In a study of low-income mothers in North Carolina, Hardison-Moody et al. (2018) found that in addition to typical breastfeeding problems, including trouble with latching and misgivings regarding their milk supply (Hornsby et al., 2019), mothers lacked information and support from medical professionals and employers. Despite most women thinking breastfeeding was best for their infants, many Black and Latina mothers were embarrassed to breastfeed in public, mistrusted their bodies, and preferred the known ingredients and nutrients in formula (Hardison-Moody et al.; Kaufman, Deenadayalan, & Karpati, 2010). Similarly, Rozga et al. (2015) found a preference for formula or bottle feeding to be a leading cause for breastfeeding cessation in their low-income population. Results from these studies may suggest that infant feeding norms in these racial groups do not support breastfeeding or that breastfeeding is not well-supported for these groups.

In a review article conducted by DeVane-Johnson et al. (2017), employment and socio-cultural influences were cited as an explanatory factor for why Black mothers are less likely to breastfeed than both their non-Black peers and foreign-born Black women. For example, foreign-born Black women are often raised in environments where breastfeeding is normalized. The authors suggested that this early socialization regarding infant feeding, including exposure to family member's beliefs about breastfeeding, plays a significant role in feeding decisions (DeVane-Johnson et al., 2017).

In addition to previously discussed sociodemographic variables, a mother's residential and relationship status with the father can play a role in breastfeeding outcomes, perhaps due to

varying levels of support from their partner (Guzzo & Lee, 2008). Both Gibson-Davis and Brooks-Gunn (2007) and Guzzo and Lee (2008) used data from the Fragile Families and Wellbeing Study and reported that married women were more likely to breastfeed when compared with cohabiting couples or romantically involved couples who are not residing together, a finding that has been supported by subsequent research in other populations (e.g., Algamdi et al., 2017). This is consistent with the 2016 report of breastfeeding rates from the CDC (2019) in which married women had higher breastfeeding rates than unmarried women for every breastfeeding category measured including ever breastfed, breastfeeding at six months, breastfeeding at 12 months, and exclusive breastfeeding.

However, in Guzzo and Lee's (2008) nested design, other demographic variables (e.g., age, income) and support explained much of the variance in breastfeeding between married and cohabiting mothers indicating that, in their sample, maternal tendencies, social support, and SES advantages may explain why married women are more likely to breastfeed and breastfeed longer than unmarried women. In contrast, Gibson-Davis and Brooks-Gunn (2007) asserted that "differences between married and unmarried mothers do not simply result from the host of demographic characteristics measured" (p. 1115), and that relationship status plays a direct role in breastfeeding initiation. In their models, relationship status remained significant despite controlling for paternal support and demographics.

The Current Study

The review of existing literature provides inconsistent evidence for the impact of both parenting identity and couple relationship variables on breastfeeding outcomes. However, there is empirical and theoretical evidence that both the parenting identity (Cooke et al., 2003; Stryker, 1980) and the couple relationship (Jessee et al., 2010; Waller & Hill, 1951) influence other

parenting behaviors. Therefore, I am examining elements of parenting identity (parenting self-efficacy, role salience, and role satisfaction), the couple relationship (relationship quality, couple conflict), and co-parenting on sustained breastfeeding while controlling for relevant demographics. Sociodemographic markers (e.g., age, income, education, race) are often used to identify differences in breastfeeding rates. However, these factors do not lend themselves to intervention, and it is therefore important to examine modifiable influences on breastfeeding outcomes. This study will also evaluate previous associations with breastfeeding outcomes (demographics, parenting self-efficacy, maternal role satisfaction, relationship quality, and couple conflict) within a low-income population, as well as fill existing gaps in the literature regarding maternal role salience and co-parenting by examining the following questions.

RQ1: Does mothers' parenting self-efficacy, maternal role satisfaction, or maternal role salience predict sustained breastfeeding when controlling for relevant demographic variables?

RQ2: Does mothers' perception of relationship quality, couple conflict, or co-parenting alliance predict sustained breastfeeding when controlling for relevant demographic variables?

CHAPTER 3: METHODS

Sample

Participants in this study were recipients of Maternal, Infant, and Early Childhood Home Visiting (MIECHV) services, an evidence-based home visiting service using the Healthy Families America (HFA) model in the state of Tennessee. Additionally, they were participants in the Tennessee Dad (TD) program evaluation study. MIECHV is a federally-funded, free service for mothers to support the health and well-being of mothers and children (TN Department of Health, 2019). The HFA model is one of four models used in the state of Tennessee and aims to improve child outcomes by promoting positive parent-child relationships and healthy attachment (Healthy Families America, 2019). Mothers who meet MIECHV eligibility requirements are enrolled prenatally or within three months of their child's birth.

Eight home visiting (EHV) agencies operating at 11 agency sites across 50 counties in Tennessee held the contracts for all statewide MIECHV home visiting with the HFA model. All were invited to participate in the Tennessee Dad (TD) program, and all agreed. The TD program was a grant-funded supplement to early home visiting services with an express aim of engaging fathers in home visiting services, enhancing fathers' parenting attitudes, knowledge, and skills, and improving couple-related outcomes. Using cluster randomization, agency supervisors were assigned to treatment or control conditions. Each home visitor was then assigned to a condition based on their supervisor's assignment.

All 694 EHV clients who initiated services between July 2016 and July 2017 were screened by the agencies' Family Assessment Workers for TD eligibility. To be eligible for the TD program, each female client was required be the biological mother of the home visited baby and speak English. Additionally, each female client had to identify a "participating dad" who

could be (a) the biological father of the child living with the EHV client, (b) not the biological father of the child but the partner, boyfriend, or husband of the EHV client living with the EHV client, or (c) the biological father of the child who is living within 30 minutes of the EHV client and having had contact with the EHV client at least twice in the past 30 days. Residential biological fathers were included in the study when possible. If the residential biological father was not available non-biological residential fathers or non-residential biological fathers were included. Of the families screened, 424 families were found to be eligible. Once a family was deemed eligible, consent was obtained from the father or father figure first and the mother subsequently. Of the EHV families who were eligible, 282 mother and father pairs agreed to be contacted for participation in the TD program. After informed consent was obtained from both the mother and father, EHV clients were assigned to treatment condition (standard EHV curriculum plus TD curriculum) or control condition (standard EHV curriculum only) based on the assignment of their home visitor. For the treatment group, home visitors invited fathers to discuss one of 24 TD Topic Guides at each visit and provided a small gift. The TD Topic Guides addressed child health and safety, father-child interactions, and couple quality and co-parenting skills. Soon after informed consent was obtained, participants were contacted to complete the first survey (Time 1); 268 mothers completed this survey. Participants were contacted to complete a second survey (Time 2) approximately four months after completion of the Time 1 survey; 183 mothers completed this survey.

For the purposes of this study, the sample will be restricted to mothers: (a) whose babies were born at the time of the baseline survey ($n = 186$), (b) who indicated that they were exclusively breastfeeding ($n = 36$) or combination feeding ($n = 63$) at the time of the baseline survey, and (c) who subsequently answered infant feeding questions on the follow up survey.

Mothers in the resulting sample ($N = 70$; $n = 28$ exclusively breastfeeding at Time 1, $n = 42$ combination feeding at Time 1) were an average of 24.46 years old (range 16 - 40 years). Of the sample, 11.4% had obtained a Bachelor's degree or higher, 32.9% had earned an Associate's degree or trade certificate or attended college in some other capacity, 42.9% had a high school diploma or GED but no further education, and 12.9% had attended but not graduated high school. The sample was predominantly White (64.3%) with other participants identifying as Black (22.9%), Hispanic/Latino (4.3%), Asian/Pacific Islander (1.4%), or other (5.7%). Most participants in our study were married to (38.6%) or cohabiting with (40%) the father of their child. Of those not married or cohabiting (21.4%), approximately half were romantically involved on a steady basis with the child's father. More than half (55.7%) of mothers were not working at Time 2. Of mothers who were working, 22.9% were working less than 30 hours per week and 21.4% were working more than 30 hours per week. Fifteen mothers indicated their infant was born prematurely. Infants were between 0.57 and 78 weeks old at the Time 1 survey ($M = 12.90$, $SD = 15.84$) and between 10.86 and 93 weeks ($M = 28.87$, $SD = 15.70$) at the Time 2 survey. The study sample was similar to the full sample on all study variables with the exception of education level and relationship status. Mothers included in the study had higher levels education on average and were less likely to be cohabiting than those who were not included. Descriptive statistics for the study sample can be found in Table 1 and 2.

Table 1

Descriptive Statistics for Continuous Variables (N = 70)

Variables	<i>M</i>	<i>SD</i>	M full	SD full	Range	α
Infant age at Time 1 (weeks)	12.9	15.84	n/a		0 – 78	n/a
Infant age at Time 2 (weeks)	28.88	15.7	n/a		10.86 – 93	n/a
Mother's age (years)	24.46	5.2	23.37		16 – 40	n/a
Couple conflict (10 items)	1.47	0.46	1.4	.40	1 – 4	0.79
Relationship quality (4 items)	3.81	0.4	3.80	.43	1 – 4	0.87
Co-parenting alliance (12 items)	3.77	0.4	3.81	.33	1 – 4	0.92
Parenting self-efficacy (7 items)	3.58	0.44	3.60	.37	1 – 4	0.8
Role salience (8 items)	3.85	0.29	3.89	.22	1 – 4	0.82
Role satisfaction (8 items)	3.19	0.63	3.20	.59	1 – 4	0.81

Table 2

Sample Descriptives for Categorical Variables (N = 70)

Variables	<i>n</i>	%	% full sample
Infant gender			
Male	35	50	
Female	35	50	
Infant prematurity			
Yes	15	21.4	23.8
No	55	78.6	76.2
Relationship status			
Married	27	38.6	31.5
Cohabiting	28	40	52.8
Non-residential, steady	7	10	8.6
Non-residential on-off	3	4.3	3.4
N-R, friends	5	7.1	3.4
Employment status			
Not working/on leave	39	55.7	64
Working part-time	16	22.9	35.5
Working full-time	15	21.4	
Education			
Less than HS	9	12.9	20.1
HS/GED	30	42.9	53
some college	23	32.9	21.6
college degree	8	11.4	5.2
Race			
White	45	64.3	70.1
Black	16	22.9	22
other	4	5.7	7.5
Hispanic/LatinX	3	4.3	
Asian/Pacific Islander	1	1.4	
prefer not to answer	1	1.4	.4

Instrument and Procedures

After consent was obtained from both parents, trained researchers contacted mothers via telephone and administered a 45-minute baseline survey (Time 1). Mothers were contacted by telephone approximately four months after completion of the Time 1 survey to again provide data related to parenting and family functioning (Time 2). Participants received a \$40 gift card for each completed survey. The standard EHV curriculum included information on infant health and breastfeeding; however, both treatment and control groups received the same standard EHV curriculum. Data from participants in the treatment and control conditions were combined for the present study. It is not expected that the fathering intervention impacted participants' responses to the limited T2 measures employed in this study (mother's breastfeeding status and employment status); however, in the interest of thoroughness I tested for differences between conditions as described in the analysis section.

Measures

Demographic variables. Demographic information such as mothers' age, race, income, education level, infant prematurity, employment status, and relationship status were recorded at Time 1.

Age. Participants indicated their age in years. Age was available as a continuous independent variable and was used in that way.

Infant age. Participants were asked at Time 1 if their child had been born. Mothers who responded *yes*, were then asked the child's birthdate. Two new variables were constructed (T1 Infant Age in Weeks and T2 Infant Age in Weeks) by subtracting the child's birthdate from the survey date (T1 or T2, respectively) and dividing by 7 to calculate the child's age in weeks at both time points. Infant's age at Time 1 and Time 2 were used as continuous variables.

Infant prematurity. Participants were asked if their infant was “born pre-term, or well before the due date, and considered a preemie?” Responses were coded 0 (*no*), 1 (*yes*), and 2 (*don’t know*). All participants in the present study responded either “yes” or “no” and so the variable was used dichotomously.

Race. Participants were asked to indicate with which race they identified. Participants were allowed to respond freely and surveyors then selected from or prompted the participant to choose from a list of six options (*American Indian, Asian/Pacific Islander, Black, Hispanic, White/Caucasian, or Other*). Eight participants (11.4%) identified with one of the four racial categories other than White; one mother preferred not to identify race. Mothers who identify as Black typically have different breastfeeding outcomes than White mothers or other minority mothers (Alghamdi et al., 2017; McKinney et al., 2016); therefore, I created a categorical race variable as follows: 0 (*White/Caucasian; n = 45*), 1 (*Black; n = 16*), 2 (*other minority; n = 8*), and 7 (*prefer not to answer, n = 1*).

Education level. To measure education level, interviewers matched eight pre-determined categories ranging from 1 (*no formal schooling*) through 8 (*graduate degree*) with the mother’s response to the question “What is the highest grade, degree, or year of regular school that you have completed?” An initial review of the data supported collapsing the responses into the following categories: 1 (*less than a high school education; n = 9*), 2 (*high school diploma or GED; n = 30*), 3 (*Associate’s degree/some college/trade school; n = 23*), and 4 (*Bachelor’s degree or higher; n = 8*). This variable has an element of scaling and was therefore used ordinally.

Time 2 Employment Status. Participants were asked to indicate if they were working, on maternity leave, or not working at Time 2. Mothers who indicated that they were not working

were coded as 0 (*not working or on leave*). One participant indicated they were still on maternity leave at Time 2 and this participant was included with the not working group as the impact of employment on sustained breastfeeding is most likely to occur during the transition back to work (Rozga et al., 2015). Mothers who indicated they were working were further asked how many hours per week they worked. Mothers who reported they were working 29 hours per week or less were coded as 1 (*working part time*) and those that reported working 30 hours per week or more were coded as 2 (*working full time*). ; >30 hours per week) based on IRS (2020) guidelines.

Relationship status. At Time 1 mothers were first asked to respond *yes* or *no* to the question, “Are you currently married to (child’s father)?” Mothers who responded *no* were then asked to respond *yes* or *no* to the question, “Are you and (child’s father) living together now?” Fathers were considered to be non-residential if the mother answered “no” to both married and cohabiting questions. I constructed a *relationship status* variable as follows 1 (*married*), 2 (*cohabiting*), and 3 (*nonresidential*).

If the mother indicated that she was neither married nor cohabiting, the interviewer further asked the mother to choose which statement best described her relationship with the child’s father (*romantically involved on a steady basis, romantically involved in an on-and-off relationship, we are just friends, we hardly ever talk, we never talk to each other*).

Questions regarding relationship quality and couple conflict were only asked of mothers who were married to ($n = 27$), cohabiting with ($n = 28$), or romantically involved on a steady basis with ($n = 7$) the child’s father. Eight mothers were not romantically involved on a steady basis with the non-residential father. Therefore, these participants were not included in the relationship analysis but were retained in the regression analysis for parenting identity.

Sustained breastfeeding. Mothers were asked the question, “Is baby breastfed, formula fed, or both?” at each survey (Time 1 and Time 2). Only mothers who indicated they were breastfeeding in some capacity at Time 1 by answering “breastfed” or “both” were included in the present study. Mothers who answered “breastfed” or “both” at Time 2 were then coded as 1 (*sustained breastfeeding*). Mothers who indicated they were no longer breastfeeding at Time 2 by answering “formula fed” were coded as 0 (*non-sustained breastfeeding*).

Mothering identity variables. Mothering identity variables of parenting self-efficacy, maternal role satisfaction, and maternal role salience were recorded at Time 1.

Parenting self-efficacy. Parenting self-efficacy was measured using the seven questions that form the Efficacy subscale of the Parenting Sense of Competence Scale (Gibaud-Wallston & Wandersman, 1978). At Time 1, mothers were asked to respond to questions including “I meet my own personal expectations for expertise in caring for my child,” and “I believe I have all the skills necessary to be a good mother to my child.” Items were measured using a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). As suggested by Ohan, Leung, and Johnston (2000), scores for individual questions were averaged to create a scale score for parenting self-efficacy with higher scores indicating a greater sense of parenting self-efficacy. This measure showed good reliability with a Cronbach’s alpha of .80.

Maternal role satisfaction. Maternal role satisfaction was measured using eight items from the Parenting Sense of Competence Scale (Gibaud-Wallston & Wandersman, 1978). At Time 1 mothers were asked to respond on a scale from 1 (*strongly disagree*) to 4 (*strongly agree*) to questions including “Being a parent makes me tense and anxious,” and “Even though being a parent could be rewarding, I am frustrated now.” All items were reverse scored such that

a higher score indicates a higher level of maternal role satisfaction. Scores for all items were averaged to create a scale score. This measure showed good reliability ($\alpha = .81$).

Maternal role salience. The measure for maternal role salience was adapted from the Parenting Role Salience Scale (Fox & Bruce, 2001). In an attempt to improve reliability of the measure, four original questions were chosen for use, one was re-written, and three new questions were added for the TD survey for a total of eight questions. At Time 1, mothers were asked to respond to prompts such as “Being a parent makes me feel special somehow,” and “Being a mom is a big part of my life.” Items were measured using a 4-point scale from 1 (*strongly disagree*) to 4 (*strongly agree*). Scores for all items were averaged to create a scale score. This measure showed adequate reliability ($\alpha = .82$).

Couple variables. Questions about couple relationship quality, couple conflict, and co-parenting alliance were recorded at Time 1.

Couple relationship quality. Couple relationship quality was measured using four items from the six-item Quality of Marriage Index (QMI; Norton, 1983) collected at Time 1. Participants were asked to respond on a 4-point scale from 1 (*strongly disagree*) to 4 (*strongly agree*) to four questions about their relationship with their child’s father. The items were, “My relationship with my partner is strong,” “My relationship with my partner is stable,” “We have a good relationship,” and “I really feel like part of a team with my partner.” Norton explained that each item on the index can be used as an individual predictor, or items can be used together for a more robust measure. Therefore, scores from the four questions were averaged to create a scale score. This scale showed good reliability ($\alpha = .87$).

Couple conflict. Couple conflict was measured at Time 1 by asking mothers to report the frequency with which they disagree with the baby’s father about ten topics including chores,

money, spending time together, and fidelity. Participants responded on a 4-point scale of 1 (*never*), 2 (*sometimes*), 3 (*often*), and 4 (*almost always*). Scores for individual questions were averaged to create a couple conflict scale with higher scores indicating a greater amount of conflict in the relationship. This measure showed good reliability ($\alpha = .79$).

Co-parenting alliance. Co-parenting alliance was measured using 12 items from the 20-item Parenting Alliance Inventory (PAI) gathered at Time 1. This scale was developed “as a measure of a key component of a couple’s shared commitment and communication regarding child rearing” (Abidin & Brunner, 1995, p. 32). Abidin and Brunner reported that this scale was intended to eliminate the confounding influence of marital conflict by using narrowly focused questions specifically relating to cooperation and communication surrounding parenting. Questions included, “I feel good about my child’s other parent’s judgement about what is right for our child,” and “He and I are a good team.” Each question was measured on a 4-point scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). In a study of married and divorced parents with children between 1 and 19 years of age, Konold and Abidin (2001) found that all the items from the communication and teamwork subscale were unidimensional and measured the same underlying construct of general parenting alliance. Therefore, scores for this measure were averaged to create a scale score with higher scores indicating a higher level of co-parenting alliance. This measure showed high reliability ($\alpha = .92$).

Descriptive statistics for parenting identity and couple relationship variables can be found in Table 1.

Analysis

Data were examined for missing data points and it was found that less than 1% of all data were missing in what constituted an at random pattern; therefore, I allowed the statistical

software to perform listwise deletion where necessary (IBM, 2013; Ott & Longnecker, 2016). The data set was also evaluated for outliers and influential points.

In preliminary analysis, the two groups (sustained breastfeeding and non-sustained breastfeeding) were compared on sociodemographic variables (mother's age, race, education level, employment status, relationship status, infant's age at both times, and infant prematurity) to see if differences existed between the groups for each variable in order to determine which variables should be used as controls in the subsequent logistic regressions. Ordinal (e.g., educational level and employment status) and nominal variables (e.g., infant prematurity, race, and relationship status) were examined using chi-square tests of homogeneity. Independent samples t-tests were used for continuous variables (e.g., mother's age at Time 1 and infant's age at both times; Upton, 2017). According to Upton, if a variable is not statistically significant when comparing groups, it is unlikely that it will add to an overall regression model and can be eliminated to make the model more parsimonious and reduce the standard error. The results of these analyses indicated the only variable that differed for mothers who sustained and did not sustain breastfeeding was infant prematurity ($p < .05$). In the sample, 15 mothers reported that their infant was premature, and 40% of those premature infants still breastfed in some capacity at Time 2 compared to 69.1% of full-term infants. Thus, only infant prematurity was entered as a control for the regression models discussed below.

Next, I conducted a separate binary logistic regression using SPSS for each research question. Logistic regression is appropriate when the outcome variable is dichotomous (Ott & Longnecker, 2016). Specifically, for the first research question, I regressed sustained breastfeeding on parenting self-efficacy, maternal role salience, maternal role satisfaction, and infant prematurity (control variable). For the second research question, I regressed sustained

breastfeeding on relationship quality, couple conflict, co-parenting alliance, and infant prematurity (control variable). To interpret results, I set a null hypothesis that all slopes would be equal to 0 in the model. Results were reviewed to obtain a p -value for the full model as well as p -values and associated odds ratios for significant ($p < .05$) variables. Given that there may be a relationship among (a) parenting self-efficacy, maternal role satisfaction, and maternal role salience, or (b) relationship quality, couple conflict, and co-parenting alliance, I also checked for multi-collinearity between study variables. This produced a variance inflation factor (VIF) which can indicate a potentially problematic correlation between predictor variables when the value is greater than five.

CHAPTER 4: RESULTS

For the first research question, I examined whether parenting variables (parental self-efficacy, maternal role satisfaction, and maternal role salience) predicted sustained breastfeeding when controlling for infant prematurity. Linearity of the continuous variables with respect to the logit of the dependent variable was assessed via the Box-Tidwell (Box & Tidwell, 1962) procedure. The overall logistic regression model for the first research question was not significant. When examining individual predictors, infant prematurity, maternal role salience, maternal role satisfaction, and parental self-efficacy were all non-significant. VIF was examined to determine problematic multi-collinearity among parenting variables. All VIF values were less than five, indicating correlation between predictor variables was within acceptable limits.

For the second research question, I examined whether couple-related variables (couple conflict, couple relationship quality, and co-parenting alliance) predicted sustained breastfeeding when controlling for infant prematurity. Linearity of the continuous variables with respect to the logit of the dependent variable was assessed via the Box-Tidwell (Box & Tidwell, 1962) procedure. The overall logistic regression model for the second research question was not significant. When examining individual predictors, infant prematurity, couple conflict, couple relationship quality, and co-parenting alliance were all non-significant. Multicollinearity testing indicated that although there was some correlation between couple conflict, relationship quality, and co-parenting alliance, all VIF values were less than five, indicating an acceptable level of multicollinearity.

Table 3

Summary of Logistic Regression Results for Variables Predicting Sustained Breastfeeding for Mothers ($n = 70$), Controlling for Infant Prematurity

Predictor	<i>B</i>	<i>SE B</i>	<i>Exp(β)</i>	95% <i>CI</i>
Parenting Identity				
Self-efficacy	.41	.76	1.50	.34 – 6.69
Role satisfaction	-.41	.48	.66	.26 – 1.68
Role salience	-1.06	1.22	.35	.03 – 3.76
Constant	4.75			
χ^2	5.60			
<i>Df</i>	4			
Couple Factors				
Couple conflict	.56	.70	1.76	.44 – 6.95
Relationship quality	.84	1.22	2.32	.21 – 25.58
Co-parenting alliance	-.81	1.45	.44	.03 – 7.60
Constant	-.28			
χ^2	3.61			
<i>Df</i>	4			

Note: Control variable is infant prematurity coded as 1 for *yes* and 0 for *no* (not included in table). $Exp(\beta)$ = exponentiated *B*. Parenting variables (self-efficacy, role salience, role satisfaction) scored from 1 *low* to 4 *high*.

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

CHAPTER 5: DISCUSSION

The purpose of this study was to examine predictors of sustained breastfeeding in low-income mothers, with a specific focus on mothering identity and the couple relationship. Breastfeeding is often recognized as the healthiest option for both mothers and children (AAP, 2012; WHO, 2019). The American Academy of Pediatrics (AAP) recognizes numerous “short and long term medical and neurodevelopmental advantages of breastfeeding” and recommends exclusive breastfeeding for six months and continued breastfeeding – with complementary foods – for at least one year (AAP, 2012, p. e827). Despite recent increases in breastfeeding rates in the U.S., the CDC (2019) reports that breastfeeding targets are not being met equally by all demographic sub-populations. Although it is important to understand connections between breastfeeding and demographic characteristics, structural factors do not easily lend themselves to intervention; therefore, it is important to understand the role of more modifiable factors on breastfeeding outcomes.

In the present study, none of the study variables were found to significantly predict sustained breastfeeding. With regard to potential control variables, only infant prematurity was found to be significantly different for participants who did and did not sustain breastfeeding. Mothers reporting that their infants were born prematurely were less likely to sustain breastfeeding than mothers of full-term infants. Potential reasons for non-significant findings, including the limited sample size and power as well as lack of variability of study variables are discussed below.

Demographic Variables and Breastfeeding

Demographic variables, including maternal and child health, mother’s education and employment, age, and race are often associated with breastfeeding rates (Schulze & Carlisle,

2010). In our sample, the only demographic variable that was related to sustained breastfeeding was infant prematurity. Mothers who reported that their infants were premature, or born well before their due date, were less likely to sustain breastfeeding than mothers who reported their infant was born at term. Infants that are premature may have difficulty feeding, underlying medical conditions, or require a NICU stay; all factors that can interfere with a mother's ability to breastfeed (Briere et al., 2016; Guzzo & Lee, 2008; Rozga et al., 2015). Despite the significant relationship between infant prematurity and sustained breastfeeding, infant prematurity was not significant when included with other variables in the full regression models.

Results from the initial chi-square test indicated that sustained breastfeeding did not differ based on the mother's education level. This finding differs from the results of most published research. Higher levels of education have been associated with a greater likelihood of ever breastfeeding and longer durations of breastfeeding (Rozga et al., 2015), especially for women who have a four-year degree or higher (Guzzo & Lee, 2008). This association has been reported with a variety of samples. Beyond the association of education level with breastfeeding outcome in other studies, the mechanism connecting education with breastfeeding remains unclear.

There are three main considerations for the lack of association between education and breastfeeding in this study: changing norms, an underlying influence of SES, and sample size limitations. First, it is possible that formal education has historically provided mothers with access to information regarding infant health and breastfeeding as well as social support and normative exposure to breastfeeding. However, attitudes toward infant feeding are increasingly pro-breastfeeding (Swanson & Power, 2005), and access to breastfeeding information has become ubiquitous with advancements in technology. Thus, formal education may no longer

serve as the means through which breastfeeding information and norms are communicated. Second, the relationship between education and breastfeeding may be masking the influence of SES or income, a consideration that has not been fully explored in existing breastfeeding research. Given that our sample is comprised of individuals who qualified for federally-funded home visiting, it is relatively homogenous with regard to income. Therefore, SES related differences (including links between age, income, and education) may be less evident than in previous research. Finally, the size of the sample and corresponding statistical power may have caused acceptance of the null hypothesis when differences did in fact exist. With specific regard to education, the eight categories of education were collapsed into four categories; however, these individual categories still had small counts, potentially influencing the p value (Upton, 2017).

Results from our study also found that employment status at Time 2 did not predict sustained breastfeeding, which contrasts with previous research suggesting that a mother's return to work contributes to cessation of breastfeeding (Rozga et al., 2015). However, it is possible that the timing of the measure influenced these non-significant results. Some mothers who are returning to work prior to 12 weeks choose not to breastfeed at all (Rubin, 2016). Also, Rozga et al. (2015) reported that while mothers typically cited work as a reason for ending breastfeeding around four months, some cite it as a reason for cessation as early as four weeks. Infants in the present study were, on average, older than eight weeks old at Time 1, and most (84.1%) were more than four months old at Time 2. It is possible that many working mothers transitioned back to work prior to the Time 1 measure rather than between time points, as was expected. Also, mothers who chose not to breastfeed, or ceased breastfeeding, due to employment may have done so prior to the Time 1 measure and were not captured in our sample.

Contrary to expectations, the mother's age at Time 1 was not found to predict sustained breastfeeding. This contrasts with existing research reporting higher percentages of ever breastfeeding (Alghamdi et al., 2017) and longer durations of breastfeeding (Guzzo & Lee, 2008; Swanson & Power, 2005) for older mothers across a variety of samples. It has been suggested that age may be correlated with other demographic variables that are also associated with breastfeeding outcomes (e.g., marital status, education; Gibson-Davis & Brooks-Gunn, 2007). Normative attitudes, which are becoming increasingly pro-breastfeeding (Swanson & Power, 2005) may influence younger mothers to breastfeed at higher or similar rates as older mothers, which could explain the lack of association of maternal age with sustained breastfeeding in the present study.

Additional structural and demographic factors shown to be related to breastfeeding outcomes include relationship status and race. In our sample, no differences were found between mothers who sustained breastfeeding and those who did not based on relationship status or race. Existing research indicated married mothers are more likely to initiate and sustain breastfeeding when compared to mothers who are cohabiting or romantically involved but not residing with the father (Alghamdi et al., 2017; CDC, 2019; Gibson-Davis & Brooks-Gunn, 2007; Guzzo & Lee, 2008). One possible explanation for the lack of association between marital status and sustained breastfeeding in the present study is that differences in breastfeeding between married and unmarried mothers reported in other studies may be related to SES advantages that are likely to attend marriage (e.g., income, age, education level; Guzzo & Lee, 2008). As with age and education, the income differences typically found between married and non-married women, that might be responsible for associations with marital status and breastfeeding, may not be present in the current study.

Many studies that compare breastfeeding between racial groups find that Black mothers have the lowest rates of breastfeeding (DeVane Johnson et al., 2017); CDC (2019) reports also reflect this disparity. Chi-square tests indicated that race did not predict sustained breastfeeding in our sample; 64.4% of White mothers sustained breastfeeding compared to 68.8% of Black mothers and 50.0% of mothers identifying with another minority racial group. Our results indicating that sustained breastfeeding did not differ for racial groups supports those reported by Alghamdi et al. (2017) who had a sample similar to the one employed in the present study in regard to race, education, work status, and relationship status. Race is socially constructed and is not a causal factor of behavior (Burton, Bonilla-Silva, Ray, Buckelew, & Freeman, 2010); therefore, there may be other social or structural factors involved in breastfeeding disparities. As with previously discussed demographic variables, it may be that the differences seen between racial groups in other studies are masking SES influences. For example, Bai, Shahla, Wunderlich, and Fly (2011), indicated that the White mothers in their sample were more likely to be married, higher income, working full time, and with higher average education than other racial groups. Thus, their report that breastfeeding rates were higher for White mothers was likely influenced by relationship status, income, and education, a result that was not supported by our more homogenous sample.

Maternal Identity, Couple Variables, and Breastfeeding

In our analyses, neither the model examining parenting identity nor the model examining the couple relationship was significant when predicting sustained breastfeeding. In addition, none of the variables within the models were significant. It is possible that several methodological features including the measurement of breastfeeding, the timing of measures, the characteristics of the sample, the lack of variability in certain measures across the sample, and/or

design of the TD intervention as a father-focused program contributed to these non-significant results Each is discussed below.

First, the measurement of breastfeeding in our study may not have captured all breastfeeding experiences. Mothers were asked their current infant feeding practice and were not asked if they had ever breastfed, or at what point they may have stopped breastfeeding if they were currently formula feeding. Mothers were not asked the extent to which they were combination feeding; mothers who indicated they were combination feeding could have been supplementing in small amounts or feeding their infant mostly formula. Partial breastfeeding is a common practice (Swanson & Power, 2005) and should not be excluded from study. However, a more nuanced approach to measuring breastfeeding behavior including if mothers ever breastfed, the details of combination feeding, or a retrospective report of breastfeeding cessation would have allowed us to better explore whether our selected predictors are involved in breastfeeding decisions in some manner.

Second, the timing of measures may have made it more challenging to detect a significant relationship with sustained breastfeeding. More than half of the infants (52.2%) were older than eight weeks at Time 1, and mothers were at different points in their transition to motherhood when study variables were measured. Past research indicates evidence of bi-directionality in the relationship between self-efficacy and breastfeeding, making the timing of the self-efficacy measure – before or after breastfeeding is established – important (Chong et al., 2016). Glassman et al. (2014) reported that self-efficacy, measured in the first week after birth, predicted exclusive breastfeeding within the first six weeks. Shepherd et al. (2017) also reported a positive association between self-efficacy measured at six months' post-partum and breastfeeding behaviors within the first six months. It is possible that self-efficacy in their study may have been

a result of previous breastfeeding behaviors. The inability of self-efficacy to predict sustained breastfeeding in our study could indicate that higher levels of self-efficacy were already established based on early breastfeeding experiences. An earlier measure of parenting self-efficacy could prove to be predictive of future breastfeeding behavior.

Regarding the maternal role, Stryker (1980) and Bulcroft et al. (1993) suggested that role behaviors that are perceived as important are likely to be enacted and internalized. When enacted successfully or reinforced by others, these role behaviors can influence an individual's self-efficacy and satisfaction with the given role and make the role more salient to their overall identity. Time 1 surveys took place when infants were between one week and one year old; previous research has examined perceptions of the maternal role early in the post-partum period or at a standard time for all mothers. For example, Cooke et al. (2003) measured maternal satisfaction at two weeks' post-partum. Similarly, Isabella and Isabella (1994) collected data at one, four, and nine months post-partum; both studies reported an association between maternal satisfaction and breastfeeding. Had our study examined maternal role satisfaction early the post-partum period or at a standardized time for all mother we may have found that maternal role satisfaction predicted sustained breastfeeding.

The timing of measurement could also play a role in the non-significant findings in relation to couple variables. Again, couple variables were measured after initial breastfeeding had been established. Our results indicated that relationship quality did not predict breastfeeding at Time 2 when infants were, on average, four months old. This supports the results from Falceto et al. (2004) who measured any breastfeeding at four months post-partum and found that relationship quality did not predict breastfeeding at that point. Had our study measured initial

breastfeeding or assessed sustained breastfeeding at an earlier time point, we may have found that relationship quality predicted breastfeeding in our sample.

Results from our study showed no connection between couple conflict and sustained breastfeeding. Mothers in our sample indicated low levels of conflict ($M = 1.47, SD = .45$); mothers experiencing higher levels conflict in their relationship may not have initiated breastfeeding or may have ceased breastfeeding prior to the Time 1 measure. A comparison of breastfeeding and non-breastfeeding mother's reports of conflict at Time 1 or a measure of couple conflict prior to breastfeeding initiation may provide further clarification for this variable.

Our results also indicated that co-parenting alliance did not predict breastfeeding outcomes. Previous research examining co-parenting and infant feeding decisions is limited (Thullen et al., 2016), therefore, comparison to previous research cannot be made. However, there are two considerations regarding non-significant result for this variable. First, it is possible that mothers who lacked co-parenting support for breastfeeding may not have initiated breastfeeding or may have ceased breastfeeding prior to the Time 1 measure. Additionally, many low-income mothers identify their own mother, live-in relatives (who are not their partner), or close friends, as support (Callan & Dolan, 2013; Hardison-Moody et al., 2018); therefore, it is possible that some mothers in our sample were not co-parenting primarily with the father of their child or that the mother-father co-parenting relationship was not as influential for these mothers.

The characteristics of the sample (e.g., demographic makeup and size) could have contributed to non-significant results for study variables. Our analysis revealed no connection between self-efficacy and sustained breastfeeding which supports results reported by Alghamdi et al. (2017), who utilized a similar sample in regard to marital status, race, and education. Previous research reporting a connection between self-efficacy and breastfeeding has included

mothers that were predominately White, married, and employed (Shepherd et al., 2017), or focused particularly on a Latina population in which social norms promote breastfeeding (Glassman et al., 2014). Research reporting a relationship between maternal role satisfaction and breastfeeding (Cooke et al., 2003; Hauck & Reinbold, 1995; Isabella & Isabella, 1994) also had samples that were predominately White, educated, and married. No studies were located that examined the maternal role in low SES mothers. Our non-significant results may indicate that early breastfeeding behavior is not influential on parental identity in lower SES populations or that parental identity is not an important a factor influencing breastfeeding decisions in these populations.

Our analysis of couple variables and sustained breastfeeding were also non-significant. Previous research reporting positive associations between relationship quality and breastfeeding (Papp, 2012; Isabella & Isabella, 1994) examined samples of predominately White, higher SES mothers. Our sample was more aligned with that reported by Gibson-Davis and Brooks-Gunn (2007), with similar sample characteristics in regard to race, relationship status, and SES. Our results indicating no association between relationship quality and breastfeeding outcome support those reported by Gibson-Davis and Brooks-Gunn. It is possible that SES or the proportion of unmarried couples in our study influenced these non-significant results. Perhaps the effects of relationship quality on parenting behaviors are not as influential for unmarried mothers as those seen in married mother, especially as unmarried mothers often have other significant relationships (Hardison-Moody et al., 2018)

Results from our study also indicated that co-parenting alliance did not predict sustained breastfeeding. Although partners can affect breastfeeding outcomes (Guyer et al., 2012), mothers often take the lead in infant feeding decisions, sometimes without consideration to the father

(Thullen et al., 2016). In addition, many low-income mothers turn to close friends and live-in relatives (e.g., their own mother) for support following the birth of a child (Callan & Dolan, 2013; Hardison-Moody et al., 2018). This supportive familial relationship may displace the father as a provider of support and thereby diminish the correlation between breastfeeding and co-parent support. Further researcher examining the role of social support for breastfeeding and parenting outside of the romantic relationship for low-income mothers would be warranted.

The overall sample size of the study could also have affected results. Small samples, such as the one employed in this study, limit the ability to detect differences even if they happen to exist. According to Cohen (1988) the 70 participants in this study would only allow for detection of large effect size differences. Thus, it is possible that smaller effect size differences existed between the groups but were not detectable. Nonetheless, this study utilized existing data and the inclusion of a larger sample was not possible.

Finally, the lack of variability in study variables may have contributed to non-significant results. When reporting on questions related to parenting and the couple relationship, participants may succumb to social desirability, the desire to be seen in a positive light by the researcher (Carr & Springer, 2010), which could contribute to artificially inflated measurements of parenting identity and couple variables. The lack of variability may also stem from a selection factor related to the nature of the study, which was a father-focused parenting intervention, as discussed previously. Couples essentially self-selected into the study, which could indicate that their relationship quality and co-parenting alliance may be higher, and conflict lower, than in the general population.

Most mothers in our study indicated that they were efficacious in their parenting role ($M = 3.5$, $SD = .44$) with a range of 2.14 to 4.0. Mothers in our sample also reported high levels of

maternal role salience ($M = 3.85$, $SD = .29$) and role satisfaction ($M = 3.19$, $SD = .63$), indicating they place great importance on their role as mother and that they felt that they are doing a good job as a mother. As discussed above, higher levels of self-efficacy and maternal role salience may have been established based on earlier breastfeeding and parenting experiences and therefore not predictive of subsequent behavior. Additionally, the measures of mothering identity (parenting self-efficacy, maternal role salience, and maternal role satisfaction) capture broad parenting attitudes, and it is possible that these broad attitudes are less closely tied to breastfeeding practices than measures more specifically focused on breastfeeding.

Previous research examining the role of couple conflict and breastfeeding outcomes is limited; however, relationship distress and conflict has been shown to influence decisions to initiate and continue breastfeeding (Kitsantas et al., 2019). Our sample indicated low to moderate levels of conflict in relationships ($M = 1.47$, $SD = .46$) with a range of 1.0 to 2.9 and high overall relationship quality. All previous studies identified measured substantial conflict (e.g., divorce; Kitsantas et al., 2019) or distress in relationships (Sullivan et al., 2004). Therefore, it may be that the conflict experienced in this sample was not severe enough to influence infant feeding decisions.

Limitations

Despite the strengths of this study, which include within group comparisons among low-income mothers and the use of longitudinal data, several limitations exist, including a limited sample size, lack of variability in measures, and issues related to variable measurement.

First, the sample size was small, which limited the power of the analysis and increased the likelihood of a Type II error (Ott & Longnecker, 2016). As discussed previously, given a larger sample, we may have had the ability to detect smaller effects, and found that our variables

did significantly predict sustained breastfeeding. As reviewed in detail above, our sample included mothers who were exclusively breastfeeding or combination feeding at Time 1. Examining only exclusive breastfeeding mothers may have produced different results; however, we lacked sufficient sample size to do so. Similarly, based on sample size concerns, all participants were included despite variability in infant's age at Time 1. A consistent timing of the first survey (for example when all infants were under 6 weeks old) or a retrospective report of breastfeeding cessation could have more accurately captured duration of breastfeeding and allowed for time- or age-dependent comparisons of breastfeeding.

Another limitation to this study was the lack of a narrow, role-specific measure. Perhaps a more targeted measure of role behavior (Ervin & Stryker, 2001), such as breastfeeding self-efficacy (Chong et al., 2016; de Jager et al., 2014; Pollard & Guill, 2009) or the Maternal Breastfeeding Evaluation Scale (MBFES; Cooke et al., 2003; Leff et al., 1994), would have predicted sustained breastfeeding. The ability for broad parenting identity measures to predict breastfeeding behavior also assumes that breastfeeding is a salient role behavior (Bulcroft et al., 1993; Stryker, 1980); therefore, general measures of parenting identity may not have predicted sustained breastfeeding for women for whom breastfeeding was not as salient.

Finally, additional control variables could have been considered. Factors often cited when discussing infant feeding differences that were not used in this analysis include income, previous feeding experience, and supplementation (Rozga et al., 2015). Personal income information was only collected from working mothers, and household income was not available from the mother's report. Income information was obtained from fathers; however, not all fathers resided with the mother and some families may have had additional household income from other

sources (e.g., other working adults in the household) that was not reported, making an accurate calculation of household income for mothers challenging.

Previous feeding experiences and the use of formula supplements (e.g., combination feeding) are often associated with breastfeeding outcomes. Mothers who have never breastfed a previous child, or breastfed less than three months, are less likely to breastfeed future children (de Jager et al., 2014; Swanson & Power, 2005). Although our study did ask if mothers had other children, we did not measure previous infant feeding experiences. In addition, supplementation of breastfeeding with formula can be related to perceived or actual low milk supply and lead to early cessation of breastfeeding (Rozga et al., 2015). Despite having knowledge of whether mothers were exclusively breastfeeding or combination feeding at Time 1, these variables were not considered individually. Including a measure of previous infant feeding experience, or utilizing previous children or supplementation as control variables may have provided different results.

Summary

Our study examined breastfeeding in a sample of low-income mothers receiving federally funded home visitation. The ability to conduct within group comparisons among low-income women provides important insights into this group (DeVane-Johnson et al., 2017), which often behaves differently than higher SES groups of mothers. Our findings support previous research using similar samples (Alghamdi et al; 2017; Gibson-Davis & Brooks-Gunn, 2007). Specifically, sustained breastfeeding did not differ based on demographic factors, self-efficacy, or relationship quality. However, breastfeeding rates for unmarried mothers, mothers identifying as Black, and mothers without a college education are often lower than average breastfeeding rates (CDC, 2019). It is possible that differences in breastfeeding for the aforementioned groups are, in fact, a

product of income or SES and there may be other underlying structural predictors or social influences on breastfeeding outcomes apart from those in the present study.

This study makes an important contribution to the literature examining aspects of the mothering role and couple factors in relation to sustained breastfeeding. The lack of connection between self-efficacy and breastfeeding has been reported in other studies with demographically similar samples (Alghamdi et al., 2017), although known research has yet to examine maternal role salience and role satisfaction in a similar population. Non-significant results for mothering identity variables may indicate that either mothering identity is established early during the transition to parenting or is not significantly related to infant feeding decisions in this population. Our study also supports previous research reporting that relationship quality did not predict breastfeeding (Falceto et al., 2004; Gibson-Davis & Brooks-Gunn, 2007). Non-significant results for couple variables may indicate that mothers in this sample do not place as much emphasis on partner support as higher SES mothers, and that low levels of couple conflict do not influence infant feeding decisions.

Implications for Policy and Practice

This study provides many important contributions to the existing literature of breastfeeding. The results of this study can be used to identify important considerations for policy and practice at the federal, state, and local levels; especially when taken in combination with the reviewed body of literature regarding benefits of breastfeeding and reasons for breastfeeding cessation.

In the present study parenting identity variables did not predict sustained breastfeeding. It is possible that feelings surrounding the mothering role are positively influenced by early breastfeeding but, as infants age, breastfeeding becomes less relevant to the mothering identity.

As breastfeeding become less relevant it is less likely to be enacted, and formula use is more likely to be accepted. The trend of decreased breastfeeding as infants age is seen in the present study in which about half of all mothers were breastfeeding at Time 1 and two thirds of these mothers sustaining breastfeeding to Time 2; a decline in breastfeeding between birth and six months is also seen in U.S. and Tennessee data (CDC, 2019; TN Dept. of Health, 2020).

There are several ways to influence normative breastfeeding for older infants through policy and practice. First, the U.S. Food and Drug Administration (FDA), the entity that currently oversees formula companies, should more strictly adhere to the *WHO International Code of Marketing of Breast-milk Substitutes* (see Soldavini & Taillie, 2017) for all infants up to age one. WHO restrictions include limiting free formula samples, updating regulations regarding formula labeling and nutritional claims, and providing scientifically based information to parents regarding formula and breastfeeding. Second, to address breastfeeding challenges that often arise in the first six weeks (Rozga et al., 2015), federal and state insurance regulatory bodies should verify that lactation services are available to all mothers through private insurance coverage or public health programs, as mandated by the Affordable Care Act (ACA; Hawkins, Dow-Fleisner, & Noble, 2015).

U.S. or state level policy could provide support for parents at risk of discontinuing breastfeeding upon their return to work, which typically occurs six to eight weeks after birth (Rozga, et al., 2015). To begin, leave for new parents should a minimum of twelve weeks, with at least a portion of this being paid leave. Furthermore, employer requirements for pumping or breastmilk expression at work as outlined in the ACA should be maintained and expanded to provide paid break time to employees not currently covered (Hawkins, Dow-Fleisner, & Noble,

2015). Employers should also be advised to offer flexible working environments and schedules, including remote work or telecommuting where possible.

In addition to national and state policy, there are ways that hospitals, medical practitioners, and other service providers can influence infant feeding norms and support breastfeeding parents, especially lower SES parents and parents of premature infants. As mentioned previously, breastfeeding older infants may not be as important to parents as breastfeeding younger infants; however, the AAP (2012) recommends breastfeeding for a year or longer. Pediatricians should resist the temptation to recommend and normalize formula supplementation for breastfeeding parents through the first year and should instead promote continued breastfeeding and coordinate lactation consultation for parents and infants who require breastfeeding help. Increased training in the normal course of breastfeeding for pediatricians could also prove helpful to address this issue.

Lower SES mothers tend to have low rates of breastfeeding and should receive focused support to meet breastfeeding goals. Mothers classified as low-income qualify for, and often utilize, WIC services. Despite promoting breastfeeding, participation in WIC is associated with lower rates of breastfeeding (Francescon et al., 2016), perhaps because of perceived differences in financial benefits between formula and breastfeeding packages or the tendency for formula supplementation to replace breastfeeding. Mothers receiving WIC breastfeeding benefits should receive benefits equal to those receiving formula and should be educated regarding supplementation if they choose to combine formula and breastfeeding.

Parents of premature infants often face specific breastfeeding barriers. In the present study, mothers of premature infants were less likely to sustain breastfeeding than mothers of full-term infants. Establishing breastfeeding soon after birth can be challenging if an infant has

underlying medical issues or requires a NICU stay where direct breastfeeding is sometimes discouraged in place of bottle- or tube-fed fortified human milk (Briere et al., 2016). However, premature infants can be directly breastfed in the NICU and this practice is shown to increase the duration of breastfeeding after hospital discharge. Hospitals need to prioritize breastfeeding by making breast pumps available and allowing for direct breastfeeding within the NICU. This is especially important for lower-income mothers who may lack the resources to obtain a high-quality, hospital grade breast pump. Practitioners should continue support mothers to pump and establish a milk supply while their infants are in the NICU and should also encourage a goal of establishing breastfeeding prior to discharge while also providing follow-up lactation services.

Participants of this study were all receiving home-visitation services. The home visitor is uniquely positioned to support breastfeeding. First, home visitors can work with mothers to establish breastfeeding goals and provide information and external resources for breastfeeding. In addition, home visitors could receive training on helping mothers to overcome basic breastfeeding challenges (e.g., latching issues and concerns over milk supply; Rozga et al., 2015). In addition, both medical providers and home visitors should work to identify and be aware of who is co-parenting or supporting the mother at home and the influence of these individuals on breastfeeding decisions. Breastfeeding interventions more frequently include spouses or co-parents and emphasize the role they play in breastfeeding outcomes (Abass-Dick & Dennis, 2018); however, in the present study, relationship variables did not predict sustained breastfeeding. It is possible that couple-related variables that were not included in the study are more important in breastfeeding decisions or that other family members or close friends are influencing breastfeeding decisions in this population. Therefore, breastfeeding information

should be communicated to all individuals who could potentially influence breastfeeding decisions.

Additionally, it is possible that differences seen in breastfeeding rates for sub-groups (e.g., younger, lower levels of education, racial minorities) are, in fact, affected by income. The present study, which controlled for income by using a low-income sample, found no differences in sustained breastfeeding based on demographic factors. It is important to disentangle age, race, education, and income to better understand the direct effects of each as well as the potential interactions at play. Entities supporting health-based research (e.g., National Institutes of Health) should make exploring this phenomenon a priority in order to provide more effective health interventions for at-risk populations.

Future Research

The present study investigated elements of parenting identity and the couple relationship on sustained breastfeeding. Despite non-significant results, there remains theoretical support for the effect of both parenting identity and the couple relationship on infant feeding decisions. Future research should examine the influence of these factors on initial breastfeeding or compare mothers who are formula feeding, breastfeeding, or combination feeding to determine if differences exist between groups. Researchers should take care to design studies that have consistent timing of measures for all mothers and can accurately capture duration of breastfeeding. Results from this study also indicated that demographic differences (e.g., age, race, education, relationship status, employment) did not exist between mothers who sustained and did not sustain breastfeeding. Future research should qualitatively examine infant feeding behaviors in these sub-groups, with special consideration to breastfeeding cessation, to provide meaningful insights into the social and structural factors influencing infant feeding decisions for

these groups. Additionally, only the mother's reports of couple variables were utilized in the present study. The use of dyadic data, or the inclusion of reports of relationship quality and couple conflict from the father's perspective, could serve to corroborate or control for the mother's report leading to a more robust analysis.

Conclusions

The purpose of this study was to examine if elements of the parenting identity or the couple relationship predicted sustained breastfeeding in a sample of low-income mothers. Results indicated that none of the variables included significantly predicted breastfeeding at the Time 2 measure. However, disparities in breastfeeding for lower-income, racial minority, younger, and unmarried mothers are often reported. Therefore, supports need to be in place to assist these mothers in meeting breastfeeding goals and future research should continue to explore both the reasons for cessation in these groups as well as the intricate relationship between SES, demographic characteristics, and breastfeeding outcomes.

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Vita

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