EVALUATING A PRENATAL, BREASTFEEDING EDUCATIONAL VIDEO'S INFLUENCE ON PROTECTIVE RESOURCES, PSYCHOSOCIAL FACTORS, AND BREASTFEEDING OUTCOMES

by

Erin M. Godly-Reynolds

A thesis submitted to the faculty of
The University of North Carolina at Charlotte
in partial fulfillment of the requirements
for the degree of Master of Arts in
Psychology

Charlotte

2019

Approved by:

_____
Dr. Ryan P. Kilmer

_____
Dr. Charlie L. Reeve

_____
Dr. Margaret M. Quinlan

ABSTRACT

ERIN M. GODLY-REYNOLDS. Evaluating a prenatal, breastfeeding educational video's influence on protective resources, psychosocial factors, and breastfeeding outcomes. (Under the direction of DR. RYAN P. KILMER).

Barring major medical conditions (e.g., HIV), breastfeeding is widely recognized as the healthiest feeding option for babies. In the United States, approximately three out of every four mothers initiate breastfeeding; however, less than one in five mothers exclusively breastfeeds her child at six months. With that as the backdrop, this project aimed to evaluate a prenatal, educational video on breastfeeding as a cost-effective, feasible strategy for modifying factors that positively influence exclusive breastfeeding duration. Adult, primiparous (i.e., first-time) mothers in their third trimester of pregnancy (28 to 40 weeks gestation) and residing in the U.S. were recruited through an online crowdsourcing data acquisition platform.

At Time 1, 51 of 104 participants were assigned to the video intervention group; the other participants did not view the video. The 28-minute, professionally produced video, *BabyBabyOhBaby: Nurturing Your Gorgeous and Growing Baby by Breastfeeding*, was initially evaluated through a pre-post design within the video group. After watching the video, nearly all (98%) of participants said they would recommend the video to other women. In addition, relative to scores on measures completed before watching the video, participants endorsed significantly higher scores on a measure of breastfeeding self-efficacy and a scale assessing breastfeeding knowledge and attitudes. The degree of change in these scores reflected a large, positive effect for breastfeeding

self-efficacy, $t(50) = 7.01$, $p < .001$, $d = .98$, and a medium, positive effect for breastfeeding knowledge and attitudes, $t(50) = 3.76$, $p < .001$, $d = .53$.

A second data collection (Time 2) occurred when participants were four- to six-weeks postpartum; 26 video group and 16 no treatment group participants ($n = 42$) completed the surveys used at Time 1 (breastfeeding self-efficacy, breastfeeding knowledge and attitudes) as well as items added to assess peer support utilization and infant feeding practices. In this study, consistent with prior work (e.g., McQueen et al., 2011), breastfeeding included any breastmilk, regardless of how it was expressed. Results of a hierarchical multiple regression suggest that, after controlling for prenatal scores, women who reported higher levels of postpartum breastfeeding self-efficacy were more likely to continue breastfeeding exclusively; overall, postpartum breastfeeding self-efficacy and breastfeeding knowledge and attitudes accounted for 37% of the variance in exclusive breastfeeding duration. Adding peer support utilization and whether or not the video intervention had been viewed did not contribute meaningfully to the model or provide additional insights into women's exclusive breastfeeding duration. A subsequent path analysis provided evidence that the video indirectly, positively influenced exclusive breastfeeding duration through breastfeeding self-efficacy ($r = .20$) and breastfeeding knowledge and attitudes ($r = .22$). Taken together, these results suggest that utilizing high-quality, prenatal, educational videos on breastfeeding that positively influence women's breastfeeding self-efficacy and breastfeeding knowledge and attitudes may prolong exclusive breastfeeding duration in the U.S. Implications for healthcare providers are considered.

ACKNOWLEDGMENTS

This project would not have been possible without the unwavering support of my committee members, Drs. Ryan Kilmer (chair), Chuck Reeve, and Maggie Quinlan. A special thank you to Ryan for approving and then embracing this topic, believing in me always, and providing constructive feedback continually that significantly improved my writing. Chuck, you have taught me how to conduct research in a way that aligns with my values and upholds high standards for ethics and rigor; thank you for going above and beyond to offer your quantitative methodology expertise and mentorship throughout this process. Maggie, it has been my privilege to learn from your professional and personal experiences with this topic; thank you for being such an exemplary teacher, researcher, and feminist – I admire and appreciate you very much.

To David Stark and the women and families who shared their experiences, for creating such a beautiful and powerful video. Thank you for helping mothers all over the world, including the participants in this study, to initiate and continue breastfeeding. This project would not have been possible without your generosity and technical assistance.

To my mom, Christine Godly; thank you for independently researching what was best for your children and then tenaciously leading by example – breastfeeding and always putting us first. Your intellectual curiosity motivated me and modeled the way. To my sister, Kate Godly, and her healthy, brilliant, and beautiful, breastfed children. Thank you for helping so many families through La Leche League and as an IBCLC. Like many meaningful endeavors in my life, you were the inspiration for this project. Finally, to Michael Reynolds, my incredibly understanding, patient, and supportive partner; thank you for your unconditional love – you make everything possible!

TABLE OF CONTENTS

LIST OF TABLES viii

LIST OF FIGURES ix

CHAPTER 1: INTRODUCTION 1

1.1 Improving Breastfeeding Outcomes in the U.S.: Timing of Interventions 2

1.2 Modifiable Factors that Influence Breastfeeding 3

1.2.1 Breastfeeding self-efficacy 3

1.2.2 Breastfeeding knowledge and attitudes 4

1.2.3 Breastfeeding peer support 5

1.3 Benefits of Breastfeeding for Children 6

1.3.1 Physical health benefits 6

1.3.2 Cognitive and behavioral benefits 6

1.4 Health and Economic Benefits of Breastfeeding for Mothers 8

1.5 Guiding Theoretical Frameworks 9

1.5.1 Social cognitive theory 9

1.5.2 A Unique Population: First-time Mothers in the U.S. 10

1.6 Barriers and Facilitators to Breastfeeding 12

1.6.1 Knowledge and attitudes 12

1.6.2 Breastfeeding in the community 13

1.6.3 Social norms 14

1.6.4 Hospital practices and professional supports 14

1.6.5 Peer support and La Leche League 17

1.6.6 Educational videos 19

1.7 Summary and Conclusions 23

1.7.1 Social ecological model 25

1.7.2 Demographic characteristics of participants 26

1.7.3 WIC participants 26

1.8 Research Questions and Hypotheses 29

CHAPTER 2: METHODS 32

2.1 Participant Recruitment and Procedures 32

2.2 Participants 38

2.3 Measures 40

2.3.1 Inclusion criteria checks I and II 40

2.3.2 Satisfaction rating of the video 40

2.3.3 Breastfeeding self-efficacy 41

2.3.4 Mothers' knowledge and attitudes toward breastfeeding 42

2.3.5 Peer support utilization 43

2.3.6 Breastfeeding assessment 43

2.3.7 Demographic and additional participant information 44

2.4 Analytic Approach 45

2.4.1 Preliminary steps 45

2.4.2 Quantitative Analytic Strategy 45

CHAPTER 3: RESULTS 47

3.1 Preliminary analyses 47

3.2 Evaluating the Video: Within-group Results 52

3.3 Longitudinal (Short-term) Effects: Between-group Results 57

CHAPTER 4: DISCUSSION 65

4.1 Hypothesis 1: Perception and Immediate Impact of Video 66

4.2 Hypothesis 2: Theory-based Path Model 67

4.3 Study Limitations, Contributions, and Future Directions 70

REFERENCES 74

APPENDIX A: INCLUSION CRITERIA QUESTIONNAIRES 83

APPENDIX B: PARTICIPANT DEMOGRAPHIC AND PERSONAL FORM QUESTIONNAIRE 85

APPENDIX C: BREASTFEEDING ASSESSMENT QUESTIONNAIRE 95

APPENDIX D: SATISFACTION RATING OF THE VIDEO QUESTIONNAIRE 97

APPENDIX E: SAMPLE EMAIL REMINDER 99

LIST OF TABLES

TABLE 1: Basic characteristics of the respondents at Time 1 and Time 2 47

TABLE 2: Quality of the intervention according to video group participants at Time 1 52

TABLE 3: Changes in breastfeeding self-efficacy and breastfeeding knowledge and attitudes 56

TABLE 4: Descriptive statistics and correlations among study variables 58

TABLE 5: Hierarchical multiple regression equation for exclusive breastfeeding duration 60

TABLE 6: Path Model: Summary of Effects 64

LIST OF FIGURES

FIGURE 1: Hypothesized direct and mediated pathways 31

FIGURE 2: Study's procedural steps 37

FIGURE 3: Data collection time periods 39

FIGURE 4: Self-reported knowledge of breastfeeding at Time 1 54

FIGURE 5: Level of change in self-reported knowledge of breastfeeding at Time 1 55

FIGURE 6: Standardized path coefficients 62

CHAPTER 1: INTRODUCTION

Because of breastfeeding's numerous health benefits for baby and mother, multiple sources have consistently supported it as the optimal choice – the gold standard – for infant feeding (barring major medical issues, e.g., HIV, or other challenges; Eglash, Montgomery, & Wood, 2008; James & Garza, 2012; Labbok, 2001). However, many barriers exist that prevent first-time mothers in the U.S. from initiating breastfeeding, and from following the American Academy of Pediatrics' (2005) evidence-based recommendation to continue breastfeeding (i.e., continuation or duration) for at least one year. Even though exclusive breastfeeding is recommended for at least six months (World Health Organization [WHO] & UNICEF, 2003), in the U.S. approximately 30% (29.3 +/- 1.8) of breastfed infants also receive formula to supplement breastmilk before they are three-months-old (Centers for Disease Control and Prevention [CDC], 2012). While some risk factors (influencing breastfeeding initiation or continuation) are static (e.g., the age of the mother), others are modifiable. For example, effective interventions have been found to increase breastfeeding initiation rates and duration by targeting psychological factors (e.g., breastfeeding self-efficacy) that predict favorable breastfeeding outcomes (de Jager, Broadbent, Fuller-Tyszkiewicz, & Skouteris, 2014; Dodt, Joventino, Aquino, Almeida, & Ximenes, 2015; Glassman, McKearney, Saslaw, & Sirota, 2014; Kingston, Dennis, & Sword, 2007).

This project aims to add to the literature on cost-effective, feasible interventions to modify factors that positively influence breastfeeding duration. The present study evaluated the possible influence of a professionally-produced video that was created to educate pregnant women and their families on the health benefits and realities of breastfeeding by featuring "real people who wanted to share the joy they've found in breastfeeding" (Stark, 2011). Endorsed by La Leche League, an organization with trained and accredited volunteers who provide peer support for pregnant and breastfeeding women (CDC, 2014), the video also pre-emptively answers common questions and encourages viewers with additional questions or difficulties to follow-up with a La Leche League volunteer or International Board Certified Lactation Consultant.

To better understand the value of this specific video intervention's possible effects, this project tested hypothesized, modifiable factors identified in the literature as mechanisms through which effective interventions contribute to higher rates of exclusive breastfeeding continuation. Specifically, this project evaluated the perceived quality of this prenatal, breastfeeding educational video, as well as its immediate impact on first-time mothers' ratings of their breastfeeding knowledge and attitudes, and breastfeeding self-efficacy. Furthermore, this study followed-up with mothers to assess their utilization of peer supports highlighted in the video, their breastfeeding self-efficacy, breastfeeding knowledge and attitudes, and their infant feeding behaviors four- to six-weeks postpartum.

2.4 Improving Breastfeeding Outcomes in the U.S.: Timing of Interventions

While mothers vary regarding the point in time when they make initial breastfeeding decisions (e.g., prior to conception; early in pregnancy), a recent study

indicates that their feeding decisions may fluctuate during pregnancy (Risica & McCausland, 2017). The authors of that same work (Risica & McCausland, 2017) assert that more research is warranted to determine when women make feeding decisions during pregnancy, and that notion could be extended to better understand the timing and influences upon the range of choices mothers face regarding the feeding of their infant or young child. For instance, beyond that initial decision whether or not to initiate breastfeeding, mothers must consider additional decisions, such as how long to continue nursing. Research indicates that mothers make these ongoing, specific infant feeding decisions after childbirth, based on their experiences and available support (Andrews, 2014).

In the U.S., recent rates of initiation are moderate (i.e., 76.5% for "ever breastfed"; CDC, 2013, 2014). At the same time, low breastfeeding continuation rates reveal that, in addition to efforts focused on increasing the initiation rate to 100% of mothers who can breastfeed (i.e., no medical impediments that prohibit it), interventions are needed that help mothers sustain this positive health behavior. Increased emphasis on duration is pertinent – by six months postpartum, the national average drops to 16.4% for exclusive breastfeeding and 49.4% for any breastfeeding (CDC, 2013, 2014).

1.2 Modifiable Factors that Influence Breastfeeding

1.2.1 Breastfeeding self-efficacy

The likelihood of behavior initiation and maintenance is positively correlated with the strength of one's personal efficacy beliefs, which reflect a person's self-reported capability to produce desired effects through her actions (Cleveland & McCrone, 2005). Conceptualized as the confidence an individual has regarding the management of one's

thought, emotion, motivation, action, and environment, these efficacy beliefs (also described as self-efficacy) constitute an essential factor in analyzing breastfeeding behavior, because motivation and perseverance are required to initiate and sustain a positive health behavior (Bandura, 2004; Reeves & Woods-Giscombé, 2015). In a similar vein, researchers (e.g., Glassman, McKearney, Saslaw, & Sirota, 2014) described breastfeeding self-efficacy as a modifiable factor associated with exclusive breastfeeding, and others (e.g., Cleveland & McCrone, 2005) recommended assessing perceived self-efficacy to inform education, intervention, and promotion efforts aimed at increasing breastfeeding rates and duration to improve the health of children.

1.2.2 Breastfeeding knowledge and attitudes

A diverse range of factors can influence breastfeeding initiation and continuation. For instance, mothers sometimes lack prior knowledge regarding breastfeeding techniques, such as how to hold and position a baby at the breast or how to achieve an effective latch (Jones & Spencer, 2007; US Department of Health and Human Services [USDHHS], 2011). Furthermore, some first-time mothers do not have accurate knowledge about infant feeding benefits, while others have developed negative attitudes and beliefs that remain prevalent in the U.S. As one case in point, only 25% of the U.S. public believes that feeding a baby with infant formula instead of breastmilk increases the chances the baby will get sick (USDHHS, 2011). According to the Surgeon General's Call to Action to Support Breastfeeding (2011), increasing mothers' knowledge and skills relative to breastfeeding, and positively influencing their attitudes towards breastfeeding, are appropriate goals for educating mothers about breastfeeding.

1.2.3 Breastfeeding peer support

Research conducted over the past sixty years cites the importance of successful role modeling and lay support, which remains hindered by the low occurrence of breastfeeding in the U.S. A considerable body of work indicates that peer supports increase the likelihood of breastfeeding and, specifically, breastfeeding continuation (Cleveland & McCrone, 2005; Dennis, 1999; Gau, 2004).

Researchers have found a positive relationship between peer support, specifically through La Leche League (LLL) participation, and increased breastfeeding rates: The utilization of peer support is associated with an increased likelihood of breastfeeding and, critically, breastfeeding continuation (Cleveland & McCrone, 2005; Dennis, 1999; Gau, 2004). In fact, the CDC's Annual Breastfeeding Report Cards recognize the specific impact of LLL and include a category for the number of LLL Leaders per 1,000 live births in the U.S. (CDC, 2014). The CDC (2014) asserts that this indicator, which was 0.90 in 2014, represents an important element of comprehensive breastfeeding support, and is an estimate of the availability of breastfeeding assistance in the U.S.

There has not yet been a formal evaluation of the video that was utilized as an intervention in the present study. To address this gap, the video's effectiveness was examined in terms of the video's impact on participants' breastfeeding knowledge and attitudes and breastfeeding self-efficacy, as well as the video's impact on participants' infant feeding practices. Additionally, it was expected that video viewership and peer support utilization would be positively associated with higher levels of postpartum breastfeeding self-efficacy and breastfeeding knowledge and attitudes, which would predict exclusive breastfeeding continuation.

1.3 Benefits of Breastfeeding for Children

1.3.1 Physical health benefits

According to the World Health Organization (WHO), appropriate feeding practices are crucial in infants' and children's ability to achieve optimal physical health and cognitive outcomes. In fact, their Global Strategy, developed collaboratively with experts around the world, recommends exclusive breastfeeding during at least the first six months of life (WHO & United Nations Children's Fund [UNICEF], 2003). Similarly, in the United States, the CDC's Division of Nutrition, Physical Activity, and Obesity has identified protecting, promoting, and supporting breastfeeding as crucial strategies for improving the health of mothers and their children (CDC, 2013). These recommendations are informed by the overwhelming evidence that nothing has been developed to date (e.g., formula) that equals breastmilk from a health perspective. In fact, introducing infants to formula, or any food to supplement breastfeeding, has been linked to a range of infant and child health complications, including: diarrhea and vomiting; asthma; childhood obesity; Type 2 diabetes; poor school performance; reduced productivity; impaired intellectual and social development; and even morbidity and mortality (USDHHS, 2011; WHO, 2013). Beyond such differences, research has also documented long-term public health benefits of breastfeeding, such as reduced rates of hypertension, cardiovascular disease, hyperlipidemia, and some types of cancer (Binns, Lee, & Low, 2016).

1.3.2 Cognitive and behavioral benefits

In addition to physical health benefits, research has supported associations between breastfeeding and cognitive and behavioral benefits for children. As one case in

point, compared to infants who were never breastfed or were breastfed for less than six months, infants breastfed for at least six months exhibited enhanced neurological functions (e.g., general, verbal, quantitative, memory, perception, and motor) at age four, and a range of familial factors did not explain these differences (e.g., maternal education, IQ, social class; Julvez et al., 2013). Another study found that all breastfed children (i.e., born full term or preterm) were one- to six-months ahead of children who were never breastfed, based on five-year-olds' cognitive development (i.e., scores on measures assessing naming vocabulary, pattern construction, and picture similarities), and there was an even more significant impact of breastfeeding on cognitive outcomes among children born preterm (Quigley et al., 2012).

While fewer studies have been conducted examining the influence of breastfeeding on early childhood behavioral problems, there is evidence to suggest that children breastfed for at least four months have reduced odds of behavioral problems and diagnoses during early childhood (Heikkilä, Sacker, Kelly, Renfrew, & Quigley, 2011). For example, one study found an association between breastfeeding (i.e., duration of at least four months) and a reduced risk of behavioral problems related to attention and hyperactivity, and higher levels of social competence, at age four (Julvez et al., 2007).

In addition, there is evidence that the influence of breastfeeding may even extend into adolescence and affect various dimensions of mental health. For example, a fourteen-year longitudinal study conducted in Australia found that breastfeeding for less than six months was an independent predictor of mental health problems (assessed by the Child Behavior Checklist) through childhood and into adolescence (Oddy et al., 2010). Furthermore, a study conducted with participants in the U.S. found that children in

preschool and kindergarten at high genetic risk of externalizing behavior (e.g., physical aggression; tantrums) who breastfed for very long durations (e.g., at least twelve months) exhibited noticeably low levels of externalizing behavior (based on the Preschool and Kindergarten Behavior Scales – Second Edition [PKBS-2]; average age of 5 years and 9 months; Jackson, 2015). This finding contributes to the literature on the long-term, behavioral impacts of breastfeeding, because externalizing behavior in childhood is a crucial risk factor for crime and delinquency later in life (Jackson, 2015).

1.4 Health and Economic Benefits of Breastfeeding for Mothers

The advantages of breastfeeding extend beyond physical and mental health benefits for breastfed children. For mothers, breastfeeding is associated with reduced risks of ovarian and breast cancer, relative to mothers who did not breastfeed (American Academy of Pediatrics, 2005; Galson, 2008; Mathur & Dhingra, 2014; USDHHS, 2011). From a financial perspective, these health outcomes affect mothers immediately and impact children in the longer-term. For example, cost-effectiveness analyses suggest that the consequences of breastfeeding infants for at least three months include healthcare savings of $300 during the first year, a difference mainly attributable to formula-fed infants' higher rates of diagnoses of otitis media, respiratory infections, and gastroenteritis (Eglash et al., 2008). This figure does not include the frequently accompanying lost wages due to absenteeism when mothers in low-paying, hourly employment need to miss work to care for their sick child. In the United States alone, estimates suggest that $10.5 billion per year would be saved, and 741 deaths prevented if 80% of infants were exclusively breastfed for at least six months (Bartick & Reinhold, 2010).

1.5 Guiding Theoretical Frameworks

1.5.1 Social cognitive theory

Research aiming to understand infant feeding choices and intervene effectively can be framed using a social cognitive lens because this theory supports the notion that beliefs of personal efficacy (i.e., self-efficacy) play a central role in personal change. A significant body of work suggests that the likelihood of behavior initiation and maintenance is positively correlated with the strength of one's self-efficacy or personal efficacy beliefs.

Thus, based on Bandura's social cognitive theory, self-efficacy may play a vital role in mediating successful breastfeeding practices (Glassman et al., 2014). In turn, healthcare providers would gain an improved ability to educate, intervene, and promote the health of children by increasing breastfeeding rates and duration if women's perceived self-efficacy of breastfeeding was assessed "at any time" (Cleveland & McCrone, 2005).

For example, measuring pregnant women's breastfeeding self-efficacy would inform healthcare providers of the level of importance (on an individualized basis) of offering and/or referring mothers to prenatal, breastfeeding intervention opportunities (e.g., education, peer support resources). Similar to how primary care physicians utilize results from measures screening for depression to inform patient care (see, e.g., Hirschtritt & Kroenke, 2017), mothers with low breastfeeding self-efficacy scores could be identified to prompt their healthcare providers (e.g., OBGYN) to prioritize this topic during prenatal care visits. In addition, because challenges can arise for mothers at various times after they have begun breastfeeding (Jones & Spencer, 2007; USDHHS,

2011), it would also benefit mothers if healthcare providers assessed their level of breastfeeding self-efficacy during the postpartum period (i.e., at least for the first six months) to make these barriers known. With this information, healthcare providers would be well-positioned to inform new mothers about available resources and supports, which in turn could increase their level of confidence in their ability to continue breastfeeding.

In a similar vein, self-efficacy is an important factor for researchers analyzing breastfeeding disparities because motivation and perseverance are required to initiate and sustain a positive health behavior (Bandura, 2004; Reeves & Woods-Giscombé, 2015). Self-efficacy, therefore, can help provide a conceptual foundation for hypotheses about why some women do not continue to breastfeed (Cleveland & McCrone, 2005). In addition, consistent with the broader social ecological perspective, social cognitive theory posits that human behavior should be viewed in context and under multiple levels of influence (Webster, Russ, Vazou, Goh, & Erwin, 2015). Thus, social cognitive theory provides a basis for understanding why the following factors have been found to predict breastfeeding self-efficacy and breastfeeding outcomes: personal success; psychological responses (e.g., disgust at the thought of breastfeeding due to cultural norms regarding sexuality); vicarious experience; emotional support, and encouragement (Furman & Dickinson, 2013; McCarter-Spaulding & Gore, 2012).

1.5.2 A Unique Population: First-time Mothers in the U.S.

Bandura (1997) proposed personal mastery experiences as one of four sources of self-efficacy. This holds particular relevance for the breastfeeding context. Previous experiences (i.e., successfully breastfeeding older children) can lead to the expectation of

repeated future good outcomes, which may partially explain Nichols and colleagues' (2007) findings that rates of breastfeeding and mean breastfeeding self-efficacy scores among primiparous women are considerably lower than those of their multiparous peers (Nichols, Schutte, Brown, Dennis, & Price, 2007). In line with self-efficacy theory, multiparous peers' prior performance mastery through at least some successful breastfeeding behaviors (e.g., initial latching success; some breastfeeding, even if goals of exclusivity and/or duration were not met) predicts enhanced breastfeeding self-efficacy compared to first-time mothers who never have before had the opportunity to breastfeed (Bandura, 1997; Dennis, 1999; Nichols, Schutte, Brown, Dennis, & Price, 2007).

In light of differences, found or presumed, there is a tradition in the breastfeeding literature of treating primiparous and multiparous women as unique groups because challenges for each group are fundamentally distinct. For example, coping with the demands of a second baby (e.g., changing roles within the family) is relevant to multiparous women. However, the nature of these challenges is different from, for example, the anxiety that primiparous women may experience because they never before had the opportunity to attempt this behavior and subsequently overcome any specific, physiological challenges (Ewing & Morse, 1988). Therefore, much of the research on the psychological aspects of breastfeeding has treated primiparous mothers as a unique, target population to isolate and better understand factors that determine the initial parental choice of infant feeding method (Manstead, 2007). Two noteworthy sets of findings are that (1) parental attitudes toward and beliefs about breastfeeding are strongly associated with a woman's decision to initiate and continue breastfeeding, and (2)

perceived support from both professionals and laypersons positively impacts mothers' breastfeeding decisions and behaviors (Manstead, 2007).

While many mothers in the U.S. continue to perceive formula feeding as a standard or normal practice, the evidence overwhelmingly supports breastfeeding as healthier than any form of human milk substitute (HMS; Dennis, Hodnett, Gallop, & Chalmers, 2002). According to the National Center for Chronic Disease Prevention and Health Promotion's (2014) Breastfeeding Report Card, 79.2% of all infants born in the U.S. are breastfed initially. However, by six months the national rate of any breastfeeding falls to 49.4%, and by one year the rate decreases to 26.7% (CDC, 2014). In addition, approximately one in five infants born in the U.S. (19.4%) receives formula within two days of birth (CDC, 2014). In order to understand these low rates of breastfeeding, as well as the key role of professional and layperson support in the U.S., research has focused on identifying the factors that improve or hinder first-time mothers' ability to breastfeed.

1.6 Barriers and Facilitators to Breastfeeding

Barriers and facilitators to breastfeeding exist at multiple levels, influencing mothers' decisions to continue or discontinue breastfeeding; these obstacles and aides exist at the individual, social, and program/community-wide levels.

1.6.1 Knowledge and attitudes

At the individual level, some mothers are unaware of the health benefits of breastfeeding; the U.S. Department of Health & Human Services (2011) describes this as a lack of knowledge regarding the specific benefits of breastfeeding and the limited ability of mothers to cite the risks associated with not breastfeeding. At the same time,

mothers seem to view commercially prepared formula as equivalent to breastmilk regarding nutritional value, as well as more convenient than breastfeeding in their everyday environments (e.g., at work or public places; in social situations). Evidence of the nutritional content misperception is a belief held by those in the U.S., including some health professionals, that formula has been enhanced in recent years, and therefore can be considered as healthy as breastmilk (USDHHS, 2011).

1.6.2 Breastfeeding in the community

That the physical act of breastfeeding can be challenging at times also serves as another barrier that can result in mothers favoring formula (Jones & Spencer, 2007; USDHHS, 2011). That said, in communities in the U.S. where educational efforts and campaigns have successfully normalized breastfeeding, this barrier (i.e., physical discomfort and/or embarrassment) has been alleviated by feelings of social acceptance that prevail in these place-based and online communities (Keitt, Reis-Reilly, Fuller-Sankofa, & Carr, 2018; TheBump.com, 2011). In these instances, it is important to note that women in these communities felt empowered by knowledge on the subject and, importantly, experienced perceived control over their own physical environments (e.g., living in more affluent, highly-educated areas where women have greater job flexibility).

1.6.3 Social norms

For women with less privilege in terms of educational attainment and socioeconomic status, social norms may serve as greater deterrents to breastfeeding because advocating for the right to breastfeed may create a legitimate threat to their livelihood (i.e., job attainment and security). After all, with only 18.8% of infants born in the U.S. exclusively breastfeeding at six months (CDC, 2014), an employer with a power

differential over an entry-level employee, for example, could accurately cite how "normal" it is for babies to be fed formula or other human milk substitutes. While current norms in the U.S. may seem discouraging, especially in the South (e.g., in Louisiana only 56.9% of mothers initiate breastfeeding; CDC, 2014), there are recent examples of diverse communities around the world in which breastfeeding has replaced formula feeding as the social norm (e.g., Brazil; Pérez-Escamilla & Chapman, 2012). According to these researchers (Pérez-Escamilla & Chapman, 2012), disrupting the social norms around formula feeding could help uproot default systems currently in place that make breastfeeding difficult and unappealing to many women who likely would breastfeed if their right to do so was fully respected and supported.

1.6.4 Hospital practices and professional supports

Because most women in the U.S. give birth and attend prenatal classes in a hospital setting, hospital norms (e.g., availability and usage of formula) tend to become pervasive in communities. Prenatal, breastfeeding education that prepares mothers in the U.S. for the immediate challenges they may experience after birth is needed at least in part due to common hospital practices that have been found to negatively impact breastfeeding initiation rates and duration (Sakala, 2011)**.**

An abundance of literature has documented how hospital practices impact women's breastfeeding initiation and duration (CDC, 2013; Crenshaw et al., 2012; Gau, 2004; Palda, Guise, Wathen, & the Canadian Task Force, 2004; Tarrant et al., 2011). For the past forty years, research findings on this topic have consistently identified the importance of hospital policy on breastfeeding behaviors. Informed by these findings, in 1989 the WHO and UNICEF launched the Baby-Friendly Hospital Initiative (BFHI; Gau,

2004). The BFHI focused its efforts on medical institutions' (e.g., maternity wards) commitment to protecting, encouraging, and supporting postpartum women to breastfeed; specifically, the BFHI created a list of "Ten Steps to Successful Breastfeeding" and developed training courses to teach health facilities how to implement each step (Gau, 2004; WHO & UNICEF, 2009; WHO, 1998). Facilities earn a "Baby Friendly" accreditation after the 10 steps have become institutionalized hospital practices. Research has consistently found a higher rate of breastfeeding among women who deliver at hospitals accredited as Baby Friendly (Chien, Tai, Chu, Ko, & Chiu, 2007; Philipp, Malone, Cimo, & Merewood, 2003).

The BFHI's recommended 10 steps were created in reaction to professionals' conflicting advice and inconsistent practices in their efforts to support mothers' breastfeeding (Reddin, Pincombe, & Darbyshire, 2007). The recommended steps include factors such as ensuring the newborn and mother initiate breastfeeding within 30 minutes of birth; rooming in (i.e., the baby stays with mom all the time except for necessary medical procedures during the hospital stay); and fostering the establishment of breastfeeding support groups and referring the mother to them before she leaves the hospital (i.e., hospital staff tells mother how to contact breastfeeding support groups as part of standard discharge protocol; WHO & UNICEF, 2009). Research suggests that these factors are associated positively with breastfeeding. For instance, one self-report study found a positive association between the number of BFHI practices experienced by mothers in Taiwan and their infant feeding choices at one month and three months after delivery (Chien et al., 2007). In fact, this study documented a dose-response relationship

– the level of breastfeeding positively correlated with the number of Baby-Friendly practices, after controlling for potential confounds (Chien et al., 2007).

Research specific to U.S. populations indicates full implementation and continued application of the 10 steps framework of the BFHI positively impacts breastfeeding initiation rates, mothers feeding more breastmilk than formula, and exclusive breastfeeding rates (Philipp et al., 2003). According to the accrediting body for the Baby-Friendly Hospital Initiative in the U.S., 491 hospitals and birthing centers across the 50 U.S. states, the District of Columbia, and the Commonwealth of Puerto Rico hold the Baby-Friendly designation, and 23.4% of annual births (approximately 933,000 births) occur at these Baby-Friendly designated facilities (Baby-Friendly USA, Inc., 2018). Therefore, among participants in this study, it is probable that approximately 8 in 10 mothers will deliver their babies in hospitals that are not following all or even any BFHI practices.

Through participation in the *Listening to Mothers II* survey, U.S. mothers reported a failure of many hospitals to implement best practices for fostering breastfeeding, and these issues seemed to have implications for women's choices: While 61% of participants intended to exclusively breastfeed, only 51% of these women were doing so one week after their child's birth (Sakala, 2011). These findings were similar to those of the 2009 Maternity Practices in Infant Nutrition and Care (mPINC) survey, through which mothers indicated a great potential for hospitals to improve their practices in order to increase breastfeeding onset and duration (Sakala, 2011).

The absence of BFHI practices appears to have consequences, as does the presence of these steps and practices. For instance, Tarrant and colleagues (2011)

concluded that exposure to BFHI practices increased the likelihood that new mothers would breastfeed beyond eight-weeks postpartum. Moreover, more fine-grained analyses, controlling for all other BFHI practices and possible confounding variables, found that exclusive breastfeeding while in the hospital was protective against early breastfeeding cessation (Tarrant et al., 2011). Taken together, these various findings suggest that women's experiences in the hospital (e.g., from the attitudes to which they are exposed to their own practices) appear to affect their breastfeeding choices and behavior.

While a prenatal, breastfeeding educational video cannot be expected to improve women's exposure to BFHI practices in the hospital or birthing center to which they have access, the video may better prepare women regarding not only the challenges that could arise, but also the questions they are entitled to ask their healthcare professionals if formula feeding is suggested to them as an equivalent alternative. Furthermore, the video may be especially valuable for mothers who are not offered professional support to continue breastfeeding when challenges arise during their hospital stay, because the video encourages viewers to utilize professionals (e.g., lactation consultants) and peer support resources (e.g., La Leche League), who are available in communities throughout the U.S. to help mothers meet their breastfeeding goals.

1.6.5 Peer support and La Leche League

La Leche League (LLL) is an organization focused on providing support, assistance, and knowledge for pregnant and breastfeeding mothers. Trained and accredited volunteer mothers provide support in the form of group meetings (in person, online and via telephone), and partnership efforts throughout their communities (CDC,

2014). Of particular relevance to the present work, LLL can facilitate an environment that is conducive to answering the Surgeon General's Call to Action to Support Breastfeeding (2011) because leaders and participants share their knowledge and skills and normalize a positive attitude towards breastfeeding. In LLL, breastfeeding peer supporters are volunteer laywomen who have breastfed their child(ren) and have had additional training in the theory and practice of breastfeeding (Wade, Haining, & Day, 2009).

In the 1950s, an international grassroots effort dedicated to re-establishing breastfeeding resulted in the creation of LLL (Eglash et al., 2008). The founders believed social pressures were one of the main obstacles to successful breastfeeding, an opinion based on their own experiences at the time; in 1956, only 20% of U.S. mothers breastfed their babies, which made breastfeeding an unusual choice (LLL International, 2014).

Because new mothers lacked support from family or friends, the founders realized mothers who attempted to breastfeed on their own were "almost destined to fail," and thus their organization has since worked diligently to fill this void (LLL International, 2014, p. 2). LLL support groups work to actively counteract the influence of family members from older generations who do not encourage younger women to breastfeed, which can result in negative psychological and physiological consequences based on a lack of shared breastfeeding knowledge (Cleveland & McCrone, 2005; Dennis, 1999). According to the U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, LLL methods are considered best practice for providing peer support, and its leaders are deemed experts on the subject (Shealy, Li, Benton-Davis, & Grummer-Strawn, 2005).

Via the LLL methods, trained and accredited volunteer mothers provide support for pregnant and breastfeeding mothers in the form of group meetings (in person, online and via telephone), and partnership efforts throughout their communities (CDC, 2014). Lay helpers (e.g., LLL leaders), utilized as peer supports, have mediated links between healthcare professionals and clients in the community (Dennis, 1999). For example, LLL leaders are trained to address various challenges to breastfeeding, including early introduction of other foods and liquids, environmental contamination of breastmilk, lack of support of the mother in her workplace, and even complications due to medicated childbirth (LLL International, 2014).

Given LLL's focus on facilitating and providing support for new mothers, many studies examining the relationship between peer support(s) and breastfeeding rates have involved LLL International. As one case in point, one longitudinal effort employed peer counselors who completed trainings developed by LLL and found greater exclusive breastfeeding during the first three months postpartum among the women who received support from the peer counselors compared with women who did not have a counselor (Arlotti, 1998).

1.6.6 Educational videos

The video evaluated in this study has been endorsed by LLL, as evidenced by LLL logo's inclusion on the DVD cover and the website selling the DVD. Information about LLL is also presented in the video. Some of this organization's affiliates have already begun utilizing the video (e.g., including a hard copy in their group's library of book and video resources). However, there has not yet been a formal evaluation of the video's effectiveness in terms of the video's impact on participants' breastfeeding

knowledge and attitudes, and breastfeeding self-efficacy, as well as the video's impact on participants' infant feeding practices.

Many mothers do not have resources (relational or otherwise) that support their breastfeeding. For instance, some healthcare providers do not offer prenatal education on infant feeding (Kellams et al., 2015). In addition, breastfeeding is not easily understood (or optimally learned) through the books, leaflets, and other written materials that are many women's only source of information on the topic (USDHHS, 2011). Furthermore, given differential levels of access to peer support, many women in the U.S. do not have people in their lives (e.g., extended family or friends who have breastfed) who offer them social support around breastfeeding (*Social Support Interventions,* 2007). In turn, it would appear that many first-time mothers could benefit from programming or resources that provide practical information about breastfeeding.

Educational videos may be a cost-effective and time-saving method for reaching a diverse audience of first-time mothers who may not otherwise know of or have access to quality prenatal education that is focused explicitly on breastfeeding (Kellams et al., 2015). In fact, some research suggests that promotional videos can positively affect the duration of breastfeeding among participants at high risk of breastfeeding discontinuation (e.g., African American Women, Infant, and Children (WIC) program participants; Gross et al., 1998). For example, when utilized as an inexpensive, low-intensity intervention, an educational infant feeding video was found to increase mothers' breastfeeding knowledge and was associated with positive changes in infant feeding behavior (Scheinmann, Chiasson, Hartel, & Rosenberg, 2010). For breastfeeding education to be

implemented at scale, different modes of delivery, including video demonstrations, should be considered and evaluated rigorously (Willumsen, 2013).

BabyBabyOhBaby: Nurturing Your Gorgeous and Growing Baby by Breastfeeding is a twenty-eight-minute educational video on breastfeeding that was professionally produced and directed by David Stark (2011). In this video for new mothers, a narrator, more than a dozen families (e.g., mostly mother-baby pairs, with a few partners), and one expert educate viewers on a range of pertinent topics, including: the importance of immediate (e.g., within the first hour of birth) skin-to-skin contact between mother and baby; baby-led breastfeeding, specifically the breast crawl and laid back breastfeeding; colostrum, transitional, and mature milk differences; health benefits of breastfeeding for baby and mother; the role of breastfeeding in mother-baby bonding; four popular positions and latching techniques; the "second most important job in the world," defined as support from the mother's partner; and answers to frequently asked breastfeeding questions (Stark, 2011).

Images include a combination of mothers, partners, and babies, who represent diverse ages and ethnicities, engaging in breastfeeding and bonding activities, as well as three-dimensional models illustrating relevant physiology and breastfeeding positioning (Stark, 2011). Throughout the video, common messages include, "There is nothing better than mothers' milk; there has never been anything more natural or nourishing" and, "For the great majority of moms and babies (i.e., regardless of delivery method, mother's return to school or work, initial challenges regarding milk production, etc.), breastfeeding is possible and a rewarding experience" (Stark, 2011). In a friendly, non-threatening manner and tone, the narrator cites specific evidence-based and convenience-related

advantages of breastmilk over formula (Stark, 2011). The video discloses that while breastfeeding is the best choice, it can be challenging, especially in the beginning (Stark, 2011). Subsequently, the narrator references LLL multiple times, and mothers thoroughly explain the utility of resources and supports, including friends, family members, LLL volunteers and peers, healthcare providers, and International Board Certified Lactation Consultants (Stark, 2011).

An opening message, that "families in this DVD are real people who wanted to share the joy they've found in breastfeeding" reflects the overall tone, which distinguishes this video from other educational resources (Stark, 2011). Taylor and Hutchings (2012) assert that listening and learning from women's experiences of breastfeeding can enable new perspectives of breastfeeding to form, and that "integrating cognitive with affective learning has the potential to positively change attitudes," because video narratives "generate strong emotions in listeners, triggering reflexive practice" (p. 89). In addition, in Stark's (2011) video, mothers present challenges they experienced and, importantly, explain how they overcame those barriers to breastfeeding, concluding with why they feel the effort was worthwhile. If viewers relate to the women in the video (e.g., see themselves), especially if their specific fears about breastfeeding are addressed, their breastfeeding self-efficacy may improve after listening to these women's stories because an important component of self-efficacy is the belief in one's ability to persevere with intended behaviors when confronted with obstacles.

1.7 Summary and Conclusions: Theoretical Frameworks Guiding the Proposed Path of Influence from Video Intervention to Infant Feeding Behaviors

Few studies that utilize technology in health behavior interventions evaluate any of the theoretical components hypothesized to be affected by the intervention (Riley et al., 2011). As one case in point, in Free et al.'s (2013) systematic review of technology-based health behavior change interventions, participants' behaviors (e.g., amount of Vitamin C consumed daily for a nutrition intervention) were typically the sole outcome measure. Similarly, participants' self-efficacy (e.g., score on a measure of self-efficacy for negotiating contraceptive use for a sexual health intervention) was utilized as a secondary outcome in just three studies that were guided by social cognitive theory. As a result, the majority of these studies did not capitalize on an opportunity to evaluate the underlying theory of change regarding why participants altered their behavior (e.g., decided to consume more Vitamin C). Nonetheless, social cognitive theory can not only serve as a useful framework for the conceptualization of health behavior, it also includes a number of key constructs and additional socio-cognitive determinants that are relevant to decisions regarding the initiation and maintenance of specific health behavior.

In the context of breastfeeding, for example, both proximal and distal goals are considered as motivations capable of influencing behavior. However, women in the U.S., in general, may be unaware that the effects of breastfeeding on infant health begin immediately after the baby's birth (e.g., reduced risk of infant mortality and morbidity), and therefore, may not feel motivated to continue even though their children are benefitting. As one example, a study that targeted reproductive-aged women who, by their reports, would not normally breastfeed found that, after being advised about the

benefits of breastfeeding, these women tended to view lactation as a "bonus" comparable to taking a multivitamin (Stuebe, 2009). Nevertheless, while they thought of breastfeeding as helpful, these participants did not conclude it was essential for infant health (Stuebe, 2009). To the average parent in the U.S., important health and cognitive outcomes of breastfeeding may not be evident (i.e., observable and/or publicized as related) until the child is at least five-years-old (e.g., risk of type-2 diabetes; school achievement levels). Therefore, it is important to note that mothers in this video share experiences that describe their immediate, perceived benefits of breastfeeding, such as special bonding time with baby.

While Bandura has not published on breastfeeding, specifically, many researchers have applied his framework in research that considers breastfeeding to be a health-promoting behavior (Dennis & Faux, 1999; Nichols et al., 2007). This behavior (including a mother's decision to breastfeed and her ability to continue) is certainly affected by environmental influences, which include personal and situational elements of a mother's life, as well as the health system that serves her. Thus, the social cognitive theory articulated by Bandura (1997) is well suited for this study because, in addition to self-efficacy, it recognizes contextual, potentially contributing factors in its framework: Illustrated as a structural path of influence (see Bandura, 2004, Figure 1.), perceived self-efficacy affects behavior both directly and indirectly through its impact on one's perception of facilitators (e.g., peer support in this context) and impediments (e.g., workplace environment in this context) to health-promoting behavior (e.g., breastfeeding).

This study's theory of change is qualified by the fact that the impact of the video on breastfeeding knowledge and attitudes, and breastfeeding self-efficacy, and the impact of these hypothesized mediators on infant feeding behaviors, may vary in accordance with known risk and protective factors, barriers and facilitators to breastfeeding that participants experience that are outside of the researcher's control in this study. Therefore, the following literature may also be relevant based on characteristics of participants in the sample.

1.7.1 Social ecological model

Initially, the literature on breastfeeding practices focused on peer supports' or hospital/medical professional practices' influences on breastfeeding rates among heterogeneous samples of mothers. However, over time, trends revealed the importance of considering the population of mothers being studied; African Americans, residents of the southeast U.S., and WIC program participants represent subgroups (i.e., specific populations) who are least likely to breastfeed in the U.S. (Chezem, Friesen, & Parker, 2004; Cleveland & McCrone, 2005; Dee, 2007; Dick et al., 2002; Finch & Daniel, 2002).

Work conducted over the last ten years has aimed to determine the causes of disparity in initiation and duration of breastfeeding across states and within unique populations (CDC, 2013; Dee, 2007). According to both relevant theory and research findings, the decision to breastfeed depends on a complex interplay of variables, including educational level, age, and marital and socioeconomic status of mothers (Huntington, 2011) and, more broadly, a range of micro- and macro-level factors, representing multiple levels of influence that affect infant feeding decisions (Dee, 2007). Put another way, intrapersonal, community, organizational, and contextual variables act

directly and indirectly to influence mothers' decisions to initiate and sustain breastfeeding. Therefore, the social ecological model also serves as an appropriate theoretical framework for work in this area (Dee, 2007).

1.7.2 Demographic characteristics of participants

Research also has documented the influence of multiple socio-demographic characteristics on breastfeeding outcomes. For instance, there is evidence to support the consideration of participants' race in the present study to assess its potential role in the breastfeeding outcomes assessed here. As one example, after controlling for socioeconomic status, an analysis of the 1999-2006 National Health and Nutrition Examination Survey found that African American women were less likely to breastfeed compared to women of other races (McDowell, Wang, & Kennedy-Stephenson, 2008); this result aligns with findings from multiple other studies (e.g., Cleveland & McCrone, 2005; Dick et al., 2002; Reeves & Woods-Giscombé, 2015). Beyond race, other socio-demographic factors also appear to play a role in breastfeeding decisions and practices. For example, the lowest rates of breastfeeding in the U.S. occur among women of low-income status who often represent minority groups, are younger than 20 years of age, and tend to enter prenatal care late or not at all (Bronner, Barber, Vogelhut, & Resnik, 2001).

1.7.3 WIC participants

In order to improve the historically low initiation and continuation rates among WIC participants, over the past decade, the WIC program has greatly increased its efforts to provide breastfeeding support; this is an urgent area of need for this population (Whaley, Meehan, Lange, Slusser, & Jenks, 2002). WIC mothers represent a sizeable group of Americans; at the beginning of the 21st Century this group's infants comprised

half of all babies born in the U.S., and these women have been found to be among the least likely to breastfeed in the U.S. (Finch & Daniel, 2002).

WIC participants have access to free formula samples, which creates a distinct barrier to breastfeeding for this subpopulation – for non-WIC participants, formula is expensive; free formula, therefore, negates the economic advantage of breastfeeding that non-WIC participants experience (Finch & Daniel, 2002). Because of the nature of breastfeeding (e.g., mother's milk supply decreases if formula is used to supplement or replace breastfeeding), formula that WIC participants begin feeding their infants because it is available to them (i.e., free and offered) may actually interfere with evidence-based interventions such as peer support and educational programs (Chezem et al., 2004). Put another way, interventions may be less effective because the introduction of formula has created an additional, physiological barrier to breastfeeding for this population.

In addition, it is difficult for professionals (e.g., lactation consultants) and/or peer supporters of breastfeeding to challenge new mothers' perception that introducing formula to their infants was the right decision after they have observed short-term effects of formula feeding (e.g., infant weight gain) that they perceive positively. It is a common fear among new mothers that their newborns are not returning to and then surpassing their birth weight quickly enough. Stories explaining this issue have been featured in LLL International's online magazine: in one example, a first-time mother describes how her physician gave her "no other alternative" than formula supplementation after her daughter had lost almost two pounds (compared to her birth weight) four days after birth (Pinto, 2016, para. 4). However, this mother had planned to exclusively breastfeed and felt devastated by the medical assistant's exclamation while feeding her daughter, "She's

a bottle baby" (Pinto, 2016, para. 4). Determined not to give up, she attended a La Leche League meeting and received much-needed guidance on how to increase her own milk supply; while it took two weeks, this new mother learned how to substantially increase her supply until her daughter no longer required any supplementation to breastfeeding (Pinto, 2016).

While this article (Pinto, 2016) provides an example of one mother persevering to achieve her goal eventually, evidence suggests that access to free formula decreases the likelihood that mothers will continue breastfeeding after their babies receive formula supplementation within the first two weeks after birth. Research conducted with a Canadian sample also found evidence that giving out commercial discharge packages (which contain the artificial formula and promotional materials for artificial formula) when families left the hospital resulted in lower breastfeeding rates compared to patients not receiving the packages (Palda et al., 2004). Implications of this finding are highlighted by researchers who note the prevalence of breastfeeding at 20-weeks postpartum was found to be significantly higher among mothers who breastfed exclusively during the first two weeks postpartum when compared with those who supplemented with infant formula (Chezem et al., 2004).

In view of these trends, some researchers have concluded that making prenatal, educational videos available to populations at higher risk for breastfeeding discontinuation may be a cost-effective strategy to prolong breastfeeding duration, which could potentially reach members of these populations (e.g., WIC) more easily than traditional forms of prenatal education (Kellams et al., 2015). However, there is likely high variability regarding the quality of existent prenatal, educational videos. Individual

videos, therefore, should be evaluated regarding their potential impact on breastfeeding outcomes, with attention to the degree to which video components are theory-driven and research-informed, as well as how the overall presentation of content is received, retained, and rated by viewers. In addition, in order to more accurately assess (i.e., partial out) the potential, direct influence of educational videos on breastfeeding outcomes, research should also consider the multiple factors known to influence infant feeding decisions (e.g., utilizing peer support). Finally, it is important to understand the impact of interventions on groups of participants disaggregated by sociodemographic characteristics (e.g., race/ethnicity, age, WIC participation, etc.) that are associated with differential rates of breastfeeding.

1.8 Research Questions and Hypotheses

This short-term, longitudinal effort was guided by multiple key research questions and hypotheses:

RQ1: What is the perceived quality of the video, *BabyBabyOhBaby: Nurturing Your Gorgeous and Growing Baby by Breastfeeding,* as a prenatal, educational tool according to pregnant, first-time mothers?

RQ2: To what degree does watching this video (during participants' third trimester of pregnancy) impact known predictors of breastfeeding initiation and continuation – i.e., viewers' breastfeeding self-efficacy and breastfeeding knowledge and attitudes – immediately after they view the video?

RQ3: Because the video exposes participants to specific forms of and ways to access breastfeeding peer support, is watching the video associated with participants' utilization of peer support for breastfeeding?

Based on existent evidence that breastfeeding outcomes can be predicted through theory-based, latent variables (i.e., breastfeeding self-efficacy; breastfeeding knowledge and attitudes) and observable variables (i.e., peer support utilization), three additional questions address the mechanisms through which watching this video was hypothesized to increase the likelihood of participants exclusively breastfeeding their child for up to four weeks:

RQ4: Does watching the video predict improved postpartum breastfeeding self-efficacy, breastfeeding knowledge and attitudes, and peer support utilization?

RQ5: Do postpartum breastfeeding self-efficacy, breastfeeding knowledge and attitudes, and peer support utilization positively relate to exclusive breastfeeding duration (through 4 weeks)?

RQ6: Does the video impact groups of participants differently based on their socio-demographic characteristics?

These questions inform the following hypotheses:

Hypothesis 1. This video was hypothesized to (1a.) be perceived by participants as a quality form of prenatal, breastfeeding education they would recommend to a friend, and (1b.) positively impact first-time mothers' prenatal breastfeeding self-efficacy and their breastfeeding knowledge and attitudes.

Hypothesis 2. Figure 1 displays a theory-based, path model of the hypothesized relationships involving key study variables. This model includes several postulates: (2a.) a positive, indirect relationship between viewing the video and exclusive breastfeeding duration, mediated by postpartum breastfeeding self-efficacy, and postpartum breastfeeding knowledge and attitudes; (2b.) a positive, direct relationship between

viewing the video and utilizing peer support; (2c.) an indirect, positive relationship between peer support utilization and exclusive breastfeeding duration, mediated by postpartum breastfeeding self-efficacy, and postpartum breastfeeding knowledge and attitudes; and (2d.) a positive, total effect of watching the video on exclusive breastfeeding duration, considering all mediators included in the model. However, (2e.) all hypothesized relationships in the model may be influenced by the following potential confounds, which the literature supports as able to independently predict variance in breastfeeding outcomes: race/ethnicity, educational level, age, WIC participation, and marital and socioeconomic status of mothers.

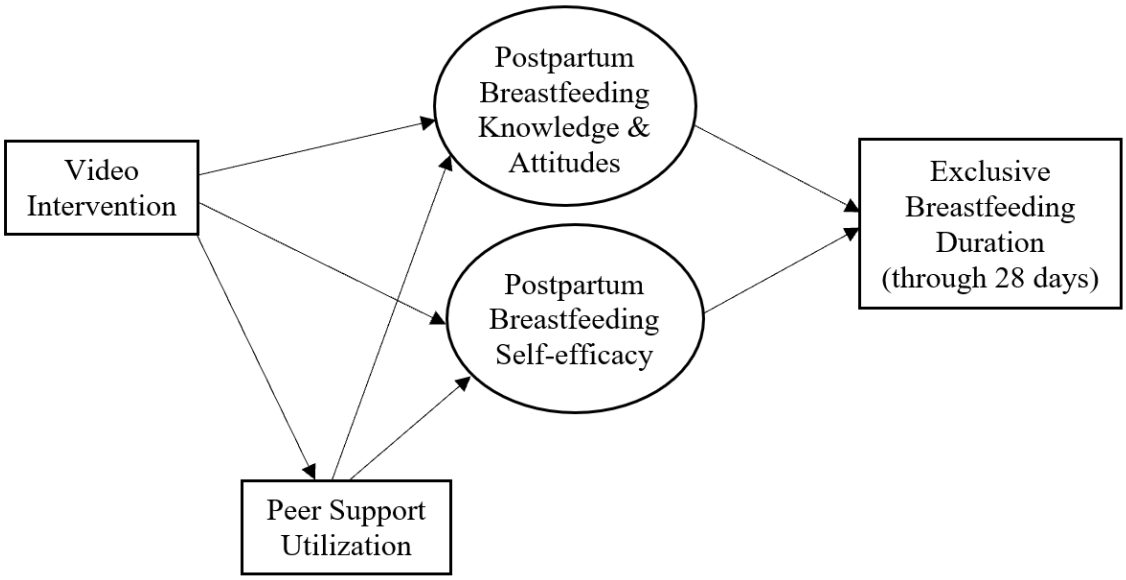

Figure 1. Hypothesized direct and mediated pathways.

CHAPTER TWO: METHODS

2.1 Participant Recruitment and Procedures

To participate, all women had to be (1) primiparous (i.e., a first-time mother); (2) at least 18-years-old; (3) in their third trimester of pregnancy (28 to 40 weeks gestation); (4) without any major medical complications (i.e., not medically deemed unable to breastfeed), and (5) able to read and write in English. For Time 2 participation, participants must have completed the task in Time 1 and have given birth to a healthy, full-term newborn (at least 37 weeks, weighing at least 5.5 pounds). Participants were excluded from analyses if they failed the two attention manipulation checks (e.g., see Appendix D, questions 2 and 7). Participants were also excluded if they had already watched the educational video prior to taking part in this study.

Adult, pregnant women residing in the United States were recruited through Amazon's Mechanical Turk (Mturk), specifically "TurkPrime," an online crowdsourcing data acquisition platform used by behavioral sciences researchers (Litman, Robinson, & Abberbock, 2016). Mturk is one of the suites of Amazon.com Web Services; it enables researchers to recruit participants to complete tasks such as surveys, opinion polls, cognitive psychological studies, and many others. Researchers advertise studies on Mturk, and participants choose to participate based on their interest in the topic and compensation amounts.

Mturk has been used by psychologists for participant recruitment for several years (Buhrmester et al., 2011, Litman et al., 2014). Participants see a list of potential jobs (opportunities to participate, referred to as HITs) when they log into their Mturk account. The price (i.e., compensation amount) is provided next to the name of the HIT along with the approximate length of time that the HIT will take. For this study, the name of the HIT was, "FOR WOMEN IN THIRD TRIMESTER OF PREGNANCY ONLY. Answer survey questions about infant feeding choices. You may also be selected to watch and rate an educational video." For data collection at the second time point, the name of the HIT was, "FOR MOTHERS WHO PARTICIPATED WHILE PREGNANT ONLY. Answer follow-up questions about your infant feeding choices."

Mechanical Turk assigned each worker a unique Worker ID (i.e., semi-random, alphanumeric string) that was included with the Time 1 and Time 2 data sets that the researcher downloaded. Mturk Worker IDs were stored in the same data set as responses between Time 1 and Time 2 data collection. After Time 2 data were matched with Time 1 data using the IDs, all Worker IDs were deleted by the researcher, and replaced by a random, unique participant ID number.

The Mechanical Turk "Include" feature was used to collect Time 2 data. This offered the second HIT to only the Mturk workers who completed the first HIT for this study and restricted Mturk workers who did not complete the first HIT for this study from viewing the second. This method did not allow any other workers to take the second HIT, and the researcher used Worker IDs to match Time 1 and Time 2 data.

The survey/study was hosted on Qualtrics. Mturk rules state that participants can terminate the study by returning the HIT at any time, without any penalty. Prior to

beginning the study, all participants were provided informed consent, according to the regulations of the University of North Carolina at Charlotte Institutional Review Board. Mturk Workers who viewed and selected the HIT created for this study were provided a link using Qualtrics survey software. The first multiple choice question to begin the survey had the consent form text pasted in the question text area. The answer choices were, "Yes, I consent" or "No, I do not consent." Using Qualtrics' "Logic" feature, participants who did not consent were sent to the end of the survey, and a message appeared indicating that their participation in the study had been terminated. Ten of 1,034 potential participants who pursued the HIT until the consent question chose not to consent, so their participation was terminated; no data are available about these individuals.

Participants were paid via a researcher-established Mturk account for completing the studies. Payment was transferred directly to the participants' credit cards immediately after the completion of a study. Individual researchers set payment amounts on Mturk that vary widely. At the time the present study was approved, one live HIT contained "breastfeeding" or "pregnancy", and the researcher for that project offered 25 cents to participants; two hours were allotted to complete a survey about participants' pregnancy, childbirth, and childrearing experiences. Although researchers have discussed compensation of as little as 10 cents per person for 10-minute studies (Buhrmester, Kwang, & Gosling, 2011), Mturk advises payment of more than $4 per hour, preferably closer to $6 per hour or more, to minimize dropout (TurkPrime, 2015).

Participants in this study were paid according to the following schedule. Time 1 participants in the no treatment group (i.e., those who did not view the video) were paid

$2.00 for approximately 10 minutes of their time (i.e., $12/hour). Time 1 participants in the video group were paid $4.00 for approximately 40 minutes of their time (i.e., $6.00/hour), in addition to viewing an educational video for free (video sells for $26.00: https://babybabyohbaby.com/store/). Time 2 participants were paid $4.00 for approximately 20 minutes of their time (i.e., $12/hour).

Participants viewed the HIT on Mturk and self-selected to participate at Time 1. Participants who met the inclusion criteria (see eligibility above) and had at least a 95% Worker approval rating (the Worker's percentage of submitted assignments that had been approved by other Mturk requesters) were eligible to complete this study. The no treatment and video / intervention groups completed the surveys electronically. A Qualtrics link to all surveys was included in the HIT. The first survey items at each time point assessed inclusion criteria. If participants' answers to any of these questions revealed they should be excluded from this study, the Qualtrics survey ended, displaying an explanatory notification of ineligibility and termination of the HIT.

At Time 1, all participants completed a set of initial questionnaires. Then, using Qualtrics' "randomizer" feature, half of the participants were automatically, randomly provided with a link to the video being evaluated, *BabyBabyOhBaby: Nurturing Your Gorgeous and Growing Baby by Breastfeeding.* The other half of the participants, assigned to the no treatment group, were notified that their Time 1 task, or HIT, requirements had been fulfilled immediately following completion of the set of initial questionnaires.

Participants assigned to the video group were instructed to watch all twenty-eight-minutes of content, then complete the original set of questionnaires a second time, and

respond to questions assessing their immediate impressions of the video. This pretest-posttest design was chosen to evaluate participants' perceptions of the quality of the video as well as the impact of the video as an intervention. At Time 2, all participants were asked to complete the original set of questionnaires again, as well as a questionnaire to assess mothers' infant feeding behaviors. Figure 2 outlines each procedural step, illustrated in chronological order for members of both groups for the duration of the study.

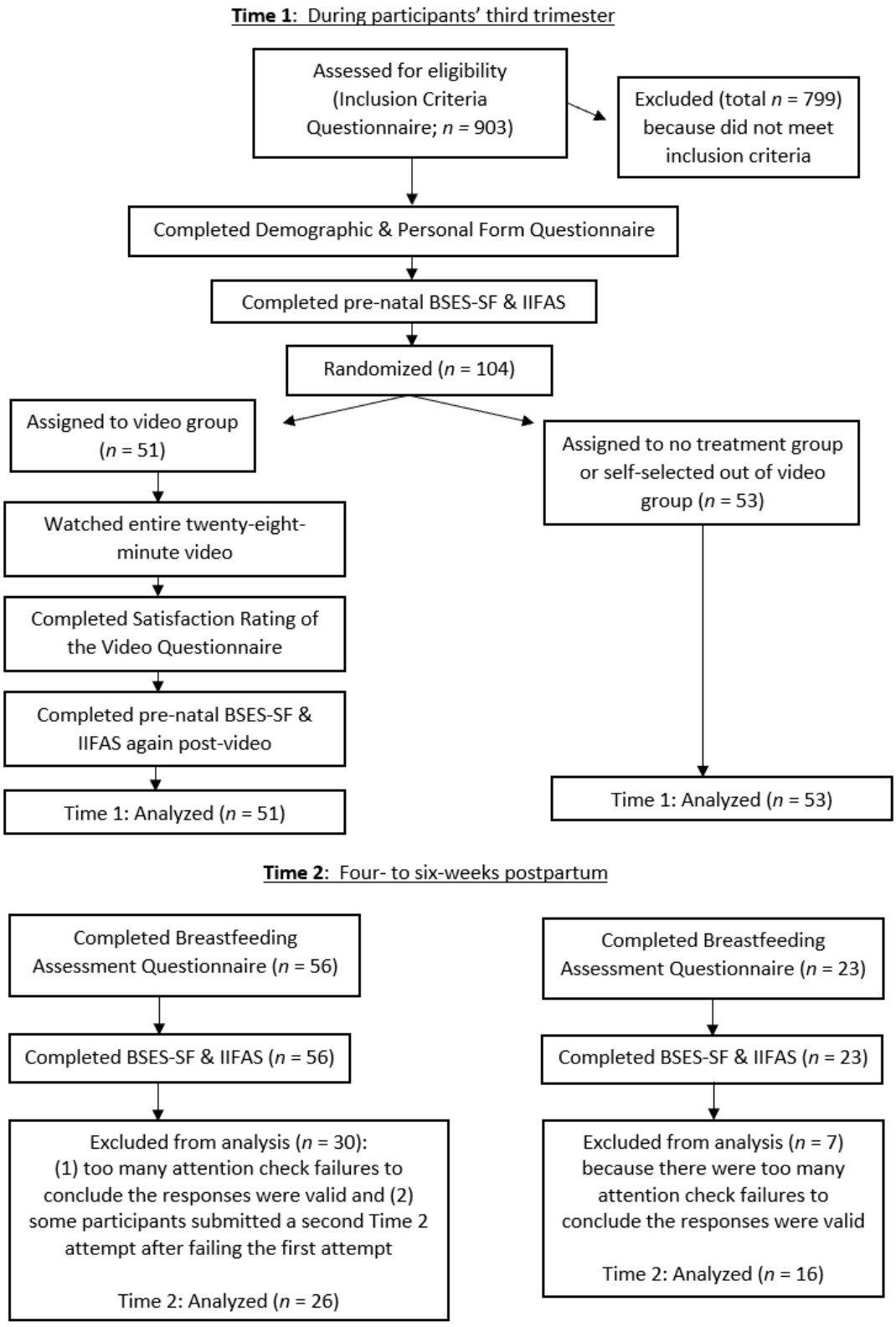

Figure 2. Study's procedural steps in chronological order (vertically, top to bottom). *Note.* 'BSES' represents Dennis' (2003) Breastfeeding Self-Efficacy Scale-Short Form, and 'IIFAS' represents de la Mora's (1999) Iowa Infant Feeding Attitudes Scale.

2.2 Participants

Based on a prior study, which used self-efficacy as the outcome variable to compute the sample size using a repeated measures ANOVA *F*-test, a sample size of 74 was determined to be necessary to provide sufficient statistical power (assuming a Type I error rate of 0.05; effect size of 0.29 and 20% attrition rate; Wu, Hu, McCoy, & Efird, 2014). Taking into consideration predicted attrition, the aim was to recruit 100 participations at Time 1 so that at least 74 women would likely participate again at Time 2. At Time 1 this goal was exceeded because 104 women participated; however, the expected rate of attrition overestimated the likelihood that Mturk Workers would participate again at Time 2. Only 42 of the 104 Time 1 participants successfully completed the study again at Time 2.

The researcher attempted to increase Time 2 participation in two main ways. First, email reminders were sent through Mturk directly to Time 1 participants reminding them when they would be eligible to participate and asking if their due dates had changed (see Appendix E). Second, Time 2 data collection was extended so that women could continue participating until it was mathematically impossible for any remaining Time 1 participants to have a baby who was younger than 6-weeks-old. The researcher calculated this period using the mothers' dates of participation and reported due dates at Time 1. There were four weeks between the end of Time 1 and beginning of Time 2 data collection, and seventeen weeks overall. This was a sufficient time period for women to participate between twenty-eight-weeks and forty-weeks gestation at Time 1 and again when their babies were between four- and six-weeks-old at Time 2 (see Figure 3). Successful Time 2 completion frequencies dropped from 33 participants in September to

two in December, 2018.

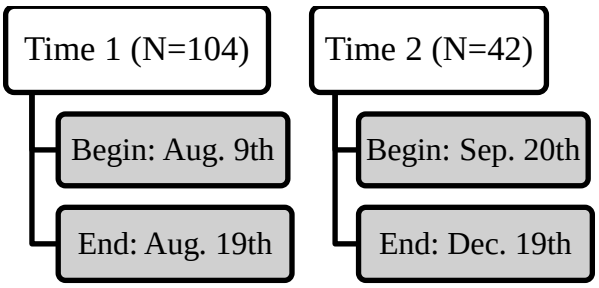

Figure 3. Data collection time periods.

The women in the sample ranged in age from 21 – 55 years, with a mean age of 31.08 years (*SD* = 6.23). Annual household income for participants ranged from less than $20,000 to more than $100,000, with 5% earning $0 to $19,999, 22% earning $20,000 to $39,999, 33% earning $40,000 to $59,999, 21% earning $60,000 to $79,999, 12% earning $80,000 to $99,999, and 8% earning $100,000 or more. At Time 1, 30% of participants reported they were eligible for WIC, but at Time 2 only 12% (*n* = 5) reported that they participated in WIC. Only 7% of participants were single, with 76% married to the biological father of the baby, 12% not married but in a committed relationship with the biological father of the baby, and 5% not married but in a committed relationship with someone other than the biological father of the baby.

Thirty-two states are represented in the sample, with the largest number of participants from California (*n* = 16), Texas (*n* = 13), Florida (*n* = 12), and New York (*n* = 7). The percentage of participants residing in Southern states increased slightly from 34% at Time 1 to 40% at Time 2. There were diverse localities represented as well, with 20% of participants residing in a rural area, 37% in a suburb, and 43% in an urban

setting. At Time 1 50% of participants identified as white, 15% as African American or black, 2% as Asian, 8% as Hispanic or Latinx, 7% as two or more races, and 18% were coded as other because they chose not to report their racial or ethnic identity. Results of a *z* test suggested that racial groups were proportionally similar at Time 2: 42% white, 17% African American or black, 2% Asian, 10% Hispanic or Latinx, 7% two or more races, and 21% other (coded as such because they chose not to report their racial or ethnic identity).

At Time 2, 93% of participants reported delivering their baby in a hospital, and 7% said they used a birthing center. At Time 1, 53% reported that the hospital where they planned to give birth was accredited as "Baby Friendly"; at Time 2, 70% reported delivering in a "Baby Friendly" hospital.

2.3 Measures

2.3.1 Inclusion criteria checks I and II

Seven questions at Time 1 and five questions at Time 2 confirmed participants' eligibility, based on the study's inclusion criteria. They included items that assessed the mother's English fluency and age and the baby's due date (Time 1) or birthdate (Time 2). Appendix A includes the full listing of inclusion criteria checks.

2.3.2 Satisfaction rating of the video

BabyBabyOhBaby: Nurturing Your Gorgeous and Growing Baby by Breastfeeding, a 28-minute educational video on breastfeeding, was professionally produced and directed by David Stark (2011), in collaboration with experts in the field, including Barbara Emanuel, former Executive Director of La Leche League International. Six subject-matter experts – i.e., qualifications include International Board Certified

Lactation Consultant, International Childbirth Education Association Certified Childbirth Educator, Licensed Midwife, Master's in Public Health, and Certified Nurse Midwife – were present during video production (Stark, 2011). In line with other evaluations of e-health videos (Garcia, 2013; Melzer, 2016), participants rated the quality of the video and reported whether they would recommend the video to others. On this measure, developed for the present work, Time 1 video group participants completed five items, four of which captured their opinions of the video on a 5-point Likert scale; a fifth item asked if they would recommend the video to other women. Appendix D includes the full listing of these items, which asked participants to rate the degree to which, in their experience, the video improved the participant's knowledge of breastfeeding; led the participant to want to learn more about breastfeeding; led the participant to reflect on and consider changing her beliefs about infant feeding, as well as her approach to infant feeding.

2.3.3 Breastfeeding self-efficacy

The 14-item Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) is an adaptation of the original 33-item BSES. Both self-report measures, developed by Dennis (Dennis, 2003; Dennis & Faux, 1999), assess breastfeeding confidence. The BSES-SF has been utilized by many researchers studying breastfeeding self-efficacy (e.g., Nichols et al., 2007) over the past fifteen years. All items begin, "I can always…" and are anchored with a 5-point Likert-type scale. Adhering to Bandura's (1997) recommendation for measures of self-efficacy, items are presented positively; higher scores indicate higher levels of breastfeeding self-efficacy.

Dennis (2003) describes the BSES-SF as an "excellent measure of breastfeeding self-efficacy" that predicts breastfeeding discontinuation, and "evaluate[s] the effectiveness of various interventions" (p. 6). The short form's Cronbach's alpha coefficient was found to be 0.94 (Dennis, 2003). In multicultural samples, BSES-SF scores have predicted future infant feeding patterns. For example, in a study of 165 breastfeeding women, mothers with higher in-hospital BSES-SF scores were more likely to be exclusively breastfeeding at four-weeks postpartum (Gregory, Penrose, Morrison, Dennis, & MacArthur, 2008). BSES-SF scores have been cited as able to demonstrate significant differences between breastfeeding mothers and bottle-feeding mothers at four and eight weeks (Ho & McGrath, 2010). Moreover, the BSES-SF predicts breastfeeding cessation, and can also identify problems mothers are having breastfeeding, which could help inform professionals when specific interventions are needed (Chambers, Alder, Hoddinott, & McInnes, 2007). Researchers have endorsed the BSES-SF for its sound psychometric properties and utility among diverse samples (Gregory et al., 2008; Wutke & Dennis, 2007).

2.3.4 Mothers' knowledge and attitudes toward breastfeeding

The self-report Iowa Infant Feeding Attitudes Scale (IIFAS) includes 17 items and a 5-point Likert response scale (i.e., strongly disagree to strongly agree) for all questions (de la Mora, Russell, Dungy, Losch, & Dusdieker, 1999). Ranging from 17 to 85, higher scores reflect more positive attitudes towards breastfeeding. The IIFAS is a valid and reliable measure that evaluates breastfeeding knowledge and attitudes in cross-cultural settings, with Cronbach's alpha scores of .85–.86 reported (Vijayalakshmi, Susheela, & Mythili, 2015). According to Ho and McGrath (2010), the IIFAS includes

knowledge and attitude items, and scores predict initial infant feeding methods and subsequent breastfeeding behaviors.

2.3.5 Peer support utilization

The number of times mothers reported that they utilized peer support was totaled to indicate each mother's frequency of peer support utilization. Specific questions asked the number of times mothers had attended a La Leche League Group meeting or contacted a peer from this group, as well as the number of times each mother had reached out to and received breastfeeding advice or support from anyone with breastfeeding experience.

2.3.6 Breastfeeding assessment

Because Time 2 occurred four- to six-weeks postpartum, the impact of the video on duration of exclusive breastfeeding was predicted to be greater than the impact of the video on the duration of any breastfeeding, because mothers typically stop breastfeeding exclusively prior to discontinuing breastfeeding entirely (see Glassman et al., 2014; Wu et al., 2014).

The Infant Feeding Questionnaire (see McQueen, Dennis, Stremler, & Norman, 2011), which uses Labbok and Krasovec's (1990) classification of infant feeding, captured breastfeeding initiation and duration at Time 2. This questionnaire has been utilized in many studies to reliably assess mothers' amount of breastfeeding (e.g., exclusive, some, or none). In this study, consistent with prior work (e.g., McQueen et al., 2011), breastfeeding included any breastmilk, regardless of how it was expressed. Appendix C includes items that prompted the participant to share exact details outlining infant feeding choices for the duration of her baby's life (up to six weeks). For example,

if the mother reported that she was no longer practicing any breastfeeding, she was asked for the date of discontinuation. Mothers also indicated whether their child had ever been fed breastmilk only for a period of at least 24 hours, and if so, for how long. Responses provided specific information regarding duration of breastfeeding: both the number of days of any breastfeeding and the number of days of exclusive breastfeeding were captured.

2.3.8 Demographic and additional participant information

Dennis' (1999**)** participant questionnaires were modified as appropriate to collect information regarding factors and characteristics relevant to infant feeding choices; the measures were adapted to include items assessing factors that were identified in the literature more recently. Participant demographic information was collected at Time 1, and additional information regarding childbirth and infant feeding experiences was collected at Time 2; participants' Mturk Worker ID enabled these data to be linked. See Appendix B for the full listing of relevant demographic and personal information, such as a description of geographic region (e.g., city, country, or suburb) in which the participant lives, and the highest level of education the participant has completed.

Based on the existing literature, multiple variables – race/ethnicity, age, WIC participation, relationship status, and socioeconomic status – were identified as potential confounds because of their well-documented, independent effects on breastfeeding attitudes and behavior. In anticipation of SES being a confound, annual household income was used as a proxy for socioeconomic status. Participants provided their household income by choosing a category; each choice increased consistently (e.g.,

increments of $20,000), with the exception of the last category (e.g., more than $100,000).

2.4 Analytic Approach

2.4.1 Preliminary steps

Data were downloaded from Qualtrics as a CSV file, which was viewed using Microsoft Excel. Workers provided their Worker IDs as a response to the first survey question. Each response was checked for completion and accuracy. Specifically, participants in the video group answered two questions that everyone who watched the video and read the questions would be able to answer correctly (e.g., manipulation checks). Then, all workers who passed these checks were paid through the Mechanical Turk (Mturk) website by matching their Worker IDs from the Qualtrics data to the list of workers for the study on Mturk's results page. The Excel data spreadsheet was uploaded to SPSS Statistics version 24, the software used for all analyses.

2.4.2 Quantitative Analytic Strategy

The current study used a within-group approach initially to assess the quality of the video according to video group participants only at Time 1, and then a between-group approach to understand the durability (i.e., lasting impact) of the video's hypothesized effect on exclusive breastfeeding duration at Time 2.

First, Time 1 data were analyzed. Satisfaction ratings and the percentage of participants who would recommend the video to other women were reported. Descriptive statistics were calculated for video group participants. In addition, two paired *t*-tests were calculated to interpret the average change in breastfeeding self-efficacy (BSES-SF) as well as average change in knowledge and attitudes (IIFAS), based on scores collected

before and after participants watched the video. These analyses were designed to test hypothesis one, which predicted that the video would be perceived as a high quality form of prenatal, breastfeeding education that would positively impact breastfeeding self-efficacy and breastfeeding knowledge and attitudes.

Second, Time 2 data were analyzed; data from Time 1 were included in analyses as appropriate because of the longitudinal design (i.e., all women who participated at Time 2 also participated at Time 1). Means and standard deviations were calculated for continuous variables and frequencies and percentages for categorical variables. Zero order and point-biserial correlations were calculated to demonstrate the degree to which variables in the model were related. A hierarchical multiple regression was conducted to test the hypothesized model following the procedures described by Cohen, Cohen, West, and Aiken (2003). Path model coefficients, which measure the magnitude of the presumed influence of each predictor on each outcome, were also calculated. Direct, indirect, total, and spurious effects for variables in the model were calculated, and all individual path coefficients were interpreted to test the hypothesized, positive indirect relationships and hypothesized, positive total effect of the video intervention on exclusive breastfeeding duration. These analyses were designed to test hypothesis two, which predicted that peer support utilization, postpartum breastfeeding knowledge and attitudes, and postpartum breastfeeding self-efficacy would mediate the relationship between the video intervention and excusive breastfeeding duration.

CHAPTER THREE: RESULTS

3.1 Preliminary analyses

Preliminary analyses indicated that none of the variables anticipated as warranting statistical control were acting as confounds. First, the proportion of participants within each group (i.e., video and no treatment) at both Times 1 and 2 were compared to test for unequivalent groups based on each potential confound (see Table 1).

Table 1. *Basic characteristics of the respondents at Time 1 and Time 2.*

	Time 1		Time 2	
Characteristic	No treatment group (n = 53)	Video group (n = 51)	No treatment group (n = 16)	Video group (n = 26)
WIC Eligible/Participant				
Yes	16 (30.2%)	15 (29.4%)	3 (18.8%)	2 (7.7%)
No	18 (34.0%)	15 (29.4%)	13 (81.3%)	24 (92.3%)
Did not know	19 (35.8%)	21 (41.2%)	N/A	N/A
Age of Mother	31.2 ± 5.9[a]	30.9 ± 6.6[a]	N/A	N/A
Gestation/Age of Baby	33.3 ± 3.3[b]	33.6 ± 3.5[b]	4.8 ± 0.7 [b]	4.7 ± 0.6 [b]
Relationship status				
Single	N/A	N/A	1 (6.3%)	2 (7.7%)

Table 1. *Basic characteristics of the respondents at Time 1 and Time 2 (continued).*

	Time 1		Time 2	
Characteristic	No treatment group (n = 53)	Video group (n = 51)	No treatment group (n = 16)	Video group (n = 26)
Committed relationship / Married to biological father of baby	N/A	N/A	14 (87.5%)	23 (88.5%)
Committed relationship / Married to someone other than biological father of baby	N/A	N/A	1 (6.3%)	1 (3.8%)
SES (annual income level)				
$0 - $19,999	1 (1.9%)	4 (8.0%)	1 (6.3%)	1 (3.8%)
$20,000 - $39,999	10 (18.5%)	13 (26.0%)	1 (6.3%)	6 (23.1%)
$40,000 - $59,000	18 (33.3%)	16 (32.0%)	4 (25.0%)	10 (38.5%)
$60,000 - $79,999	14 (25.9%)	8 (16.0 %)	5 (31.3%)	5 (19.2%)
$80,000 - $99,999	5 (9.3%)	7 (14.0%)	1 (6.3%)	4 (15.4%)
$100,000+	6 (11.1%)	2 (4.0%)	4 (25.0%)[c]	0 (0.0%)[c]
Delivery Setting				
Hospital	N/A	N/A	16 (100%)	23 (88.5%)
Birthing Center	N/A	N/A	0 (0.0%)	3 (11.5%)

Table 1. *Basic characteristics of the respondents at Time 1 and Time 2 (continued).*

	Time 1		Time 2	
Characteristic	No treatment group (n = 53)	Video group (n = 51)	No treatment group (n = 16)	Video group (n = 26)
Baby Friendly Hospital Status				
Yes	N/A	N/A	12 (75.0%)	16 (66.7%)
Did not know	N/A	N/A	4 (25.0%)	7 (29.2%)
N/A	N/A	N/A	0 (0.0%)	1 (4.2%)
Race/Ethnicity				
White	29 (.054.7%)	23 (45.1%)	7 (43.8%)	11 (42.3%)
African American/Black	9 (17%)	7 (13.7%)	3 (18.8%)	4 (15.4%)
Asian	1 (1.9%)	1 (2.0%)	1 (6.3%)	0 (0.0%)
Hispanic/Latinx	1 (1.9%)[d]	7 (13.7%)[d]	1 (6.3%)[d]	3 (11.5%)[d]
Two or More Races	2 (3.8%)	5 (9.8%)	1 (6.3%)	2 (7.7%)
Other	11 (20.8%)	8 (15.7%)	3 (18.8%)	6 (23.1%)

[a] Average age in years ± standard deviation. [b] Average gestation for Time 1 and age in weeks at Time 2 ± standard deviation. [c] The proportion of participants in the video group who reported an annual income of $100,000+ is significantly smaller compared to the group with no treatment ($p < .05$). [d] The proportion of participants in the video group who identify as Hispanic or Latinx is significantly larger compared to the group with no treatment ($p < .05$).

The proportion of participants in the video and no treatment groups were equivalent on all but two variables measured: income and race. Specifically, the video group had a lower proportion of participants who reported earning $100,000 or more annually and a higher proportion of participants who identified as Hispanic or Latinx. Therefore, two ordinary least squares, bivariate regressions were run to determine the extent to which these variables (i.e., either one) independently predicted the outcome (i.e., exclusive breastfeeding duration). Results indicated that neither income nor being Hispanic or Latinx was able to predict the outcome at a statistically significant level ($p < .05$). In addition, income was found to account for only 1% of the variance in exclusive breastfeeding duration. Therefore, neither factor was treated as a confound in this study.

Frequencies were also run for any breastfeeding duration (i.e., initiation and continuation with supplementation) and exclusive breastfeeding duration to assess the overall level of variation in the sample. These data could only be collected among the subgroup of women who completed the Time 2 follow-up ($n = 42$). There was little variability in breastfeeding initiation rates: Only 1 woman (2%) did not initiate breastfeeding. Another two women (4%) had stopped breastfeeding before their babies were twelve-days-old. The remaining 39 women (93%) were still breastfeeding when their babies were four-weeks-old.

Regarding exclusive breastfeeding duration, the women in this sample reported slightly more variability: four women (10%) never exclusively breastfed; four (10%) stopped exclusively breastfeeding before their babies were four-days-old; one (2.4%) exclusively breastfed for fifteen days; and the remaining 33 women (79%) were still exclusively breastfeeding when their babies were four-weeks-old.

While data were collected for some babies when they were older than four-weeks-old (e.g., between four- and six-weeks-old), the maximum number of days for exclusive breastfeeding duration was re-coded as twenty-eight so that this variable's range (i.e., 0-28) would be consistent for all participants. Without restricting this variable to a 28-day maximum (i.e., allowing for up to 42 days), there was more variability within this sample: Only 67% of women were exclusively breastfeeding when they participated at Time 2 (up to six-weeks postpartum). Because five participants completed Time 2 as soon as possible based on eligibility criteria (i.e., when their babies were exactly twenty-eight-days-old), this additional variability in exclusive breastfeeding duration, which reflected five other participants introducing their babies to formula when they were between four- and six-weeks-old, was not captured. Because of the extremely low variability in initiation rates and any breastfeeding duration within this sample, only exclusive breastfeeding duration was included as a dependent variable in all between-group analyses.

As part of the study's preliminary analyses, frequencies were computed for all study variables. Peer support utilization was the only variable with outliers detected. This variable was calculated using responses to the following three questions: (1) How many peers have provided you with peer support? (2) Please explain (a) how you reached out to each person and (b) how each person has provided you with breastfeeding support; and (3) Approximately how many times have you received breastfeeding advice/support from each peer? The researcher concluded that participants provided responses that reflected valid interpretations of peer support (as evidenced by the experiences they described); however, responses for this set of items were complicated by the fact that

participants were able to answer the third question by naming up to ten people. This method was problematic because 18 of the 42 participants reported that no one provided them with peer support, another 23 reported between one to three peers, and one participant provided peer support information for ten individuals. This resulted in a peer support utilization range of zero to 295, with 100 and 20 representing the second and third highest calculations of total peer support utilization. Therefore, the two highest scores of 295 and 100 were treated as outliers and removed from the dataset, resulting in a range of peer support utilization from zero to 20. The mean for this variable changed from 12.71 (*SD* = 47.33) to 3.47 (*SD* = 5.39).

3.2 Evaluating the Video: Within-group Results

It was hypothesized that the educational video would be perceived as a quality form of prenatal, breastfeeding education (1a), which would positively impact video group participants' breastfeeding knowledge and attitudes, and breastfeeding self-efficacy (1b). A within-group approach initially assessed the quality of the video at Time 1, according to video group participants only. When asked if they would recommend the video to other women, 98% of participants responded "yes" (*n* = 51). Table 2 summarizes findings regarding the ratings of the video's quality.

Table 2. *Quality of the intervention according to video group participants at Time 1.*

Item: This video led you to…	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Want to learn more about breastfeeding	0 (0.0%)	1 (2.0%)	5 (9.8%)	23 (45.1%)	22 (43.1%)

Table 2. *Quality of the intervention according to video group participants at Time 1 (continued).*

Item: This video led you to…	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Reflect on and consider changing your beliefs about feeding your baby	11 (21.6%)	9 (17.6%)	8 (15.7%)	12 (23.5%)	11 (21.6%)
Reflect on and consider changing your approach to feeding your baby	5 (9.8%)	7 (13.7%)	6 (11.8%)	21 (41.2%)	12 (23.5%)

Note: $n = 51$.

The overwhelming majority of participants (88.2%) either agreed or strongly agreed that the video led them to want to learn more about breastfeeding, and only one participant disagreed or strongly disagreed. Almost two-thirds of participants (64.7%) agreed or strongly agreed that the video led them to reflect on and consider changing their approach to feeding their baby, and nearly half (45.1%) agreed or strongly agreed that the video led them to reflect on and consider changing their beliefs about feeding their baby.

Participants reported their breastfeeding knowledge on a 5-point scale, ranging from very poor (1) to very good (5). Figure 4 illustrates changes in reported breastfeeding knowledge, displaying the percentage of video group participants who chose each of the five responses before and after watching the video. Figure 5 depicts the level of reported change in terms of knowledge increasing or decreasing (e.g., good (4) to very good (5) is an increase of 1). For example, 8% of participants reported that their breastfeeding knowledge did not change after watching the video. The majority of participants ($n = 28$; 55%) experienced a one-level increase, which reflects one of the

following changes in self-reported breastfeeding knowledge: from 'very poor' (1) to 'poor' (2); 'poor' (2) to 'fair' (3); 'fair' (3) to 'good' (4); or 'good' (4) to 'very good' (5). In addition, 45 participants (88%) reported either a one- or two-level, positive change in breastfeeding knowledge. Before watching the video participants' mean breastfeeding knowledge score was 3.38 (*SD* = .90). After watching the video their mean score increased to 4.60 (SD = .60).

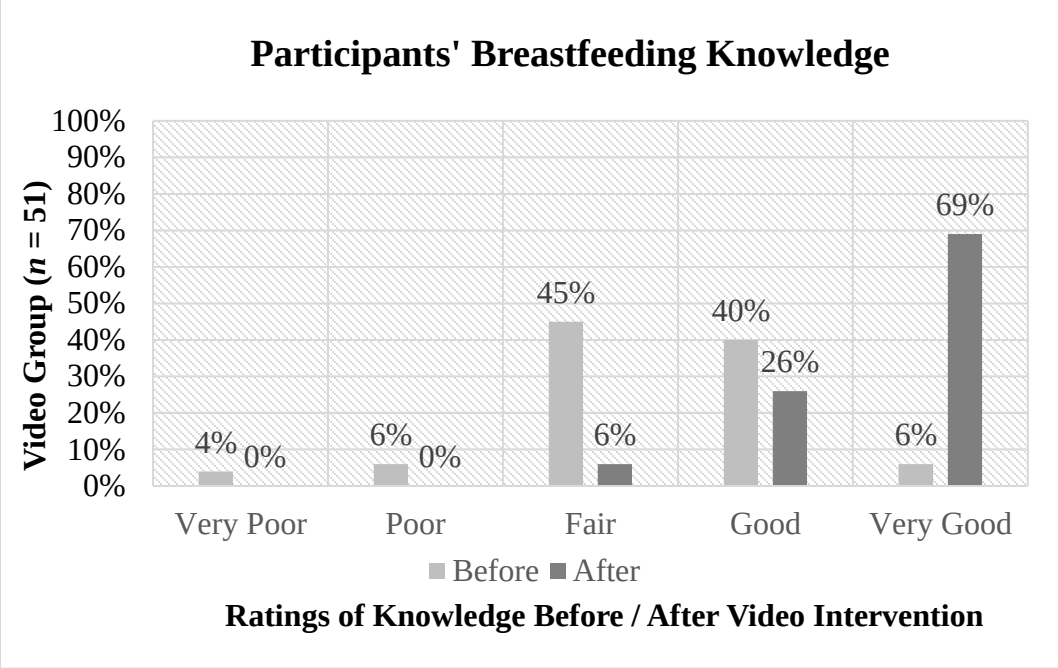

Figure 4. Self-reported knowledge of breastfeeding at Time 1.
Note. n = 51. Breastfeeding knowledge was reported on a 5-point scale from very poor (1) to very good (5).

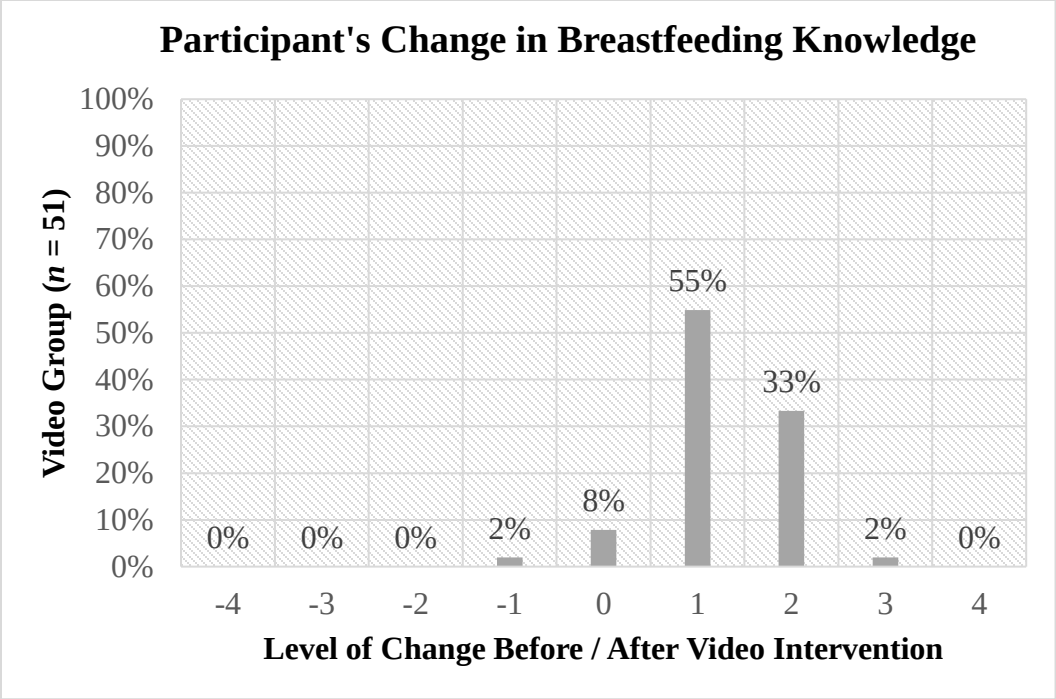

Figure 5. Level of change in self-reported knowledge of breastfeeding at Time 1. *Note.* n = 51. Breastfeeding knowledge was reported on a 5-point scale ranging from Very Poor (1) to Very Good (5).

In addition, participants completed validated scales measuring breastfeeding self-efficacy and breastfeeding knowledge and attitudes (i.e., BSES-SF and IIFAS). Changes in both breastfeeding self-efficacy and breastfeeding knowledge and attitudes were positive and statistically significant for those who watched the video. According to the effect size, d, there was a large, positive effect for breastfeeding self-efficacy, $t(50) = 7.01$, $p < .001$, $d = .98$, and a medium, positive effect for breastfeeding knowledge and attitudes, $t(50) = 3.76$, $p < .001$, $d = .53$; that is, those who watched the video subsequently reported higher levels of breastfeeding self-efficacy and breastfeeding knowledge and attitudes. On average, BSES and IIFAS scores improved from 51.39 to 58.94 (7.55 points) and from 65.47 to 68.27 (2.80 points), respectively.

Table 3. *Changes in breastfeeding self-efficacy and breastfeeding knowledge/attitudes.*

	Possible score ranges	Mean (SD) Pre-video	Post-video	CI	Cohen's *d*	*p**
Breastfeeding Self-efficacy	14-70	51.39 (11.97)	58.94 (10.59)	5.39 - 9.71	.98	< .001
Breastfeeding Knowledge and Attitudes	17-85	65.47 (8.49)	68.27 (9.32)	1.31 - 4.30	.53	< .001

Note: n = 51. BSES signifies average score on the 14-item Breastfeeding Self-Efficacy Scale-Short Form; higher scores indicate higher levels of breastfeeding self-efficacy. IIFAS signifies average score on the 17-item Iowa Infant Feeding Attitudes Scale; higher scores reflect more positive attitudes towards breastfeeding. *Significance for the difference between prenatal and postpartum, obtained by paired *t*-test.

3.3 Longitudinal (Short-term) Effects: Between-group Results

This study's analyses were guided, at least in part, by a hypothesized theory-based path model that included the following postulates: (2a.) a positive, indirect relationship between viewing the video and exclusive breastfeeding duration, mediated by postpartum breastfeeding self-efficacy, and postpartum breastfeeding knowledge and attitudes; (2b.) a positive, direct relationship between viewing the video and utilizing peer support; (2c.) an indirect, positive relationship between peer support utilization and exclusive breastfeeding duration, mediated by postpartum breastfeeding self-efficacy, and postpartum, breastfeeding knowledge and attitudes; and (2d.) a positive, total effect of watching the video on exclusive breastfeeding duration, considering all mediators included in the model. Because of the study's small sample, it was not possible to test this full model; however, bivariate correlations, a hierarchical multiple regression, and simultaneous entry regressions (i.e., path analyses) were run to examine the key, hypothesized relationships.

Correlations and descriptive statistics are provided in Table 4. For video group participants, pre-video scores were used for prenatal breastfeeding self-efficacy and prenatal breastfeeding knowledge and attitudes so that all Time 2 participants could be included in analyses involving these prenatal variables. Overall, participants exclusively breastfed for an average of 22.52 days and utilized peer support 3.47 times. Both breastfeeding self-efficacy and breastfeeding knowledge and attitudes improved between participation at Time 1 (prenatal) and Time 2 (postpartum).

Table 4. *Descriptive statistics and correlations among study variables.*

Variable	*M (SD)*	1	2	3	4	5	6	7
1. Prenatal Breastfeeding Self-efficacy	51.10 (12.72)	--						
2. Postpartum Breastfeeding Self-efficacy	55.43 (14.02)	.58**	--					
3. Prenatal Breastfeeding Knowledge and Attitudes	64.83 (9.45)	.41**	.49**	--				
4. Postpartum Breastfeeding Knowledge and Attitudes	67.40 (9.87)	.44**	.66**	.81**	--			
5. Peer Support Utilization	3.47 (5.39)	.04	-.19	.09	.004	--		
6. Exclusive Breastfeeding Duration	22.52 (10.83)	.10	.41**	.30	.27	-.12	--	
7. Video Intervention	26 (61.9)	.39*	.39*	.50**	.57**	.07	.03	--

Note: n = 42 for all variables except for Peer Support (n = 40). Breastfeeding self-efficacy = average score on Breastfeeding Self-Efficacy Scale-Short Form. Breastfeeding knowledge and attitudes = average score on Iowa Infant Feeding Attitudes Scale. Peer support utilization = total number of times mothers received breastfeeding advice or support from anyone with breastfeeding experience. Exclusive breastfeeding duration = the number of days participants reported breastfeeding without any other supplementation up to 28 days. Video intervention was dummy coded as 0 for the no treatment group and 1 for the video group. *p < .05. **p < .01.

Consistent with the hypothesized relations, all significant correlations were positive. Participants' breastfeeding self-efficacy and breastfeeding knowledge and attitudes were significantly correlated at both times (prenatal r = .41, p < .01; postpartum

$r = .66$, $p < .01$). Within each of these variables, the prenatal to postpartum relationships were also significantly correlated (breastfeeding self-efficacy $r = .58$, $p < .01$; breastfeeding knowledge and attitudes $r = .81$; $p < .01$). In addition, significant correlations were found between prenatal breastfeeding self-efficacy and postpartum breastfeeding knowledge and attitudes ($r = .44$, $p < .01$) as well as prenatal breastfeeding knowledge and attitudes and postpartum breastfeeding self-efficacy (($r = .49$, $p < .01$).

Postpartum breastfeeding self-efficacy and exclusive breastfeeding duration were also significantly correlated ($r = .41$, $p < .01$). The video intervention also was positively correlated with: prenatal breastfeeding self-efficacy ($r = .39$; $p < .05$); postpartum breastfeeding self-efficacy ($r = .39$; $p < .05$); prenatal breastfeeding knowledge and attitudes ($r = .50$; $p < .01$); and postpartum breastfeeding knowledge and attitudes ($r = .57$; $p < .01$). That is, women who watched the video also tended to have greater levels of breastfeeding self-efficacy and breastfeeding knowledge and attitudes at both times 1 and 2.

This study used a hierarchical multiple regression to determine the amount of variance in exclusive breastfeeding duration attributable to the video intervention over and above the effects of breastfeeding self-efficacy, breastfeeding knowledge and attitudes, and peer support utilization. Prenatal breastfeeding self-efficacy and prenatal breastfeeding knowledge and attitudes were controlled for by entering them first. The video intervention variable was dummy coded (0 for no treatment group; 1 for video group) so that results could be interpreted as the impact of the video on exclusive breastfeeding duration in comparison to the reference group (i.e., participants who did not watch the video). The results of this analysis can be seen in Table 5.

Table 5. *Hierarchical multiple regression equation for exclusive breastfeeding duration.*

Model		Exclusive Breastfeeding Duration				
		b	S.E.	β	R^2	ΔR^2
Step 1					.12	.07
	(Intercept)	-4.14	12.51			
	Prenatal BSES-SF	-.03	.14	-.04		
	Prenatal IIFAS	.43*	.21	.35*		
Step 2					.37	.25**
	(Intercept)	-1.84	11.41			
	Prenatal BSES-SF	-.32*	.15	-.38*		
	Prenatal IIFAS	.43	.27	.35		
	Postpartum BSES-SF	.64**	.17	.76**		
	Postpartum IIFAS	-.34	.29	-.30		
Step 3					.37	.00
	(Intercept)	-1.85	11.57			
	Prenatal BSES-SF	-.32*	.15	-.38*		
	Prenatal IIFAS	.43	.27	.35		
	Postpartum BSES-SF	.64**	.19	.76**		
	Postpartum IIFAS	-.35	.30	-.30		
	Peer Support	.02	.30	.01		
Step 4					.39	.02
	(Intercept)	-7.48	12.62			
	Prenatal BSES-SF	-.30	.15	-.35		
	Prenatal IIFAS	.44	.27	.36		
	Postpartum BSES-SF	.64**	.19	.76**		
	Postpartum IIFAS	-.26	.31	-.22		
	Peer Support	.04	.30	.02		
	Video Intervention	-4.09	3.71	-.18		

Note: n = 42 for all variables except for Peer Support (n = 40). IIFAS stands for breastfeeding knowledge and attitudes. BSES-SF stands for breastfeeding self-efficacy. b = unstandardized regression weight; β = standardized regression weight. ΔR^2 = Change in R^2 from prior model. *p < .05 **p < .01

The results of this hierarchical multiple regression suggest that the inclusion of postpartum breastfeeding self-efficacy and postpartum breastfeeding knowledge and attitudes significantly added to the variance accounted for in exclusive breastfeeding

duration ($\Delta R^2 = .25$, $p < .01$), after controlling for prenatal breastfeeding self-efficacy and prenatal breastfeeding knowledge and attitudes (though postpartum breastfeeding self-efficacy was the only predictor of the two that reached significance at this step). Overall, step two of this model demonstrated a strong index of fit, accounting for 37% of the variance in exclusive breastfeeding duration. The third and fourth steps, which included peer support utilization and the video intervention, did not contribute significantly to the model's prediction of exclusive breastfeeding duration.

A path analysis (i.e., series of simultaneous entry regressions) was also conducted to evaluate the hypothesized path model shown in Figure 1. Estimated path weights were added to the model in Figure 6. When postpartum self-efficacy and postpartum knowledge and attitudes were entered as outcome variables, prenatal scores were entered first to test the impact of the video intervention after controlling for baseline (Time 1) scores. A summary of all direct, indirect, spurious or suppressed, and total effects are shown in Table 6. Because the specific resulting scores and the scoring metrics used for the measures of breastfeeding self-efficacy (BSES-SF) and breastfeeding knowledge and attitudes (IIFAS) are uninterpretable from a practical standpoint, the table includes standardized coefficients (β).

Results suggest that postpartum breastfeeding self-efficacy had a large effect on exclusive breastfeeding duration ($r = .41$). That is, women who reported higher levels of postpartum breastfeeding self-efficacy were more likely to continue breastfeeding exclusively. More specifically, for every one standard deviation increase on the BSES-SF scale, the exclusive breastfeeding duration was predicted to increase by .76 standard deviation, which is 8.23 days ($\beta = .76$; $p < .01$). The effects of other variables in the

model were small, based on Pearson's *r* interpretations of .10 as small, .24 as medium, and .37 as large, and the interpretation of a point-biserial correlation of .15 as a small, significant effect (Cohen, 1988).

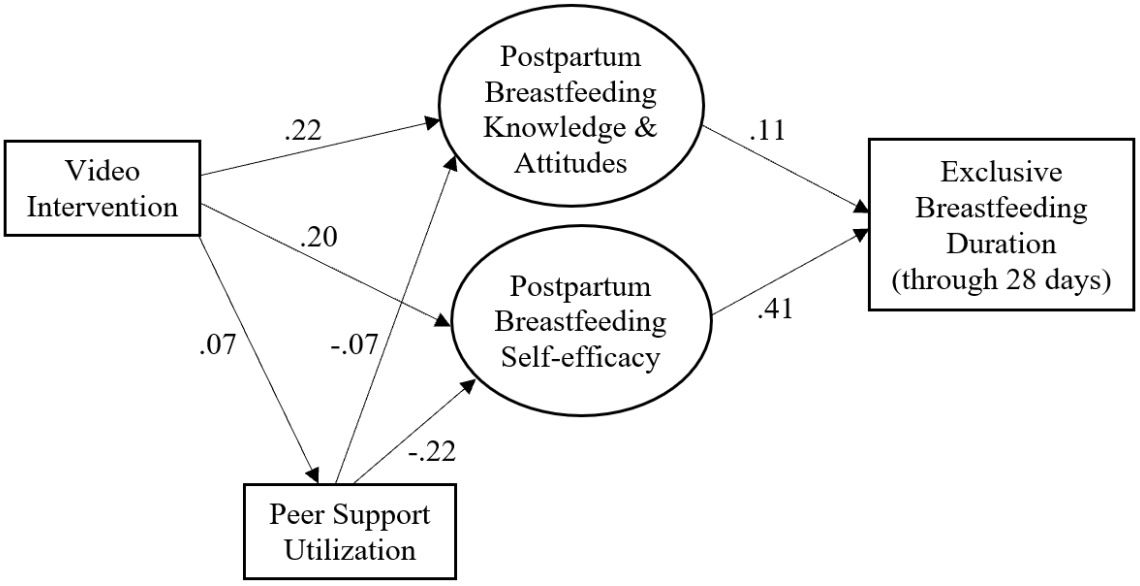

Figure 6. Standardized path coefficients.

There were small, positive effects of the video intervention on postpartum breastfeeding knowledge and attitudes (*r* = .22) and postpartum breastfeeding self-efficacy (*r* = .20), which were found after controlling for prenatal scores. That is, women who watched the video were more likely to report higher postpartum breastfeeding self-efficacy and breastfeeding knowledge and attitudes (even after accounting for their prenatal scores). There was also a small, positive effect of postpartum breastfeeding knowledge and attitudes on exclusive breastfeeding duration (*r* = .11). In other words, women with higher postpartum breastfeeding knowledge and attitude scores were more likely to continue exclusive breastfeeding. Finally, there was a small, negative effect of

peer support utilization on postpartum breastfeeding self-efficacy (r = -.22), such that women who utilized less peer support were more likely to report higher postpartum breastfeeding self-efficacy.

Spurious or suppressed effects were calculated as the difference between zero-order correlations and total effects because standardized coefficients were used. The effects of peer support utilization and the video intervention on exclusive breastfeeding duration were slightly suppressed (β = -.02, -.07, respectively); no other suppressed effects were found.

Table 6. *Path Model: Summary of Effects*

	PS	IIFAS	BSES-SF	EBD
Video Intervention				
Total Effect	.07	.22	---	.10
Direct Effect	.07	.22	.20	---
Indirect Effect	---	---	---	.10
Spurious/*Suppressed* Effect	---	---	---	-.*07*
Peer Support Utilization (PS)				
Total Effect	---	-.07	-.22	-.10
Direct Effect	---	-.07	-.22	---
Indirect Effect	---	---	---	-.10
Spurious/*Suppressed* Effect	---	.07	.03	-.*02*
Postpartum IIFAS				
Total Effect	---	---	---	.11
Direct Effect	---	---	---	.11
Indirect Effect	---	---	---	---
Spurious/*Suppressed* Effect	---	---	---	.16
Postpartum BSES-SF				
Total Effect	---	---	---	.41
Direct Effect	---	---	---	.41
Indirect Effect	---	---	---	---
Spurious/*Suppressed* Effect	---	---	---	.00

Note: n = 42 for all variables except for Peer Support Utilization (*n* = 40). Peer support utilization (PS) = the number of times mothers have received breastfeeding advice or support from anyone with breastfeeding experience. IIFAS = breastfeeding knowledge and attitudes. BSES-SF = breastfeeding self-efficacy. EBD = exclusive breastfeeding duration, up to 28 days.

CHAPTER FOUR: DISCUSSION

This study sought to explore the potential influence of an educational video on breastfeeding and its associations with factors related to exclusive breastfeeding duration. Overall, findings demonstrated that primiparous women who continued to breastfeed exclusively four-weeks postpartum tended to have higher postpartum breastfeeding self-efficacy as well as greater breastfeeding knowledge and attitudes that favored breastfeeding over formula-feeding. In addition, women who viewed the prenatal, educational video thought that it was a high quality, informative tool, and a positive influence of the video was detected immediately as well as four- to six-weeks postpartum because mothers' breastfeeding self-efficacy and breastfeeding knowledge and attitudes tended to continue to improve. This study provided insight into the mechanisms through which a high quality, prenatal video intervention positively influenced primiparous women and helps address a gap in the literature by rigorously evaluating a relatively low-intensity intervention that practitioners could implement at scale to improve breastfeeding outcomes in the U.S.

Although the present work did not test a comprehensive structural model, it examined five research questions, which were re-stated as two hypotheses reflecting the specific roles of key factors. The sections below will consider findings related to each hypothesis in turn, followed by study limitations, contributions, and suggestions for future work.

4.1 Hypothesis 1: Perception and Immediate Impact of Video

The hypothesis that participants would perceive the video as a quality form of prenatal, breastfeeding education they would recommend to a friend was supported. As expected, the video led most participants to want to learn more about breastfeeding as well as reflect on and consider changing their beliefs and approach to infant feeding. In addition, the percentage of participants who reported their breastfeeding knowledge as good or very good increased from 46% before watching the video to 95% after watching the video, which has practical significance. Coupled with the evidence that 50 out of 51 participants would recommend the video to a friend, findings support the conclusion that the video, *BabyBabyOhBaby: Nurturing Your Gorgeous and Growing Baby by Breastfeeding*, was well-received by participants as a quality form of prenatal, breastfeeding education.

These findings align with prior assertions that women prefer breastfeeding videos over other modalities for learning about this topic (e.g., written materials; USDHHS, 2011), and that listening and learning from women's experiences of breastfeeding could enable new perspectives of breastfeeding to form (Taylor & Hutchings, 2012). In addition, because this video features laypeople who offer practical advice, women may have appreciated this video's delivery method because it deviates from the common, journalistic approach that typically features healthcare providers offering scientific advice about breastfeeding in a way that suggests breastfeeding is a naturally occurring practice without everyday obstacles (Mumba & Quinlan, 2016). Furthermore, findings are consistent with a recent study that utilized technology (e.g., mobile health) to deliver a prenatal educational video on exclusive breastfeeding; the vast majority of those

participants (i.e., 90%) found the prenatal, educational video to be very beneficial (Alnasser et al., 2018).

The hypothesis that the video would positively impact video group participants' breastfeeding knowledge and attitudes as well as breastfeeding self-efficacy was also supported. As expected, after watching the video, participants' breastfeeding self-efficacy was higher, and breastfeeding knowledge and attitudes were more favorable towards breastfeeding, according to scores on validated measures (i.e., BSES-SF and IIFAS). Although this study was the first formal evaluation of this prenatal educational video, the video includes components that are comparable to other interventions that have been evaluated using the same outcome criteria. As one case in point, mean BSES-SF scores were significantly higher in women who had seen pictures or videotapes of mothers successfully breastfeeding compared to mothers who had not (Kingston, Dennis, & Sword, 2007). In addition, findings from this study are consistent with prior efforts that have supported the positive influence of interventions based on Bandura's self-efficacy theory on breastfeeding self-efficacy (Cleveland & McCrone, 2005; Nichols et al., 2007) and of educational infant feeding videos on mothers' breastfeeding knowledge (Scheinmann, Chiasson, Hartel, & Rosenberg, 2010).

4.2 Hypothesis 2: Theory-based Path Model

Because this study examined key relationships reflecting the underlying theory of change regarding why participants who viewed the video would be more likely to continue to breastfeed exclusively, its findings can have utility that extends beyond many other evaluations of health behavior interventions (see systematic review by Free et al., 2013). The hypothesis that the relationship between viewing the video and exclusive

breastfeeding duration would be positive and indirect, mediated by postpartum breastfeeding self-efficacy and postpartum breastfeeding knowledge and attitudes, was supported. Results from the hierarchical multiple regression and path analysis support the conclusion that postpartum breastfeeding self-efficacy had the greatest influence on exclusive breastfeeding duration (i.e., women with higher postpartum breastfeeding self-efficacy were more likely to continue breastfeeding exclusively), but all effects predicted in this hypothesis were positive and significant. Moreover, breastfeeding self-efficacy and breastfeeding knowledge and attitudes were supported as mechanisms through which the intervention influenced exclusive breastfeeding duration. More specifically, the present results suggest that watching the video during women's third trimester was associated with higher breastfeeding self-efficacy and improved breastfeeding knowledge and attitudes, and higher postpartum levels of each of these factors was associated with a longer duration of exclusive breastfeeding. These findings are consistent with the extant literature suggesting that higher breastfeeding self-efficacy relates to a significantly higher level of breastfeeding (Gassman, McKearney, Saslaw, & Sirota, 2014) and that increases in mothers' breastfeeding knowledge is associated with positive changes in infant feeding behavior (Scheinmann, Chiasson, Hartel, & Rosenberg, 2010).

Findings did not support either hypothesis that included peer support utilization. The relationship between viewing the video and utilizing peer support was not significant. This result was unexpected because many women in the U.S. do not have people in their lives to offer them social support around breastfeeding (*Social Support Interventions, 2007),* and the video provided concrete and specific information about how to contact and locate LLL trained and accredited volunteer mothers who could meet this

need, whether via their facilitation of group meetings throughout the U.S. or their provision of online and telephone support services (CDC, 2014). However, in contrast to the psychosocial factors of relevance to this study (which were intrapersonal in nature), the utilization of peer support would have required that the participants take externally-directed action and seek support. It is possible that this video-based intervention was not sufficiently strong to catalyze such action, particularly if participant women were not certain how to request such assistance.

The relationship between peer support utilization and postpartum breastfeeding knowledge and attitudes was not significant, and the relationship between peer support utilization and postpartum breastfeeding self-efficacy was negative. These findings were also unexpected, given the considerable body of work that indicates the importance of successful role modeling and lay support, as well as evidence that peer supports increase the likelihood of initiation and continuation of breastfeeding (Cleveland & McCrone, 2005; Dennis, 1999; Gau, 2004). In addition, the total effect of watching the video on exclusive breastfeeding duration was not significant. In view of these results, the assumptions of the theory of change used in this study may have been flawed – for example, it is possible that women who were confident in their ability to continue breastfeeding exclusively did not need peer support, and this alternative explanation is consistent with the present findings. Especially given the relatively high rate of breastfeeding initiation within this sample (see below), it is plausible that peer support was not utilized because women already had high breastfeeding self-efficacy, ample breastfeeding knowledge, and favorable breastfeeding attitudes. Furthermore, if that was

the case, it would explain why women who utilized more peer support tended to have lower postpartum breastfeeding self-efficacy.

The present results may also reflect the fact that all forms of peer support were grouped together for this work; it is also possible that results would be different if women were only asked about their utilization of LLL trained and accredited volunteer mothers. For example, one evaluation of an intervention that required peer counselors to complete LLL trainings found that women who utilized support from their peer counselor breastfed exclusively for a longer duration (up to three months) compared to women who did not have a counselor (Arlotti, 1998).

4.3 Study Limitations, Contributions, and Future Directions

This study had several limitations that bear mention. Most significantly, a combination of sample size at Time 2, demographic homogeneity among participants, and no variables anticipated as confounds behaving as such precluded testing all study hypotheses. Specifically, it was not possible to test that all hypothesized relationships in the model may be influenced by confounds from the literature (hypothesis 2e) and, in turn, it was only possible to address five of the study's six guiding research questions. Moreover, because of the small sample size, it was not feasible to include all known barriers to breastfeeding in the model (e.g., returning to work full-time soon after birth and workplace conditions, such as a private space for breastfeeding or expressing milk; see Bai, Wunderlich, & Weinstock, 2012; Glassman et al., 2014; Shealy, Li, Benton-Davis, & Grummer-Strawn, 2005).

In addition, the small sample size and its specific characteristics also limit generalizability. As one case in point, within this sample 41 of the 42 women who

participated at Time 2 initiated breastfeeding. This rate (97.6%) well exceeds the average initiation rate of 76.5% among women in the U.S. (CDC, 2014). It is possible that this higher than expected initiation rate may be attributable, at least in part, to the sub-titles that were used to advertise the study on TurkPrime at both Times 1 and 2. That is, because sub-titles included the phrase, "Answer questions about your infant feeding choices" it is possible that women who were planning to formula feed (Time 1) and then who did not initiate breastfeeding (Time 2) were less likely to participate in this study because they believe that may not be perceived as the "right" choice or because they felt insecurity or even shame as a result of what may have been perceived as a failure as a mother if they did not want to or were unable to breastfeed despite the known benefits for their baby.

An additional major study limitation stems from the fact that the design lacked a true control group. Ideally, the control group would have watched a different video that was not on breastfeeding and then completed the battery of surveys (e.g., BSES-SF and IIFAS) a second time, so that both the video and control groups would have had two data points at Time 1. Because this study does not include a control group, a plausible alternative explanation for the higher post-video BSES-SF and IIFAS scores within the video group at Time 1 is repeated exposure. In other words, the second exposure to items may have caused participants' results to improve because they were given the opportunity to become familiar with all of the items, recognize that the video endorsed breastfeeding as best, and then potentially change their responses to match what they thought the researcher was expecting.

Finally, two design choices limited the ability of this study to explain variation in infant feeding practices among these women and the relationships conceptualized as a path from watching the video to utilizing peer support to breastfeeding exclusively at four-weeks postpartum. First, because of the online data collection method used, there was only one way to contact participants to remind them to participate again at Time 2, which was through MTurk. Therefore, the researcher balanced the utility of a longitudinal design with the known likelihood that participants would not follow-up and possibly stop using this platform all together before they participated again four- to six-weeks postpartum (i.e., Time 2). A stronger design would extend Time 2 to six-months postpartum because that would have significantly increased variability in exclusive breastfeeding as well as variability in any breastfeeding; in the present study, the variance for this crucial variable was rather restricted. Second, the measurement of peer support utilization could be improved to increase reliability and validity of responses. There was a wide range of responses, likely because of inconsistent interpretations of the question and response fatigue. In addition, the current approach computed the product resulting from participants' responses to multiple items to calculate a total score; as an alternative, participants could have estimated how many times they had utilized peer support since their baby's birth.

Despite these limitations, this study's findings yield insights that may increase the degree to which healthcare providers can engage in well-targeted approaches to education and intervention. In particular, it would appear that there could be specific benefit to focusing on breastfeeding knowledge and attitudes and breastfeeding self-efficacy during critical periods (e.g., third trimester; Cleveland & McCrone, 2005). For example,

healthcare providers (e.g., OB/GYN) could play this video in their office waiting rooms and/or provide copies or online access for women to view at home with their partner and others who provide them with social support (e.g., friends and family members) as part of their standard prenatal care. Findings also support the assertion that making prenatal, educational videos available to primiparous mothers in the U.S. may be a cost-effective strategy to prolong breastfeeding duration more easily than traditional forms of prenatal education (Tuong, Larsen, & Armstrong, 2014). However, future work should replicate this study with a larger sample that includes populations at a higher risk for breastfeeding discontinuation as well as a more heterogeneous sample in terms of sociodemographic characteristics (e.g., race/ethnicity, age, WIC participation, etc.) that are associated with differential rates of breastfeeding.

REFERENCES

Alnasser, Y., Almasoud, N., Aljohni, D., Almisned, R., Alsuwaine, B., Alohali, R., … Alhezayen, R. (2018). Impact of attitude and knowledge on intention to breastfeed: Can mHealth based education influence decision to breastfeed exclusively? *Annals of Medicine and Surgery, 35*, 6–12. https://doi.org/10.1016/j.amsu.2018.09.007

American Academy of Pediatrics. (2005). Breastfeeding and the use of human milk. *Pediatrics*, *115*, 496–506. https://doi.org/10.1542/peds.2004-2491

Andrews, J. S. (2014). *Best for baby: What factors influence new mothers when choosing between breastfeeding and bottle feeding babies under the age of two*. Thesis, Smith College. Retrieved from https://scholarworks.smith.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1828&context=theses

Baby-Friendly USA, Inc. (2018, March 1). *Baby-Friendly USA: Find facilities*. Retrieved March 5, 2018, from https://www.babyfriendlyusa.org/find-facilities

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education & Behavior*, *31*, 143–164. https://doi.org/10.1177/1090198104263660

Binns, C., Lee, M., & Low, W. Y. (2016). The long-term public health benefits of breastfeeding. *Asia Pacific Journal of Public Health*, *28*, 7–14.

Bronner, Y., Barber, T., Vogelhut, J., & Resnik, A. K. (2001). Breastfeeding peer counseling: Results from the national WIC survey. *Journal of Human Lactation*, *17*, 119–125.

Centers for Disease Control and Prevention. (2012). *Breastfeeding among U.S. children born 2002–2012, CDC National Immunization Surveys*. Retrieved from http://www.cdc.gov/breastfeeding/data/NIS_data/

Centers for Disease Control and Prevention. (2013). *Breastfeeding report card: United States*. Retrieved from http://www.cdc.gov/breastfeeding/pdf/2013breastfeedingreportcard.pdf

Centers for Disease Control and Prevention. (2014). *Breastfeeding report card: United States*. Retrieved from https://www.cdc.gov/breastfeeding/pdf/2014breastfeedingreportcard.pdf

Chambers, J. A., Alder, E. M., Hoddinott, P., & McInnes, R. J. (2007). A systematic review of measures assessing mothers' knowledge, attitudes, confidence and satisfaction towards breastfeeding. *Breastfeeding Review*, *15*(3), 1–17.

Chezem, J. C., Friesen, C. A., & Parker, C. G. (2004). Effect of professional postpartum support on infant feeding patterns among breastfeeding participants in the WIC program. *Family and Consumer Sciences Research Journal*, *32*, 349–360. https://doi.org/10.1177/1077727X04263843

Chien, L.-Y., Tai, C.-J., Chu, K.-H., Ko, Y.-L., & Chiu, Y.-C. (2007). The number of Baby Friendly hospital practices experienced by mothers is positively associated with breastfeeding: A questionnaire survey. *International Journal of Nursing Studies*, *44*, 1138–1146. https://doi.org/10.1016/j.ijnurstu.2006.05.015

Cleveland, A. P., & McCrone, S. (2005). Development of the breastfeeding personal efficacy beliefs inventory: A measure of women's confidence about breastfeeding. *Journal of Nursing Measurement*, *13*, 115–127.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). New York, NY: Routledge.

Crenshaw, J. T., Cadwell, K., Brimdyr, K., Widström, A.-M., Svensson, K., Champion, J. D., … Winslow, E. H. (2012). Use of a video-ethnographic intervention (PRECESS Immersion Method) to improve skin-to-skin care and breastfeeding rates. *Breastfeeding Medicine*, *7*(2), 69–78. https://doi.org/10.1089/bfm.2011.0040

Davis, J. A. (1985). *The logic of causal order*. Thousand Oaks: SAGE Publications.

de Jager, E., Broadbent, J., Fuller-Tyszkiewicz, M., & Skouteris, H. (2014). The role of psychosocial factors in exclusive breastfeeding to six months postpartum. *Midwifery*, *30*, 657–666. https://doi.org/10.1016/j.midw.2013.07.008

Dee, D. L. (2007). *Breastfeeding practices among North Carolina WIC clients from 1996 through 2002: Patterns, correlates, and the effects of in-home postpartum support*. Dissertation, University of North Carolina at Chapel Hill. Retrieved from zotero://attachment/407/

Dennis, C. (2003). The Breastfeeding Self-Efficacy Scale: Psychometric assessment of the short form. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *32*, 734–744. https://doi.org/10.1177/0884217503258459

Dennis, C.-L. (1999). *A randomized controlled trial evaluating the effect of peer (mother-to-mother) support on breastfeeding duration among primiparous women*. Dissertation, National Library of Canada. Retrieved from https://tspace.library.utoronto.ca/handle/1807/13080

Dennis, C.-L., & Faux, S. (1999). Development and psychometric testing of the Breastfeeding Self-Efficacy Scale. *Research in Nursing and Health*, *22*, 399–409.

Dennis, C.-L., Hodnett, E., Gallop, R., & Chalmers, B. (2002). The effect of peer support on breast-feeding duration among primiparous women: A randomized controlled trial. *Canadian Medical Association Journal*, *166*, 21–28.

Dick, M. J., Evans, M. L., Arthurs, J. B., Barnes, J. K., Caldwell, R. S., Hutchins, S. S., & Johnson, L. K. (2002). Predicting early breastfeeding attrition. *Journal of Human Lactation*, *18*, 21–28.

Dodt, R. C. M., Joventino, E. S., Aquino, P. S., Almeida, P. C., & Ximenes, L. B. (2015). An experimental study of an educational intervention to promote maternal self-efficacy in breastfeeding. *Revista Latino-Americana de Enfermagem*, *23*, 725–732. https://doi.org/10.1590/0104-1169.0295.2609

Eglash, A., Montgomery, A., & Wood, J. (2008). Breastfeeding. *Disease-a-Month*, *54*, 343–411. https://doi.org/10.1016/j.disamonth.2008.03.001

Ewing, G., & Morse, J. (1988). Paradoxical priorities in breastfeeding research: Challenges for new directions. *The Australian Journal of Advanced Nursing*, *6*(2), 24–28.

Finch, C., & Daniel, E. L. (2002). Breastfeeding education program with incentives increases exclusive breastfeeding among urban WIC participants. *Journal of the American Dietetic Association*, *102*, 981–984. https://doi.org/doi:10.1016/S0002-8223(02)90224-5

Furman, L. M., & Dickinson, C. (2013). Community health workers: Collaborating to support breastfeeding among high-risk inner-city mothers. *Breastfeeding Medicine*, *8*, 73–78. https://doi.org/10.1089/bfm.2012.0027

Galson, S. K. (2008). Mothers and children benefit from breastfeeding. *Journal of the American Dietetic Association*, *108*, 1106–1106. https://doi.org/10.1016/j.jada.2008.04.028

Garcia, D. (2013). *Diffusing the innovation of e-health featuring avatar videos designed to empower men who have sex with men to increase HIV testing, screening for sexually transmitted infections, and risk reduction behaviors*. Dissertation, Teachers College, Columbia University. Retrieved from http://search.proquest.com.librarylink.uncc.edu/pqdtglobal/docview/1424827824/fulltextPDF/8D17B440251A46AEPQ/10?accountid=14605

Gau, M.-L. (2004). Evaluation of a lactation intervention program to encourage breastfeeding: A longitudinal study. *International Journal of Nursing Studies*, *41*, 425–435. https://doi.org/10.1016/j.ijnurstu.2003.11.002

Glassman, M. E., McKearney, K., Saslaw, M., & Sirota, D. R. (2014). Impact of breastfeeding self-efficacy and sociocultural factors on early breastfeeding in an urban, predominantly Dominican community. *Breastfeeding Medicine*, *9*, 301–307. https://doi.org/10.1089/bfm.2014.0015

Gregory, A., Penrose, K., Morrison, C., Dennis, C.-L., & MacArthur, C. (2008). Psychometric properties of the Breastfeeding Self-Efficacy Scale- Short Form in an ethnically diverse U.K. sample. *Public Health Nursing*, *25*, 278–284. https://doi.org/10.1111/j.1525-1446.2008.00705.x

Gross, S. M., Caulfield, L. E., Bentley, M. E., Bronner, Y., Kessler, L., Jensen, J., & Paige, D. M. (1998). Counseling and motivational videotapes increase duration of breast-feeding in African-American WIC Participants who initiate breast-feeding. *Journal of the American Dietetic Association*, *98*, 143–148. https://doi.org/10.1016/S0002-8223(98)00037-6

Heikkilä, K., Sacker, A., Kelly, Y., Renfrew, M. J., & Quigley, M. A. (2011). Breast feeding and child behaviour in the Millennium Cohort Study, *96*, 635–642. https://doi.org/10.1111/j.1365-2214.2011.01290.x

Hirschtritt, M. E., & Kroenke, K. (2017). Screening for depression. *JAMA*, *318*, 745–746. https://doi.org/10.1001/jama.2017.9820

Ho, Y.-J., & McGrath, J. M. (2010). A review of the psychometric properties of breastfeeding assessment tools. *Journal of Obstetric, Gynecologic & Neonatal Nursing*, *39*, 386–400. https://doi.org/10.1111/j.1552-6909.2010.01153.x

Huntington, J. J. (2011). *The association between socio-demographic factors and intention to breastfeed by region of the United States*. Thesis, University of North Carolina at Charlotte. Retrieved from https://uncc.worldcat.org/title/association-between-socio-demographic-factors-and-intention-to-breastfeed-by-region-of-the-united-states/oclc/841610118&referer=brief_results

Jackson, D. B. (2015). *Do nutritional factors influence externalizing behavior during early childhood? A genetically informed analysis.* Dissertation, Florida State University. Retrieved from http://diginole.lib.fsu.edu/islandora/object/fsu:253091/datastream/PDF/view

James, W. P. T., & Garza, C. (2012). Summary of the 24th Marabou Symposium: Nutrition and the human microbiome. *Nutrition Reviews*, *70*, S87–S94.

Jones, E., & Spencer, S. A. (2007). The physiology of lactation. *Paediatrics and Child Health*, *17*, 244–248.

Julvez, J., Guxens, M., Carsin, A.-E., Forns, J., Mendez, M., Turner, M. C., & Sunyer, J. (2013). A cohort study on full breastfeeding and child neuropsychological development: The role of maternal social, psychological, and nutritional factors. *Developmental Medicine & Child Neurology*, *56*, 148–156. https://doi.org/10.1111/dmcn.12282

Julvez, J., Ribas-Fitó, N., Forns, M., Garcia-Esteban, R., Torrent, M., & Sunyer, J. (2007). Attention behaviour and hyperactivity at age 4 and duration of breast-feeding. *Acta Paediatrica*, *96*, 842–847. https://doi.org/10.1111/j.1651-2227.2007.00273.x

Keitt, S. H., Reis-Reilly, H., Fuller-Sankofa, N., & Carr, M. (2018). Breastfeeding in the community: Sharing stories on implementations that work. *Journal of Human Lactation*, *34*, 285–303. http://journals.sagepub.com/doi/10.1177/0890334418757957

Kellams, A. L., Gurka, K. K., Hornsby, P. P., Drake, E., Riffon, M., Gellerson, D., … Coleman, V. (2015). The impact of a prenatal education video on rates of breastfeeding initiation and exclusivity during the newborn hospital stay in a low-income population. *Journal of Human Lactation*, *32*, 152-159. doi:10.1177/0890334415599402

Kingston, D., Dennis, C.-L., & Sword, W. (2007). Exploring breastfeeding self-efficacy. *The Journal of Perinatal & Neonatal Nursing*, *21*, 207–215. https://doi.org/10.1097/01.JPN.0000285810.13527.a7

La Leche League International. (2014). *Biographical information for all seven founders.* Retrieved November 29, 2015, from http://www.llli.org/docs/founders_bio1.pdf

Labbok, M. H. (2001). Effects of breastfeeding on the mother. *Pediatric Clinics of North America*, *48*, 143–158.

Litman, L., Robinson, J., & Abberbock, T. (2016). TurkPrime.com: A versatile crowdsourcing data acquisition platform for the behavioral sciences. *Behavior Research Methods*. https://doi.org/10.3758/s13428-016-0727-z

Manstead, A. S. (2007). Breastfeeding. In S. Ayers, A. Baum, & C. McManus (Eds.), *Cambridge handbook of psychology, health and medicine* (2nd ed.). Cambridge, UK: Cambridge University Press. Retrieved from https://librarylink.uncc.edu/login?url=https://search.credoreference.com/content/entry/cupphm/breastfeeding/0?institutionId=5899

Mathur, N. B., & Dhingra, D. (2014). Breastfeeding. *The Indian Journal of Pediatrics*, *81*, 143–149. https://doi.org/10.1007/s12098-013-1153-1

McCarter-Spaulding, D., & Gore, R. (2012). Social support improves breastfeeding self-efficacy in a sample of Black women. *Clinical Lactation*, *3*, 112–115. https://doi.org/10.1891/215805312807022923

McDowell, M. M., Wang, C.-Y., & Kennedy-Stephenson, J. (2008). *Breastfeeding in the United States: Findings from the National Health and Nutrition Examination Surveys, 1999-2006* [Data set]. American Psychological Association. https://doi.org/10.1037/e455822008-001

McQueen, K. A., Dennis, C.-L., Stremler, R., & Norman, C. D. (2011). A pilot randomized controlled trial of a breastfeeding self-efficacy intervention with primiparous mothers: Breastfeeding self-efficacy intervention with primiparous mothers. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, *40*, 35–46. https://doi.org/10.1111/j.1552-6909.2010.01210.x

Meedya, S., Fahy, K., & Kable, A. (2010). Factors that positively influence breastfeeding duration to 6 months: A literature review. *Women and Birth*, *23*, 135–145. https://doi.org/10.1016/j.wombi.2010.02.002

Melzer, L. J. (2016). *Design, implementation, and evaluation of an e-health video intervention to address gaps in knowledge on chances of pregnancy and risks for older women ages 35-55: Predictors of high ratings of the video and a high level of knowledge*. Thesis, Teachers College, Columbia University. Retrieved from http://search.proquest.com/openview/82a994cecd0ff94a026c8d0d14b75a7c/1?pq-origsite=gscholar&cbl=18750&diss=y

Mumba, M., & Quinlan, M. (2016). Combat breasts and intimate citizenship: Media coverage of breastfeeding women in the U.S. Air Force. *Women's Reproductive Health, 3*, 178-197. http://dx.doi.org/10.1080/23293691.2016.1237722

Nichols, J., Schutte, N. S., Brown, R. F., Dennis, C.-L., & Price, I. (2007). The impact of a self-efficacy intervention on short-term breast-feeding outcomes. *Health Education & Behavior*, *36*, 250–258. https://doi.org/10.1177/1090198107303362

Oddy, W. H., Kendall, G. E., Li, J., Jacoby, P., Robinson, M., de Klerk, N. H., … Stanley, F. J. (2010). The long-term effects of breastfeeding on child and adolescent mental health: A pregnancy cohort study followed for 14 years. *The Journal of Pediatrics*, *156*, 568–574. https://doi.org/10.1016/j.jpeds.2009.10.020

Palda, V. A., Guise, J.-M., Wathen, C. N., & the Canadian Task Force. (2004). Interventions to promote breast-feeding: Applying the evidence in clinical practice. *Canadian Medical Association Journal*, *170*, 976–978. https://doi.org/10.1053/cmaj.1031197

Pérez-Escamilla, R., & Chapman, D. J. (2012). Breastfeeding protection, promotion, and support in the United States: A time to nudge, a time to measure. *Journal of Human Lactation*, *28*, 118–121. https://doi.org/10.1177/0890334412436721

Philipp, B. L., Malone, K. L., Cimo, S., & Merewood, A. (2003). Sustained breastfeeding rates at a US baby-friendly hospital. *Pediatrics*, *112*, e234–e236.

Pinto, V. (2016, May 21). Newborn weight loss: Getting back on track. *Breastfeeding Today*. Retrieved from http://breastfeedingtoday-llli.org/newborn-weight-loss-getting-back-on-track/

Quigley, M. A., Hockley, C., Carson, C., Kelly, Y., Renfrew, M. J., & Sacker, A. (2012). Breastfeeding is associated with improved child cognitive development: A population-based cohort study. *The Journal of Pediatrics*, *160*, 25–32. https://doi.org/10.1016/j.jpeds.2011.06.035

Reddin, E., Pincombe, J., & Darbyshire, P. (2007). Passive resistance: Early experiences of midwifery students/graduates and the Baby Friendly Health Initiative 10 steps to successful breastfeeding. *Women and Birth*, *20*, 71–76. https://doi.org/10.1016/j.wombi.2007.04.003

Reeve, C. L., & Basalik, D. (2011). A state level investigation of the associations among intellectual capital, religiosity and reproductive health. *Intelligence*, *39*, 64–73. https://doi.org/10.1016/j.intell.2010.09.007

Reeves, E. A., & Woods-Giscombé, C. L. (2015). Infant-feeding practices among African American women: Social-ecological analysis and implications for practice. *Journal of Transcultural Nursing*, *26,* 219–226. https://doi.org/10.1177/1043659614526244

Riley, W. T., Rivera, D. E., Atienza, A. A., Nilsen, W., Allison, S. M., & Mermelstein, R. (2011). Health behavior models in the age of mobile interventions: Are our theories up to the task? *Translational Behavioral Medicine*, *1*, 53–71. https://doi.org/10.1007/s13142-011-0021-7

Risica, P. M., & McCausland, K. (2017). Infant feeding decisions and behaviours among low-income smoke-exposed women: Timing and change during pregnancy. *Public Health Nutrition*, *20*, 2796–2805. https://doi.org/10.1017/S1368980017001690

Sakala, C. (2011). Expanded and improved federal data on U.S. maternity care practice. *Birth*, *38*, 357–359.

Scheinmann, R., Chiasson, M. A., Hartel, D., & Rosenberg, T. J. (2010). Evaluating a bilingual video to improve infant feeding knowledge and behavior among immigrant Latina mothers. *Journal of Community Health*, *35*, 464–470. https://doi.org/10.1007/s10900-009-9202-4

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Belmont, CA: Wadsworth.

Shealy, K. R., Li, R., Benton-Davis, S., & Grummer-Strawn, L. M. (2005). *The CDC guide to breastfeeding interventions*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Retrieved from https://www.cdc.gov/breastfeeding/pdf/breastfeeding_interventions.pdf

Social Support Interventions. (2007). Cambridge University Press. Retrieved from http://search.credoreference.com/content/entry/cupphm/social_support_interventions/0

Stark, D. (2011). *BabyBabyOhBaby: Nurturing your gorgeous and growing baby by breastfeeding [Motion picture]*. US: Stark Productions, Inc. Retrieved from https://babybabyohbaby.com/store/breastfeeding-dvd-english-us-ca/

Stuebe, A. (2009). The risks of not breastfeeding for mothers and infants. *Reviews in Obstetrics & Gynecology*, *2*(4), 10.

Tarrant, M., Wu, K. M., Fong, D. Y., Lee, I. L., Wong, E. M., Sham, A., … Dodgson, J. E. (2011). Impact of baby-friendly hospital practices on breastfeeding in Hong Kong. *Birth*, *38*, 238–245.

Taylor, A. M., & Hutchings, M. (2012). Using video narratives of women's lived experience of breastfeeding in midwifery education: Exploring its impact on midwives' attitudes to breastfeeding. *Maternal & Child Nutrition*, *8*, 88–102. https://doi.org/10.1111/j.1740-8709.2010.00258.x

TheBump.com. (2011, August 2). TheBump.com and Breastfeeding.com 2nd Annual Breastfeeding Survey Reveals Breastfeeding Perceptions. *Business Wire*. Retrieved from https://advance-lexis-com.librarylink.uncc.edu/document/?pdmfid=1516831&crid=60bcedea-61d4-4ab8-a9d9-c183a0940b99&pddocfullpath=%2Fshared%2Fdocument%2Fnews%2Furn%3AcontentItem%3A53FY-BMC1-JBG1-813D-00000-00&pddocid=urn%3AcontentItem%3A53FY-BMC1-JBG1-813D-00000-00&pdcontentcomponentid=7924&pdteaserkey=sr0&pditab=allpods&ecomp=cy3k&earg=sr0&prid=bcc97910-3254-4d5c-96f8-2eec43e7b4be

Tuong, W., Larsen, E. R., & Armstrong, A. W. (2014). Videos to influence: A systematic review of effectiveness of video-based education in modifying health behaviors. *Journal of Behavioral Medicine*, 37, 218–233. https://doi.org/10.1007/s10865-012-9480-7

TurkPrime. (2015, March 8). How to minimize dropout rate on Mechanical Turk. Retrieved May 9, 2017, from http://blog.turkprime.com/2015/03/hot-to-minimize-dropout-rate-on.html

U.S. Department of Health and Human Services. (2011). *Executive Summary: The Surgeon General's call to action to support breastfeeding*. Washington, DC: U.S. Department of Health and Human Services, Office of the Surgeon General. Retrieved from http://www.surgeongeneral.gov/library/calls/breastfeeding/executivesummary.pdf

Wade, D., Haining, S., & Day, A. (2009). Breastfeeding peer support: Are there additional benefits? *Community Practitioner, 82*(12), 30–33.

Wagner, W. E. (2015). *Using IBM SPSS Statistics for research methods and social science statistics* (5th ed.). Thousand Oaks: SAGE Publications, Inc.

Webster, C. A., Russ, L., Vazou, S., Goh, T. L., & Erwin, H. (2015). Integrating movement in academic classrooms: Understanding, applying and advancing the knowledge base. *Obesity Reviews*, *16*(8), 691–701. https://doi.org/10.1111/obr.12285

Whaley, S. E., Meehan, K., Lange, L., Slusser, W., & Jenks, E. (2002). Predictors of breastfeeding duration for employees of the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). *Journal of the American Dietetic Association*, *102*(9), 1290–1293.

Willumsen, J. (2013, July). *Breastfeeding education for increased breastfeeding duration.* Retrieved March 3, 2018, from http://www.who.int/elena/bbc/breastfeeding_education/en/

World Health Organization & UNICEF. (2003). *Global strategy for infant and young child feeding*. Retrieved from http://www.who.int/nutrition/publications/infantfeeding/9241562218/en/

World Health Organization & UNICEF. (2009). *Baby-Friendly Hospital Initiative: Breastfeeding promotion and support in a Baby-Friendly Hospital* (A 20-hour course for maternity staff). Retrieved from http://apps.who.int/iris/bitstream/handle/10665/43593/9789241594981_eng.pdf;jsessionid=4F23237ADE8563AC941F7CF73E6B73D6?sequence=5

World Health Organization. (1998). *Evidence for the ten steps to successful breastfeeding*. Retrieved from http://www.who.int/nutrition/publications/evidence_ten_step_eng.pdf

Wu, D. S., Hu, J., McCoy, T. P., & Efird, J. T. (2014). The effects of a breastfeeding self-efficacy intervention on short-term breastfeeding outcomes among primiparous mothers in Wuhan, China. *Journal of Advanced Nursing*, *70*(8), 1867–1879. https://doi.org/10.1111/jan.12349

Wutke, K., & Dennis, C.-L. (2007). The reliability and validity of the Polish version of the Breastfeeding Self-Efficacy Scale-Short Form: Translation and psychometric assessment. *International Journal of Nursing Studies*, *44*(8), 1439–1446. https://doi.org/10.1016/j.ijnurstu.2006.08.001

APPENDIX A: INCLUSION CRITERIA QUESTIONNAIRES

Inclusion Criteria Check I

The following seven questions will take approximately one minute to answer.

1. Are you fluent (able to read and write) in English?
   - Yes
   - No (END STUDY)

2. When is your baby due?
   - Date _____
   - I am not currently pregnant (END STUDY)

3. Currently, how many weeks pregnant are you?
   - 1-12 (END STUDY)
   - 13-16
   - 17-20
   - 21-24
   - 25-28
   - 29-32
   - 33-36
   - 37-40
   - 41 or more (END STUDY)

4. On your baby's due date, how old will you be?
   - Under 18 years of age (END STUDY)
   - 18-21
   - 22-25
   - 25-30
   - 31-35
   - 36-40
   - 40-45
   - 46+

5. Are you a first-time mom, meaning this baby will be your first biological child (baby that you give birth to and raise)?
   - Yes
   - No (END STUDY)

6. Have you ever watched the video, "BabyBabyOhBaby Nurturing Your Gorgeous and Growing Baby by Breastfeeding"?
   - Yes (END STUDY)
   - No

7. Currently, where do you live?
    - U.S. State or territory (provide list of all states and U.S. territories from which participants will choose to make data cleaning easier)
    - I do not live in the U.S. (END STUDY)

Inclusion Criteria Check II

The following questions will take approximately one minute to complete.

1. Weeks gestation (when in your pregnancy was the baby born)?
    - Prior to 37 weeks (END STUDY)
    - 37-40 weeks
    - 40+ weeks

2. How much did your baby weigh when born?
    - Less than 5.5 pounds (END STUDY)
    - 5.5 pounds or more

3. When was your baby born? (mo/day/yr)

4. Currently, how many weeks old is your baby?
    - Less than 2-weeks
    - 2-4 weeks
    - 4-6 weeks
    - 6-8 weeks
    - 8-10 weeks
    - 10-12 weeks
    - More than 12-weeks

5. Did you experience major medical complications that stopped you from physically being able to breastfeed?
    - No
    - Yes:
        - Did a medical professional determine that you would be unable to breastfeed?
            - Yes (END STUDY)
            - No
6. Did you experience something other than a major medical complication that stopped you from being able to breastfeed?
    - No
    - Yes:
        - Victim of sexual assault/abuse
        - Other (prompt open-ended text box)
            - Please briefly describe what you experienced:

APPENDIX B: PARTICIPANT DEMOGRAPHIC AND PERSONAL FORM QUESTIONNAIRE

Participant Demographic and Personal Form

The following questions ask you to describe yourself. It will only take approximately two minutes, and it will help describe the women in the study.

1. How would you describe where you live?
   - City (urban)
   - Country (rural)
   - Suburb

2. What is the highest level of education you have completed?
   - Elementary School
   - High School
   - Some college
   - College- Associate's degree
   - College- Bachelor's degree
   - Some graduate school
   - Graduate degree

3. Have you decided how you will feed your baby?
   - Yes (skip #5)
   - No (skip #4)

4. During which trimester of your pregnancy did you make this decision?
   - First trimester
   - Second trimester
   - Third trimester

5. Have you thought about how you will feed your baby?
   - Yes
   - No (skip #6)

6. Who has *most* influenced your thoughts and/or decision to breastfeed and/or formula-feed your baby?
   - No one- I made the decision myself and/or only consider my own thoughts
   - Partner
     - Is your partner the baby's father?
       - Yes
       - No
   - Mother
   - Mother-in-law
   - Other family member(s), specify _____
   - Friend(s)
   - Public health nurse

- Midwife
- Physician
- Hospital nursing staff
- Lactation consultant
- La Leche League
- WIC staff member
- Other, specify _____

7. Were you ever breastfed as a baby?
   - Yes
     - Exclusively (i.e., you were fed breastmilk ONLY for a period of at least 24 hours)?
       - Yes
       - No
       - I don't know
   - No

8. Do you have a close family member or friend who has ever breastfed a baby?
   - Yes
     - Exclusively (i.e., baby was fed breastmilk ONLY for a period of at least 24 hours)?
       - Yes
       - No
   - No

9. Are you currently attending any prenatal classes?
   - Yes
   - No (skip #10)

10. Did you attend a class on breastfeeding?
    - Yes
    - No

11. When you became pregnant, were you smoking cigarettes daily, occasionally, or not at all?
    - Daily
    - Occasionally
    - Not at all

12. Currently, do you smoke cigarettes daily, occasionally, or not at all?
    - Daily
    - Occasionally
    - Not at all

13. Were you born in the United States?
    - Yes (skip #14)
    - No

14. Where were you born? Country_____
15. What is your date of birth?

16. Based on how you identify, please select **all** racial/ethnic/cultural groups to which you belong:
    - American
    - First generation American (at least one of your parents was not born in the U.S.):
        - Mother's country of origin _____ or I don't know
        - Father's country of origin_____or I don't know
    - Second generation American:
        - Grandparents' country(ies) of origin_____or I don't know
    - African American
    - Black
    - White
    - Hispanic
    - Latinx
    - Asian; please specify _____
    - Pacific Islander
    - Jewish
    - Middle Eastern
    - Other_____

17. What is your estimated annual household income before taxes?
    - $0 - $19,999
    - $20,000 - $39,999
    - $40,000 - $59,999
    - $60,000 - $79,999
    - $80,000 - $99,999
    - $100,000 - +

18. Are you eligible to participate in The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)?
    - Yes
    - No (skip #19)
    - I don't know (skip #19)

19. Are you enrolled in The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)?
    - Yes
    - No

20. Where do you plan on delivering your baby?
    - At home
    - Birthing center
    - Hospital
        - Based on compliance with the World Health Organization's 10 Steps to Successful Breastfeeding, is this hospital recognized as "Baby Friendly"?
            - Yes
            - No
            - I don't know
    - Other _____
    - I don't have a plan yet for where my baby will be born

Thank you for completing this portion of the study. The next set of questions will ask about your beliefs about feeding your baby and your expectations for how that will go.

Additional Participant Information

The following questions ask you to describe yourself, and your childbirth and infant feeding experiences. It will only take approximately five minutes and it would help researchers describe the women in the study, and better understand how different groups' infant feeding decisions are made.

1. What is your marital status?
    - Married/Common law
    - Committed relationship with biological father of the baby
    - Committed relationship (not with the biological father of the baby)
    - Single
    - Other_____

2. Do you participate in The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)?
    - Yes
    - No

3. What is your baby's date of birth?

4. Where was your baby delivered?
    - At home
    - Birthing center
    - Hospital
        - Based on compliance with the World Health Organization's 10 Steps to Successful Breastfeeding, is this hospital recognized as "Baby Friendly"?
            - Yes
            - No
            - I don't know
    - Other _____

5. How would you describe your baby's birth? Check all that apply.
   - Vaginal:
     - Spontaneous
     - Forceps
       - Low forceps
       - Mid forceps
       - I don't know
     - Vacuum extraction
   - Natural (no anaesthesia/analgesia)
   - Anaesthesia/Analgesia:
     - Epidural
     - Spinal
     - General
     - Local (pudendal block)
     - Nitrous oxide (Entonox)
     - Opioid
     - Other, specify _____
   - Cesarean Section:
     - Planned/routine
     - Emergency (doctor insisted because baby's or mom's life was in danger)

6. How long were you in the hospital/birthing center after you gave birth to your baby?
   - _____Hours
   - N/A (home birth)

7. When you were in labor, did you have a midwife or doula?
   - Yes, specify one or both:_____
   - No

8. Did you experience serious breastfeeding problems while you were in the hospital or birthing center?
   - N/A (home birth)
   - Yes, specify the problem: _____
   - No

9. Did your baby receive any supplementation other than breastmilk while in the hospital or birthing center?
    - N/A (home birth)
    - No
    - Yes:
        - Was this your decision?
            - Yes
            - No
                - Who made the decision:_____
        - Were you told that your baby required formula supplementation because s/he had "lost too much weight" in the hospital?
            - Yes
                - Who communicated this information to you (check everyone who told you this):
                    - Nursing assistant or nursing aide
                    - Nurse (i.e., RN)
                    - Nurse Practitioner
                    - Physician Assistant (i.e., PA)
                    - Physician (i.e., MD)
                        - Was this the doctor (i.e., OBGYN) who delivered your baby?
                            - Yes
                            - No
                                - Was this the rounding pediatrician?
                                    - Yes
                                    - No
                    - Other: (open-ended)
            - No
                - Please explain why your baby received any supplementation other than breastmilk while in the hospital or birthing center:

10. Were you seen by a lactation consultant or a nurse you felt was knowledgeable about breastfeeding?
    - Yes
    - No:
        - Was there a lactation consultant or qualified nurse available to offer you breastfeeding assistance or support?
            - Yes, explain why you were not seen:_____
            - No
        - Did you ask for assistance, or did someone ask for assistance on your behalf?
            - Yes
            - No

11. When you participated in this study when you were pregnant, did you watch the video, "BabyBabyOhBaby Nurturing Your Gorgeous and Growing Baby by Breastfeeding"?
    - Yes:
        - Did watching the video influence… [IRB: "Did watching the video influence…" will begin each of the following questions on Qualtrics]
            - Prenatal care decisions, such as attending a class on breastfeeding or finding resources on your own to learn more about breastfeeding?
                - Yes
                - Please explain:_____
                - No
            - Your decision to breastfeed your baby
                - Yes
                - Please explain:_____
                - No
            - Decisions you made in the hospital/birthing center (regarding breastfeeding initiation or any activity related to breastfeeding)?
                - Yes
                - Please explain:_____
                - No
                - N/A (home birth)
            - Decisions within the first week of your baby's life?
                - Yes
                - Please explain:_____
                - No
            - Your plan regarding for how long you hope to continue breastfeeding?
                - Yes
                - Please explain:_____
                - No
                - N/A
                - I'm not breastfeeding currently
                - I never breastfed
            - Decision to participate in a breastfeeding support group, such as La Leche League?
                - Yes
                - Please explain:_____
                - No
        - Did you learn anything from the video that has been helpful to you since the baby was born?
            - Yes; please explain:_____
            - No
        - Would you add anything to the video, such as something you wish you had known prior to giving birth?
            - Yes; please explain:_____
            - No

    - Would you take anything out of the video, or make any other changes to improve the video?
        - Yes; please explain:_____
        - No
- No

12. Have you participated in a breastfeeding support group, such as La Leche League?
    - Yes:
        - Specifically, is it a La Leche League group?
            - Yes
                - Please explain how this group provides breastfeeding support, and how you participate (e.g., attend meetings; online support only, etc.):_____ _____

                - Approximately how many times have you participated (i.e., attended a meeting or reached out to someone from the group for advice about breastfeeding?) _____ time(s)
            - No
                - Please explain how this group provides breastfeeding support, and how you participate (e.g., attend meetings; online support only, etc.):_____ _____

                - Approximately how many times have you participated (i.e., attended a meeting or reached out to someone from the group for advice about breastfeeding?) _____ time(s)
    - No

13. Have you reached out to a knowledgeable peer (i.e., someone with breastfeeding experience) or multiple peers in another way (i.e., other than through a support group) for help and/or advice about breastfeeding?
    - Yes
        - I have ____ peers who have provided me with peer support *(this number will determine the number of blanks below for the next two questions)*
        - Please explain how you reached out to each person and how each person has provided you with breastfeeding support.
            - Person 1:
            - Person 2:
            - Etc.
        - Approximately how many times have you received breastfeeding advice/support from each peer?
            - Person 1: _____time(s)
            - Person 2: _____time(s)
            - Etc.
    - No

14. When did you **first** decide how you would feed your baby (i.e., breastfeed and/or formula feed)?
    - Before pregnancy
        - Did you change your mind during pregnancy?
        - Did you change your mind at/after birth?
    - During pregnancy:
        - First trimester
            - Did you change your mind later during pregnancy?
            - Did you change your mind at/after birth?
        - Second trimester
            - Did you change your mind later during pregnancy?
            - Did you change your mind at/after birth?
        - Third trimester
            - Did you change your mind later during pregnancy?
            - Did you change your mind at/after birth?
    - At/after birth

15. Who influenced your decision *most* to breastfeed and/or formula feed your baby?
    - No one- I made the decision myself
    - Partner
    - Mother
    - Mother-in-law
    - Other family member(s), specify _____
    - Friends
    - Public health nurse
    - Midwife
    - Physician
    - Hospital nursing staff

- Lactation consultant
- La Leche League
- People in the educational video, "BabyBabyOhBaby Nurturing Your Gorgeous and Growing Baby by Breastfeeding"
- Other, specify _____
- Do not know

16. How soon after birth did you breastfeed your baby for the first time?
    - I did not attempt to breastfeed (skip question #20)
    - Within the first hour
    - 2-10 hours
    - More than 10 hours

17. Have you thought about how long you would like to breastfeed your baby?
    - Yes
        - About how long do you think you will breastfeed your baby?
            - Less than 1 month
            - 1 month
            - 2 months
            - 3 months
            - 4 months
            - 5 months
            - 6 months
            - Between 6 months and 1 year
            - More than 1 year
            - As long as I can
            - Do not know

    - No

This concludes your participation in the study. Thank you for making this research possible. If you have any questions about the purpose, procedures, and outcome of this project, contact Ms. Erin Godly-Reynolds (908-309-8520, egodlyre@uncc.edu).

APPENDIX C: BREASTFEEDING ASSESSMENT QUESTIONNAIRE

Breastfeeding Assessment

The following questions ask about your experience feeding your baby. It will take approximately five minutes to complete.

18. Has what you feed your baby – breastmilk only, formula only, combination of both, or other - changed between when your baby was born and today?
    - Yes, what my baby receives has changed since birth
        - Which choice describes your infant feeding practices? (then auto skip them to #19)
        - At first, I fed my baby ONLY breastmilk
            - When was the last time your baby received ONLY breastmilk? Date:
        - At first, I fed my baby both breastmilk and formula, but I don't breastfeed anymore
            - When was the last time your baby received ANY breastmilk? Date:
        - At first, I fed my baby only formula, but now I'm breastfeeding
            - When was your baby breastfed for the first time? Date:
        - At first, I fed my baby only formula, then I breastfed, but I don't breastfeed anymore
            - When did your baby receive ONLY breastmilk for a period of at least 24 hours?
                - Never
                - Start date: - End date:
            - When did your baby receive ANY breastmilk? Start date: - End date:
    - No, I have been feeding my baby the same – breastmilk only, formula only, combination of both, or other - since birth
19. How have you been feeding your baby?
    - Breastfeeding alone
    - Breastfeeding in combination with something else (formula or other human milk substitute)
    - Bottlefeeding (formula or other human milk substitute):
        - When did your baby last receive breastmilk?
            - Date: _____
            - My baby has never been breastfed (skip to #21.)

20. Has your baby received breastmilk in the past 24 hours?
    - Yes
    - No
        - When did your baby last receive breastmilk?
            - Date
            - My baby has never been breastfed

21. What else besides breastmilk has your baby received since birth?

- Nothing (Breastmilk Only)
- Breastmilk and Supplementation
    - Fluids Only, specify what fluids_____
    - Formula
        - How often are you giving your baby formula?
            - Less than 1 bottle/week
            - Between 1 bottle/week and 1 bottle/day
            - 1 bottle/day or more
                - Is the breast given only for baby's comfort?
                    - Yes
                    - No

22. Choose **all** factors that have influenced your infant feeding decisions (what you feed your infant, and for how long):
    - Partner's influence and support or lack of support
    - Peers' influence
    - Society's influence (you would feel criticized if you went against what is considered normal)
    - Family member's influence
    - Public policy's influence (in some states it is not legal to breastfeed in public spaces)
    - Work policy's influence (whether or not pumping and storing milk are feasible)
    - Work logistics (working long hours, or working somewhere that does not have a refrigerated place to store milk)
    - Other work-related factor: _____
    - Pain when breastfeeding or pain because of breastfeeding
    - Accelerated weight loss (for nursing mothers) attributable to breastfeeding
    - Convenience of your chosen feeding method
    - Health benefits to baby
    - Health benefits to mom
    - Watching the video in this study
    - Breastfeeding support group's influence
    - How you feel when you feed your infant (bonding)
    - WIC benefits (free formula)
    - Free formula from another source: _____
    - Treatment in hospital or birthing center
    - Other_____

23. Please rank the top 3 factors that influenced your infant feeding decisions, in order from 1 (most influential) to 3 (least influential), and provide an explanation so that our study team can better understand your experience:

    - 1._____
    - 2._____
    - 3._____

APPENDIX D: SATISFACTION RATING OF THE VIDEO QUESTIONNAIRE

Satisfaction Rating of the Video

The following questions ask for your opinion of the video, and will take approximately two minutes to complete.

1. How much of the video did you watch?
   - The entire twenty-eight-minute video
   - Most of the video
   - Some of the video
   - Did not watch the video
2. What did you think about the toddler pretending to breastfeed her baby doll?
   - That was unexpected, and I didn't like it
   - I expected that to be included in this video
   - There was no toddler pretending to breastfeed a doll in this video
   - That was unexpected, but I thought it was funny
3. Please rate your knowledge of breastfeeding:

   - BEFORE watching the video:

1	2	3	4	5
Very Poor	Poor	Fair	Good	Very Good

   - AFTER watching the video:

1	2	3	4	5
Very Poor	Poor	Fair	Good	Very Good

For the following three questions [IRB: Qualtrics will include these directions for #3, #4, & #5], please rate the degree to which this video led you to…

4. Want to learn more about breastfeeding

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

Please provide details about the video that explain your rating:_____

5. Reflect on and consider changing your beliefs about feeding your baby

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

Please provide details about the video that explain your rating:_____

6. Reflect on and consider changing your approach to feeding your baby

1	2	3	4	5
Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree

Please provide details about the video that explain your rating:_____

7. Did you ask the lactation consultant any questions during a Q&A interactive session at the end of the video?
   - Yes, she answered all my questions
   - No, the video I watched did not include a Q&A session or anything interactive, so I couldn't have asked any questions
   - Yes, but she was unable to answer some of my questions
8. Would you recommend the video to other women?
   - Yes
     - Why?_____
   - No
     - Why not?_____
9. How could the video be made better?_____

Thank you for completing part two of the study. The third part asks survey questions, which are similar to the ones you answered in part one. Thank you for your continued participation, which makes this research possible.

APPENDIX E: SAMPLE EMAIL REMINDER

Message from Erin Godly-Reynolds (egodlyre@uncc.edu)

Hi,

This is a friendly reminder that you will be eligible to complete the second HIT of the infant feeding study (live now) when your baby is 4-6 weeks old. Compensation is $4.00 and the HIT will take approximately 20 minutes to complete.

Here is the link: http://www.turkprime.com/Router/Mturk/107645

To remain eligible, you MUST participate while your baby is 4-6 weeks old (you can't participate until your baby is 4-weeks, and you can't participate once your baby is 6-weeks and 1 day old).

This study depends on participants completing the second HIT, so I truly appreciate your time and sincerely look forward to learning how you and your baby are doing!

Thank you,
Erin Godly-Reynolds
egodlyre@uncc.edu
(Sent from my TurkPrime Account)