

Spring 5-16-2015

# The Relationships Among Perceived Stress, Birth Satisfaction, and Breastfeeding Self-Efficacy in Early Postpartum Women

Katherine Hinic  
katherine.hinic@student.shu.edu

Follow this and additional works at: <https://scholarship.shu.edu/dissertations>

 Part of the [Maternal and Child Health Commons](#), [Maternal, Child Health and Neonatal Nursing Commons](#), [Public Health Education and Promotion Commons](#), and the [Women's Health Commons](#)

---

## Recommended Citation

Hinic, Katherine, "The Relationships Among Perceived Stress, Birth Satisfaction, and Breastfeeding Self-Efficacy in Early Postpartum Women" (2015). *Seton Hall University Dissertations and Theses (ETDs)*. 2040.  
<https://scholarship.shu.edu/dissertations/2040>

THE RELATIONSHIPS AMONG PERCEIVED STRESS, BIRTH  
SATISFACTION, AND BREASTFEEDING SELF-EFFICACY IN EARLY  
POSTPARTUM WOMEN

BY

KATHERINE A. HINIC

Dissertation Committee

Dr. Marie Foley, Chair  
Dr. Judith Lothian  
Dr. Karen D'Alonzo

Approved by the Dissertation Committee:

Marie Foley

Date: 3/16/15

Karen D'Alonzo

Date: 3/16/15

Judith Lothian

Date: 3/16/15

Submitted in partial fulfillment of the  
Requirements for the degree of Doctor of Philosophy in Nursing  
Seton Hall University  
2015

Copyright © Katherine A. Hinic

## ACKNOWLEDGEMENTS

I would like to express my sincerest thanks and deepest appreciation to Dr. Marie Foley, my chair and advisor, for her support, guidance, and encouragement since my first day at Seton Hall University. Your generosity of time and wisdom has immeasurably contributed to my own personal and academic development. I feel deeply grateful for the privilege I have had to work with you. I am thankful to my committee members, Dr. Judith Lothian and Dr. Karen D'Alonzo for the time and expertise they have shared with me in the areas of maternal-newborn health promotion and self-efficacy theory.

My colleagues, Jeannie Couper, Lisa Heelan, Patti Ricci-Allegra, and Lori Wilt, and the relationships we have developed over the past four years have been a delightful and important part of this journey. I am very thankful for each of you and for your friendship.

I would like to acknowledge the Robert Wood Johnson Foundation and the New Jersey Nursing Initiative for their generous support of my doctoral studies. This grant has provided many rich experiences and opportunities, which have greatly enhanced my education and broadened the horizons of what I thought was possible.

Finally, I am immensely grateful to my wonderful family, Mom, Dad, Rob, Eileen, Saulo, and Petar for their encouragement, help, and confidence in me. And to my children, Ethan, Nina, and Julia, who are my joy and help me keep everything in perspective.

## **DEDICATION**

I dedicate this work to my mother, Susan McKee, my main source of efficacy information and role model, who has instilled in me the confidence and capacity to complete this degree.

## TABLE OF CONTENTS

	ACKNOWLEDGEMENTS .....	3
	DEDICATION .....	4
	TABLE OF CONTENTS .....	5
	LIST OF TABLES .....	7
	LIST OF FIGURES .....	8
	LIST OF APPENDICES .....	9
	ABSTRACT .....	10
I	INTRODUCTION.....	12
	Introduction to the Problem.....	12
	Purpose.....	17
	Definitions.....	17
	Delimitations.....	18
	Theoretical Framework.....	19
	Research Questions.....	24
	Hypotheses.....	24
	Significance of the Study.....	25
II	REVIEW OF THE LITERATURE.....	28
	Self-Efficacy Theory.....	28
	Breastfeeding Self-Efficacy Empirical Review .....	35
	Perceived Stress.....	43
	Perceived Stress and Breastfeeding Empirical Review .....	49
	Birth Satisfaction.....	59
	Birth Satisfaction and Breastfeeding Empirical Review .....	66
	Conclusion.....	71
III	METHODOLOGY.....	74
	Study Design.....	74

	Description of Population and Setting .....	74
	Sample Size and Statistical Power .....	75
	Research Instruments .....	76
	Breastfeeding Self-Efficacy Scale-Short Form.....	76
	Perceived Stress Scale-10.....	78
	Birth Satisfaction Scale-Revised.....	79
	Participant Information Form.....	81
	Ethical Considerations .....	82
	Data Collection Procedures.....	83
	Analysis of Data.....	86
IV	FINDINGS .....	88
	Introduction .....	88
	Description of the Sample .....	88
	Statistical Analyses .....	96
	Content Analysis for Birth Satisfaction Scale-Revised .....	110
	Summary .....	111
V	DISCUSSION OF FINDINGS .....	115
	Introduction.....	115
	Breastfeeding Self-Efficacy .....	116
	Birth Satisfaction .....	120
	Perceived Stress .....	124
	Relationships Among Ancillary Variables .....	128
	Qualitative Analysis of Birth Satisfaction Scale Comments .....	128
	Study Strengths .....	130
	Study Limitations .....	131
VI	SUMMARY, IMPLICATIONS, AND CONCLUSIONS .....	133
	Summary .....	133
	Implications .....	134
	Conclusions .....	139
VII	REFERENCES.....	142
VIII	APPENDICES.....	157

## LIST OF TABLES

Table 1. Study Sample Characteristics: Race and Ethnicity of Sample and Hospital Study Site Data (2012) .....	90
Table 2. Study Sample Characteristics: Socioeconomic Description of the Sample .....	91
Table 3. Study Sample Characteristics: Birth Type in Study Sample and Hospital Study Site Data (2014) .....	93
Table 4. Study Variables: The Birth Satisfaction Scale-Revised (BSS-R) and BSS-R Subscales Survey Results .....	95
Table 5. Study Variables: Perceived Stress Scale-10 (PSS-10) and Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) Survey Results .....	96
Table 6. Means, Standard Deviations, and Bivariate Correlations for Main Study Variables (Pearson Correlation) .....	99
Table 7. Bivariate correlations (Spearman's rank) between Breastfeeding Self-Efficacy and Ancillary Variables .....	101
Table 8. Multiple Linear Regression Analysis Examining Predictors of Breastfeeding Self-Efficacy .....	105
Table 9. Correlations Between Ancillary Variables – Spearman's Rank Correlation .....	109

**LIST OF FIGURES**

Figure 1. Study Theoretical Framework .....	23
Figure 2. Self-efficacy Theory .....	32

**LIST OF APPENDICES**

Appendix A: Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF)..	157
Appendix B: Perceived Stress Scale-10 (PSS-10) .....	158
Appendix C: Birth Satisfaction Scale-Revised (BSS-R) .....	159
Appendix D: Participant Information Form .....	160
Appendix E: Permission to use the BSES-SF.....	164
Appendix F: Permission to use BSS-R .....	165
Appendix G: Seton Hall University IRB Approval Letter .....	166
Appendix H: Hospital IRB Approval Letter .....	167
Appendix I: Recruitment Script .....	169
Appendix J: Letter of Solicitation.....	173

## ABSTRACT

This descriptive correlational study examined the relationships among perceived stress, birth satisfaction, and breastfeeding self-efficacy in women in the early postpartum period. The study, guided by self-efficacy and stress and coping theories, aimed to identify factors related to breastfeeding self-efficacy, an important psychological variable in sustained breastfeeding. The sample ( $N=107$ ) was comprised of primarily well-educated, higher income, non-Hispanic White (69.8%) women recruited from a single New Jersey hospital in the first four days postpartum. The sample was comprised of nearly equal numbers of primiparous and multiparous women, all of whom expressed an intention to breastfeed, with an overall cesarean section rate of 38.8%. Participants were invited by the researcher to complete three established survey instruments, which measured the main study variables: the Perceived Stress Scale-10, the Birth Satisfaction Scale-Revised, and the Breastfeeding Self-efficacy Scale-Short Form, in addition to a researcher-generated demographic questionnaire. Survey responses were analyzed using a variety of descriptive and inferential statistical analyses.

Study results indicated a small positive correlation between birth satisfaction and breastfeeding self-efficacy and a small negative correlation between birth satisfaction and perceived stress. A statistically significant multivariate model revealed that the main and ancillary variables explored in the study explained 38.5% of the variance in breastfeeding self-efficacy scores. Supplemental formula feeding

in the hospital explained the most variance in scores, followed by birth satisfaction, and infant feeding plans.

The study findings elucidate the impact of certain sources of efficacy information, which may inform strategies for nurses and healthcare professionals to impact a woman's self-efficacy for breastfeeding. Strategies include supporting and guiding women in formulating their infant feeding plans antenatally, promoting birth satisfaction, involving partners in breastfeeding education, and limiting the use of in-hospital supplemental formula unless medically indicated.

## **Chapter I**

### **INTRODUCTION TO THE PROBLEM**

Breastfeeding an infant for the first year of life is one of the most effective strategies for the promotion of health and prevention of morbidity in both developing and industrialized nations (American Academy of Pediatrics [AAP], 2012; Association of Women's Health, Obstetric, and Neonatal Nurses, [AWHONN], 2015; World Health Organization [WHO], 2012). Exclusive breastfeeding for the first six months of life followed by breastfeeding with the addition of complementary foods for at least the first year of life is recommended as the "normative standard for infant feeding" (AAP, 2012, p. e827). While the rate of breastfeeding initiation has risen nationally to 79.2%, only 49.4% of women are still breastfeeding their infants at 6 months of life and only 26.7% continue for one year (Centers for Disease Control and Prevention [CDC], 2014). While improvements have certainly been made, these numbers remain significantly lower than the Healthy People 2020 goals of having 60.6% of women breastfeeding at 6 months and 34.1% breastfeeding at 12 months (United States Department of Health and Human Services, [US DHHS], 2012). Furthermore, Odom, Li, Scanlon, Perrine, & Grummer-Strawn (2013) found that 60% of mothers stopped breastfeeding earlier than they desired.

Because of the substantial infant, maternal and societal benefits associated with breastfeeding for a period of at least six months, it is essential for nurses to support those women who wish to breastfeed. The Agency for Healthcare Quality and Research (AHRQ)'s extensive systematic review revealed to the public important

maternal and infant health benefits associated with breastfeeding (Ip et al., 2007). Infant health benefits associated with breastfeeding include decreased risk of lower respiratory tract infections such as pneumonia and respiratory syncytial virus (RSV), along with decreased risk of gastrointestinal infections, Sudden Infant Death Syndrome (SIDS), allergic disease, and celiac disease (Chantry, Howard, & Auinger, 2006; Ip et al., 2007; Kramer & Kakuma, 2012). These health benefits are associated with exclusive breastfeeding for the first six months of life (Kramer & Kakuma, 2012). In this meta-analysis, Ip et al. (2007) additionally identified decreased risk of breast and ovarian cancer in women with lifetime breastfeeding experience of at least 12 months compared with women who had never breastfed an infant. The odds of developing Type 2 Diabetes also decreased with increasing duration of breastfeeding during one's lifetime. In one important United States study, Chen and Rogan (2004) found that post-neonatal mortality was decreased by 21% in infants who were exclusively breastfed for the first six months of life.

While numerous factors impact breastfeeding outcomes, only a few of these factors are modifiable by healthcare providers and therefore provide an opportunity for nurses to effect significant change in behavior. Breastfeeding self-efficacy, a modifiable psychological factor, has been identified in recent years as a significant predictor of breastfeeding duration and exclusivity (Blyth et al., 2002; Dennis, 1999; de Jager, Skouteris, Broadbent, Amir, & Mellor, 2013; Meedy, Fahy, & Kable, 2010; Mitra, Khoury, Hinton, & Carothers, 2004). A new mother's level of breastfeeding self-efficacy in the early postpartum period effectively predicts

continued breastfeeding at 4, 6, 8, and 16 weeks postpartum (Blyth et al., 2002; Dennis, 2003; McCarter-Spaulding & Gore, 2009). Other researchers have demonstrated a significant relationship between breastfeeding self-efficacy in the early postpartum period and breastfeeding duration up until 6 months (Bosnjak, Rumboldt, Stanojevic, & Dennis, 2012; McCarter-Spaulding & Gore; Wilhelm, Rodehorst, Stepan, Hertzog, & Berens, 2008). A significant relationship between breastfeeding self-efficacy and exclusive breastfeeding has also been demonstrated (Blyth et al., 2002; Dai & Dennis, 2003; Dennis, 2003; Dennis, Heaman, & Mossman, 2011; de Jager, et al., 2013; Kronborg & Vaeth, 2004; McCarter-Spaulding & Gore; Semnic, Loisel, & Gottlieb, 2008).

Therefore, breastfeeding self-efficacy is particularly consequential for nurses working with mothers and families in order to demonstrate progress towards meeting public health goals for breastfeeding and in the reduction of preventable morbidity in this population. The concept of breastfeeding self-efficacy has been developed in nursing and studied primarily as it relates to long term infant feeding outcomes; however, very few studies have addressed the impact of various maternal and social factors, or sources of efficacy information, on breastfeeding self-efficacy.

The experience of childbirth is an important life event for a woman and a critical consideration in the study of any aspect of the postpartum experience. The first formal task of motherhood is the evaluation and cognitive processing of the childbirth experience (Mercer, 1995). Childbirth satisfaction is a complex and multidimensional construct influenced by numerous factors, including how the reality

of the birth experience compares with expectations, caregiver attitudes and behavior, maternal participation in decisions made throughout the labor, and presence of medical interventions (Hodnett, 2002). More recently, Hollins Martin and Fleming (2011) identified similar factors that influence childbirth satisfaction, including quality of care provision, women's personal attributes, and stress experienced during labor, which includes medical interventions. Positively perceived birth experiences have been associated with increased maternal sense of competence (Mercer, 1986), self-esteem, mastery, and confidence (Callister, 2004). Negative birth experiences, on the other hand, can be disempowering to the woman (Fenwick, Gamble, & Mawson, 2003), and may result in negative effects on a woman's mental health (Beck, 2001), self-efficacy, and self-esteem (Callister). Feelings of anger, guilt, disappointment, and loss of control have been associated with a negative birth experience (Callister). Fear of childbirth (Rubertsoon, Waldenström, Wickberg, 2003), postpartum depression (Beck, 1996, 2001), and post-traumatic stress disorder (Beck, 2004) have also been associated with negative perceptions of the birth experience.

The rise in medical interventions and cesarean births in the United States over the past two decades (Hamilton, Martin, Osterman, & Curtin, 2014) have prompted study of how these factors may impact continued breastfeeding. However few studies (Beck & Watson, 2008; Bryanton, Gagnon, Johnston, & Hatem, 2008) have examined the relationship between satisfaction with the birth experience and breastfeeding outcomes. The inconsistent findings related to the impact of cesarean birth and

breastfeeding (Cakmak & Kuguoglu, 2007; Pérez-Ríos, Ramos-Valencia, & Ortiz, 2008; Rowe-Murray & Fisher, 2002) could be partially explained by the woman's own satisfaction with the entire birth experience.

Regardless of a woman's satisfaction with her birth experience, the transition to motherhood is generally accompanied by stress, due to the tremendous physical and psychosocial changes following childbirth and the responsibilities of caring for and integrating an infant into the family (Mercer, 1995). Perceived stress, a prevalent affective or emotional state, is more common in women than men and generally is more common in younger women (Cohen & Janicki-Deverts, 2012). Bandura (1997) defines stress as an emotional state generated by perceived threats and taxing demands, based on the stress and coping theory of Lazarus & Folkman (1984). Stress in the postpartum period can be detrimental to the health of both the mother and the infant, especially if the new mother perceives the stress to exceed her resources for coping (Beck, 2001; Hung, 2004). Much stress-related research on new mothers has focused on serious psychiatric conditions, including post-traumatic stress disorder and postpartum depression (Beck, 2004). The relationships among perceived stress, birth satisfaction, and breastfeeding outcomes remain largely unexplored.

Breastfeeding self-efficacy has been identified as an important factor in sustained breastfeeding and exclusive breastfeeding in many parts of the world. However, the impact of specific theory-based maternal factors or experiences on a woman's level of breastfeeding self-efficacy has been explored in only a limited number of studies in Canada (Dennis, 2003; Dennis, 2006; Kingston, Dennis, &

Sword, 2007) and one study in China (Zhu, Chan, Zhou, Ye, & He, 2014). Only one study examined factors that impact breastfeeding self-efficacy in the first several days postpartum (Kingston et al., 2007) and did not include the variables of perceived stress and birth satisfaction, which are of particular importance during this time period. The other Canadian studies looked at predictors of breastfeeding at 1 week postpartum or later (Dennis, 2003; 2006). Zhu et al. (2014) examined predictors of antenatal breastfeeding self-efficacy in pregnant Chinese mothers.

No research has been conducted to determine predictors of breastfeeding self-efficacy in the early postpartum period in US mothers. In order to effectively plan and implement interventions aimed at increasing breastfeeding in the first days of life, a critical time in the establishment of breastfeeding, nurses require more information about factors that influence breastfeeding self-efficacy among mothers in the United States.

### **Purpose of the Study**

The purpose of this study was to examine the relationships among perceived stress, birth satisfaction, and breastfeeding self-efficacy. This study has three main variables: perceived stress, birth satisfaction, and breastfeeding self-efficacy.

### **Definitions**

**Birth satisfaction** is conceptually defined by Hollins Martin and Martin (2014) as a woman's perceptions of her birth experience. Birth satisfaction is influenced by the three concepts of quality of care provision, women's personal attributes, and stress experienced during labor. The operational definition for birth

satisfaction is a score on the Birth Satisfaction Scale-Revised (BSS-R) (Hollins Martin & Martin, 2014), which was developed to “construct a meaningful picture of what constitutes a woman’s like or dislike of the childbearing experience” (Hollins Martin & Martin, 2014).

**Perceived stress** is defined by Bandura (1997) as an emotional state generated by perceived threats and taxing demands. Stressors can take diverse forms, physical or psychological, and result in different patterns of physiologic activation. Level of perceived stress is largely determined by an individual’s perceived coping resources and self-efficacy for managing stressors. This variable is operationalized as performance on the Perceived Stress Scale-10 (Cohen, Kamarck & Mermelstein, 1983).

**Breastfeeding self-efficacy** is defined by Dennis & Faux (1999) as a “woman’s confidence in her ability to perform specific tasks and behaviors related to successful breastfeeding” (p. 406). In this study, breastfeeding self-efficacy will be operationalized as a score on the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) (Dennis, 2003).

### **Delimitations, Inclusion Criteria**

This study was limited to women in the early postpartum period (first four days after birth) who intended to breastfeed and gave birth to a live full term or late term ( $\geq 39$  weeks and 0/7 days and  $\leq 42$  weeks and 0/7 days gestation) (American College of Obstetricians and Gynecologists [ACOG], 2013), singleton infant. Participants were required to be greater than or equal to 18 years of age and able to

speak and read English. Their infants needed to be healthy, and cared for in the well-baby nursery.

### **Theoretical Framework**

Childbirth and infant feeding decisions are highly personal experiences that occur in a larger sociocultural and environmental context. Self-efficacy theory, the overarching theoretical framework for the proposed study, provides a context for understanding human behavior as a component of a larger and more complex social structure (Bandura, 1977, 1986, 1997). The proposed study is also guided by stress and coping theory (Lazarus & Folkman, 1984). Both theories propose an interdependent transactional model of the individual, the environment, and behavior. The concept of cognitive appraisal or processing, which is present in both theories, facilitates an understanding of individual human experiences within the larger sociocultural context.

Bandura (1986) describes an interdependent causal structure, which operates in the context of a broad network of socio-structural influences. Described as triadic reciprocal causation, the structure includes internal personal factors, such as cognitive, affective, and biological events; behavior; and environmental events, which influence one another bi-directionally. Within this model, self-efficacy beliefs are the most consequential cognitive determinants of behavior, particularly as tasks become more complicated (Bandura, 1997).

Self-efficacy beliefs are related to individuals' perceptions of their ability to perform specific behaviors, rather than their actual observed abilities. Self-efficacy

beliefs impact thoughts and behavior in several key ways: 1) behavior choice; 2) the amount of effort expended to persist in a task despite obstacles; 3) self-regulation of thought patterns, and 4) emotional reactions (Bandura, 1977). A strong sense of self-efficacy enables individuals to be persistent in a behavior, engage in positive thought patterns that promote success, and react emotionally to a new situation in a positive way. Individuals with lower self-efficacy are more likely to anticipate failure, perceive a new behavior as daunting and overwhelming, and engage in negative thought patterns and emotional reactions (Bandura, 1997). Each of these outcomes of efficacy beliefs has been found to be significant in breastfeeding behavior (Avery, Zimmerman, Underwood, & Magnus, 2009; DiGirolamo, Thompson, Martorell, & Grummer-Strawn, 2005; Robinson & VandeVusse, 2011).

Breastfeeding self-efficacy is a factor that has been shown to predict continued breastfeeding up to six months postpartum in diverse groups of women and is modifiable by healthcare professionals (Dennis, 2003; McCarter-Spaulding & Dennis, 2010). Women with higher levels of self-efficacy related to breastfeeding are more likely to choose to breastfeed and continue to do so (Avery et al., 2009, Blyth et al. 2002, Dennis, 2003, O'Brien, Buikstra, & Hegney, 2008). Likewise, low maternal confidence has been associated with the decision to formula feed (Mitra et al., 2004; Wells, Thompson, & Kloebler-Tarver, 2006) and early cessation of breastfeeding (Brown, Raynor, & Lee, 2011).

Self-efficacy in the early postpartum period can be impacted by numerous factors. Perceived stress, which is prevalent in women of childbearing age, (Cohen &

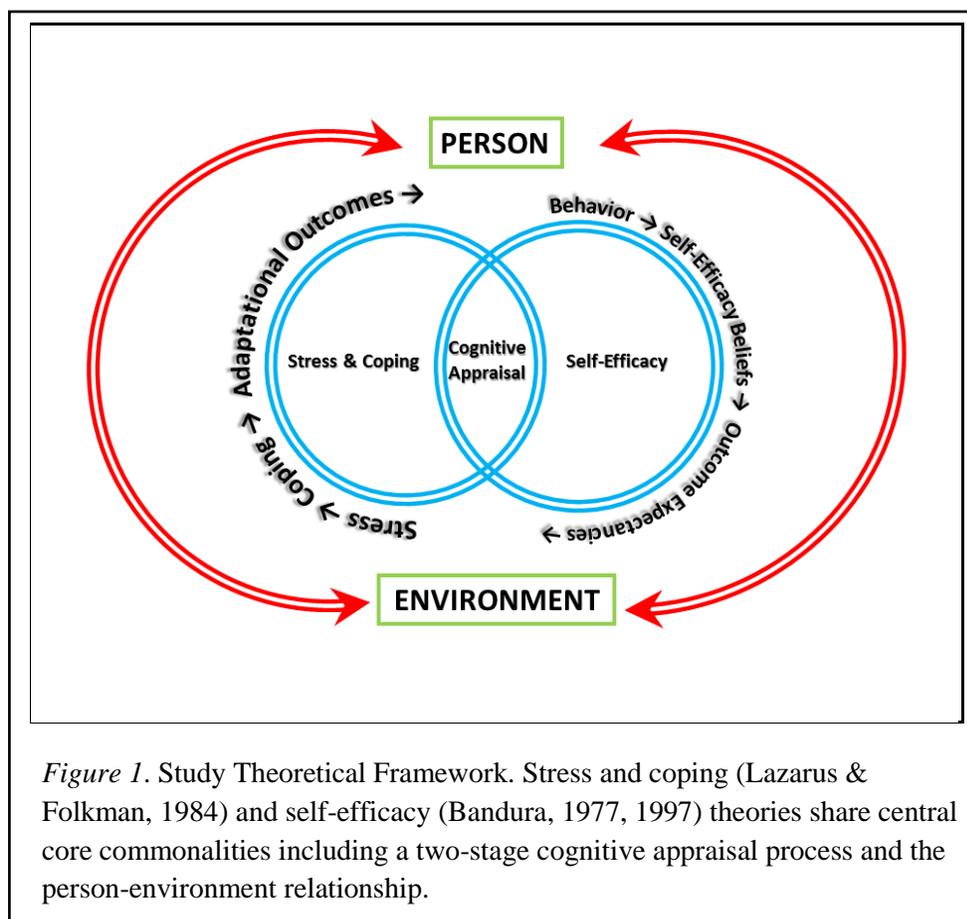
Janicki-Deverts, 2012) impacts self-efficacy beliefs by altering an individual's affective state (Bandura, 1997). Lazarus and Folkman's (1984) stress and coping theory provides a framework for understanding stress. These authors describe psychological stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 19). Within this theory, an individual's cognitive appraisal of stress as well as the recognition of harm, loss, threat, or challenge, is necessary for any emotional or physiological reactions to occur in response to the stressor. Perceived stress is an affective state, often accompanied by physiological symptoms, which could impact a woman's perception of her self-efficacy. Perceived stress can influence regulation of thought and emotional reactions (Bandura, 1997; Lazarus & Folkman, 1984) and has been associated with lower levels of breastfeeding self-efficacy (Dennis, 2003, 2006).

The recent experience of childbirth and a mother's satisfaction with the experience could impact a new mother's self-efficacy for breastfeeding in several ways. According to Bandura (1986), individuals make inferences about their abilities from the emotional or physiologic cues they experience in anticipation of performing a behavior. Positive emotions such as satisfaction can enhance self-efficacy, while negative emotions such as pain, anxiety, or stress can diminish self-efficacy (Dennis, 1999). Feelings of mastery, confidence (Callister, 2004), joy, and amazement (Halldorsdottir & Karldottir, 1996) have been reported following a positive birth. On the other hand, women with negatively perceived birth experiences have expressed

anger, indignation (Mercer, Green-Jervis & Brannigan, 2012), disempowerment (Fenwick et al., 2003), and feelings of failure (Beck & Watson, 2008). These powerful emotional states will likely impact a new mother's self-efficacy for breastfeeding and other tasks of motherhood in the early postpartum period. While Bandura (1997) cautions against assessment of omnibus or general self-efficacy, not related to a specific behavior, self-efficacy in one domain may impact self-efficacy for a related behavior. For example, self-efficacy gained from a positive childbirth experience could impact a woman's affective state and subsequent self-efficacy for breastfeeding, a closely related domain. Although these relationships have been explored in a very limited number of studies, a more positively perceived birth experience has been associated with higher levels of breastfeeding self-efficacy (Dennis, 2006).

These two theories work in concert with one another to explain the relationships among perceived stress, birth satisfaction, and breastfeeding self-efficacy. Both theories emphasize the ongoing transaction of the individual and the environment as well as the importance of cognitive appraisal or processing. Social cognitive theory (Bandura, 1986), the overarching framework from which self-efficacy is derived, is a bidirectional transactional model of the individual, environment, and behavior. Similarly, Lazarus & Folkman describe stress as a "transaction between a person and environment" (p. 19). The saliency of an individual's cognitive appraisal in regulating thought and behavior (Bandura, 1997; Lazarus & Folkman, 1984) is present in both theories. In self-efficacy theory, a two-

stage cognitive appraisal process of self-efficacy beliefs and outcome expectancies impacts behavior. Lazarus & Folkman compare the primary and secondary cognitive appraisal within their stress and coping framework to this two-stage process described by Bandura. Cognitive appraisal impacts behavior and affect through multi-directional transaction with the environment in both theories (see Figure 1).



Together, these theories provide a rich and solid framework to examine relationships among perceived stress, perception of birth experience, and breastfeeding self-efficacy in the early postpartum period.

### **Research Questions**

1. What are the relationships among perceived stress, birth satisfaction, and breastfeeding self-efficacy in the early postpartum period?
2. How well do perceived stress and birth satisfaction predict breastfeeding self-efficacy in the early postpartum period?

### **Sub-questions:**

- a. What is the relationship between birth satisfaction and breastfeeding self-efficacy in the early postpartum period?
- b. What is the relationship between perceived stress and breastfeeding self-efficacy during the early postpartum period?
- c. What is the relationship between birth satisfaction and perceived stress during the early postpartum period?

### **Hypotheses**

The literature supports inclusion of three hypotheses:

1. There is an inverse relationship between perceived stress and breastfeeding self-efficacy in the early postpartum period.
2. There is a positive relationship between birth satisfaction and breastfeeding self-efficacy in the early postpartum period.

3. There is an inverse relationship between perceived stress and birth satisfaction in the early postpartum period.

### **Significance of the Study**

Support for women who choose to breastfeed is a priority for healthcare providers working with families to optimize maternal and child health outcomes. Human milk provides optimal nutrition for growth and development for almost all infants in the United States (AAP, 2012). In addition to reducing maternal and infant morbidity (Ip et al., 2007), achieving better breastfeeding rates has important financial implications for our country. The suboptimal breastfeeding practices in the United States today burden our country with billions of dollars in additional pediatric (Bartick & Reinhold, 2010) and maternal (Bartick et al., 2013) healthcare costs. In their detailed cost analysis of Ip et al.'s (2007) Agency for Healthcare Quality and Research (AHRQ) report, Bartick and Reinhold (2010) found that if 90% of families adhered to the exclusive breastfeeding recommendation, \$13 billion in direct and indirect healthcare costs, including cost of formula, would be saved in the United States. The healthcare costs result from physician visits, treatments, medications, and hospitalizations resulting from the excessive burden of disease associated with formula-feeding.

Likewise, Bartick and colleagues (2013) used statistical modeling to evaluate the cost of maternal health outcomes associated with breastfeeding for one year in a cohort of 1.88 million 15-year-old young women followed until the age of 70. Bartick and colleagues (2013) found if 90% of the women who bore a child breastfed

for at least one year, in contrast to 23% who did in 2011, \$17.4 billion would be saved in premature death, direct and indirect healthcare costs. It is estimated that the suboptimal breastfeeding practices also contribute 4,981 excess cases of breast cancer, 53,847 cases of hypertension, and 13,946 myocardial infarctions when compared with the cohort of optimally breastfeeding women.

Despite its well-documented maternal and infant benefits, and recent improvement in breastfeeding rates, 60% of women stop breastfeeding earlier than they wish (Odom et al., 2013). Fewer than half of mother-baby dyads who begin breastfeeding are still breastfeeding at six months of life and fewer than a third continue to one year (CDC, 2014). High quality research focused on modifiable factors that impact breastfeeding outcomes is needed for nurses to effectively plan and implement interventions that will continue to improve breastfeeding experiences for mothers and infants. Given the prevalence of stress in young women in the United States (Cohen & Janicki-Deverts, 2012) and its association with perceived and actual birth experience (Bryanton et al., 2008), a more thorough understanding of the relationships among these factors and breastfeeding self-efficacy is needed. In addition to their high prevalence, all of the factors in this study are particularly consequential for nurses because each can be impacted by nursing care.

Clarification of the relationships among perceived stress, birth satisfaction, and breastfeeding self-efficacy is an important step in understanding and meeting the breastfeeding support needs of all women. Findings from this study will inform the design of effective strategies for breastfeeding support. In addition to these clinical

practice implications, findings from this study will further develop the concept of breastfeeding self-efficacy and advance self-efficacy theory. This study is one step in addressing the paucity of research examining the relationships among these important factors that have great potential to impact self-efficacy and ultimately breastfeeding exclusivity and duration.

## **Chapter II**

### **REVIEW OF THE LITERATURE**

This chapter will provide the theoretical rationale for the proposed study and provide an overview of what is known about the relationships among breastfeeding self-efficacy, perceived stress, and birth satisfaction in the early postpartum period. The theories of self-efficacy and stress and coping provide a framework for understanding relationships among variables in the study. An overview of self-efficacy theory will be presented, followed by a more detailed discussion of factors within the theory that relate specifically to this study. A discussion of perceived stress and birth satisfaction and their relationships with theory and breastfeeding outcomes will follow. This critical analysis of the literature will elucidate what is known about each of these factors, their relationships with one another, and important gaps in the literature.

#### **Self-efficacy Theory**

Self-efficacy theory is a psychological theory to explain and predict human behavior. Self-efficacy theory has guided empirical research in disciplines both within and outside of healthcare in the United States and internationally. Areas where this theory has been studied include education (Collins, 1982; Moos & Azevedo, 2009), business and management (Baron & Morin, 2010; Machida & Schaubroek, 2011; Betz & Hackett, 1981), athletic performance (Jackson & Beauchamp, 2010), psychology (Bandura, 1997; Dupere, Leventhal, & Vitaro, 2012), and healthcare practice and research (Lenz & Shortridge-Baggett, 2002; Pender, 2006).

**Overview of the theory.** Albert Bandura (1977), a psychologist, first introduced the concept of self-efficacy in his seminal paper describing social learning theory. Bandura re-named the theory social cognitive theory (1986) to reflect the expanded view that human functioning is the result of a dynamic interplay of personal, behavioral, and environmental influences. Based on continued research and refinement of his theory, Bandura (1997) re-conceptualized the theory, emphasizing the interdependence of human beings with each other, and their collective efficacy as a group.

Self-efficacy beliefs work in concert with outcome expectancies, which are individual judgments of what one expects to occur as a result of the performance of an action (Bandura, 1986). Outcome expectations do have a role in predicting performance; however, they are highly dependent on self-efficacy beliefs, which are known to predict performance much better than outcomes expectations (Bandura, 1986). Self-efficacy beliefs can predict whether individuals will engage in a given behavior and how much they will persist in the behavior despite obstacles and difficulties. In addition, self-efficacy is a behavior-specific construct, rather than a more static trait (Bandura, 1997).

**Self-efficacy and breastfeeding.** As with many health behaviors, self-efficacy has been identified as a determinant of breastfeeding behavior (Blyth et al., 2002; Dennis, 1999, 2003, 2006; Dennis et al., 2011; McCarter-Spaulding & Gore, 2009). Breastfeeding confidence has been cited in the literature as a predictive factor in breastfeeding outcomes (Hill & Humenick, 1996; Mitra et al., 2004), and Dennis

(1999) conceptualized this confidence theoretically within the self-efficacy framework. Breastfeeding self-efficacy is a factor that has been shown to predict continued breastfeeding across racial and demographic groups and is potentially modifiable by healthcare professionals (Dennis, 2003, 2006; Gregory, Penrose, Morrison, Dennis, & MacArthur, 2008; McCarter-Spaulding & Gore, 2009).

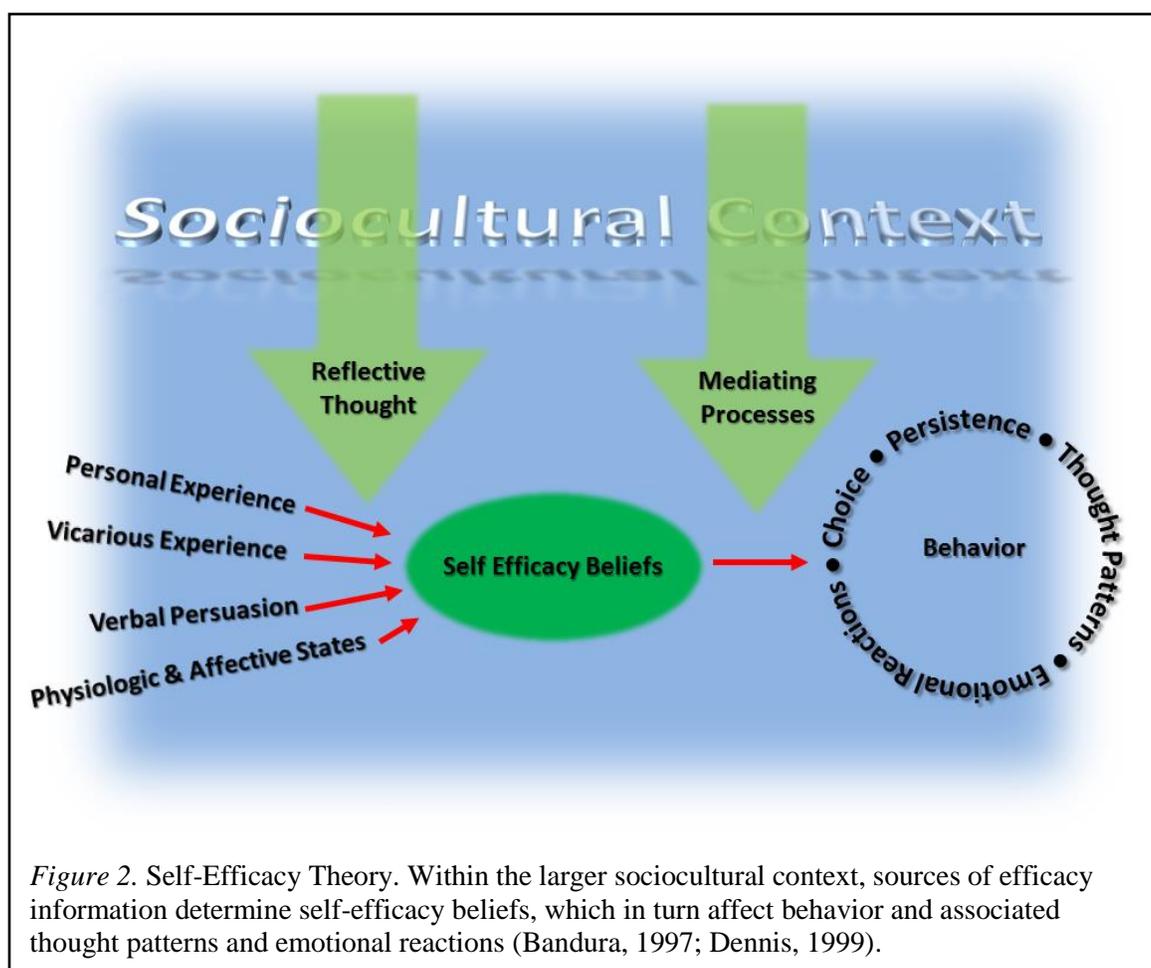
Breastfeeding self-efficacy in the early postpartum period is an important predictor of longer term breastfeeding outcomes and has been studied using a variety of quantitative and qualitative methodologies. Breastfeeding self-efficacy in the early postpartum period is associated with continued breastfeeding to 4, 6, 8, and 16 weeks postpartum (Blyth et al., 2002; Dennis, 2003; McCarter-Spaulding & Gore, 2009). In addition, a significant relationship has been demonstrated between breastfeeding self-efficacy in the early postpartum period and breastfeeding duration up until 6 months (Bosnjak et al., 2012; McCarter-Spaulding & Gore; Wilhelm et al., 2008).

Breastfeeding self-efficacy has also been identified as a factor associated with an exclusive pattern of breastfeeding (Blyth et al., 2002; Dai & Dennis, 2003; Dennis, 2003; Dennis et al., 2011; de Jager, et al., 2013; Kronborg & Vaeth, 2004; McCarter-Spaulding & Gore; Seminic et al., 2008). A relationship has been found between antenatal breastfeeding self-efficacy scores and breastfeeding intention (Robinson & VandeVusse, 2011; Wells et al., 2006) and behavior (Blyth et al., 2002; Nichols, Schutte, Brown, Dennis, & Price, 2009; Robinson & VandeVusse, 2011). Even among women who have never breastfed a previous child, breastfeeding self-efficacy during pregnancy is an independent predictor of actual breastfeeding behavior.

The saliency of breastfeeding self-efficacy throughout the entire breastfeeding experience has been identified by mothers through qualitative study. “Confident commitment” emerged as the main quality necessary for continued breastfeeding in a large ( $N = 152$ ) grounded-theory study of infant feeding behaviors in Caucasian and African American women in the US (Avery et al., 2009). Women described breastfeeding confidence as a central part of the entire breastfeeding experience in a Gadamerian Hermeneutic dialogue (Grassley & Nelms, 2008). Groups of mothers and clinicians in an Australian study (O’Brien, Buikstra, Fallon, & Hegney, 2009) both identified breastfeeding self-efficacy among the five most important factors affecting breastfeeding duration. Similarly, in a qualitative study of the views and experiences of breastfeeding support for low-income women in the United Kingdom, Entwistle, Kendall, and Mead (2010) found that mothers who felt confident about their ability to successfully breastfeed are better able to overcome social barriers and continue to breastfeed, despite obstacles.

**Sources of efficacy information.** Within social cognitive theory, self-efficacy beliefs are the most important determinants of human functioning. These beliefs are constructed from four key sources of information, which become meaningful through cognitive processing of the information and reflective thought (Bandura, 1997). Four principal sources of efficacy information were identified by Bandura (1977, 1997) to include enactive mastery, vicarious experience, verbal persuasion, and physiologic and affective states. Information from each of these four sources is selectively

interpreted and integrated into an individual's appraisal of his or her personal efficacy, which in turn impacts behavior (See Figure 2).



The principal sources of efficacy information, described by Bandura (1977, 1997) and applied to breastfeeding by Dennis (1999) are illustrated in Figure 2, and include:

***Personal Experience.*** Personal experience, also called enactive mastery experience, with a particular behavior is the most influential source of efficacy

information, resulting in stronger and more generalized efficacy beliefs (Bandura, 1997). The influence of enactive mastery experience on breastfeeding self-efficacy has been consistently supported in the literature, with higher mean BSES-SF scores among mothers with previous breastfeeding experience than those with no previous experience (Blyth et al., 2002; Dennis & Faux, 1999; Dennis, 2003; McCarter-Spaulding & Gore, 2009; Wutke & Dennis, 2007; Bosnjak et al., 2012). Similarly, a woman's breastfeeding self-efficacy scores increase over time, when measured on more than one occasion in a single study (Gregory et al., 2008; McCarter-Spaulding & Gore, 2009; Otsuka et al., 2013).

***Vicarious experience.*** Vicarious experience involves learning from observing the performance of other individuals and learning from their skills and abilities (Dennis, 1999). Vicarious experience influences self-efficacy beliefs through modeled attainments of others and can occur in a live, recorded, or printed format. Also known as observational learning, vicarious experience is particularly influential when a person has little or no prior experience with an activity and when the model and learner are similar (Bandura, 1997). The importance of vicarious experience in breastfeeding has been supported in the literature (Bolton, Chow, Benton, & Olson, 2009; Kingston et al., 2007; Robinson & VandeVusse, 2011; Rossman et al., 2011; Zhu et al., 2014).

***Verbal persuasion.*** Social influence from significant others can impact self-efficacy beliefs. A sense of self-efficacy is more likely to be maintained when one is struggling with difficulties if significant others express faith in one's capabilities

(Bandura, 1997). Support and encouragement from significant others including the infant's father (Scott, Shaker, & Reid, 2004; Zhu et al., 2014) and maternal grandmother (Grassley & Eschiti, 2008) as well as from healthcare providers, including maternal newborn nurses (Bernaix, 2000), can positively impact breastfeeding initiation and duration.

*Physiologic and affective states.* These somatic indicators of personal efficacy are especially important for behaviors that involve physical and health functioning (Bandura, 1997) such as breastfeeding. Physiological state refers to the state of arousal associated with a particular emotion such as clammy hands, racing heart rate, pain, or fatigue. Emotional or affective states can have generalized effects on self-efficacy beliefs in diverse realms of functioning (Bandura, 1997). Perceived stress is an affective state that can be associated with physical symptoms, particularly those of autonomic nervous system activation. Physiologic responses to stress include increases in heart and respiratory rate, increase in blood pressure, and perspiration. Decreases in salivary production, mucus, and gastrointestinal function are also somatic manifestations of perceived stress (Aldwin, 1994). Significant relationships have been demonstrated between breastfeeding self-efficacy and perceived stress (Dennis, 2003; Dennis, 2006), anxiety (Dennis, 2006) and postpartum depression (Dai & Dennis, 2003; Dennis, 2006) supporting the saliency of this source of efficacy information for breastfeeding. The strong emotional responses to childbirth, described in the qualitative literature, support the ability of this major life event to

impact breastfeeding self-efficacy through a woman's affective state; however, few studies have empirically examined this relationship.

***Processing of efficacy information.*** These efficacy beliefs regulate human functioning through four major mediating processes including cognitive, motivational, affective, and selective processes (Bandura, 1977, 1997). A new mother's sense of breastfeeding self-efficacy influences her feelings, thoughts, motivations, and actions (Dennis, 1999) through these mediating processes.

### **Breastfeeding Self-Efficacy Empirical Review**

Numerous longitudinal (Blyth et al., 2002; Dennis, 2003; McCarter-Spaulding & Gore, 2009; O'Brien et al., 2008), correlational (Dennis, 2006), experimental (Noel-Weiss, Rupp, Cragg, Bassett, & Woodend, 2006; Otsuka et al., 2013; Kamran, Shrifirad, Mirkarimi, & Farahani, 2012), and qualitative studies (Avery et al., 2009; Grassley & Nelms, 2008; O'Brien et al., 2009) have established the significance of the concept of breastfeeding self-efficacy and its predictive ability for duration and exclusivity of breastfeeding. The following review provides the empirical evidence for the present study and will focus on studies that have examined maternal correlates of breastfeeding self-efficacy. The few studies examining specific maternal characteristics or sources of efficacy information on breastfeeding self-efficacy provide a beginning foundation of knowledge on which to base further inquiry and theory development.

**Sources of efficacy information and maternal characteristics.** In a Canadian longitudinal study to test the newly developed Breastfeeding Self-Efficacy

Scale-Short Form (BSES-SF), Dennis (2003) evaluated relationships between breastfeeding self-efficacy and three theoretically related constructs: postpartum depression, self-esteem, and perceived stress. A largely white, married sample of postpartum Canadian women ( $N = 481$ ) completed the BSES-SF, Edinburgh Postnatal Depression Scale (EPDS) (Cox, Holden, & Sagovsky, 1987), and infant feeding status questionnaires at 1, 4, and 8 weeks postpartum. The Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965) and Perceived Stress Scale (PSS) (Cohen et al., 1983) ( $\alpha = .90$  at 1 week,  $\alpha = .91$  at 8 weeks) were each completed at 1 and 8 weeks postpartum. The three study hypotheses were supported: breastfeeding self-efficacy correlated positively with self-esteem ( $r = .22, .88, p < .001$ ): and negatively with postpartum depression ( $r = -.38, -.35, -.25, p < .001$ ) and perceived stress ( $r = -.25, -.28, p < .001$ ) at each time period respectively. When demographic factors and BSES-SF response patterns were evaluated, there were no significant relationships between breastfeeding self-efficacy and maternal age, marital status, education or income. However, significant differences in breastfeeding self-efficacy were observed between mothers who had vaginal and cesarean deliveries ( $t = 2.46, p < .01$ ).

To further advance the concept of breastfeeding self-efficacy, Dennis (2006) developed a multi-factorial predictive model of breastfeeding self-efficacy at one week postpartum. The sample ( $N = 594$ ) for this longitudinal study, which included primiparous ( $n = 227, 44\%$ ) and multiparous women ( $n = 367, 56\%$ ), was comprised of Canadian women who generally identified as Caucasian ( $n = 474, 92\%$ ) and were

married or living with partner ( $n = 469, 91.2\%$ ). Educational level and income were diverse among this group. Twenty six maternal factors were significantly correlated with BSES scores at one week postpartum, including perceived stress ( $r = -.16, p < .001$ ), anxiety ( $r = -.26, p < .001$ ), method of delivery ( $r = -.12, p < .001$ ), satisfaction with care during labor and delivery ( $r = .14, p < .001$ ), and control during labor and delivery ( $r = .15, p < .001$ ). Significantly correlated variables were examined using standard multiple regression. A best fit regression model, which explained 54% of the variance in BSES scores at one week postpartum, was comprised of eight variables: maternal educational level ( $\beta = .17, p < .001$ ), support from other women with children ( $\beta = .08, p = .05$ ), type of delivery ( $\beta = -.09, p = .05$ ), satisfaction with pain relief during labor ( $\beta = .17, p < .001$ ), satisfaction with postpartum care ( $\beta = .22, p < .001$ ), breastfeeding progress ( $\beta = .71, p < .001$ ), feeding infant as planned ( $\beta = .15, p < .001$ ), and anxiety ( $\beta = -.15, p < .001$ ). This model was statistically significant ( $F(25) = 47.37, p < .001$ ), indicating that, as a set, these maternal characteristics explained the variance in BSES scores.

Kingston and colleagues (2007) further explored the concept of breastfeeding self-efficacy by examining the impact of theory-based antenatal and postpartum experiences on self-efficacy at 48 hours and 4 weeks postpartum. Participants in this descriptive study ( $N = 65$ ) included mostly married (95.2%) primiparous (44.4%) and multiparous (55.6%) women, who described their ethnicity as English Canadian (84.1%). Measures included the BSES-SF ( $\alpha = .94$ ) infant feeding status, and a questionnaire that addressed theoretically-based experiences involving sources of

efficacy information. Seeing pictures or videos of other women breastfeeding and degree of pain were the only ones that were related to significantly higher BSES-SF scores at 48 hours postpartum. Mean BSES-SF scores were significantly higher at 48 hours postpartum for women who reported seeing pictures or videos of other women breastfeeding ( $m = 51.24 \pm 9.96$ ) than those who did not ( $m = 40.87 \pm 11.73$ ,  $t(62) = 2.69$ ,  $p < 0.01$ ), supporting the impact of vicarious experience. In the immediate postpartum period, women experiencing a “moderate” or “little” degree of pain had significantly lower BSES-SF score than those who experienced “no pain” ( $F = 4.16$ ,  $p = .02$ ). Neither of these factors continued to impact breastfeeding self-efficacy at the 4-week data collection point. This study was limited by a homogeneous and small sample of white, married, well-educated mothers who generally reported similar exposure to the potential efficacy-enhancing experiences.

Zhu and colleagues (2014) examined predictors of antenatal breastfeeding self-efficacy in new mothers ( $N = 201$ ) in the unique cultural context of mainland China, which maintains its one-child policy. This convenience sample of married (100%), primiparous (90.05%) Mandarin-speaking women who intended to breastfeed completed the Chinese Version of the Breastfeeding Self-Efficacy Scale (CV-BSES) (Dai & Dennis, 2003) and the Perceived Social Support Scale (PSSS) (Zimet, Dahlem, Zimet, & Farley, 1988), which measures mothers’ perceived adequacy of social support, during pregnancy. Demographic information, perceived attitudes of significant others towards breastfeeding, timing of decision to breastfeed, and previous personal or vicarious experience were also reported by participants.

Variables significantly correlated with breastfeeding self-efficacy included perceived social support ( $r = .324, p < .001$ ), perceived husband's attitude towards breastfeeding ( $r = .226, p = .001$ ), perceived mothers' attitude towards breastfeeding ( $r = .139, p = .05$ ), and perceived friends' attitude towards breastfeeding ( $r = .159, p = .024$ ). Previous breastfeeding experience ( $t = 2.27, p = .024$ ), previous experience watching others breastfeed ( $t = 3.44, p = .004$ ), and the decision to breastfeed before pregnancy were also related to breastfeeding self-efficacy scores. A best-fit regression model revealed five variables that explained 34% of variance in antenatal CV-BSES scores. These variables included perceived social support ( $\beta = .296, p < .001$ ), maternal time of decision to breastfeed ( $\beta = -.235, p < .001$ ), previous experience watching others breastfeed ( $\beta = .193, p = .003$ ), perceived husband's attitude towards breastfeeding ( $\beta = .161, p = .003$ ), and previous breastfeeding experience ( $\beta = .034, p = .004$ ). These findings support the significance of theoretically-related constructs to breastfeeding self-efficacy. Vicarious experience and attitudes of others were particularly important sources of efficacy information in this sample in a country in which the vast majority women have only one child and do not have the benefit of previous personal experience with breastfeeding.

**Measures of breastfeeding self-efficacy.** Three instruments have been developed to measure breastfeeding self-efficacy: Breastfeeding Self-efficacy Scale-Short Form (BSES-SF) (Dennis & Faux, 1999; Dennis, 2003), the Breastfeeding Personal Beliefs Inventory (BPBI) (Cleveland and McCrone, 2005), and the Prenatal Breastfeeding Self-efficacy Scale (Wells et al., 2006).

The BSES-SF is the most widely used instrument to measure the construct of breastfeeding self-efficacy. The Breastfeeding Self-Efficacy Scale (BSES) ( $\alpha = .97$ ), a 33-item Likert scale instrument, was psychometrically tested in a sample of 130 in-hospital breastfeeding mothers in Canada (Dennis and Faux, 1999). This homogeneous sample of new mothers consisted of 92% Caucasian women, 90% of whom were married and 83% of whom delivered vaginally. The high internal consistency and multiple factor loadings suggested the need for refinement of the scale and item reduction.

Dennis (2003) reduced the number of items to create the Breastfeeding Self-efficacy Scale-Short Form (BSES-SF) ( $\alpha = .94$ ), a fourteen item Likert-type scale. Scores on the BSES-SF correlated significantly with original BSES scores at 1 ( $r = 0.99$ ), 4 ( $r = 0.99$ ), and 8 ( $r = 0.99$ ) weeks postpartum. The scale mean was 55.88 ( $SD = 10.58$ ), with an item mean of 3.99 and item variance of 1.04. Exploratory factor analysis yielded a one-factor solution with an eigenvalue of 8.17 that explained 58.35% of the variance in scores. The sample ( $m$  age = 29) used for initial psychometric assessment of the BSES-SF ( $N = 491$ ) was mostly white (91%), married (90%), and diverse with respect to educational level and income (Dennis, 2003). The predictive validity of BSES-SF was established in this study. Mothers who were exclusively breastfeeding at 4 weeks postpartum had significantly higher BSES-SF scores ( $m = 58.43$ ,  $SD = 8.91$ ) than mothers who were either partially breastfeeding ( $m = 50.08$ ,  $SD = 12.20$ ) or formula feeding ( $m = 41.56$ ,  $SD = 12.19$ ). Similar differences in 1-week BSES-SF scores were found between mothers who were

breastfeeding ( $m = 57.66$ ,  $SD = 9.89$ ) and formula feeding ( $m = 46.13$ ,  $SD = 11.38$ ) at 8 weeks postpartum ( $t(449) = 8.16$ ,  $p < .001$ ).

Additional methodologic studies have demonstrated the usefulness of the BSES-SF in diverse samples including adolescent mothers ( $\alpha = .84$ ) (Dennis et al., 2011), Black mothers in the United States ( $\alpha = .94$ ) (McCarter-Spaulding & Dennis, 2010), and a sample of ethnically diverse women within the United Kingdom ( $\alpha = .90$ ) (Gregory et al., 2008). While much of the research on breastfeeding self-efficacy has been focused on mothers of term, well infants, Wheeler and Dennis (2013) recently psychometrically tested the BSES-SF on a sample of mothers with ill or preterm infants in the NICU and found that it effectively identified those at risk for premature cessation of breast or breast milk feeding ( $\alpha = .88$ ). The BSES-SF has been translated and further methodologically tested in more than ten other countries around the world (Bosnjak et al., 2012; Dai & Dennis, 2003; Dennis et al., 2011; Oliver-Roig et al., 2012; Wutke & Dennis, 2007). Breastfeeding self-efficacy scores in these diverse populations have consistently predicted breastfeeding duration at 3, 4, 6, 8, and 16 weeks postpartum, suggesting breastfeeding self-efficacy is a meaningful construct for many groups of women.

The Breastfeeding Personal Efficacy Beliefs Inventory (BPEBI) was developed by Cleveland & McCrone (2005) as an instrument to measure breastfeeding confidence at any time before or after giving birth. This 27 item visual analogue scale ( $\alpha = .89$ ) was psychometrically tested in a sample of 479 female

college students (Cleveland & McCrone, 2005). No additional published studies using this instrument were located.

The Prenatal Breastfeeding Self-efficacy Scale (Wells et al., 2006) was created to specifically assess self-efficacy in pregnant women. This 29-item scale ( $\alpha = .89$ ) was psychometrically tested on a diverse group of 279 pregnant low income women in the Southern United States. Although this instrument has effectively been used in pregnant women in published research (Robinson & Van deVusse, 2011), it is not suitable to for postpartum use.

In summary, three instruments have been developed to measure to concept of breastfeeding self-efficacy. The BSES-SF has been used most widely in the literature and has consistently demonstrated excellent reliability and validity in diverse samples of mothers. The Prenatal Breastfeeding Self-Efficacy Scale has also been applied successfully in samples of pregnant women. Finally, the literature does not reflect any published studies using the BPBI in pregnant or postpartum women.

**Summary of the breastfeeding self-efficacy literature.** In summary, breastfeeding self-efficacy has been identified as a significant modifiable factor in predicting long term breastfeeding outcomes in diverse groups of mothers. A reliable and valid instrument, the BSES-SF has been developed to effectively measure the construct.

While the concept of breastfeeding self-efficacy has been advanced significantly over the past fifteen years, numerous gaps persist in this literature. Little is known about the impact of specific sources of efficacy information on

breastfeeding self-efficacy. Three Canadian studies and one Chinese study were located that specifically addressed the impact of select theoretically related maternal characteristics and experiences on breastfeeding self-efficacy.

Findings from these studies support the relationships between breastfeeding self-efficacy and theoretically related concepts, however important gaps are present. First, no studies within the United States were found, which is significant since the experiences of the English Canadian and Chinese women in these studies may be different from those of childbearing women in a diverse and densely populated area of the Northeastern United States. In addition, the two Canadian studies that examined correlates of breastfeeding self-efficacy, measured the concept at one week postpartum (Dennis, 2003, 2006) and at one, four and eight weeks postpartum (Dennis, 2006). Only one study (Kingston et al., 2007) examined the impact of maternal experiences on breastfeeding self-efficacy at 48 hours postpartum. Zhu et al.'s (2014) work in China revealed important information about factors that impact antenatal breastfeeding self-efficacy, in this population of primarily primiparous women. Research in the United States is needed to determine the impact of maternal characteristics and experiences on breastfeeding self-efficacy in American mothers in the early postpartum period.

### **Perceived Stress**

Human stress has been a prominent area of inquiry across a wide variety of disciplines including psychology, medicine, engineering, philosophy, sociology, anthropology, and nursing. Aldwin (1994) suggests that stress is viewed as a

“unifying construct” (p. 20), which can provide a common ground across disciplines, allowing for the integration of scientific approaches to facilitate a more comprehensive understanding of the human experience.

**Theoretical perspectives.** Perceived stress is defined as the degree to which one’s life situations are appraised as stressful (Cohen et al., 1983). Cohen and colleagues’ work on the measurement of perceived stress is an extension of Lazarus’ (1966) seminal work on stress and coping. Psychological stress is characterized by Lazarus and Folkman (1984) as “a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being” (p. 19). In Lazarus & Folkman’s framework, the individual’s cognitive appraisal of stress, the recognition of harm, loss, threat, or challenge, is necessary for any emotional or physiological reactions to occur in response to the stressor. This framework, does not, however, ignore the importance of external life events as causes of stress, rather it emphasizes the importance of an individual’s lived experience of the stress. Each person may experience a particular set of life circumstances in a unique manner, based on available coping resources and individual interpretations of events.

Stress is closely linked with coping, which is described by Lazarus & Folkman (1984) as the “process through which the individual manages the demands of the person-environment relationship that are appraised as stressful and the emotions they generate” (p.19). Coping is an important mediator of stress reactions and in his early work, Lazarus (1966) described stress reactions as “reflections or

consequences of coping processes intended to reduce threat” (p. 152). The dynamic nature of stress and coping processes is similar to the dynamic cognitive appraisal of self-efficacy beliefs. The physiological and psychological manifestations of stress can impact individuals’ sense of self-efficacy, performance of behavior, and health status (Bandura, 1997).

*Early theoretical foundations.* Perceived stress is an important contributor to the physiologic state, affecting both the neuroendocrine and immune systems. Perceived stress has an “activating effect” (Aldwin, 1994) physiologically, depending on personal and contextual factors associated with the stress. An early researcher, Walter Cannon (1937, 1953) acknowledged the relationship between emotions and the neuroendocrine system. Cannon and Rosenblueth (1937) described the “fight or flight” reaction, or the arousal of the sympathetic nervous system in response to stress, as a necessary process to enhance physical performance in the presence of a threat. Selye (1956) expanded upon Cannon’s fight or flight theory by describing a three stage physiologic reaction process to stress, focusing on the activity of the adrenal cortex. These early models propose universal physiologic reactions to stress. Continued research, reviewed by Lazarus (1966), suggested a more individual physiologic response to perceived stress, mediated by cognitive appraisal. While sympathetic nervous system activation is universally present, patterns of heart and respiratory rate increases and sweating vary among individuals. These individual variations served as the impetus for Lazarus’ (1966) more comprehensive

psychological framework of stress and coping, including the importance of cognitive appraisal on stress reactions.

*Perceived stress and health.* Continued work further explicated the role of perceived stress and neuroendocrine and immune function. The immune system's ability to respond to psychological stimuli was demonstrated by Ader & Cohen (1982) in their work examining the impact of noxious psychological stimulus on the immune response in rats. Subsequently, significant relationships between perceived stress and susceptibility to illness in humans have been demonstrated (Cohen, Tyrell, & Smith, 1993). This growing body of literature supports the role of psychological stress as a risk factor for psychiatric (Hammen, 2005) and physiologic (Cohen, Janicki-Deverts, & Miller, 2007; Krantz & McCeney, 2002) disorders. Lower levels of perceived stress have also been correlated with increased health promoting behaviors (Cohen & Williamson, 1988).

*Perceived stress in the childbearing woman.* Perceived stress during pregnancy has been associated with numerous adverse perinatal outcomes including preterm birth and low birth weight (Nkanshah-Amankra et al., 2010), small for gestational age infants (Ahluwalia et al., 2001), and postpartum depression (Beck, 1996, 2001). Stress during the postpartum period is particularly significant because it is one of the most consistent predictors of postpartum depression (Beck, 1996, 2001; Cutrona, 1983; Miller, 2002). Hung (2004) found that perceived stress within the first 42 days postpartum was inversely related to maternal mental health, including measures of anxiety, depression, sleep disturbances, and interpersonal problems. In

addition, this author found an association between high levels of perceived stress and increased maternal susceptibility to illness (Hung, Lin, Stocker, & Yu, 2011).

Therefore, perceived stress would logically be an important source of efficacy information influencing breastfeeding self-efficacy, by affecting both a new mother's physiologic and affective states.

The transition to motherhood is intrinsically accompanied by stress (Mercer, 1995). The initial period of adaptation to motherhood involves resolving the gap between reality and expectations for birth, infant, and her own body; integrating the infant into her family structure; balancing infant care with other responsibilities, including employment and other children; and redefining her role in existing relationships including with her partner, her parents, and her partner's parents (Mercer, 1995). The need to cope with fatigue and pain can be additional sources of stress during this time. This complex set of circumstances accompanying the transition to motherhood, in combination with other existing life stressors for the woman and family could likely result in "a relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources" (Lazarus & Folkman, 1984, p. 19).

**Measurement of perceived stress.** The Perceived Stress Scale (PSS) was created by Cohen and colleagues (1983) to measure "the degree to which one's life situations are appraised as stressful" (p. 385) and is based upon the work of Lazarus (1966), including the importance of cognitive appraisal in the perception of stress. The perceived stress scale additionally measures the degree to which respondents find

their lives to be “unpredictable, uncontrollable, and overloading.” (p. 387). Each of these issues has been identified as a critical component of the experience of stress (Lazarus, 1966; Lazarus & Folkman, 1984). The PSS was designed for use in samples with at least a junior high school education. This Likert scale instrument was initially psychometrically tested in three samples: college freshmen ( $N = 332$ ) college students in psychology class ( $N = 114$ ) and a community sample in a smoking cessation group ( $N = 64$ ). Coefficient alpha reliability for the PSS in each group was .94, .85, and .86 respectively. Content validity of instrument was supported in each group with PSS scores correlating with the impact of stressful life events experienced ( $r = .35, p < .01$ ;  $r = .24, p < .01$ ;  $r = .49, p < .01$ ) in each group respectively and depressive symptomatology in the college student samples ( $r = .76, p < .001$ ;  $r = .65, p < .001$ ).

The original 14-item PSS was reduced to 10-items, based on a factor analysis in a large probability sample ( $N = 2270$ ) in the United States (Cohen & Williamson, 1988). Deletion of the four items with relatively low loadings resulted in a shorter instrument and maintained its acceptable internal consistency ( $\alpha = .78$ ). In addition to its wide application in research, the PSS-10 was again validated in two additional US national probability samples ( $N = 2000$ ) in 2006 and 2009 on adults ages 18 and older with excellent internal reliability,  $\alpha = .91$  (Cohen & Janicki-Deverts, 2012). The PSS-10 has also been used in postpartum women and has demonstrated acceptable reliability in this population, with a Cronbach’s alpha of greater than .80 (Dennis, 2003, 2006; Groer, 2005; Wambach, 1998).

The Post-Delivery Perceived Stress Inventory (PDPSI) (Razurel et al., 2013), recently developed in Switzerland, measures postpartum perceived stress as it relates specifically to events occurring during the labor and delivery and immediate postpartum periods. Although appropriate for use in the early postpartum period, this instrument does not tap into more general and chronic sources of stress identified by pregnant and postpartum women. Because the goal of this study is to measure a new mother's general level of perceived stress, the PSS was identified as a more appropriate tool.

### **Perceived Stress and Breastfeeding Empirical Review**

There have been a limited number of studies examining the relationships between stress and breastfeeding outcomes. Two quantitative studies were located that examined the impact of stressful life events on breastfeeding outcomes in Australia (Li et al., 2008) and the United States (Dozier, Nelson, & Brownwell, 2012). Two additional studies examined the impact of psychological and psychosocial factors, including perceived stress, on breastfeeding outcomes in Australian mothers (O'Brien et al., 2008) and Hispanic mothers in the United States (Insaf et al., 2011). A recent Greek study supported the relationship between stress and breastfeeding in the early postpartum period (Doulougeri, Panagopoulou, & Montgomery, 2013). Relationships between infant feeding and perceived stress have emerged as important themes in several qualitative studies (Cricco-Lizza, 2004; Razurel et al., 2011).

**Quantitative and mixed methods studies.** Doulougeri and colleagues (2013) examined the relationship between both physiologic and psychological measures of stress and initiation of breastfeeding in a correlational study of women in the early postpartum period ( $n = 95$ ) in Greece. Physiologic stress measures included cortisol levels measured from the mother's blood ten minutes after delivery. One hour following delivery, participants completed four instruments assessing individual components of the subjective experiences of stress. The four stress indicators were aggregated based on exploratory factor analysis to create a new composite score, the Post Delivery Stress Score (PDSS). Lactation measures included timing of lactation initiation, duration of first feeding, and milk volume and frequency of feedings on day 4. Mothers' blood cortisol levels were positively associated with stress during labor ( $r = .513, p < .001$ ) and negative feelings ( $r = .503, p < .001$ ) and negatively associated with bonding ( $r = -.533, p < .001$ ).

Regarding the relationship between stress and lactation, no significant relationships were observed between cortisol levels and the lactation parameters. However, significant relationships were found between psychological stress and early lactation. Self-reported PDSS scores were positively correlated with initiation of lactation ( $r = .420, p < .001$ ), negatively associated with milk volume ( $r = -.453, p < .001$ ), frequency of feedings ( $r = -.470, p < .001$ ), and duration of first feeding ( $r = -.520, p < .001$ ). In addition, positive emotions were positively associated with feeding frequency ( $r = .21, p = .04$ ) and milk volume ( $r = .21, p = .46$ ). Multiple regression was performed to assess the impact of PDSS on the lactation parameters.

After controlling for maternal age and epidural use, PDSS was negatively associated with milk volume ( $R^2 = .362$ ,  $p < .001$ ), duration of first feeding ( $R^2 = .414$ ,  $p < .001$ ), and frequency of feedings ( $R^2 = .313$ ,  $p < .001$ ). This study provides recent support for the impact of both psychological and physiologic stress on early breastfeeding.

In a recent prospective cohort study, Insaf and colleagues (2011) examined the impact of prenatal perceived stress, anxiety, and depressive symptoms on breastfeeding intention in a sample of predominantly young, unmarried, lower SES Hispanic women with an educational level of high school or less ( $N = 424$ ) living in the northeastern United States. Perceived stress was measured on the PSS (Cohen et al., 1983) during a prenatal visit in early pregnancy ( $m = 13.6$  weeks gestation) and updated mid-pregnancy at 24 to 28 weeks gestation. The outcome variable, intention to breastfeed, was abstracted from medical records following delivery. Women in the highest quartile of perceived stress scores in early pregnancy were 23% less likely to intend to breastfeed than those in the lowest quartile ( $p = .03$ ). Perceived stress scores in mid-pregnancy were not statistically significantly associated with intention to breastfeed.

In a two-stage Australian study, O'Brien and colleagues (2008, 2009) examined the relationship between maternal psychological characteristics and breastfeeding duration. In the initial qualitative phase of the study, the authors employed a nominal group technique to elicit perceptions of mothers and clinicians on the influence of psychological factors affecting breastfeeding duration. Mothers ( $n = 17$ ) were divided into three groups, based on method of infant feeding: fully

breastfeeding, fully formula feeding or combination feeding. One group of lactation consultants ( $n = 4$ ) contributed their perceptions of factors impacting their clients' duration of breastfeeding. Eighteen factors related to psychological differences among women emerged. Data from all four groups were combined and the five most important factors were identified: mother's priorities, mothering self-efficacy, faith in the natural superiority of breastfeeding, adaptability and flexibility, stress, and breastfeeding self-efficacy. This study was limited by the small number of breastfeeding clinician participants.

The second phase of this study was a prospective survey to further explore the relationship between the psychological factors and breastfeeding duration. The sample ( $N = 375$ ) of Australian women completed an initial questionnaire within fourteen days of giving birth and received a follow up phone call at 6 months postpartum to assess infant feeding method. Among the psychological factors measured were perceived stress, measured by the stress subscale of the Depression, Anxiety, Stress Scale-21 (Lovibond & Lovibond, 1995) and breastfeeding self-efficacy, measured by the BSES-SF (Dennis, 2003). Symptoms of stress were reported by 26% of the sample in the early postpartum period; however, the relationships among stress and duration of exclusive or any breastfeeding was not statistically significant in this sample. After controlling for socio-demographic factors, duration of breastfeeding was significantly related to years of education ( $OR = .92, p \leq .050$ ), breastfeeding self-efficacy ( $OR = .95, p < .001$ ), faith in breastmilk ( $OR = 1.70, p \leq .001$ ), and planned duration of breastfeeding ( $OR = 2.19, p < .001$ ).

*Stressful life events and breastfeeding.* Two studies have examined the impact of stressful life events on breastfeeding outcomes. Dozier et al. (2012) examined the relationship between stressful life events and breastfeeding outcomes in a primarily Black (39.6%) sample of low income mothers ( $N = 341$ ) in an urban area of the northeastern United States, who initiated breastfeeding. More than half of these mothers planned to breastfeed for four months or more and 43% had breastfed a prior infant. This study examined the association between four types of stressful life events experienced during pregnancy or the first month postpartum and duration of any and exclusive breastfeeding. Participants rated life events as affecting them “a little,” “a lot,” or “not at all.” Stressors were categorized as follows: partner associated (e.g. separation or divorce), traumatic (e.g. stayed in shelter, self or partner went to jail), financial (e.g. major problems with money), and emotional (death of partner or close family member, serious accident or illness in family).

Life event stress data was collected at four weeks postpartum and mothers reported infant feeding method at both four and thirteen weeks postpartum. The average number of stressful life events experienced during or in the month after pregnancy was 2.5. Financial stress was the most prevalent stressor, experienced by 65.7% of mothers. Partner-associated stress followed at 49.6% and traumatic and emotional stresses were experienced by 29.9% and 29.3% of participants respectively. Across all four stress types, the presence of the stress was significantly associated with earlier cessation of any and exclusive breastfeeding. When other maternal factors were adjusted for, however, the only significant relationship with

breastfeeding outcomes was for those mothers experiencing financial or traumatic stress. Those experiencing financial stress were nearly three times more likely to have stopped breastfeeding by 4 weeks ( $OR = 2.76$ ; 95%  $CI$ : 1.25, 6.06). The experience of traumatic stress was significantly associated with cessation of exclusive breastfeeding by 13 weeks ( $OR = 2.95$ , 95%  $CI$ : 1.04, 8.38). The findings from this study highlight the prevalence of stressful life events in this population and suggest that different types of stress may impact breastfeeding outcomes differently. Perceived level of stress associated with these life events was not reported in this paper.

Li and colleagues (2008) explored the effect of the experience of stressful life events during pregnancy and maternal social contact and support on exclusive breastfeeding duration in sample of Australian mothers ( $N = 2979$ ) in a prospective cohort study. The number of life stress events were measured at 18 and 34 weeks gestation and included events such as loss of a close relative, close friend, loss of partner's job or own job, problems with older children, separation and divorce, financial problems, and residential move.

In a multivariate regression model, which included psychological and socio-demographic factors, the experience of stressful life events at both 18 and 34 weeks gestation were significant predictors of breastfeeding duration. The number of stress events during pregnancy was not associated with duration of breastfeeding; however, certain types of stressful life events were associated with higher risk for premature cessation of breastfeeding. Mothers who experienced separation or divorce ( $p =$

.005), financial problems ( $p < .001$ ), and residential moves ( $p = .002$ ) were more likely to stop breastfeeding before four months compared with those who did not experience these types of events. Although this study was published in 2008, data was collected between 1989 and 1992. Also, perceived stress associated with these life events was not measured.

*Perceived stress and breastfeeding self-efficacy.* Two Canadian studies (Dennis, 2003, 2006) specifically examined the relationship between perceived stress and breastfeeding self-efficacy. The results from both of these studies support a negative correlation between perceived stress and breastfeeding self-efficacy.

In Dennis' longitudinal study (2003), it was hypothesized that perceived stress, measured by the PSS (Cohen et al., 1983), would correlate negatively with breastfeeding self-efficacy. As anticipated, BSES-SF scores correlated negatively with perceived stress at one week ( $r = -.28, p \leq .001$ ), four weeks ( $r = -.40, p \leq .001$ ), and eight weeks ( $r = -.50, p \leq .001$ ) postpartum. These findings support both the applicability of self-efficacy theory to breastfeeding behavior and the validity of the BSES-SF.

Dennis (2006) evaluated the relationship of perceived stress and breastfeeding self-efficacy in the development of a predictive model for breastfeeding self-efficacy at one week postpartum, as discussed on page 35. Perceived stress was measured with the PSS-10 ( $\alpha = .90$ ). Maternal perceived stress was negatively associated with BSES scores ( $r = -.16, p < .001$ ). The impact of each factor significantly associated with BSES, including perceived stress, was examined via standard multiple

regression. Perceived stress, however, did not remain in the eight variable best fit regression model, which explained 54% of the variance in BSES scores.

**Qualitative studies.** While no qualitative studies were located that specifically examined perceived stress and breastfeeding, stress emerged as an important theme in several qualitative studies of women in the perinatal period.

Cricco-Lizza's (2004) ethnography of infant feeding beliefs and experiences of Black women enrolled in WIC supports the importance of stress in infant feeding beliefs and choices. This ethnographic study included extensive participant observations in a New York metropolitan area Women, Infant, & Children Supplemental Nutrition Program (WIC) office and a series of in-depth interviews with eleven key informants over a period of eighteen months. Cricco-Lizza describes a "preponderance of loss and stress" (p. 1202) in the lives of her key informants as well as those she observed in the WIC office. Stressful life events including very early deaths or separation from parents and siblings, inconsistent or no relationships with babies' father, extreme financial hardship, racial discrimination, and fears for safety and abuse were daily struggles for these informants. In the postpartum period, most of these new mothers resumed a full schedule of their normal activities, including work or school, on discharge with little or no help. The early return to work was accompanied by the stress of arranging for appropriate childcare, financial concerns, and low paying inflexible job schedules.

Razurel et al. (2011) examined stress and coping in primiparous women ( $N = 62$ ) in Switzerland during the postpartum period via a semi-structured interview at six

weeks postpartum. Participants were mostly of Swiss nationality, married, and of high socioeconomic status. Five themes were identified from the interviews including stressful events, perceived stress, social support, coping strategies, and prenatal education. The importance of each of these themes was analyzed during the early postpartum period in the hospital (days 1-4) and the later postpartum period at home up until six weeks postpartum. Interaction with caregivers, particularly when they provided contradictory information, and breastfeeding were the most stressful factors in the early postpartum period. Breastfeeding remained the most stressful experience when the mother returned home. Much of the breastfeeding-related stress was related to the discrepancy between women's perceived idealized image and the reality of this often difficult process. Also, breastfeeding was perceived by these mothers as a "high stakes" (p. 240) activity and a necessary quality of a "good mother." During the postpartum hospitalization, women looked to hospital staff for support as a coping strategy and found that their emotional needs were largely unmet.

In contrast, Jevitt, Groer, Crist, Gonzalez, & Wagner (2012) did not identify breastfeeding as a prominent source of stress in their qualitative content analysis study in the southeastern United States, although 47% of the women in their sample ( $N = 200$ ) were breastfeeding. Stressors arising within these maternal-newborn dyads included coping with multiple roles and tasks, lack of sleep and fatigue, children's health concerns, parental relationship strain, and infant crying. External stressors included financial problems.

As discussed previously, (p. 50) O'Brien and colleagues (2009) identified stress as an important factor in breastfeeding duration in their Australian nominal group qualitative study.

**Perceived stress and breastfeeding summary.** In summary, there is a limited amount of empirical research addressing the relationship between perceived stress and breastfeeding outcomes. Qualitative study designs have included ethnography (Cricco-Lizza, 2004), qualitative descriptive with semi-structured interviews (Razurel et al., 2011), nominal group technique (O'Brien et al., 2009), and qualitative content analysis (Jevitt et al., 2012). These qualitative studies have identified stress as an important factor in infant feeding decisions as well as continued breastfeeding. Breastfeeding has been identified as a source of stress in some samples, but the literature has not consistently supported this finding.

The quantitative studies discussed differ from one another in numerous aspects: study design and location, sample characteristics, type of stress variable measured, timing of data collection, and breastfeeding outcome variable. Study designs include correlational (Dennis, 2006) and longitudinal correlational studies (Dennis, 2003; Dozier et al., 2012; Insaf et al., 2011; Li et al., 2008; O'Brien et al., 2008). The experiences of life event stress or perceived stress have been collected at various points during pregnancy (Insaf et al., 2011; Li et al., 2008) or postpartum (Dennis, 2003, 2006; O'Brien et al., 2008; Dozier et al., 2012). While each study examined relationships between stress and breastfeeding, unique aspects of the breastfeeding experience were studied as outcome variables including breastfeeding

intention (Insaf et al.), duration of any or exclusive breastfeeding (Dozier et al.; Li et al.; O'Brien et al.), and breastfeeding self-efficacy (Dennis, 2003, 2006). Only two quantitative studies examining perceived stress or life event stress and breastfeeding in the U.S. were located (Dozier et al.; Insaf et al.). No studies were identified that examined the relationship between perceived stress in the postpartum period and breastfeeding self-efficacy in the U.S.

The literature supports the negative impact of stress on breastfeeding outcomes, however results have not been entirely consistent. The limited number of U.S. studies is particularly consequential as stress is perceived within the sociocultural context.

### **Birth Satisfaction**

In all parts of the world and throughout human history, great meaning has been attached to the process of giving birth. The experience of childbirth is multidimensional and complex; and it encompasses the birth of an infant, the associated physiologic process, quality of care, and the psychological and emotional responses to this major life event. Key aspects of birth satisfaction have been identified in the literature (Hodnett, 2002; Hollins Martin & Fleming, 2011) and include discrepancy between expectations and reality of childbirth; quality of care, including support, communication, and relationship with healthcare providers (Bryanton et al., 2008; Hodnett, 2002; Knapp, 1996; Lavender, Walkinshaw, & Walton, 1999; Waldenström, Borg, Olsson, Sköld, & Wall, 1996); participation in decision making and perceived control (Goodman, Mackey, & Tavakoli, 2004;

Lavender et al; Larkin, Begley, & Devane, 2009; Simkin, 1991; Waldenström, Hildingsson, & Ryding, 2006); and stress during labor, including unanticipated outcomes, and intrapartum medical interventions. Early contact with the infant (Bryanton et al., 2008, Fenwick et al., 2003) or relationship with infant (Hollins Martin & Fleming) also promote birth satisfaction. Pain during labor and birth is related to the overall childbirth experience, but the woman's perception of control over her choices of how to cope with pain appears to be a more important factor in birth satisfaction than the actual level of pain (Goodman et al.; Hodnett, 2002).

Factors associated with a negative birth perception include feelings of powerlessness or lack of control; lack of social support; expectations not being met; unplanned cesarean birth; and history of sexual trauma (Fenwick et al., 2003; Goldbort, 2009; Soet, Brack, and Dilorio, 2003). Emergency cesarean section and other unplanned surgical procedures are consistently associated with more negative perceptions of the childbirth experience, while planned cesarean births are generally perceived more positively (Blomquist, Quiroz, MacMillan, McCulloch, & Handa, 2011; Chalmers et al., 2010; Fawcett, Pollio, & Tully, 1992; Fenwick et al.; Goldbort.; Marut & Mercer, 1979; Mercer, Hackley, & Bostrom, 1983; Waldenström et al., 1996; Waldenström, 1999).

**Significance of the childbirth experience to society, healthcare, and nursing.** The childbirth experience can have numerous long lasting effects including a woman's sense of self-efficacy and relationships with others (Callister, 2004). A satisfying birth experience is associated with feelings of mastery, self-efficacy

(Simkin, 1991), and empowerment (Callister). Negative perceptions of birth, on the other hand, can have profound effects on a woman's self-esteem, self-efficacy, and mental health (Beck, 2004; Callister). Serious consequences associated with negative perceptions of birth can include postpartum depression (Beck, 2001) and posttraumatic stress disorder (PTSD) (Beck, 2004). Negative birth experiences increase the risk of antenatal depression during a subsequent pregnancy and fear of childbirth (Rubertsson, Waldenström, & Wickberg, 2003). This fear can lead to request for cesarean on a subsequent birth or the decision not to have any more children (Gottvall & Waldenström, 2002). Disempowerment (Fenwick et al., 2003), feelings of failure (Callister), and problems with maternal-infant attachment (Reynolds, 1997) have also been associated with a negative birth experience.

**Birth satisfaction and self-efficacy.** Satisfaction with the birth experience could influence a woman's breastfeeding self-efficacy by impacting her affective and possibly physiologic states. The strong and sometimes contradictory emotions expressed by women in relation to their childbirth experience remain present throughout the early postpartum period (Callister, 2004), when the mother and infant establish breastfeeding. This affective state could either positively or negatively impact self-efficacy for breastfeeding. Bandura (1997) purports that "affective states can have widely generalized effects on beliefs of personal efficacy in diverse spheres of functioning" (p. 106). Feelings of mastery, control, and self-efficacy have been reported following a positive birth experience (Callister, 2004). While not specifically related to breastfeeding, mastery and self-efficacy in a related domain,

such as childbirth, could be expected to correlate positively with breastfeeding self-efficacy. Similarly, feelings of disempowerment or failure following a negative childbirth experience could impact a woman's affective state, triggering a decrease in breastfeeding self-efficacy.

**Measurement of birth satisfaction.** Due to the complexity of the childbirth experience, challenges related to its measurement have been cited in the literature (Bramadat & Driedger, 1993; Hodnett, 2002). Numerous instruments have been developed to assess aspects of the perceived childbirth experience such as perceived control (Hodnett & Simmons-Tropea, 1987), childbirth self-efficacy (Lowe, 1993), and satisfaction with care (Harvey, Rach, Stainton, Jarrell, & Brant, 2002). These related constructs remain important to the overall childbirth experience, but do not measure perception of the birth experience.

***Birth Satisfaction Scale.*** The Birth Satisfaction Scale (Hollins Martin & Fleming, 2011) was developed in West Scotland to address the absence of a psychometric scale that reflects the current literature on birth perception. The authors conducted a review of the literature on childbirth satisfaction and generated a framework of themes and subthemes to describe the experience. Three major themes with accompanying subthemes were identified: 1) *quality of care provision*, including the birth environment, support, and relationship with healthcare professionals 2) *women's personal attributes* including ability to cope during labor, feeling in control, preparation for childbirth, and relationship with baby, and 3) *stress experienced during labor* including distress, obstetric injuries, obstetric interventions, pain, long

labor, and health of baby. These research-based themes were transcribed into 30 statements to which childbearing women could respond on a Likert-type scale. Half of the items were reverse scored, with scores ranging from 30-150, with a higher score indicating a higher level of satisfaction. In addition, a space was left for comments below each statement on the scale.

The scale was psychometrically tested in postpartum women ( $n = 207$ ) who gave birth between 37 and 42 weeks gestation and agreed to complete the scale within the first 10 days postpartum. To validate the authenticity of the scale, Hollins Martin, Snowden, and Martin (2012) conducted a concurrent content analysis of the free text comments written by participants in the initial study and published peer-reviewed qualitative studies on birth satisfaction from the past ten years. This concurrent analysis confirmed the parsimony of the BSS, and its three subscales, with women's actual birth experiences reported in the qualitative literature.

The Birth Satisfaction Scale-Revised (BSS-R) (Hollins Martin & Martin, 2014) was created based on factor analysis and structural equation modeling techniques in a sample of 228 women, comprised of both primiparas and multiparas, in the first ten days postpartum, in West Scotland. The ten-item BSS-R ( $\alpha = .79$ ) provided an improved fit to the 3 factor solution, which included the following subscales: quality of care provision ( $\alpha = .74$ ), stress during labor ( $\alpha = .79$ ), and women's personal attributes ( $\alpha = .64$ ). Known groups validity was established by comparing satisfaction scores of women with a spontaneous vaginal birth and those with another type of birth (including cesarean, vacuum or forceps extraction). As

predicted, significant differences in BSS-R scores were observed by childbirth type ( $t = 3.44, p = .001$ ) and stress experienced during labor subscale ( $t = 4.81, p = .001$ ) in the direction predicted. Women experiencing a spontaneous birth had higher overall BSS-R scores and lower stress experienced during labor subscale scores. The BSS-R has a possible range of 0 to 40 ( $m = 28.36, SD = 5.78$ ), with a higher score indicating a higher level of satisfaction. This multidimensional scale measures the latent factor of *experience of childbirth*, which is influenced by quality of care, maternal attributes, and stress during labor.

**Single item measures.** Several researchers have employed a single item Likert scale with verbal anchors to assess a woman's overall assessment of the labor and birth experience (Blomquist et al., 2011; Sorenson & Tschetter, 2010; Waldenström, 1996; Waldenström et al., 2006). In a series of Swedish studies, women were asked to make a comprehensive assessment of the labor and birth experience by choosing one number on a seven-point Likert scale (1 = *very negative*, 7 = *very positive*). The scale was dichotomized into those who responded 1 or 2 as negative and 3-7 as mixed or positive. The division was based on a previous study, which revealed that women who scored a 1 or 2 on this same scale had fewer subsequent births, than those who scored 3 or above (Waldenström, 1996; Waldenström et al., 2006). Sorenson & Tschetter's Birth Perception Rating (BPR) was a one item 10-point Likert scale that elicited a woman's global perception of her birth, with scale anchors as *worst possible* and *best possible*. Blomquist et al.

employed a 100-point visual analog scale with 0 as *completely dissatisfied* and 100 as *completely satisfied*.

***Timing of measurement.*** Several researchers have studied whether the essentially retrospective measure of childbirth perception changes over time (Waldenström, 2003). Perception of the childbirth experience has been empirically studied at various points in time from the immediate postpartum period to fifteen to twenty years after the birth. While mothers' recall of the events of their birth experience is generally accurate for many years (Bennett, 1985; Simkin, 1996), their perceptions of the experience are less consistent. Most studies have found that negatively perceived events become more negative with the passage of time (Bennett, 1985; Hodnett, 2002; Simkin, 1991, 1992), however, this has not been entirely consistent in the literature (Waldenström, 2003). Similarly, in the early postpartum period, women may report more positive perceptions due to intense feelings of relief and euphoria described as the "halo effect" (Simkin, 1992) or due to denial, an early stage of the grieving process for a birth that did not meet their expectations (Hodnett, 2002). Researchers suggest the purpose of the study should guide the timing of the assessment (Hodnett, 2002; Waldenström, 2003).

It has been suggested that the relationship of the researcher to the participant is a more significant threat to validity of results than timing of data collection (Hodnett, 2002). Participants may be reluctant to be critical or disclose dissatisfaction to their caregivers so data collection by an independent researcher is advised (Hodnett, 2002).

*Measurement summary.* In summary, the BSS-R is a current research-based multi-dimensional measure of birth satisfaction that has been used in a limited number of studies with acceptable reliability. Other instruments measure specific aspects of the childbirth experience, but do not to capture the mother's overall birth satisfaction. Finally, single item Likert type items have proven an effective way to assess a woman's overall perception of her childbirth experience. The timing of measurement of the perception of birth should be guided by the purpose of the research study and the most reliable results will be obtained by an independent researcher, rather than a care provider.

### **Birth Satisfaction and Breastfeeding Empirical Review**

Empirical studies have examined the impact of type of birth on breastfeeding outcomes with inconsistent results; however, the subjective experience of birth and its association with breastfeeding outcomes has been more limited. Much research on birthing practices and breastfeeding has focused on objective facts of the labor experience such as length of labor (Chen, Nommsen-Rivers, Dewey, and Lonnerdal, 1998), type of delivery (Ahluwalia et al., 2012; Zanardo et al., 2010), and labor interventions (Bai, Wu, & Tarrant, 2013; Brown & Jordan, 2013). One study was located that specifically examined perception of birth experience on breastfeeding self-efficacy and a limited number of additional studies have examined the association between the perceived childbirth experience and breastfeeding outcomes.

**Birth satisfaction and infant feeding.** Empirical studies have examined the impact of the perceived birth experience on early mothering behaviors including breastfeeding outcomes.

In their population-based prospective cohort study of 652, 16 to 43 year old ( $m = 28.5$ ), predominantly married, Caucasian, middle income, English speaking Canadian women giving birth in Prince Edward Island, Canada, Bryanton, Gagnon, Hatem, and Johnston, (2009) investigated the impact of perception of the childbirth experience on early parenting behaviors, including exclusive breastfeeding. Perception of birth experience, the primary independent variable, was measured using the Questionnaire Measuring Attitudes About Labor and Delivery (QMAALD) (Marut & Mercer, 1979) between 12-48 hours postpartum. Other information including demographics, general self-efficacy, parenting self-efficacy and prenatal class attendance was also obtained through self-report. Approximately 75% had a vaginal birth. Exclusive breastfeeding while in the hospital was 74.3%. One hundred and seventy five participants with both the highest and lowest QMAALD scores were assigned to one of two cohorts on the basis of positive or negative scores. At one month postpartum, exclusive breastfeeding had decreased to 55.4%.

Perception of birth experience was not a statistically significant predictor of exclusive breastfeeding, when controlling for general self-efficacy, education, and type of birth. The odds of exclusive breastfeeding at one month postpartum were positively associated with type of birth ( $OR = 3.57, p < 0.01$ ), maternal educational level ( $OR = 2.42, p < 0.04$ ), and self-reported mental health ( $OR = 2.28, p < 0.04$ ).

Women who had a vaginal birth were had significantly higher odds of exclusively breastfeeding at one month postpartum, as did those who rated their mental health as excellent.

In a phenomenological study, Beck and Watson (2008) explored the essence of women's breastfeeding experiences after a traumatic childbirth experience. The internet sample, primarily from New Zealand, consisted of 52 mothers who perceived their birth as traumatic and whose decision to breastfeed had been impacted by this traumatic birth. Forty nine of these women did choose to initiate breastfeeding and their duration ranged from 48 hours to 27 months.

Eight themes emerged from their qualitative analysis, which the authors depict visually as weights on a balance scale, either promoting or hindering breastfeeding attempts. Mothers reported breastfeeding as an opportunity to prove oneself as a mother after they perceived their first act of mothering, giving birth, to be a complete failure. Breastfeeding was described by some as a form of atonement to the baby and a healing act helping to restore their self-esteem. One mother diagnosed with PTSD due to childbirth who successfully breastfed for 27 months stated "being able to breastfeed my daughter, despite all odds, is my proudest achievement in life" (p. 233). On the other hand, flashbacks of the traumatic birth and feelings of emptiness or detachment from the infant while breastfeeding, were greatly troubling to some new mothers. The physical ramifications of the traumatic birth including pain and insufficient or delayed milk supply interfered with the ability to breastfeed. The impact of the traumatic birth on breastfeeding led mothers down to very different

paths – the first to successful and fulfilling breastfeeding and the alternative to the potential for an additional source of trauma. Different participants experienced different “constellations of weights, which resulted in the scale tipping in either a positive or negative direction” (p.235).

***Birth satisfaction and breastfeeding self-efficacy.*** Predictors of breastfeeding self-efficacy in the immediate postpartum period were identified by Dennis (2006) in a longitudinal study in British Columbia, Canada ( $N = 522$ ), discussed previously (p. 35). The birth experience was measured with the Labour Agency Scale, which measures perceived control during labor. Additional questions regarding assessment of the overall birth experience, active say in decisions during labor, satisfaction with labor and delivery care and pain management, and separation from infant were included. Of these factors, perceived control during labor and delivery ( $r = .15, p < .001$ ), satisfaction with pain relief ( $r = .14, p < .001$ ), active participation in decision making ( $r = .14, p < .001$ ), and satisfaction with care during labor and delivery ( $r = .14, p < .001$ ) and during postpartum ( $r = .20, p < .001$ ) were significantly correlated with BSES scores at one week postpartum. Mode of birth was also significantly correlated with BSES scores at one week postpartum ( $r = -.12, p < .001$ ). Mothers whose births had more interventions, including cesarean section and instrumental vaginal delivery, had significantly lower BSES scores.

**Summary of birth satisfaction and breastfeeding.** The childbirth experience has been studied in relation to breastfeeding outcomes, primarily as it relates to method of delivery, complications during labor and birth, and associated

physiological processes and responses. The psychological aspects of the childbirth experience, including perception of birth, have been studied in a much more limited fashion in relation to breastfeeding. Perceived control during labor and delivery and positive perception of birth have been associated with higher levels of breastfeeding self-efficacy in one Canadian study (Dennis, 2006). Perception of birth experience, specifically traumatic birth, appears to impact breastfeeding outcomes by either facilitating breastfeeding as a form of atonement for a traumatic birth or impeding breastfeeding because it is yet another opportunity for additional trauma (Beck & Watson, 2008). In contrast to these findings, another recent study found no significant relationship between perception of birth and exclusive breastfeeding or other parenting behaviors at one month postpartum (Bryanton et al., 2009). Perception of birth experience could be an important factor contributing to the persistent inconsistencies noted in the literature on type of birth and breastfeeding outcomes.

While more is known about factors associated with a positive or negative childbirth experience, there is a paucity of research on the impact of the birth satisfaction on breastfeeding. In addition, much of the research on the birth experience has been conducted outside of the U.S. Current research on perception of birth and its relationship to breastfeeding in the U.S. is needed to design relevant support interventions for all mothers. As intrapartum interventions and surgical deliveries have risen significantly in recent years, it is of paramount importance to understand the psychological as well as physiological impact of these births to

identify strategies for increasing breastfeeding self-efficacy, and ultimately duration and exclusivity of breastfeeding in the United States.

## **Conclusion**

The breastfeeding literature shows that numerous maternal, infant, and sociocultural factors are important in sustained breastfeeding. Breastfeeding self-efficacy has been identified as a significant modifiable psychological factor that is related to the decision to breastfeed as well as to duration and/or exclusivity of breastfeeding (Blyth et al., 2002; Dennis, 1999, 2003; Kronborg & Væth, 2004). Much of the research on breastfeeding self-efficacy has focused on establishing its predictive ability for long term breastfeeding outcomes as well as psychometric testing and translation of an instrument to measure the construct (Dai & Dennis, 2003; Oliver-Roig et al., 2012; Wells et al., 2006; Wutke & Dennis, 2010). This important work has established the saliency of this concept for women across the world and provided a valid and reliable measure for use in many countries where achieving recommended breastfeeding outcomes remains a priority. Recent intervention studies in Canada (McQueen, Dennis, Stremmler, & Norman, 2011; Noel-Weiss et al., 2006), Australia (Nichols et al., 2009), Japan (Otsuka et al., 2013), and Iran (Kamran et al., 2012) support the ability of healthcare providers to modify a woman's breastfeeding self-efficacy, thus improving breastfeeding outcomes.

However, the literature reviewed reveals important limitations in the current state of knowledge on breastfeeding self-efficacy. Of foremost importance is that many of the studies were conducted outside of the U.S. This factor is particularly

consequential for breastfeeding research due to tremendous differences in the way different countries provide care for women and infants during labor, birth, and postpartum. Only two Canadian studies were located that specifically examined the relationships between maternal factors and breastfeeding self-efficacy (Dennis, 2003, 2006). One additional Canadian study examined the impact of experiences related to various sources of efficacy information on breastfeeding self-efficacy (Kingston et al., 2007). Therefore, little is known about the impact of maternal psychological factors on woman's level of breastfeeding self-efficacy.

The theoretical and empirical literature supports the prevalence of perceived stress in adult women of childbearing age (Cohen & Janicki-Deverts, 2012) and specifically during the postpartum period (Hung, 2004; Jevitt et al., 2012; Razurel et al., 2011) as well as its ability to impact a woman's health status (Beck, 2001; Hung, 2004). A limited number of studies have explored the impact of perceived stress during various points in pregnancy or postpartum on breastfeeding. Again, many of the studies on perceived stress in the postpartum period have been conducted outside of the United States (Hung, 2004, 2011; Razurel et al., 2011; Razurel et al., 2013). While this work provides valuable information to nurses caring for these populations, further study is needed to understand the stress experiences of women in the United States and how this impacts infant feeding.

Birth satisfaction is complex and impacted by numerous factors. Its relationship to perinatal outcomes, including breastfeeding, has been examined in few studies (Beck & Watson, 2008; Bryanton et al., 2009). A current understanding of

birth satisfaction is particularly consequential today, given the prevalence of interventions during labor and birth (DeClerq et al., 2013). In consideration of the high rate of birth interventions and the high rates of breastfeeding initiation, understanding perceptions of birth experience may be an important factor in promoting continued breastfeeding in all women.

Coping with stress, integrating the birth experience, and feeding an infant are all fundamental tasks of early motherhood (Mercer, 1995). Perinatal nurses can work to improve breastfeeding duration and exclusivity in new families by promoting breastfeeding self-efficacy. To plan effective theory-based interventions to support breastfeeding families, it is necessary to understand the impact of perceived stress and perception of birth experience on a woman's self-efficacy for breastfeeding.

## **Chapter III**

### **METHODOLOGY**

The purpose of this study was to explore the relationships among perceived stress, birth satisfaction, and breastfeeding self-efficacy in new mothers in the early postpartum period. This chapter provides an overview of the research design, population and sample, recruitment and setting. Information related to measurement and data analysis, including instruments, power, data collection procedures, and statistical analyses will also be reviewed. Ethical considerations and protection of study participants will also be addressed.

#### **Study Design**

A descriptive correlational design was used to explore the relationships among study variables. This study design specifically examines relationships among study variables and, as in any descriptive study, no attempt is made to control or manipulate the situation (Polit & Beck, 2012). Since no US studies were located in the literature related to perceived stress, birth satisfaction, and breastfeeding self-efficacy, this study design was utilized to facilitate an early understanding of these relationships in a sample obtained in the US.

#### **Description of the Population and Setting**

The population of interest in this study was women in the early postpartum period who intended to breastfeed and gave birth to a live full or late term ( $\geq 39$  weeks and 0/7 days and  $\leq 42$  weeks and 0/7 days gestation) (ACOG, 2013), well, singleton

infant, who was not admitted to a higher level neonatal care nursery. The hospital setting was selected as 98.7 percent of all US births occur in hospitals (Hamilton et al., 2014). This sample included women in the first four days postpartum who gave birth in a large teaching hospital in Northern New Jersey. The hospital provides care for approximately 4,000 women giving birth per year. Women give birth on a Labor and Delivery unit and are subsequently transferred to the Mother-Baby Unit for postpartum care. Women requiring IV magnesium sulfate or those with significant medical complications are cared for in a designated area of Labor and Delivery. Therefore, as well women represented the population of interest, postpartum women on the Mother-Baby unit were screened for eligibility by the researcher and those who met study inclusion criteria were invited to participate in the study.

One hundred and sixty five of the women screened met eligibility criteria for the study. Five of these women declined participation (3%) and 160 survey packets were distributed to the remaining eligible participants. One hundred and seven (65%) completed packets were returned, 45 women did not return the study packet (27%), and eight returned packets with greater than 50% of the survey incomplete (5%). The eight packets that were greater than 50% incomplete were discarded and the remaining 107 complete surveys were retained for analysis. This sample of 107 was determined to be adequate based on the *a priori* power analysis, described below.

### **Sample Size and Statistical Power**

A power analysis was conducted to determine the appropriate sample size. The proposed study includes 3 main variables: breastfeeding self-efficacy, perceived

stress, and birth satisfaction. An *a priori* sample size calculator (Faul, Erdfelder, Buchner, & Lang, 2009) was used to determine the necessary number of participants to adequately address the research questions. Four predictor variables were entered into the sample size calculator to account for the three subscales of the Birth Satisfaction Scale-Revised and in addition to the variable of perceived stress. A sample size of 84 is required for multiple linear regression using 4 predictor variables, to achieve a .80 power level with an effect size of .15, error (.05). To account for additional demographic factors, a power analysis was conducted to account for seven predictor variables in multiple linear regression. For this regression, a sample size of 103 was required to achieve a .80 power level with an effect size of .15, error (.05). Therefore, a sample of 107 postpartum women was obtained for the study.

Following statistical analyses, a *post-hoc* power analysis was conducted to determine the actual power of the study, given the effect size observed in the regression model.

### **Research Instruments**

Instruments were selected for this study based on their relevance to the research question, congruence with the theoretical framework, appropriateness for the population, and psychometric properties including reliability and validity.

Availability of the instrument and ease of completion for participants were also considered.

**Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF).** The Breastfeeding Self-Efficacy Scale-Short Form (see Appendix A) is a 14-item Likert

scale self-report instrument and takes about 10 minutes to complete. All items are positively worded with scores summed as advocated by Bandura (2006) to produce a range from 14 to 70, with higher scores indicating a higher level of breastfeeding self-efficacy. The BSES-SF ( $\alpha = .94$ ) was psychometrically tested in a generally white, married convenience sample of Canadian women at 1, 4, and 8 weeks postpartum (Dennis, 2003). Exploratory factor analysis with principal components analysis yielded a one factor solution that explained 58.3% of the variance in scores. Items on the BSES-SF address a woman's confidence in her ability to manage various practical aspects of breastfeeding a newborn (e.g., determine that the baby is getting enough milk, breastfeed for each feeding without formula, breastfeed with family members present). The BSES-SF has been translated into numerous languages used with acceptable reliability ( $\alpha > .80$ ) in diverse groups of women including Black mothers in the US, (McCarter-Spaulding & Dennis, 2010), mothers in the southeast US (Pollard & Guill, 2009), and adolescent mothers in Canada (Dennis et al., 2011).

The original Breastfeeding Self-Efficacy Scale (BSES) (Dennis & Faux, 1999), a 33-item Likert-type scale instrument, was the first quantitative measure of breastfeeding self-efficacy. This instrument has been used in numerous studies and has successfully predicted long term breastfeeding outcomes (Blyth et al., 2002; Dennis, 2003; Dennis & Faux, 1999) Very high internal consistency ( $\alpha = .97$ ) and multiple factor loadings, however, indicated a need for item reduction. The BSES-SF, discussed previously, resulted in a much shorter and more clinically useful single factor instrument with improved psychometric properties. Construct validity and

congruence with self-efficacy theory was demonstrated with positive correlation between BSES-SF and self-esteem ( $r = .22, p < .001$ ) and negative correlation between BSES-SF scores and perceived stress ( $r = -.25, p < .001$ ) and postpartum depression ( $r = -.38, p < .001$ ) on women in the early postpartum period (Dennis, 2003). As discussed previously, the BSES-SF has been used in numerous published studies and has effectively predicted long-term infant feeding outcomes in diverse groups of women (Dennis, 2003; Dennis et al., 2011; McCarter-Spaulding & Gore, 2009; O'Brien et al., 2008; Seminic et al., 2008).

For the current study, the BSES-SF was found to be highly reliable (Cronbach's alpha = .95). Scores ranged from 16-70.

**Perceived Stress Scale (PSS-10).** Perceived stress was measured in this study with the Perceived Stress Scale-10 (PSS-10) (Cohen et al., 1983; Cohen & Williamson, 1988). The PSS-10 (see Appendix B) is a 10-item five-point (0-4) Likert scale instrument that measures the degree to which one's life situations are appraised as stressful, assessing the degree to which circumstances are perceived as unpredictable, uncontrollable, and overloading (Cohen et al., 1983) and takes about 5 minutes to complete. Scores are obtained by reverse scoring responses to the positively stated items (4, 5, 7, and 8) and summing all scale items. Higher scores indicate a higher level of perceived stress. The range of scores for the PSS-10 is 0 to 40.

The original Perceived Stress Scale (Cohen et al., 1983) is a fourteen-item instrument created as a global measure of stress. Originally psychometrically tested

on three community samples including 332 college freshman ( $\alpha = .94$ ), 114 college psychology students ( $\alpha = .85$ ), and 64 adults in a smoking cessation group ( $\alpha = .86$ ), four items were eliminated based upon factor analysis of the instrument conducted on a large national sample ( $N = 2270$ ). Subsequent factor analysis of the PSS-10 revealed a two-factor solution composed of the negatively and positively worded items, with eigenvalues of 3.4 and 1.4 respectively. For the purposes of measuring perceived stress, however, the authors advise that distinction between the two factors is irrelevant (Cohen & Williamson, 1988). The authors recommend use of the PSS-10, rather than the original fourteen item tool, for research due to its improved factor structure, good internal reliability, and equally strong correlation with other stress measures and health outcomes (Cohen & Williamson, 1988).

The internal reliabilities for the PSS-10 in large probability samples have been .78 in the Harris Poll sample ( $N = 2270$ ) (Cohen & Williamson, 1988) and .91 in two internet-based eNation samples ( $N = 2000$ ) in 2006 and 2009 (Cohen & Janicki-Deverts, 2012). The PSS-10 has been used in postpartum women with acceptable reliabilities,  $\alpha > .80$  (Dennis, 2003, 2006; Groer, 2005; Razurel et al., 2013; Wambach, 1998).

The excellent reliability of the PSS-10 demonstrated in the previously discussed studies was also found in the current study, evidenced by a Cronbach alpha of .88. PSS-10 scores in this sample ranged from 0-30.

**Birth Satisfaction Scale-Revised (BSS-R).** Birth satisfaction was measured with the Birth Satisfaction Scale-Revised (BSS-R) (see Appendix C), a ten-item five

point Likert-type scale, which also includes space for open-ended comments following each item and at the end of the scale. The BSS-R measures women's perceptions of birth and was designed to "construct a meaningful picture of what constitutes a woman's like or dislike of the childbearing experience" (Hollins Martin & Martin, 2014, p. 610) and takes about 10 minutes to complete. Scores are obtained by reverse scoring responses to the negatively worded items (2, 4, 7, and 8) and summing all scale items. The range of scores for the BSS-R is 0 to 40, with higher scores indicate a higher level of birth satisfaction.

The original 30-item Birth Satisfaction Scale (BSS) (Hollins Martin & Fleming, 2011) was created based upon themes identified in the current literature on childbirth experience. These themes included quality of care provision, women's personal attributes, and stress during labor, each of which was accompanied by numerous subthemes. Content validity of the scale was supported by a concurrent content analysis with the primary free text data on the scale in a sample of mothers in the first ten postpartum days ( $N = 207$ ) in West Scotland and primary data from current qualitative childbirth literature. This concurrent content analysis supported the three explanatory domains within the BSS as 1) being in control, 2) things going as planned, and 3) being supported (Hollins Martin et al., 2012).

Confirmatory factor analysis and structural equation modeling techniques were employed to optimize and shorten the BSS for ease of use. The sample for this study ( $N = 228$ ) was comprised of both primiparous and multiparous women and those who had delivered vaginally and via cesarean in West Scotland in the past ten

days. The ten-item BSS-R ( $\alpha = .79$ ) emerged providing the optimal fit to the three factor solution, which included the following subscales: quality of care provision ( $\alpha = .74$ ), stress during labor ( $\alpha = .79$ ), and women's personal attributes ( $\alpha = .64$ ). The authors suggest that this multidimensional scale measures the latent factor, *experience of childbearing*, which serves as the foundation for the three subscales.

While the overall BSS-R demonstrated acceptable reliability in the present study, evidenced by a Cronbach's alpha of .72, the subscales did not perform as well. The Stress Experienced During Labor subscale, which contained four items, demonstrated a Cronbach's alpha of .54. This subscale was moderately negatively correlated with the overall BSS-R score. Women's Personal Attributes, a two item subscale, demonstrated even poorer internal consistency, evidenced by a Cronbach's alpha of .48. This was the most strongly correlated subscale with the overall BSS-R score. Finally, the third subscale, a four item subscale measuring Quality of Care, had an acceptable reliability of .75. This subscale was also strongly correlated with overall BSS-R scores. The subscales of the BSS-R were not used individually for the statistical analyses in this study. The overall BSS-R scale was used for analysis. The actual range of scores for the present study was 13-39 (possible range 0-40).

**Participant Information Form.** A participant information questionnaire (see Appendix D) was constructed by the researcher to elicit demographic information about the subjects as well as factors identified in the literature to impact infant feeding outcomes. The Participant Information Form contained 32 questions in the areas of childbirth experience, infant feeding experience and care, and general

demographic information such as age, race, and educational level. In addition to researcher generated questions, the Participant Information Form contained two previously established items (items 14 and 15) related to breastfeeding intention, that have been previously used (Humphreys, Thompson, & Miner, 1998; Bai & Wunderlich, 2011). The Participant Information Form additionally elicited the woman's perception of hospital best practices in breastfeeding care received during her hospitalization (items 16-25). These questions were based upon the WHO/UNICEF Baby Friendly Hospital Initiative's Ten Steps to Successful Breastfeeding (BabyFriendly USA, 2010) and were modified from similar items created by Otsuka et al. (2013). This form, which takes approximately 10 minutes to complete, was distributed along with study instruments for data collection.

**Permission for use of instruments.** Permission was obtained from the original authors for use of the Breastfeeding Self-Efficacy Scale-Short Form (see Appendix E) and the Birth Satisfaction Scale-Revised (see Appendix F). The Perceived Stress Scale-10 is publicly available on the internet with specific instruction from the author that permission is not needed for its use.

### **Ethical Considerations**

Permission to conduct this research was obtained from the Institutional Review Boards at Seton Hall University (see Appendix G) and at the Hospital (see Appendix H) prior to data collection. Potential participants were informed of the study through a recruitment speech and letter of solicitation to inform them of the nature of the study, their right to refuse to participate or withdraw at any time, and the

researcher's responsibilities and information. Participation in this study posed minimal risk to participants, meaning that no greater risk was incurred than those ordinarily encountered in daily life (Polit & Beck, 2012). Information about the study was presented to potential participants in a format understandable to a lay person. Participants were given the choice to consent or decline their participation (Polit & Beck, 2012).

Confidentiality was promoted for all participants by securely storing data under lock and key. All completed study instruments, identified only by numerical codes, were kept confidential and will be stored in the researcher's home office in a locked file cabinet for a period of three years. All electronic data was stored on a flash drive, which will also be kept in a locked file cabinet for at least three years. All responses have been kept confidential and only the researcher has access to the completed surveys.

### **Data Collection Procedures**

Volunteer subjects were recruited from the postpartum unit of a large medical center in northern New Jersey. Permission to conduct research was obtained from the Hospital and Seton Hall University Institutional Review Boards. Data collection commenced following approval from both boards.

Prior to any data collection, the researcher met with the nurse manager to identify times for participant recruitment which were convenient for the unit, staff, and patient flow. Data was collected on the hospital unit at these pre-determined times. Prior to arriving at the facility, the researcher checked survey envelopes for

completeness, ensuring the presence of one each of the following documents: letter of solicitation, participant information form, PSS-10, BSS-R, and the BSES-SF. Upon arrival on each day in which data were collected, the researcher reviewed the unit census with the clinical coordinator to identify patients who were eligible to participate in the study. All patients who met eligibility criteria for the study were offered the opportunity to participate.

The researcher knocked on each eligible patient's door, asked permission to enter and explained the study. To promote consistency of information, the researcher used the Recruitment Script (Appendix I) to explain the study. Eligible patients who agreed to participate were given a research packet containing all study materials including a letter of solicitation (see Appendix J), the Participant Information Form (see Appendix E), and the three instruments to measure the study variables including breastfeeding self-efficacy (see Appendix A), perceived stress (see Appendix B), and birth satisfaction (see Appendix C). Each study packet, distributed to potential participants, was enclosed in a large, unsealed white envelope. The envelope was identified with a randomly assigned identification number written in the upper right corner. This same random number was marked on the upper right corner of each study instrument. Participants were advised not to write their name or any other identifying information on study instruments.

Prior to the participant actually completing the survey, the researcher reviewed all enclosed materials with the participant. This served to both familiarize the participant with the packet and as a final check for completeness of each study

packet. At this point, the researcher checked that all codes matched one another and all forms were present. All packets were found to be complete.

The letter of solicitation contained written contact information for the researcher, the dissertation Chairperson, and the SHU IRB if the woman had any questions regarding her role or rights as a study participant. Participants were advised to keep this letter should any questions or concerns arise following participation in the study. In addition, the researcher verbally reviewed the patient's rights as a research participant, emphasizing the voluntary nature of the study and the participant's ability to withdraw at any time without penalty. Potential participants were also advised that their participation or non-participation in the study would be known only to the researcher and would not impact their or their infant's care.

After the study was explained to the participant, she was advised that she could complete the study forms and instruments at a time that was convenient for her during the hospital stay. Upon completion of the study instruments, participants were asked to return the forms to the white envelope and place it in a locked box at the nurses' station or return it to their primary nurse for placement in the box.

All data were reviewed by the researcher and screened for incompleteness. Following this review, data were entered by the researcher into IBM Statistical Package for the Social Sciences® (IBM SPSS®) Version 22. Following data entry, the accuracy of data was ensured by proofreading the original data against the computerized data file (Tabachnick & Fidell, 2013).

## **Analysis of Data**

Data were reviewed and entered into IBM SPSS<sup>®</sup> Statistics (version 22) by the researcher. Descriptive statistics were computed for each main study variable as well as for the demographic data in the form of frequencies, means, standard deviations, and percentages. The data were used to describe the sample, assess for outliers, and determine the distribution of variables. Inferential analyses were also employed to understand patterns within the demographic variables in order to best characterize the sample. Reliability calculations of the study instruments were conducted. Following descriptive summary of the data, inferential analyses were employed to answer the research question posed by this study.

Prior to statistically examining relationships among study variables, data were analyzed to evaluate whether the assumptions necessary for multiple linear regression (normality, linearity, homoscedasticity, and the absence of multicollinearity and undue influence of outliers) are met. Correlation, used to measure the size and direction of the linear relationship between two variables (Tabachnick & Fidell, 2013), was used to examine relationships within pairs of study variables. The Pearson correlation was used to examine relationships within pairs of main study variables. Spearman's *rho*, a non-parametric test, was employed to examine relationships within pairs of ranked ancillary study variables or those that were not normally distributed. Independent samples *t*-tests and one way ANOVA were used to detect mean differences in groups with two or more than two categories, respectively.

Since the relationships among the study variables have been previously studied in a very limited number of studies, standard multiple regression was employed to answer the basic question of multiple correlation among the factors. Factors significantly related to the outcome variable of breastfeeding self-efficacy were entered into the regression to generate a model to explain the variance in the construct.

Qualitative data obtained from the Birth Satisfaction Scale-Revised were analyzed under the guidance of a qualitative research expert, a member of the researcher's dissertation committee. Data were classified and subsequently coded to generate themes (Polit & Beck, 2012).

## **Chapter IV**

### **FINDINGS**

#### **Introduction**

The purpose of this study was to explore relationships among perceived stress, birth satisfaction, and breastfeeding self-efficacy in women in the early postpartum period. This chapter presents a summary of the data collected by this researcher for the present study. First, the characteristics of the sample will be described through descriptive statistics. Next, reliability of the instruments utilized for the study, including the Perceived Stress Scale-10, the Birth Satisfaction Scale-Revised, and the Breastfeeding Self-Efficacy Scale-Short form will be presented. Subsequently, bivariate relationships within pairs of study variables will be explored through the use of correlation, independent samples t-tests, and one-way ANOVA. Finally, the regression model including all predictor variables significantly correlated with the dependent variable is presented. Content analysis of comments provided by participants on the Birth Satisfaction Scale-Revised follows the quantitative analysis.

#### **Description of the Sample**

The sample included women in the first four days postpartum who gave birth in a large teaching hospital in Northern New Jersey. Postpartum women on the Mother-Baby unit were screened for eligibility by the researcher and those who met study inclusion criteria were invited to participate in the study. For the 165 women who met eligibility criteria, 160 survey packets were distributed to new mothers and 107 completed packets were returned (65%). Forty five women did not return the

study packet (27%) and eight returned packets with greater than 50% of the survey incomplete (5%). Five women who were eligible for the study declined participation (3%). Upon completion of the study materials, participants were asked to return completed surveys to a locked box at the nurse's station or to their primary nurse who then returned packets to the locked box.

Participants were asked to complete the Birth Satisfaction Scale-Revised, the Perceived Stress Scale-10, and the Breastfeeding Self-Efficacy Scale-Short Form as well as 32 researcher-generated demographic questions. Surveys were coded and data were manually entered by the researcher into IBM SPSS<sup>®</sup> Statistics (Version 22). The entire data file was proofread twice against the original survey hard copies, to ensure accuracy of data entry. Comments offered by participants on both the open-ended items on the BSS-R were transcribed exactly as written into Microsoft Word for content analysis.

**Demographic characteristics.** The ages of women who participated in this study ranged from 21 to 46 years ( $M = 32.43$ ,  $SD = 4.82$ ). As shown in Table 1, the racial and ethnic composition of the sample is similar to the population of childbearing women served by this hospital, with Non-Hispanic white women as the primary racial/ethnic group (69.8%), followed by Black women (including both Hispanic and non-Hispanic) (10.3%), and Latina or Hispanic women (7.5%). In contrast to the study sample, the hospital data reflects a higher percentage of Hispanic/Latina than Black women. This discrepancy is likely explained because many of the Hispanic/Latina women approached for the study had limited or no

English proficiency, and therefore, were not eligible for the study. Otherwise, the sample was similar to the racial and ethnic composition of the women served by this hospital (M. Beck, personal communication, October 17, 2014). Table 1 provides a comparison of the study sample and hospital data:

Table 1

*Race and Ethnicity of Sample and Hospital Study Site Data (2012)*

Characteristic	Study Participants ( <i>N</i> = 107)		Hospital Data, 2012 ( <i>N</i> = 4046)	
	<i>N</i>	%	<i>N</i>	%
<b>Race/Ethnicity</b>				
Asian/Indian	4	3.8	343	8.5
Asian/Pacific Islander	2	1.9	237	5.9
Black (Hispanic & Non-Hispanic)	11	10.3	214	5.3
Hispanic/Latina	8	7.5	533	13.2
Non-Hispanic White	74	69.8	2680	66.2
Biracial	3	2.8	9	0.2
Unknown/other	4	3.8	17	0.4

Participants were generally married (93.5%) with an educational level of a Bachelor's Degree or higher (78.5%). Sixty six participants (61.7%) reported an annual household income of greater than \$100,000, 19 (17.8%) reported an income of \$70,001-100,000, and the remaining 19.8% were evenly distributed in categories of

less than \$30,000, \$30,001-50,000, and \$50,001-70,000. One participant (0.9%) did not report her annual household income. Table 2 provides a detailed socioeconomic description of the sample.

Table 2

*Socioeconomic Description of the Sample (N = 107)*

Characteristic	N	%
<b>Marital Status</b>		
Single	3	2.8
Committed Relationship	4	3.7
Married	100	93.5
<b>Educational Level</b>		
Some High School	1	.9
High School Diploma	7	6.5
Some College	10	9.3
Associates Degree	5	4.7
Bachelor's Degree	48	44.9
Master's Degree	30	28.0
Doctoral or Professional Degree	6	5.6
<b>Income</b>		
Less than \$30,000	7	6.5
\$30,001-\$50,000	6	5.6
\$50,001-\$70,000	8	7.5
\$70,001-\$100,000	19	17.8
Greater than \$100,000	66	61.7

*Obstetrical experiences.* The sample was diverse in terms of obstetrical experience, including 53 primiparous (49.5%) and 54 multiparous (50.5%) women. Women experienced a variety of birth types including spontaneous vaginal (53.3%), instrumental vaginal (8.4%), planned cesarean (21.5%), and unplanned or emergency cesarean (16.8%). Therefore, 38.8% of the sample delivered via cesarean section, which is consistent with New Jersey's current cesarean rate of 38.4% (Hamilton et al., 2014). Of the 54 multiparous women, 24 (44.4%) reported having a cesarean section with a previous pregnancy. Of these women with a previous cesarean, 11 (45.8%) attempted a vaginal birth after cesarean (VBAC) with the current pregnancy. Six of the women who attempted VBAC (54.5%) delivered vaginally, while 5 (45.5%) delivered via cesarean section. Among women who labored, the mean self-reported length of labor was 10.68 hours (SD = 10.02). Rates of each mode of birth in the sample were similar to the hospital's annual rates, as shown in Table 3.

Table 3

*Birth Type in Study Sample and Hospital Study Site Data (2014)*

Birth Type	Study Participants ( <i>N</i> = 107)		Hospital Data, 2014 ( <i>N</i> = 3278)	
	<i>N</i>	%	<i>n</i>	%
Spontaneous vaginal	57	53.3	2091	63.8
Overall cesarean rate	41	38.3	1186	36.2
Primary cesarean rate	21	22.4	846	25.8
Instrumental vaginal	9	8.4	154	4.7
Successful VBAC	6	5.6	148	4.5

***Infant feeding plans.*** In regard to infant feeding plans, 79 women (73.8%) reported an intention to breastfeed for at least six months. Twelve mothers (11.2%) indicated they planned to breastfeed for the first month, but probably not six months, and 14 mothers (13.1%) indicated that they planned to try breastfeeding, but were not sure how long they would do it. Less than 2% indicated they were thinking about breastfeeding, but were not sure they wanted to do it. Those who reported an intention to exclusively formula feed were excluded from the study. Participants also reported the likelihood of exclusively breastfeeding for the first six months of life. Thirty eight women (35.5%) indicated they were extremely likely to exclusively breastfeed for six months, while 18 (16.8%) indicated they were likely, and 25 (23.4%) indicated they were somewhat likely. Twelve participants (11.2%) reported being

extremely unlikely to exclusively breastfeed for six months and the remainder reported being either unlikely or somewhat unlikely. Among the 52 multiparous women, 48 (92.3%) reported having experience breastfeeding a previous child and 4 (7.7%) reported choosing to formula feed their previous children.

### **Description of Study Variables**

Three established survey instruments were distributed in person via paper and pencil survey on an inpatient Mother-Baby unit by the principal investigator. These instruments were: The Birth Satisfaction Scale-Revised (BSS-R), the Perceived Stress Scale-10 (PSS-10), and the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF). The BSS-R has three subscales, which underpin the latent construct of childbirth satisfaction. Cronbach's alpha was used to assess the reliability or internal consistency of each instrument in the study sample. Acceptable reliability for an instrument used in survey research is 0.70 (Polit & Beck, 2012). All instruments demonstrated acceptable internal consistency in the study sample.

**Birth Satisfaction Scale-Revised (BSS-R).** The BSS-R is comprised of ten questions and contains three subscales. These subscales are: 1) Stress Experienced During Labor, 2) Women's Personal Attributes, and 3) Quality of Care Provision. Survey results, including mean score (*M*), standard deviation (*SD*), actual and potential range of scores, and alpha coefficient for the study sample, for the entire instrument and for each of its three subscales, are presented in the following table (Table 4).

Table 4

*The Birth Satisfaction Scale-Revised (BSS-R) and BSS-R Subscales Survey Results*

	Mean (SD)	Actual Range	Potential Range	Alpha	Correlation with BSS-R
BSS-R	28.30 (5.64)	13-39	0-40	0.719	N/A
Subscale 1 LaborStress	10.05 (3.13)	3-16	0-16	0.54	-.372**
Subscale 2 Attributes	4.81 (1.86)	0-8	0-8	0.48	.871**
Subscale 3 QualCare	13.45 (2.53)	4-16	0-16	0.75	0.683**

*Note:* Subscale abbreviations: LaborStress = Stress Experienced During Labor; Attributes = Women's Personal Attributes; QualCare = Quality of Care Provision.  
\*\*  $p < .01$

Due to their moderate to strong correlations with overall BSS-R scores, small number of items on each subscale, and generally poor internal consistencies, subscale scores were not entered individually for correlational analyses. In addition, the strong correlation of .871 between the overall BSS-R score and the Women's Personal Attributes Subscale suggests multicollinearity.

**Perceived Stress Scale-10 (PSS-10).** The PSS-10 is comprised of ten questions and measures a single construct. Survey results, including mean score, standard deviation, actual and potential range of scores, and alpha coefficient for the PSS-10 are presented in Table 5.

**Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF).** The BSES-SF contains fourteen questions and measures a single construct. Survey results, including mean score, standard deviation, actual and potential range of scores, and alpha coefficient for the BSES-SF are presented in Table 5.

Table 5

*Perceived Stress Scale-10 (PSS-10) and Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) Survey Results*

	Mean (SD)	Actual Range	Potential Range	Alpha (Present Study)	Alpha (Norming Study)
PSS-10	13.27 (6.17)	0-30	0-40	0.88	0.91
BSES-SF	46.18 (11.96)	16-70	14-70	0.95	0.94

### Statistical Analyses

Each variable was examined to determine whether it met the assumptions for multiple linear regression including normal distribution, homoscedasticity, linearity, absence of multicollinearity, and no undue influence of outlier scores (Tabachnick & Fidell, 2013). Normal distribution was evaluated by visual examination of score distribution on the histogram as well as analysis of skewness and kurtosis. The

Shapiro-Wilk test provided additional support for a normally distributed data set. Normal QQ Plots were also generated to describe the distribution. Multicollinearity was ruled out by conducting bivariate correlations between each pair of independent study variables. Correlation of  $\geq 0.80$  would suggest multicollinearity (Tabachnick & Fidell, 2013); however no correlation of this strength was found. Homoscedasticity and linearity were assessed through visual examination of scatterplots. Levene's Test for Homogeneity of variance was non-significant ( $p > .05$ ) for all main study variables, providing additional support that the assumption for homoscedasticity was met. The impact of outliers was assessed through visual examination of boxplots as well as mean and median comparisons. All of the main study variables met the aforementioned assumptions for multiple linear regression.

Missing data can pose serious threats to the integrity of a study (Tabachnick & Fidell, 2013); however the present study contained a very small amount of missing completely at random (MCAR) data. The entire data set of 7490 potential responses contained 14 data points that were not filled or marked as Not Applicable by participants. This resulted in the proportion of missing data in the overall data set of 0.16%. To evaluate for the pattern of missing data within study variables, Little's MCAR Test was run on all scale item responses. The non-significant results ( $p = .359$ ) of this test suggest data are missing completely at random. Expectation Maximization (EM) was utilized for scale items with data that was missing or marked as not applicable by participants to allow for analysis of the complete data set

(Tabachnick & Fidell, 2013). The eight study packets that were returned with greater than 50% of responses incomplete were discarded and not included in the analysis.

**Bivariate Correlation within Main Study Variables.** Following the above assessments for data integrity, bivariate correlations between pairs of main study variables were conducted. The following correlation matrix (Table 6) shows the results of the significant bivariate correlations. The outcome variable was the score obtained on the Breastfeeding Self-Efficacy Scale-Short Form. The predictor variables were total score on the Perceived Stress Scale-10 and total score on the Birth Satisfaction Scale-Revised. Individual subscales on the BSS-R were not entered as separate variables due to their poor internal consistency, small number of items, and moderate to large correlation with the overall BSS-R score.

Table 6

*Means, Standard Deviations, and Bivariate Correlations for Main Study Variables (Pearson Correlation)*

Variable	<u>M</u>	<u>SD</u>	PSS-10	BSS-R
BF Self-Efficacy	46.18	11.96	-.123	<b>.226*</b>
Perceived Stress	13.27	6.17	---	<b>-.299**</b>
Birth Satisfaction	26.72	4.27	---	---

\*  $p < .05$ ; \*\*  $p < .01$

Correlation coefficients were calculated for each pair of study variables, using the Pearson correlation. A  $p$  value of less than .05 was required for significant findings. Two of the three correlations were significant. Birth satisfaction scores were positively correlated with breastfeeding self-efficacy and negatively correlated with perceived stress. Cohen (1992) offers guidelines for effect size in the social sciences suggesting small, medium, and large effect sizes are evidenced by correlation coefficients of 0.10, 0.30, and 0.50 respectively. Therefore, these relationships are all relatively weak, with only perceived stress and birth satisfaction approaching moderate strength.

This correlation indicates a negative relationship between perceived stress and birth satisfaction. Therefore, women with higher levels of perceived stress tend to have lower levels of birth satisfaction. Although smaller, a significant positive relationship exists between birth satisfaction and breastfeeding self-efficacy. This means that women with higher levels of birth satisfaction tend to have higher levels of self-efficacy related to breastfeeding.

**Bivariate Relationships with Demographic Factors.** In addition to the main study variables, bivariate relationships between the outcome variable, breastfeeding self-efficacy, and key demographic factors were explored. Depending on the type of variable, relationships were examined using bivariate correlation (Spearman's rank), independent samples *t*-test, or one-way analysis of variance (ANOVA). No significant relationships were found between breastfeeding self-efficacy scores and participant age, income, race, ethnicity, educational level, type of birth, overall childbirth experience, or childbirth or breastfeeding class attendance.

However, several significant relationships between breastfeeding self-efficacy and demographic factors were demonstrated. The following table illustrates correlations between demographic factors and the outcome variable:

Table 7

*Bivariate correlations (Spearman's rank) between Breastfeeding Self-Efficacy and Ancillary Variables*

Variable	Spearman's <i>rho</i>	Significance
Number of Children	.226*	.019
Partner Support of Breastfeeding	.200**	.008
Infant Feeding Plans	.395**	< .001
Likelihood of Exclusively Breastfeeding x 6 months	.394**	< .001
Feeling Prepared for Birth	.306**	.001

\*  $p < .05$ ; \*\*  $p < .01$

These correlations demonstrate the significant impact of other factors on breastfeeding self-efficacy. A woman's infant feeding plans, including duration of any and exclusive breastfeeding are moderately positively correlated with breastfeeding self-efficacy. This indicates that women who plan to breastfeed for longer duration and intensity tend to have higher levels of self-efficacy. In addition, the positive correlation between number of living children and breastfeeding self-efficacy means that women who have more children tend to have higher breastfeeding self-efficacy. Partner support for breastfeeding and feeling prepared for childbirth are also associated with higher levels of breastfeeding self-efficacy.

**Group mean differences.** Group mean differences in self-efficacy were explored using independent samples *t*-tests or one-way ANOVA, as appropriate.

Significant differences in self-efficacy were noted for those with and without previous breastfeeding experience. Those with previous breastfeeding experience ( $n = 50$ ) had significantly higher mean BSES-SF Scores ( $m = 48.62$ ,  $sd = 12.14$ ) than those with no previous BF experience ( $m = 44.05$ ,  $sd = 11.49$ ,  $t [2,105] = 2.00$ ,  $p = .048$ ).

In addition, independent samples  $t$ -tests were conducted to detect mean differences in breastfeeding self-efficacy among mothers who reported they received best practices of the Baby Friendly Hospital Initiative (BFHI). There was no significant difference in breastfeeding self-efficacy in women based on whether they were informed of the benefits of breastfeeding by hospital staff, had immediate skin to skin contact, received help feeding in the first hour, felt they received enough teaching from staff, roomed in with their infant, received a pacifier for infant, were encouraged to feed on cue or were aware of hospital breastfeeding support resources. However, mothers of infants who received in-hospital formula supplementation ( $n = 27$ ) had significantly lower mean BSES-SF Scores ( $m = 39.00$ ,  $sd = 11.37$ ) than those whose infants did not receive formula supplementation in the hospital ( $n = 80$ ,  $m = 48.61$ ,  $sd = 11.22$ ,  $t [2,105] = -3.83$ ,  $p < .001$ ). A composite score of BFHI practices was created to explore whether there was a correlation between increasing number of best practices experienced and level of self-efficacy. The possible range of scores was 0-10, with increasing scores indicating a greater number of BFHI practices perceived by the participant. No significant correlation was found between this score and level of self-efficacy.

**Simple Linear Regression.** As birth satisfaction was the only main study variable significantly correlated with breastfeeding self-efficacy, a simple linear regression was conducted to examine the impact of this variable on breastfeeding self-efficacy.

The purpose of this model was to determine the impact of birth satisfaction on the dependent variable, breastfeeding self-efficacy. Based on the R square of .051, 5.1% of the variance in early postpartum breastfeeding self-efficacy was explained by birth satisfaction. Approximately 94.9% was explained by other factors. Although only a small proportion of variance was explained by this single factor, the model was statistically significant ( $F(1, 105) = 5.66, p = .019$ ).

These results indicate that while birth satisfaction explains a small, yet significant, proportion of the variance in breastfeeding self-efficacy, no strong correlation is present and the majority of variance is explained by factors outside of this simple model.

**Multiple Linear Regression.** To improve the ability of the model to predict breastfeeding self-efficacy scores, demographic factors significantly correlated with the dependent variable were then entered into a standard regression model. The purpose of the model was to determine the impact of the eight predictor variables significantly correlated with breastfeeding self-efficacy scores in this sample. These predictors include the following: 1) birth satisfaction (B1); 2) infant feeding plans (B2), including 3) likelihood of exclusive breastfeeding for six months (B3); 4) partner support of breastfeeding (B4); 5) number of living children (B5); 6) feeling

prepared for childbirth (B6); 7) receipt of formula supplementation (B7); and 8) previous breastfeeding experience (B8) on the dependent variable, breastfeeding self-efficacy.

Table 8 presents the regression analysis examining these predictors of breastfeeding self-efficacy. Data indicate that the model is statistically significant ( $F(8,97) = 7.60, p < 0.001$ ). Based on the R square of .385, 38.5% of the variance in early postpartum breastfeeding self-efficacy was explained by the variables explored in this model. Approximately 61.5% of variance was explained by other factors.

Of the seven predictor variables, the importance of birth satisfaction ( $B1 = 0.604, t = 2.56, p = 0.012$ ), infant feeding plans ( $B2 = 3.31, t = 2.10, p = .038$ ), and receipt of formula supplementation ( $B7 = -6.01, t = -2.60, p = .011$ ) were statistically significant. Receipt of formula supplementation was the strongest predictor of breastfeeding self-efficacy. The unstandardized coefficient of -6.01 indicates that women whose infants received supplementation have a 6 point lower breastfeeding self-efficacy score than those who did not receive supplementation. Receipt of formula supplementation had nearly twice the impact of infant feeding plans and nearly ten times the impact of birth satisfaction.

Table 8

*Multiple Linear Regression Analysis Examining Predictors of Breastfeeding Self-Efficacy*

Variable	<i>B</i>	<i>SE B</i>	$\beta$	<i>t</i>	<i>p</i>
Feeling Prepared for Birth	.611	1.18	.05	.52	.397
Partner Support of BF	2.83	2.22	.10	1.27	.206
Infant Feeding Plan	3.306	1.57	.22	2.10	.038*
Likelihood of EBF x 6 months	1.25	.649	.21	1.92	.058
Receipt of Formula Supplement	-6.01	2.31	-.22	-2.60	.011*
Number of Living Children	2.66	2.13	.165	1.25	.216
Previous BF Experience	1.53	3.31	.064	.46	.644
Birth Satisfaction Score	.604	.236	.215	2.56	.012*

Note. For Model:  $R = .621$ ,  $R^2 = .385$ ,  $F(8, 97) = 7.60$ ,  $p < .001$

\* $p < .05$

The null hypothesis that the impact of the independent variables on breastfeeding self-efficacy in the early postpartum period is not significantly different from zero was rejected. The positive slope suggests that women with stronger intentions to breastfeed their infants for longer duration and those with higher levels of birth satisfaction tend to have higher levels of breastfeeding self-efficacy. Similarly, the negative slope for formula supplementation indicates that women whose infants receive formula supplementation in the hospital tend to have lower levels of self-efficacy.

**Post-hoc Power Analysis.** Because the power analysis was initially conducted for seven predictor variables and the model included eight, a post-hoc power analysis was run to determine the actual power of the regression, given the  $R$  of .621 (Faul et al., 2009). Post-hoc power analysis revealed that the actual power of the study was greater than .99, indicating that the number of participants was adequate and the actual power of the study exceeded the pre-determined power of .80. This level of power indicates that in this study there is less than a 1% chance of making a Type II error, or failing to detect a true relationship or group difference (Polit & Beck, 2012).

**Additional Bivariate Testing.** The two other main study variables, perceived stress and birth satisfaction, were also examined for relationships with demographic or ancillary factors, using bivariate correlation, independent samples  $t$ -tests, and one-way ANOVA, as appropriate. In addition to their significant inverse relationship with each other ( $r = -.299, p = .002$ ), these study variables were significantly related to several ancillary variables. Important correlations with these study variables will be presented followed by moderate correlations within pairs of demographic variables.

**Perceived stress.** There was no significant mean difference in perceived stress between or among women according to the following groups: type of birth, race, ethnicity, income, educational level, parity, and childbirth or breastfeeding class participation. A negative correlation was demonstrated between perceived stress and overall childbirth experience ( $\rho = -.274, p = .004$ ), which indicates that women who have higher levels of perceived stress tend to perceive their overall childbirth

experience more negatively. Perceived stress was also negatively correlated with partner support of breastfeeding decision ( $\rho = -.260, p = .007$ ), suggesting that women with higher levels of perceived stress tend to perceive a lower level of partner support for breastfeeding. No significant correlation was observed in perceived stress levels in relation to infant feeding plans, intention to breastfeed exclusively for six months, number of living children, or participant age.

***Birth satisfaction.*** There was no significant mean difference in birth satisfaction for women based on membership in the following groups: race, ethnicity, educational level, income, parity, childbirth or breastfeeding class participation or birth type expressed dichotomously as vaginal or cesarean. One-way ANOVA exploring birth satisfaction across the four birth types, including spontaneous vaginal, instrumental vaginal, unplanned and planned cesarean was significant ( $F [3, 103] = 3.75, p = .013$ ). Post-hoc Bonferroni testing revealed the only significant mean difference ( $4.65, p = .013$ ) was between women who had a spontaneous vaginal birth and those who had an instrumental vaginal birth. No other significant mean differences were found.

Birth satisfaction was strongly correlated with participants' responses to a single Likert-type item assessing the overall childbirth experience ( $\rho = .535, p < .001$ ), indicating that women who reported a more positive overall birth experience in this single item had higher birth satisfaction scale scores. Birth satisfaction was also positively correlated with feeling prepared for birth ( $\rho = .243, p = .012$ ), which suggests that women with higher levels of birth satisfaction also felt more prepared

for their birth experience. No significant correlation was observed between birth satisfaction and the following other variables: partner support of breastfeeding decision, infant feeding plans, intention to exclusively breastfeed for six months, number of living children, or participant age.

Higher mean birth satisfaction scores were noted for mothers who reported holding their babies skin to skin immediately after birth (*Mean Difference* = 2.24,  $t = 2.62$ ,  $p = .01$ ) as well as those who reported receiving assistance with breastfeeding in the first hour of life (*Mean Difference* = 2.80,  $t = 3.10$ ,  $p = .002$ ). Mothers who reported receiving these best practices reported higher mean birth satisfaction scores than those who did not. There were no other significant mean differences in birth satisfaction associated with any of the other Baby Friendly Hospital practices.

***Demographic factors.*** In addition to the above relationships identified with the main study variables, the following table illustrates moderate correlations found within pairs of demographic factors.

Table 9

*Correlations Between Ancillary Variables – Spearman's Rank Correlation*

Variable a	Variable b	Spearman's <i>rho</i>	Significance**
Childbirth Class Participation	Breastfeeding Class Participation	.389	< .001
Feeling Prepared for Birth	Overall Childbirth Experience	.390	< .001
Feeling Prepared for Birth	Likelihood of Exclusive BF x 6 mos.	.317	.001
Participant Age	Number of Living Children	.385	< .001
Participant Age	Income	.340	< .001
Income	Educational Level	.389	< .001

\*\* $p < .01$

The moderate positive correlation between childbirth class and breastfeeding class participation indicates that that women who participated in childbirth class were more likely to also participate in a prenatal breastfeeding class. Similarly, the moderate positive correlation between feeling prepared for birth and overall childbirth experience indicates that women who felt more prepared for birth tended to perceive their experiences more positively. Women who felt more prepared for birth were more likely to express an intention to breastfeed exclusively for six months, as evidenced by the correlation between feeling prepared for birth and exclusive breastfeeding intention. Participant age was moderately correlated with both number of living children and income. This means that older participants were more likely to

have more children and higher incomes. Finally, the moderate positive correlation between income and educational level suggests that mothers with higher educational levels were more likely to report a higher household income.

### **Content Analysis for Birth Satisfaction Scale-Revised**

In addition to the quantitative portion of the scale, the BSS-R invited women to provide narrative comments about their birth experiences. Thirty nine women (36.4%) chose to provide comments on the scale. The number of comments received from women who experienced each of the birth types closely mirrored the distribution of the entire sample. Nineteen of the women who offered comments had a vaginal birth (51.3%), nine had a planned cesarean (24.3%) and nine had an unplanned cesarean (24.3%). The two main themes identified through the content analysis were 1) Unexpected Birth Processes and 2) Staff: Helping and Hindering.

Many of the comments were focused on feelings related to the birth not going as planned such as: “This was my first time and it ended up in a C-section. It was a long labor that turned into a C-section. It was stressful & mentally exhausting.” Other similar comments included: “Attempted VBAC ending in emergency C-section was upsetting/disappointing. This delivery didn’t go as we had planned/hoped at all!” and “I had trouble with anesthesia . . . I was anxious due to spinal block making me feel ill.”

Women commented on staff who either helped or hindered the birthing process. Most of the comments were positive and conveyed how the physician or midwife and hospital staff helped women through the birth process, especially when

it did not go as planned. Positive comments included: “Precipitous delivery with second degree laceration. Most distress caused by rapid delivery. Tub, midwife, and doula were wonderful!” and “The staff was excellent and professional when the after birth complications happened.” Several negative comments related to staff’s negative impact on the birth experience, including: “They wanted me to use Pitocin even though I DID NOT want it. They weren’t happy about my decision to do a non-medicated birth” and “One nurse kept pushing me to get an epidural when I wanted to push through.” The negative comments generally referred to experiences in which women perceived healthcare providers as usurping control of the labor and birth.

The majority of remaining comments were simply a statement that the woman had had a planned c-section, several of whom indicated that they did not find some questions on the BSS-R to be relevant to their peri-operative experience. Three additional comments were related to the physical environment of care such as, “The grout in the tile on the bath floor could be improved.”

### **Summary**

In summary, the results of the study indicate that there was a positive correlation between birth satisfaction and breastfeeding self-efficacy and a negative correlation between perceived stress and birth satisfaction. This means that women with a higher degree of birth satisfaction tend to have higher levels of breastfeeding self-efficacy and those with higher levels of perceived stress tend to have lower levels of birth satisfaction. No statistically significant correlation was found between perceived stress and breastfeeding self-efficacy.

There were statistically significant relationships between breastfeeding self-efficacy and several ancillary variables including moderate correlations with infant feeding plans, likelihood of exclusively breastfeeding for six months, and feeling prepared for birth. Breastfeeding self-efficacy was moderately correlated with infant feeding plans, intention to exclusively breastfeed for six months, and feeling prepared for birth. This means that those with stronger intentions to breastfeed for a longer duration and to breastfeed exclusively for a period of six months, were more likely to have higher levels of breastfeeding self-efficacy in the early postpartum period. Similarly, women who felt more prepared for childbirth tended to have higher levels of self-efficacy. Small correlations were detected between breastfeeding self-efficacy and number of living children and partner support for breastfeeding. These positive relationships indicate that with increasing number of children and partner support for breastfeeding, women tended to have higher levels of self-efficacy. There were no significant relationships between breastfeeding self-efficacy and other demographic factors including participant age, race, ethnicity, income, educational level, overall childbirth experience, mode of birth, previous breastfeeding experience, primiparity vs. multiparity, or age of infant.

Breastfeeding self-efficacy scale means were compared between groups of women to detect differences in the outcome variable across groups. Independent samples t-test was used for groups with two levels, while one-way ANOVA was used to detect differences in three or more groups. Breastfeeding self-efficacy scores were significantly lower among women whose infants received formula supplementation in

the hospital than those who did not. This means that women whose infants received formula supplementation were more likely to have lower levels of self-efficacy in the early postpartum period. The final group mean difference was based on prior experience breastfeeding. Mothers who had breastfed a previous child were more likely to have higher levels of self-efficacy than those who had never previously breastfed. No other significant group differences were detected.

Standard multiple regression revealed a statistically significant model which included infant feeding plans, receipt of formula supplementation, and birth satisfaction, that explained approximately 38.5% of the variance in early postpartum breastfeeding self-efficacy scores.

Additional bivariate testing demonstrated relationships between perceived stress and birth satisfaction with the ancillary variables as well as relationships within the ancillary or demographic variables. There were small, yet statistically significant negative correlations, between perceived stress and overall childbirth experience as well as perceived stress and partner support of breastfeeding decisions. These correlations mean that women with higher levels of perceived stress tend to have less positive perceptions of their overall childbirth experience and less support from their partner about breastfeeding. Birth satisfaction was strongly correlated with overall childbirth experience and weakly correlated with feeling prepared for birth. This means that women with higher birth satisfaction scores tended to report more positive perceptions of their birth experiences and to feel more prepared for birth.

There were moderate relationships observed between the following pairs of ancillary variables: childbirth class participation and breastfeeding class participation; feeling prepared for birth and overall childbirth experience; feeling prepared for birth and likelihood of intention to exclusively breastfeed for six months; age and number of children; age and income; and income and educational level.

Content analysis of participant comments on the Birth Satisfaction Scale-Revised supported two main themes: unexpected birth processes, and staff: helping and hindering. Other comments were informative in nature indicating the type of birth a woman had experienced. These comments added richness to the quantitative data collected on the BSS-R.

## Chapter V

### DISCUSSION OF FINDINGS

The purpose of this chapter is to discuss the findings presented in Chapter 4 in the context of the existing literature and the theoretical framework. A review of the study's methodological strengths and limitations will follow the discussion.

#### Introduction

The purpose of this descriptive correlational study was to explore the relationships among birth satisfaction, perceived stress, and breastfeeding self-efficacy. Data were collected by the principal investigator on the Mother-Baby unit of a single hospital in the Northeastern United States. Participants ( $N = 107$ ) were asked to complete a survey consisting of three established survey instruments, the Breastfeeding Self-Efficacy Scale-Short Form, Perceived Stress Scale-10, the Birth Satisfaction Scale-Revised, and a researcher-generated Participant Information Form. Data were analyzed in IBM SPSS<sup>®</sup> Statistics (Version 22).

Statistical analyses included descriptive statistics, reliabilities of all study instruments, bivariate analysis, and multiple linear regression. Bivariate relationships within pairs of main study variables and ancillary variables were conducted using independent samples  $t$ -tests, ANOVA, and bivariate correlation, as appropriate. Variables significantly related to the outcome variable, breastfeeding self-efficacy, were entered into a standard regression model. The regression model was statistically significant ( $F = 7.60, p < .001$ ) and explained 38.5% of variance in postpartum breastfeeding self-efficacy scores, evidenced by an  $R$  square of .385. Infant feeding

plans, receipt of formula supplementation, and Birth Satisfaction scores were statistically significant predictors of breastfeeding self-efficacy in the regression model.

### **Breastfeeding Self-Efficacy**

Breastfeeding self-efficacy was measured using the Breastfeeding Self-Efficacy Scale-Short Form. The mean score for the current study was 46.18,  $SD = 11.96$ , with a range of 16-70. The Breastfeeding Self-Efficacy Scale and its Short Form, used in the current study, are the most widely used scales to measure breastfeeding self-efficacy. In the initial norming study of the instrument, Dennis (2003) reported a scale mean of 55.88,  $SD = 10.85$  in a sample of 481 Canadian women at one week postpartum. This higher mean score could be explained by timing of data collection. Women in the present study were all within the first four days postpartum, while Dennis' data was collected at one week postpartum. Kingston and colleagues (2007) examined breastfeeding self-efficacy at 48 hours postpartum and mean scores on the BSES-SF were 48.80,  $SD = 10.69$ , very similar to scores in the present study. Similarly, in-hospital BSES-SF scores in a generally well-educated higher income sample of first time Canadian mothers were similar to those in the present study ( $M [189] = 48.0$ ,  $SD = 9.4$ ) (Seminic et al., 2008).

Significant mean differences in self-efficacy were noted in mothers based upon whether they had previous breastfeeding experience ( $t [107] = 2.00$ ,  $p = .048$ ). There was also a significant positive correlation between number of living children and level of breastfeeding self-efficacy ( $\rho = .226$ ,  $p = .019$ ). The impact of

previous breastfeeding experience on self-efficacy has been consistently demonstrated in the literature. Dennis (2003) found significant differences in self-efficacy between primiparas ( $M = 53.48$ ,  $SD = 10.33$ ) and multiparas with previous breastfeeding experience ( $M = 58.21$ ,  $SD = 10.87$ ,  $t [481] = 4.82$ ,  $p < .001$ ) at one week postpartum. Similarly, in their US sample of women of African descent, McCarter-Spaulding and Gore (2009) found that women with previous experience had higher levels of breastfeeding self-efficacy ( $M = 54.81$ ,  $SD = 10.96$ ) than those without previous experience ( $M = 48.98$ ,  $SD = 12.44$ ) during the postpartum hospitalization. Higher mean breastfeeding self-efficacy scores have been consistently identified in mothers with prior experience in studies involving validation of translated versions of the BSES-SF (Bosnjak et al., 2012; Dai & Dennis, 2003; Oliver-Roig et al., 2011; Wutke & Dennis, 2007). In contrast, however, Kingston and colleagues (2007) found no significant difference in in-hospital BSES-SF scores among women who reported previous successful breastfeeding experience and those without breastfeeding experience.

**Breastfeeding self-efficacy and demographic factors.** There were no significant mean differences in breastfeeding self-efficacy based on maternal demographic factors in the present study. Similarly, no significant association was identified between maternal age, level of education, marital status, or income and breastfeeding self-efficacy in numerous postpartum studies (Dennis, 2003; Gregory et al., 2008; McCarter-Spaulding & Gore, 2009) and one antenatal study (Wells et al., 2006). However, in contrast to the present study findings, certain authors have found

significant mean differences in breastfeeding self-efficacy between racial groups. For example, in their sample of low income women in the United Kingdom, Gregory and colleagues found that Caucasian mothers had significantly lower mean scores ( $M = 44.4, SD = 12.1$ ) than those of other ethnicities ( $M = 48.4, SD = 12.9, t [163] = -2.06, p = .04$ ). African American women had significantly lower self-efficacy scores than those who identified as African in another study (McCarter-Spaulding & Gore).

Breastfeeding self-efficacy did not differ based upon type of birth in the present study. The literature related to type of birth and breastfeeding self-efficacy is inconsistent. Dennis (2003) found that women who had vaginal births tended to have higher levels of breastfeeding self-efficacy than those who delivered via cesarean section ( $t [481] = 2.46, p < .01$ ). In a subsequent study, the same author (2006) found that women who had births with more interventions, such as cesarean and forceps, reported lower levels of breastfeeding self-efficacy ( $r = -.12, p < .001$ ). However, like the present study, other authors have reported no significant differences in breastfeeding self-efficacy based upon type of birth (Gregory et al., 2008; McCarter-Spaulding & Gore, 2009; Rodrigues, Padoin, Guido, & Dias Lopes, 2014).

**Breastfeeding self-efficacy and infant feeding patterns.** Actual infant feeding patterns and plans for feeding were associated with breastfeeding self-efficacy levels in the present study, as well as in the literature. In-hospital formula supplementation was associated with significantly lower mean breastfeeding self-efficacy scores ( $t = -3.83, p < .001$ ). Oliver-Roig and colleagues (2012) similarly found that women who were exclusively breastfeeding on the second day postpartum

had significantly higher BSES-SF scores than those who supplemented with formula (*Mean Difference* = 4.88, *CI* 95% = .08 – 8.97,  $p = .02$ ). At one week postpartum, Dennis (2006) found that women who were exclusively breastfeeding had higher levels of self-efficacy than women who were feeding their infants a combination of breast milk and formula. Furthermore, “feeding infant as planned” was significantly positively correlated with self-efficacy ( $r = .43$ ,  $p < .001$ ). Exclusive breastfeeding, without formula supplementation, likely represents a mother’s fulfillment of her infant feeding plans.

Infant feeding plans and likelihood of intention to breastfeed exclusively for six months were both moderately positively correlated with breastfeeding self-efficacy ( $\rho = .395$ ,  $.394$ ,  $p < .001$ , respectively). Intention and self-efficacy are correlated with breastfeeding outcomes (Wilhelm et al., 2009) and usually with each other (Mitra et al., 2004; Wells et al., 2006).

**Breastfeeding self-efficacy and partner support.** Partner support of breastfeeding decision was positively correlated with breastfeeding self-efficacy in the present study. Similar findings have been described in the literature. Dennis (2006) found positive correlations between both global social support and self-efficacy ( $r = .20$ ,  $p < .001$ ) and partner-specific support ( $r = .12$ ,  $p < .001$ ) and self-efficacy. Similarly, Zhu and colleagues (2014) found positive relationships between both perceived social support ( $r = .324$ ,  $p = .001$ ) and husband’s attitude towards breastfeeding ( $r = .226$ ,  $p = .001$ ) and antenatal breastfeeding self-efficacy scores in pregnant women in China.

### **Birth Satisfaction**

Participants in the present study had similar birth satisfaction scores ( $M$  [107] = 26.72,  $SD$  = 4.27, range 13-35) to the participants in the original norming study (Hollins Martin & Martin, 2014) ( $M$  [228] = 28.63,  $SD$  = 5.78, range = 13-40). This is the only other published study in which the relatively new BSS-R has been used. While Hollins Martin & Martin describe a three factor structure, two of the three subscales, Stress Experienced During Labor and Women's Personal Attributes, demonstrated poor internal consistency ( $\alpha$  = .54 and .48 respectively) in the current study. The third subscale, Quality of Care Provision, had an alpha coefficient of .75.

Satisfaction with birth, a complex and multidimensional construct, has been explored in relation to numerous factors including type of birth, with inconsistent results. In the present study, one-way ANOVA revealed significant differences in birth satisfaction related to type of birth ( $F$  = 3.750,  $p$  = .013). Post hoc Bonferroni testing demonstrated significantly lower birth satisfaction in women who had an instrumental vaginal birth ( $n$  = 9) than those who had a spontaneous vaginal birth ( $n$  = 57). Similarly, Hollins Martin and Martin (2014) found that mean BSS-R scores were higher in women who experienced a spontaneous vaginal birth than those with a "non-normal" birth, which included instrumental vaginal birth, planned and unplanned cesarean and breech delivery ( $t$  [221] = 3.44,  $p$  = .001). In their study of 2,541 Swedish women, Waldenström and colleagues (2004) found instrumental vaginal birth to be a risk factor for negative birth perception in primiparas, however this risk was not present for multiparous participants. No significant group mean

difference was found in the present study in birth satisfaction for women who had a spontaneous vaginal birth or cesarean birth. This has also been found in other recent studies (Fair & Morrison, 2012). Blomquist and colleagues (2011) found that in the first few days postpartum, women who had a planned cesarean had the highest level of satisfaction with the birth ( $M = 90.0, SD = 8.5$ ), as measured on a visual analogue scale, and the lowest level of satisfaction was observed in women with unplanned cesarean ( $M = 73.9, SD = 22.8$ ) and instrumental vaginal birth ( $M = 76.2, SD = 25.6$ ). The lack of association between lower birth satisfaction and unplanned cesarean section in this study was unexpected; however, the literature suggests that type of birth plays only part of the role in predicting birth satisfaction. Other factors, such as perceived control and involvement with decision-making, support from caregivers, and togetherness with infant may be more important.

Togetherness with infant immediately following birth has been associated with positive birth perception (Bryanton et al., 2008; Hollins Martin & Fleming, 2011), while its absence has been associated with negative birth perception (Fenwick et al., 2003; Waldenström et al., 2004). Findings from the current study, which show that birth satisfaction is higher among women who report holding their infant skin to skin immediately after birth (*Mean Difference* = 2.24,  $t = 2.62, p = .01$ ) or receiving assistance with breastfeeding in the first hour of life (*Mean Difference* = 2.80,  $t = 3.10, p = .002$ ), are consistent with this literature.

Women in the current study who reported feeling more prepared for birth were more likely to experience higher levels of birth satisfaction. It has been

suggested in the literature that effective antenatal preparation can assist women in the development of realistic expectations of the labor and birth process; achievable expectations that are met can lead to a higher level of satisfaction (Goodman et al., 2004; Hauck, Fenwick, Downie, & Butt, 2007). In addition, feeling prepared has been associated with a higher level of perceived control of the birth experience (Goodman et al., 2004), which is consistently linked to birth satisfaction (Bryanton et al., 2008; Goldbort, 2009; Hodnett, 2002; Hollins Martin & Fleming, 2011).

In the present study, no significant correlations or group mean differences were demonstrated between BSS-R scores and participant demographic factors including age, race, ethnicity, income and educational level. Similarly, the current literature suggests an absence of correlation between maternal age and satisfaction (Blomquist et al., 2011; Hollins Martin & Martin, 2014) and no group mean differences in respect to race and educational level (Blomquist et al., 2011; Bryanton et al., 2009). In contrast to the present study findings, Goodman and colleagues (2004) found that women who had a college education or higher had significantly higher levels of birth satisfaction ( $m(33) = 13.52$ ,  $CI = 10.21-12.90$ ) than those who had a high school diploma or less ( $m(27) = 11.56$ ,  $CI = 10.06 - 12.85$ ,  $p = .008$ ). Educational level, however, did not remain a significant variable in explaining the variance in overall childbirth satisfaction in their multivariate model.

Birth Satisfaction scores were strongly correlated with a single seven-point Likert-type item assessing childbirth experience ( $\rho = .535$ ,  $p < .001$ ). This item, “How would you describe your overall childbirth experience?” offered respondents a

seven-point Likert scale ranging from “Very Negative” to “Very Positive.” This item and other similar variations have been used effectively in previous research to assess birth experience (Blomquist et al., 2011; Sorenson & Tschetter, 2010; Waldenström, 1996; Waldenström et al., 2006). The strong correlation of BSS-R scores with this item supports the validity of the newer BSS-R in regard to its ability to effectively measure the construct of birth satisfaction.

Of note, BSS-R scores in the present study were normally distributed, with no significant skew present, representing a continuum of satisfaction and dissatisfaction with the birth experience. The “halo effect,” described in the literature as “a woman’s relief at having come through the experience safely, with a healthy baby” (Hodnett, 2002, p. S165) has been identified as a concern for collecting birth satisfaction data in the early postpartum period. However, it has been suggested that the relationship of the researcher to the participant poses a more significant threat to validity of results than timing (Hodnett, 2002). Women may be concerned about offending their healthcare providers by responding honestly if data are collected by a direct caregiver (Hodnett, 2002). Hollins Martin & Fleming (2011) advocate for an independent researcher not associated with the participant’s care as the best person to administer the BSS-R. The normal distribution of Birth Satisfaction scores in the present study suggests that participants responded to scale items honestly and thoughtfully.

**Birth satisfaction and breastfeeding self-efficacy.** Birth satisfaction was positively correlated with breastfeeding self-efficacy ( $r = .226, p < .05$ ). In addition, feeling prepared for birth was positively correlated with breastfeeding self-efficacy

( $\rho = .306, p = .001$ ). In concordance with these findings, Dennis (2006) found that satisfaction with pain management, satisfaction with labor and delivery care, perceived control during labor, and active say during labor were positively correlated with breastfeeding self-efficacy.

This relationship is also supported by the study's theoretical framework. In the initial application of self-efficacy theory to breastfeeding, Dennis (1999) asserts that "positive interpretations of arousal, such as excitement or satisfaction, enhance self-efficacy..." (p. 197). Additionally, Bandura (1997) discusses the ability of self-efficacy gained through enactive mastery in one domain to impact upon self-efficacy in another related area. Self-efficacy derived from satisfaction related to the birth experience could bolster a woman's self-efficacy for breastfeeding, particularly in the early postpartum period.

### **Perceived Stress**

Perceived stress was measured with the Perceived Stress Scale-10 (PSS-10), and the sample mean was 13.27 ( $SD = 6.17$ ). This value is lower than PSS-10 scores found in a large national sample ( $M$  age = 44.6,  $SD = 15.5$ ) in the United States, which was intended to mirror the population identified in the 2000 US Census (Cohen & Janicki-Deverts, 2012). The mean PSS-10 score for women in this sample was 16.14,  $SD = 7.56$ . However, in this large national sample, lower levels of stress were found among White participants, those with higher educational attainments, and those with higher incomes. As the sample for the current study generally consisted of highly educated, high income, primarily White women, lower levels of perceived

stress would be expected. However, there were no significant differences in perceived stress in the present study in relation to race, ethnicity, income, or educational level in the present study. In a recent large Canadian study ( $N = 6,421$ ) of pregnant women, perceived stress levels were not different among women based on race, marital status, or income even though single minority women with lower incomes were more likely to have experienced  $\geq 3$  stressful life events (Kingston, Heaman, Fell, Dzakpasu, & Chalmers, 2012).

Perceived stress in this sample was significantly negatively correlated with several aspects of the childbirth experience including birth satisfaction, overall childbirth experience, and feeling prepared for birth. Although small to moderate, these correlations demonstrate the importance of a woman's affective state in her overall birth experience. The relationship between perceived stress and these obstetrical factors is discussed in greater detail in the section that follows, titled "Perceived Stress and Birth Satisfaction."

Similarly, perceived stress was significantly negatively correlated with partner support of breastfeeding. Perceived stress has been consistently inversely related to social support (Kingston et al., 2012; Razurel et al., 2013). Social support, particularly from a partner, has been associated with lower incidence of postpartum depressive symptoms (Dennis & Ross, 2006). Dennis and Ross found that in addition to social integration, partner support in relation to infant care decisions ( $\beta = -.19, t = -.387, p < .001$ ) and encouragement to seek help when needed ( $\beta = -.10, t = -2.79, p = .005$ ) explained 13% of the variance in postpartum depression scores.

**Perceived stress and breastfeeding self-efficacy.** The lack of a significant relationship between perceived stress and breastfeeding self-efficacy was an unexpected finding, as previous studies (Dennis, 2003 & 2006) have documented small, yet significant negative correlations between these two variables ( $r = -.25, p < .001$  and  $r = -.16, p < .001$ , respectively) at one week postpartum. Bandura (1997) emphasizes that enactive mastery experience is the strongest predictor of self-efficacy and it is possible that the actual experience of breastfeeding, whether a previous child, or the early days with the present infant, more strongly impacted the woman's level of self-efficacy, obliterating any relationship with perceived stress in this time period. Bandura further emphasizes the impact of a person's interpretation of her performance during early task mastery: "Performances at early and intermediate phases of development when skills have not yet been fully organized and refined are especially vulnerable to such influences [interpretations of task performance]" (p. 85).

While the study of breastfeeding self-efficacy during the postpartum hospitalization has been limited, Kingston and colleagues (2007) found no significant relationships between breastfeeding self-efficacy and fatigue or feeling overwhelmed at 48 hours postpartum. This absence of relationship with other physiologic or affective variables is congruent with the findings from the current study in relation to perceived stress. Furthermore, Bandura (1997) highlights the importance of external events or situations on a person's ability to focus on internal somatic or affective indicators: "When situational matters command attention, one cannot be focused both inwardly and outwardly simultaneously" (p. 107). Certainly, during the postpartum

hospitalization, the mother's attention is generally outwardly focused towards the infant and her recent birth experience, perhaps diminishing the impact of perceived stress on breastfeeding self-efficacy.

As discussed previously, perceived stress scores in this sample were generally quite low. It is unlikely that these low stress levels would trigger physiologic responses to stress and possibly not even strong affective reactions. Perhaps the early timing of data collection, when the mother was likely absorbed with her own recovery and infant, also contributed to the non-significant relationship.

**Perceived stress and birth satisfaction.** There was a negative relationship between perceived stress and birth satisfaction ( $r = -.299, p < .01$ ) in the present study. While no studies were located that specifically examined the relationship of perceived stress and birth satisfaction, perceived stress is closely linked with control, an important factor in birth satisfaction. The Perceived Stress Scale, which measures the degree to which respondents find their lives to be “unpredictable, uncontrollable, and overloading” (Cohen et al., 1983, p. 387) contains numerous questions related to control. Control has been consistently identified as one of the most important components of birth satisfaction (Goodman et al., 2004; Hollins Martin & Martin, 2014; Knapp, 1996; Lavendar et al., 1999; Waldenström et al., 2004). Fear and worry were related to more negative birth perception in another study (Bryanton et al., 2008). Stress experienced during labor, one of the three subscales of the BSS-R, relates specifically to physical and psychological stress related to events associated

with the birth experience. This factor, which may be related to perceived stress, is also inversely related to birth satisfaction (Hollins Martin & Fleming, 2011).

### **Relationships Among Ancillary Variables**

While not the primary focus of the present study, several moderate relationships were demonstrated among the ancillary variables. As expected, participant age was moderately correlated with number of living children (Hamilton et al., 2014). Participant age and educational level were moderately correlated with household income. The relationship of annual household income to age and educational attainment are well-documented (Julian & Kominski, 2011; U.S. Census Bureau, 2014). Women who participated in childbirth classes were significantly more likely to participate in antenatal breastfeeding classes. This is likely due to the greater likelihood of primiparas to participate in classes (DeClerq et al., 2013).

### **Qualitative Analysis of Birth Satisfaction Scale Comments**

The two main themes identified in the comments provided by participants were unexpected birthing processes and staff: helping or hindering. The comments represent certain aspects of the birth experience that have been previously reported in the literature. The literature clearly shows that unexpected or unplanned events or perceived lack of control are associated with negative birth experiences, while support and involvement in decision making are central to positive birth experiences.

Expectations being met and personal control are consistently associated with birth satisfaction (Goodman et al., 2004; Hollins Martin & Fleming, 2011; Knapp, 1996; Waldenström et al., 2004). Participants in the present study generally

commented on unexpected or unplanned events that likely were in contrast to their expectations. Hauck et al. (2007) found that women were more likely to perceive their birth as positive when their priority expectations are achieved. However, Hauck and colleagues found that supportive healthcare professionals were so valuable to women that in their presence, a positive birth could still be achieved when expectations were not met. Likewise, if healthcare professionals were perceived as unsupportive, women whose expectations were met could still perceive their births negatively.

Staff qualities and behaviors and their impact on quality of care and birth satisfaction have been discussed in the literature. Support from and relationships with healthcare staff impact perceived quality of care and are very important components of birth satisfaction (Hauck et al., 2007; Hollins Martin & Fleming, 2011; Proctor, 1998). Provision of honest, consistent information, in relation to progress and procedures (Hollins Martin & Fleming, 2011) is central to the staff role. Professional skill and knowledge are also valued by patients (Proctor, 1998). The positive comments reported by study participants generally reflected these behaviors and traits

The negative comments related to the staff generally refer to situations in which the woman did not feel supported or felt that healthcare providers were attempting to control the birth process. The childbearing woman's perception that she is in control of the labor and birth has been consistently identified as an important factor in the childbirth experience in both qualitative and quantitative studies. A woman's personal control and confidence are positively associated with birth

satisfaction (Goodman et al., 2004; Knapp, 1996). In contrast, depersonalization and lack of control were identified as two of the three themes in a recent phenomenological study to gain insight into the negative birth experiences of first time mothers (Mercer et al., 2012). Participants in this study felt excluded by healthcare professionals about decisions that directly affected themselves and their births. Similarly, Goldbort (2009) identified lack of caring and connection with staff as two themes in her analysis of women with unexpected birth processes.

This study was primarily quantitative and the content analysis is based on limited comments that participants offered on the Birth Satisfaction Scale-Revised. However, the comments are generally consistent with findings reported in the birth satisfaction literature.

### **Study Strengths**

Although the study was limited to a single data collection site, the response rate was 65% and the sample was representative of the demographic and obstetrical profiles of the women served at this hospital. In addition, there was very little missing data in the participant surveys.

This was the first study in the United States, which specifically examined the impact of theory-based predictors on breastfeeding self-efficacy in the early postpartum period. The study's results can be used to guide future research and theory development to better understand breastfeeding self-efficacy in the United States. The findings from this study add to the growing body of knowledge about breastfeeding self-efficacy, an important modifiable factor in continued breastfeeding.

In addition, this is the first published use of the Birth Satisfaction Scale-Revised in a sample of postpartum women in the US. The BSS-R was created in response to the absence of a multidimensional tool to measure birth satisfaction and its successful use in this sample provides further support for its usefulness in diverse groups of women.

### **Study Limitations**

Results from this study should be interpreted in the context of several limitations, primarily related to sample characteristics and methodology. This study is primarily limited by convenience sampling at a single data collection site. Although generally representative of the patients served at this hospital, the sample was comprised primarily of high income, married, well-educated, White women. This, along with the geographic specificity associated with a single site, limits the generalizability of this study beyond those belonging to this specific group. Although the sample is not demographically representative of childbearing women in this part of the country, the obstetrical experiences of these women were diverse and represented the experiences of equal numbers of primiparous and multiparous women. However, as with any convenience sample, it is possible that those available might not be typical of the population in regard to study variables (Polit & Beck, 2012). Not all women who were eligible chose to participate and it is unknown how those who participated differed from non-participants.

An additional limitation is related to the poor reliabilities of two of the three subscales of Birth Satisfaction Scale-Revised. The low reliabilities of the subscales

precluded their use in data analysis. For this reason, birth satisfaction was treated as a single variable and the complex multidimensional aspects of the experience were not able to be analyzed independently.

Finally, as all of the data were self-reported, information was not objectively confirmed and conclusions have been drawn based solely on the self-reported information. Self-report is an ideal way to measure psychological characteristics of participants (Polit & Beck, 2012), which was the goal of this study. However, concerns about the accuracy of self-report must be considered, due to people's desire to present themselves in a positive way (Polit & Beck, 2012). There was no incentive offered for participation and it is possible that the availability of an incentive would have encouraged some non-participants to take part in the study (Andres, 2012).

## Chapter VI

### SUMMARY, IMPLICATIONS, AND CONCLUSIONS

#### Summary

This descriptive correlational study used survey methods to explore the relationships among perceived stress, birth satisfaction and breastfeeding self-efficacy in a convenience sample of 107 women in the early postpartum period. The sample, which consisted of generally higher income, well-educated, married, primarily white women, was recruited by the principal investigator from a large teaching hospital in the Northeastern United States. There was a small positive correlation between birth satisfaction and breastfeeding self-efficacy ( $r = .226, p < .05$ ), and no significant correlation between perceived stress and self-efficacy. There were also other significant small to moderate positive correlations with self-efficacy and ancillary variables including number of living children ( $\rho = .226, p = .019$ ), partner support of breastfeeding ( $\rho = .200, p = .008$ ), infant feeding plans ( $\rho = .395, p < .001$ ), likelihood of exclusively breastfeeding for six months ( $\rho = .394, p < .001$ ), and feeling prepared for birth ( $\rho = .306, p = .001$ ). Significantly higher mean self-efficacy scores were present in women with previous breastfeeding experience ( $t = 2.00, p = .048$ ) and those whose infants did not receive supplemental formula in the hospital ( $t = 3.83, p < .001$ ). Formula supplementation and lack of previous breastfeeding experience were both associated with lower levels of self-efficacy.

Multiple regression analysis was employed to explore the multivariate relationships present among the aforementioned factors significantly associated with the outcome variable. The regression model was statistically significant ( $F(8,97) = 7.600, p \leq .001$ ) and explained 38.5% of the variance in early postpartum breastfeeding self-efficacy scores. Receipt of formula supplementation was the strongest predictor of breastfeeding self-efficacy, with birth satisfaction and infant feeding plans also remaining significant in the model.

This is the first known United States study to specifically examine the impact of theory-based factors on breastfeeding self-efficacy during the early postpartum period. Two study hypotheses, regarding a positive relationship between birth satisfaction and perceived stress and a negative relationship between perceived stress and birth satisfaction were supported. However, the negative relationship hypothesized between perceived stress and breastfeeding self-efficacy was not supported. This was likely due to the timing of data collection as well as the relatively high socioeconomic characteristics of the sample.

### **Implications**

This study extended self-efficacy theory by expanding the knowledge of theory-based factors that are related to breastfeeding self-efficacy in the early postpartum period. This new knowledge related to the care of the childbearing family generates numerous implications for nursing practice, education, and research.

**Nursing practice.** Findings from the study have implications for nurses, advanced practice nurses (APNs), and childbirth educators caring for women and

their families during pregnancy, labor and birth, and the postpartum period. In this study, perceived stress was negatively associated with much of the overall birth experience including birth satisfaction, overall childbirth experience, and feeling prepared for birth. Other researchers have identified additional adverse outcomes associated with perinatal stress, including preterm birth, small for gestational age infant, postpartum depression, anxiety, sleep disturbances, and increased maternal susceptibility to illness (Ahluwalia et al., 2001; Beck, 1996, 2001; Hung, 2004; Hung, Lin, Stocker, & Yu, 2011; Nkanshah-Amankra et al., 2010). Therefore, identification and management of stress in the childbearing woman is of paramount importance for all healthcare providers. Screening for perceived stress or stressful life events should become a routine part of prenatal and postpartum visits.

This study provided new information about ways in which nurses and other healthcare professionals may be able to impact new mothers' self-efficacy for breastfeeding. The moderate relationships found between infant feeding plans, including intention to exclusively breastfeed for six months, and self-efficacy highlights the importance of infant decisions made during pregnancy. Therefore, nurses, APNs, and childbirth educators should continue to provide families with quality education about breastfeeding and guide them in formulating their infant feeding plans. These educational efforts should also include the woman's partner, as partner support of breastfeeding was also positively correlated with self-efficacy. Previous research has supported that intention established during pregnancy or before

strongly impacts actual infant feeding patterns (de Jager et al., 2013; DiGirolamo et al., 2005; Meedya et al., 2010; Semenic et al., 2008; Thulier & Mercer, 2009).

Nurses caring for women during the intrapartum and postpartum periods can use the study findings as evidence for practice in promoting breastfeeding self-efficacy and birth satisfaction. The correlations between birth satisfaction, feeling prepared for birth and breastfeeding self-efficacy suggest that promoting a positive birth experience can also positively impact breastfeeding. To promote a positive birth experience, nurses should communicate effectively, involve women in decision making, and provide skin to skin contact with the infant as soon as possible after birth. Findings from this study showed significantly higher levels of birth satisfaction in women whose infants were placed skin to skin immediately following birth as well as in women who reported receiving assistance with breastfeeding in the first hour after birth. These practices promote breastfeeding (DiGirolamo, Grummer-Strawn, & Fein, 2008) as well as birth satisfaction. Finally, formula supplementation in the hospital should be avoided unless medically indicated as it was the strongest predictor of lower self-efficacy in this sample. Other studies have clearly documented to adverse effects of in hospital-formula supplementation in regards to long-term infant feeding patterns (DiGirolamo, Grummer-Strawn, & Fein, 2008; Parry, Ip., Chau, Wu, Tarrant, & 2013; Semenic et al., 2008).

**Nursing education.** As discussed, this study identified numerous modifiable factors associated with breastfeeding self-efficacy. For undergraduate students, maternal-child and pediatric classes provide an ideal forum for integrating content

related to the complexity of infant feeding decisions and practices. Clinical experiences can provide opportunities for nursing students to educate new mothers and families about the benefits of breastfeeding and assist in formulating infant feeding plans, which may ultimately be related to higher levels of self-efficacy and better breastfeeding outcomes.

Self-efficacy, with its roots in psychology, provides a rich context for understanding health behavior. Research, such as the present study, which explores relationships posited by theory in the context of specific health behaviors, strengthens the theory's usefulness in education and research. For example, undergraduate students can select theoretically based interventions in care planning to enhance infant feeding outcomes. At the graduate level, self-efficacy theory can serve as a theoretical framework for research efforts. Directions for future research are presented in the following section.

Finally, perceived stress has a negative impact on numerous aspects of the childbirth experience as well as on health in general. For that reason, nursing students at all levels must be educated in how to assess for stress and intervene or refer as appropriate.

**Nursing research.** The results of this study provide a foundation for the exploration of theory-based factors and their impact on breastfeeding self-efficacy on women in the United States. Recommendations for future research include different sampling techniques, a more ethnically and socioeconomically diverse sample, and different research designs.

Future research efforts should focus on the replication of this study in other types of samples as well as expansion of the research question to include other theory-based factors that may impact self-efficacy. This study was limited by data collection at a single site and the sample, therefore did not reflect the national or even state demographic characteristics of childbearing women. It would be useful to replicate the same study at more than one hospital or birthing center that serves ethnically and economically diverse groups of women. This would strengthen the study findings by demonstrating relationships in other groups of women. It would also be interesting to investigate the relationship of perceived stress and breastfeeding self-efficacy in more diverse samples of women. Purposive sampling or quota sampling (Polit & Beck, 2012) could be considered to facilitate the understanding of breastfeeding self-efficacy in relation to racial and ethnic identity, geographic location, and other social factors. In addition, a larger sample size would allow for consideration of other factors and their relationship to breastfeeding self-efficacy.

Future research should build upon the results of this study and others related to breastfeeding self-efficacy (Dennis, 2003, 2006; Kingston et al., 2007; McCarter-Spaulding & Gore, 2009; Zhu et al., 2014) by examining the impact of select maternal and social factors at different points in time. A longitudinal study would be the ideal design to assess whether the impact of factors explored in this study, particularly those related to the birth experience, change over time. Additionally, as perceived stress is a dynamic concept, its relationship with breastfeeding self-efficacy should be explored at time periods outside of the immediate postpartum. A

longitudinal study exploring the study variables, as well as self-reported infant feeding patterns, would illustrate the relationship between the variables and actual infant feeding patterns over time.

Finally, future research is needed in regards to birth satisfaction in diverse groups of women in the United States. The Birth Satisfaction Scale-Revised is a new and promising instrument designed to measure this construct in response to the absence of a reliable scale available for this purpose. Thus far, the BSS-R has been used within the first ten days postpartum (Hollins Martin & Martin, 2014). As the literature suggests, this may not be the optimal time to assess birth satisfaction (Hodentt, 2002), measurement of the construct at multiple points in time would be valuable. It would be particularly useful to see if reports of birth satisfaction change over time. While reliability of two of the BSS-R's subscales was poor in the present study, previous research has demonstrated acceptable reliabilities (Hollins Martin & Martin, 2014). Evaluation of the overall tool's reliability as well as the reliability of its subscales at different points in time in larger samples would be valuable for its continued development and refinement.

## **Conclusions**

The findings of this study add to the small body of knowledge about factors related to breastfeeding self-efficacy. The study supports the findings of previous research in relation to the positive relationship between aspects of birth satisfaction (Dennis, 2006) and self-efficacy as well as previous breastfeeding experience and self-efficacy (Dennis, 2003, 2006; Gregory et al., 2008; McCarter-Spaulding & Gore,

2009). However, results are in contrast to Dennis' (2003 & 2006) findings, which demonstrated a negative relationship between perceived stress and self-efficacy. Additional ancillary findings revealed significantly lower levels of breastfeeding self-efficacy among women whose infants were supplemented with formula while in the hospital. Also, women who feel more prepared for birth, and have a greater perceived degree of partner support tended to have higher levels of breastfeeding self-efficacy. Finally, infant feeding plans, including intended duration of breastfeeding and likelihood of exclusively breastfeeding for six months were positively related to self-efficacy.

Correlations identified in the study were generally small to moderate; however these study findings have important implications for nursing practice, education, and research. Practicing nurses and nursing students can apply this knowledge to the care of childbearing women and families during pregnancy, intrapartum, and postpartum and promote breastfeeding self-efficacy by supporting a positive birth experience, involving the woman's partner in teaching efforts, and providing togetherness with the infant as soon as possible after birth. Effective communication with patients and their families, providing the opportunity for skin to skin contact with the infant as soon as possible after birth, and offering early assistance with breastfeeding are all strategies that can positively impact both birth satisfaction and breastfeeding. The study results clearly support prior research findings that in-hospital formula supplementation should be avoided unless truly medically necessary, as it was strongly associated with lower levels of breastfeeding self-efficacy in this sample. In

addition, the study findings provide a foundation for further inquiry and development of breastfeeding self-efficacy theory in the United States. Additional research in larger more diverse samples will strengthen this study's findings.

Breastfeeding self-efficacy, consistently identified as a predictor of duration and exclusivity of breastfeeding (deJager et al., 2013; Dennis, 2003 & 2006; Meedya et al., 2010; Semenic et al., 2008), is an important topic of inquiry for the continuation of progress towards national breastfeeding goals (US DHHS, 2012). Continued inquiry into factors associated with breastfeeding self-efficacy as well as efficacy-enhancing interventions is necessary to propel forward breastfeeding rates and associated maternal and infant health outcomes in the United States.

## REFERENCES

- Ader, R. & Cohen, N. (1982). Behaviorally conditioned immunosuppression and murine systemic lupus erythematosus. *Science*, *215*(4539), 1534-1536.
- Aldwin, C.M. (1994). *Stress, coping, & development*. New York, NY: The Guilford Press.
- Ahluwalia, I.B., Li, R., & Morrow, B. (2012). Breastfeeding practices: Does method of delivery matter? *Maternal Child Health Journal*, *16*, S231-S237. doi: 10.1007/s10995-012-1093-9
- Ahluwalia, I.B., Merritt, R., Beck, L.F., & Rogers, M. (2001). Multiple lifestyle and psychosocial risks and delivery of small for gestational age infants. *Obstetrics and Gynecology*, *97*(5), 649-656.
- American Academy of Pediatrics (2012). Breastfeeding and the use of human milk. *Pediatrics*, *129*, e827-841. doi: 10.1542/peds.2011-3552
- American College of Obstetricians and Gynecologists (2013). Definition of term pregnancy. Committee opinion No. 579. *Obstetrics & Gynecology*, *122*, 1139-40.
- Andres, L. (2012). *Designing and doing survey research*. Thousand Oaks, CA: Sage.
- Association of Women's Health, Obstetric, and Neonatal Nurses (2015). Breastfeeding (Official Position Statement). *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, *44* (1), 145-150. doi: 10.1111/1552-6909.12530
- Avery, A., Zimmerman, K., Underwood, P.W., & Magnus, J.H. (2009). Confident commitment is a key factor for sustained breastfeeding. *Birth*, *36*(2), 141-148.
- Baby-Friendly USA. (2010). *Guidelines and evaluation criteria for facilities seeking Baby-Friendly designation*. Sandwich, MA: Baby-Friendly USA.
- Bai, D.L., Wu, K., Tarrant, M. (2013). Association between intrapartum interventions and breastfeeding duration. *Journal of Midwifery and Women's Health*, *58*(1), 25-32. doi: 10.1111/j.1542-2011.2012.00254.x
- Bai, Y. & Wunderlich, S.M. (2011). Predicting intentions to continue exclusive breastfeeding for 6 months: a comparison among racial/ethnic groups. *Maternal Child Health Journal*, *15*, 1257-1264. doi: 10.1007/s10995-010-0703-7.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*. *84*(2), 191-215.

- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, N.J.: Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W. H. Freeman & Company.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. In F. Pajares & T. Urdan (Eds.) *Self-efficacy beliefs of adolescents*. (Vol. 5, pp. 307-337). Greenwich, CT: Information Age Publishing.
- Baron, L. & Morin, L. (2010). The impact of executive coaching on self-efficacy related to management soft skills. *Leadership and Organization Development Journal*, 31(1), 18-38.
- Bartick, M. & Reinhold, A. (2010). The burden of suboptimal breastfeeding in the United States: A pediatric cost analysis. *Pediatrics*, 125, 1048-1056. doi: 10.1542/peds.2009-1616
- Bartick, M., Stuebe, A.M., Schwarz, E.B., Lueongo, C., Reinhold, A.G., & Foster, E.M. (2013). Cost analysis of maternal disease associated with suboptimal breastfeeding. *Obstetrics & Gynecology*, 122 (1), 111-119. doi: 10.1097/AOG.0b013e318297a047
- Beck, C.T. (1996). A meta-analysis of predictors of postpartum depression. *Nursing Research*, 45, 297-303.
- Beck, C.T. (2001). Predictors of postpartum depression: An update. *Nursing Research*, 50(5), 275-285.
- Beck, C.T. (2004). Birth trauma: In the eye of the beholder. *Nursing Research*, 53(1), 28-35.
- Beck, C.T. & Watson, S. (2008). Impact of birth trauma on breastfeeding: a tale of two pathways. *Nursing Research*, 57 (4), 228-236.
- Bennett, A. (1985). The birth of a first child: do women's reports change over time? *Birth: Issues in Perinatal Care*, 12 (3), 153-158.
- Bernaix, L. W. (2000). Nurses' attitudes, subjective norms, and behavioral intentions toward support of breastfeeding mothers. *Journal of Human Lactation*, 16, 201-209
- Betz, N.E. & Hackett, G. (1981). The relationship of career-related self-efficacy expectations to perceived career options in college women and men. *Journal of Counseling Psychology*, 28(5), 399-410.

- Blomquist, J.L., Quiroz, L.H., MacMillan, D., McCullough, A., Hands, V.L. (2011). Mothers' satisfaction with planned vaginal and planned cesarean birth. *American Journal of Perinatology*, 28(5), 383-388. doi: 10.1055/s-0031-1274508
- Blyth, R., Creedy, D.K., Dennis, C-L., Moyle, W., Pratt, J., & DeVries, S.M. (2002). Effect of maternal confidence on breastfeeding duration: An application of breastfeeding self-efficacy theory. *Birth*, 29(4), 278-284.
- Bolton, T.A., Chow, T., Benton, P.A., & Olson, B.H. (2009). Characteristics associated with longer breastfeeding duration: An analysis of peer counseling programs. *Journal of Human Lactation*, 25(1), 18-27. doi: 10.1177/0890334408325985
- Bosnjak, A.P., Rumboldt, M., Stanojevic, M., & Dennis, C.-L. (2012) Psychometric assessment of the Croatian version of the Breastfeeding Self-efficacy Scale-Short Form. *Journal of Human Lactation*, 28(4), 565-569. doi: 10.1177/0890334412456240
- Bramadat, I.J. & Driedger, M. (1993). Satisfaction with childbirth: Theories and methods of measurement. *Birth: Issues in Perinatal Care*, 20(1), 22-29.
- Brown, A. & Jordan, S. (2013). Impact of birth complications on breastfeeding duration: an internet survey. *Journal of Advanced Nursing*, 69 (4), 828–839. doi:10.1111/j.1365-2648.2012.06067.x.
- Brown A., Raynor, P., & Lee M. (2011). Healthcare professionals' and mothers' perceptions of factors that influence decisions to breastfeed or formula feed infants: a comparative study. *Journal of Advanced Nursing* 67 (9), 1993–2003. doi: 10.1111/j.1365-2648.2011.05647.x
- Bryanton, J., Gagnon, A.J., Hatem, M., & Johnston, C. (2009). Does perception of the childbirth experience predict women's early parenting behaviors? *Research in Nursing & Health*, 32, 191–203. doi: 10.1002/nur.20314
- Bryanton, J., Gagnon, A.J., Johnston, C., & Hatem, M. (2008). Predictors of women's perceptions of the childbirth experience. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 37 (1), 24-34. doi: 10.1111/J.1552-6909.2007.00203.x
- Callister, L.C. (2004). Making meaning: Women's birth narratives. *Journal of Obstetric, Neonatal, and Gynecologic Nursing*, 33 (4), 508-518. doi: 10.1177/0884217504266898
- Cakmak, H. & Kuguoglu, S. (2007). Comparison of the breastfeeding patterns of mothers who delivered their babies per vagina and via cesarean section: An observational study using the LATCH breastfeeding charting system.

*International Journal of Nursing Studies*, 44, 1128-1137.  
doi:10.1016/j.ijnurstu.2006.04.018

- Cannon, W.B. (1953). *Bodily changes in pain, hunger, fear, and rage*. Boston, MA: Charles T. Branford Company.
- Cannon, W.B. & Rosenblueth, A. (1937). *Autonomic neuro-effector systems*. New York, NY: MacMillan Company.
- Centers for Disease Control and Prevention (2014). *Breastfeeding Report Card: United States*. Retrieved from <http://www.cdc.gov/breastfeeding/>
- Chalmers, B., Kaczorowski, J., Darling, E., Heaman, M., Fell, D.B., O'Brien, B., & Lee, L. (2010). Cesarean and vaginal birth in Canadian women: a comparison of experiences. *Birth: Issues in Perinatal Care*, 37(1), 44-49.
- Chantry, C., Howard, C., & Auinger, P. (2006). Full breastfeeding duration and associated decrease in respiratory tract infection in US children. *Pediatrics*, 117(2), 425-432.
- Chen, A. & Rogan, W.J. (2004). Breastfeeding and the risk of postneonatal death in the United States. *Pediatrics*, 113, 435-439.
- Chen, D.C., Nommsen-Rivers, L., Dewey, K.G., & Lönnerdal, B. (1998). Stress during labor and delivery and early lactation performance. *American Journal of Clinical Nutrition*, 68, 335-344.
- 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(2), 115-127.
- Cohen, J. (1992). A power primer. *Quantitative Methods in Psychology*, 112 (1), 155-159.
- Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24(4), 385-396.
- Cohen, S. & Janicki-Deverts, D. (2012). Who's stressed? Distributions of psychological stress in the United States in probability samples from 1983, 2006, and 2009. *Journal of Applied Social Psychology*, 42(6), 1320-1334. doi: 10.1111/j.1559-1816.2012.00900.x
- Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *Journal of the American Medical Association*, 298, 1685-1687.

- Cohen, S., Tyrrell, D. A. J., & Smith, A. P. (1993). Negative life events, psychological stress, negative affect, and susceptibility to the common cold. *Journal of Personality and Social Psychology, 64*, 131–140.
- Cohen, S. & Williamson, G.M. (1988). Perceived stress in a probability sample of the United States. In Spacapan, S. & Oskamp (Eds.) (1988). *Social Psychology of Health*. Newbury Park, CA: Sage.
- Collins, J.L. (1982). Self-efficacy and ability in achievement behavior. In Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: W. H. Freeman.
- Cox, J.L., Holden, J.M., Sagovsky, R. (1987). Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry, 150*, 782-786.
- Cricco-Lizza, R. (2004). Infant-Feeding beliefs and experiences of black women enrolled in WIC in the New York metropolitan area. *Qualitative Health Research, 14*, 1197-1210. doi: 10.1177/1049732304268819
- Cutrona, C.E. (1983). Causal attributions of perinatal depression. *Journal of Abnormal Psychology, 192*, 161-172.
- Dai, X., & Dennis, C-L. (2003). Translation and validation of the Breastfeeding Self-efficacy scale into Chinese. *Journal of Midwifery and Women's Health, 48*(5), 350-356. doi:10.1053/S1526-9523(03)00283-6
- DeClerq, E.R., Sakala, C., Corry, M.P., Applebaum, S., Herrlich, A. (2013). *Listening to Mothers<sup>SM</sup> III: Pregnancy and childbirth*. New York, NY: Childbirth Connection.
- de Jager, E., Skouteris, H., Broadbent, J., Amir, L., & Mellor, K. (2013). Psychosocial correlates of exclusive breastfeeding: a systematic review. *Midwifery, 29*, 506-513. doi: 10.1016/j.midw.2012.04.009
- Dennis, C-L. (1999). Theoretical underpinnings of breastfeeding confidence: A self-efficacy framework. *Journal of Human Lactation 15*, 195-201.
- Dennis, C-L. (2003). The breastfeeding self-efficacy scale: psychometric assessment of the short form. *Journal of Obstetric, Gynecological, and Neonatal Nursing, 32* (6), 734-744. doi: 10.1177/0884217503258459
- Dennis, C-L. (2006). Identifying predictors of breastfeeding self-efficacy in the immediate postpartum period. *Research in Nursing & Health, 29*(4), 256-268. doi: 10.1002/nur.20140

- 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., Heaman, M. & Mossman, M. (2011). Psychometric testing of the Breastfeeding Self-Efficacy Scale-Short Form among adolescents. *Journal of Adolescent Health*, 49, 265-271. doi: 10.1016/j.jadohealth.2010.12.015
- Dennis, C.L. & Ross, L., (2006). Women's perceptions of partner support and conflict in the development of postpartum depressive symptoms. *Journal of Advanced Nursing*, 56, 588-99. doi: 10.1111/j.1365-2648.2006.04059.x
- DiGirolamo, A. M., Grummer-Strawn, L. M., & Fein, S.B. (2008). Effect of maternity care practices on breastfeeding. *PEDIATRICS*, 122, Supplement 2, S43-S49. doi: 10.1542/peds.2008-1315e
- DiGirolamo, A., Thompson, N., Martorell, R. & Grummer-Strawn, L. (2005). Intention or experience? Predictors of continued breastfeeding. *Health Education and Behavior*, 12(2), 208-226. doi: 10.1177/1090198104271971
- Doulougeri, K., Panagopolou, E. & Montgomery, A. (2013). The impact of maternal stress on initiation and establishment of breastfeeding. *Journal of Neonatal Nursing*, 19, 162-167. doi: 10.1016/j.jnn.2013.02.003
- Dozier, A.M., Nelson, A., & Brownell, E. (2012). The relationship between life stress and breastfeeding outcomes among low-income mothers. *Advances in Preventive Medicine*, Article ID 902487. doi:10.1155/2012/902487
- Dupere, V., Leventhal, T., & Vitaro, F. (2012). Neighborhood processes, self-efficacy, and adolescent mental health. *Journal of Health and Social Behavior*, 53(2), 183-198. doi: 10.1177/0022146512442676
- Entwistle, F., Kendall, S., & Mead, M. (2010). Breastfeeding support – the importance of self-efficacy for low-income women. *Maternal and Child Nutrition*, 6, 228-242. doi: 10.1111/j.1740-8709.2009.00202.x
- Fair, C.D. & Morrison, T.E. (2012). The relationship between prenatal control, expectations, experienced control, and birth satisfaction among primiparous women. *Midwifery*, 28 (1), 39-44.
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G\*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41, 1149-1160. doi: 10.3758/BRM.41.4.1149
- Fawcett, J., Pollio, N., & Tully, A. (1992). Women's perceptions of Cesarean and vaginal delivery: Another look. *Research in Nursing and Health*, 15, 439-446.

- Fenwick, J., Gamble, J., & Mawson, J. (2003). Women's experiences of Cesarean section and vaginal birth after Cesarean: A birthrites initiative. *International Journal of Nursing Practice*, 9, 10-17.
- Goldbort, J.G. (2009). Women's lived experiences of their unexpected birthing process. *MCN: Journal of Maternal Child Nursing*, 34(1), 57-62.
- Goodman, P., Mackey, M.C. & Tavakoli, A.S. (2004). Factors related to childbirth satisfaction. *Journal of Advanced Nursing* 46(2), 212-219.
- Gottvall, K. & Waldström, U. (2002). Does a traumatic birth experience have an impact on future reproduction? *British Journal of Obstetrics and Gynecology*, 109, 254-260.
- Grassley, J. & Eschiti, V. (2008). Grandmother breastfeeding support: What do mothers need and want? *Birth*, 35(4), 329-335.
- Grassley, J.S. & Nelms, T.P. (2008). Understanding maternal breastfeeding confidence: A Gadamerian hermeneutic analysis of women's stories. *Healthcare for Women International*, 29, 841-862. doi: 10.1080/07399330802269527
- Gregory, A., Penrose, K., Morrison, C., Dennis, C-L, & MacArthur, C. (2008). Psychometric testing of the Breastfeeding Self-efficacy Scale-Short Form in an ethnically diverse UK sample. *Public Health Nursing*, 25(3), 278-284 doi: 10.1111/j.1525-1446.2008.00705.x
- Groer, M.W. (2005). Differences between exclusive breastfeeders, formula-feeders, and controls: A study of stress, mood, and endocrine variables. *Biological Research for Nursing*, 7, 106-117.
- Halldorsdottir, S. & Karlsdottir, S.I. (1996). Journeying through labour and delivery: Perceptions of women who have given birth. *Midwifery*, 12, 48-61.
- Hamilton, B.E., Martin, J.A., Osterman, M.J.K., Curtin, S.C. (2014). Births: Preliminary data for 2014. *National Vital Statistics Reports*, 63 (2). Retrieved from: <http://www.cdc.gov>
- Hammen, C. (2005). Stress and depression. *Annual Reviews of Clinical Psychology*, 1, 293-319.
- Harvey, S., Rach, D., Stainton, M.C., Jarrell, J., Brant, R. (2002). Evaluation of satisfaction with midwifery care. *Midwifery*, 18, 260-267.
- Hauck, Y., Fenwick, J., Downie, J., and Butt, J. (2007). The influence of childbirth expectations on Western Australian women's perceptions of their birth experience. *Midwifery*, 23, 235-247. doi: 10.1016/j.midw.2006.02.002

- Hill, P.D. & Humenick, S.S. (1996). Development of the H&H lactation scale. *Nursing Research*, 45 (3), 136-140.
- Hodnett, E. (2002). Pain and woman's satisfaction with the experience of childbirth: A systematic review. *American Journal of Obstetrics and Gynecology*, 186(5), S160-S172. doi: 10.1067/mob.2002.121141
- Hodnett, E. & Simmons-Tropea, D.A. (1987). The Labour Agency Scale: Psychometric properties of an instrument measuring control during childbirth. *Research in Nursing & Health*, 10(5), 301-310.
- Hollins Martin, C.J.& Fleming, V. (2011). The birth satisfaction scale. *International Journal of Health Care Quality Assurance*, 24(2), 124-135. doi: 10.1108/09526861111105086
- Hollins Martin, C.J. & Martin, C.R. (2014). Development and psychometric properties of the Birth Satisfaction Scale-Revised. *Midwifery*, 30 (6), 610-619. doi: 10.1016/j.midw.2013.10.006
- Hollins Martin, C.J., Snowden, A., & Martin, C.R. (2012). Concurrent analysis: Validation of the domains within the Birth Satisfaction Scale. *Journal of Reproductive and Infant Psychology*, 30(3), 247-260. doi: 10.1080/02646838.2012.710833
- Humphreys, A.S., Thompson, N.J., & Miner, K.R. (1998). Assessment of breastfeeding intention using the Transtheoretical Model and Theory of Reasoned Action. *Health Education Research*, 13(3), 331-341.
- Hung, C.-H. (2004). Predictors of postpartum women's health status. *Journal of Nursing Scholarship*, 36, (4), 345-351.
- Hung, C.-H., Lin, C.-J., Stocker, J., & Yu, C.-Y. (2011). Predictors of postpartum stress. *Journal of Clinical Nursing*, 20, 666-674. doi: 10.1111/j.1365-2702.2010.03555.x
- Insaf, T.Z., Fortner, R.T., Pekow, P., Dole, N., Markenson, G., & Chasan-Taber, L., (2011). Prenatal stress, anxiety, and depressive symptoms as predictors of intention to breastfeed among Hispanic women. *Journal of Women's Health*, 20(8), 1183-1192. doi: 10.1089/jwh.2010.2276.
- Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, Trikalinos T, & Lau J. (2007). *Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries*. Evidence Report/Technology Assessment No. 153 (Prepared by Tufts-New England Medical Center Evidence-based Practice Center, under Contract No. 290-02-0022). AHRQ Publication No. 07-E007. Rockville, MD: Agency for Healthcare Research and Quality.

- Jackson, B. & Beauchamp, M. (2010). Self-efficacy as a metaperception within coach-athlete and athlete-athlete relationships. *Psychology of Sport and Exercise* 1-9. doi:10.1016/j.psychsport.2009.12.005
- Jevitt, C.M., Groer, M.W., Crist, N.F., Gonzalez, L., & Wagner, V.D. (2012). Postpartum stressors: a content analysis. *Issues in Mental Health Nursing*, 33, 309-318. doi: 10.3109/01612840.2011.653658
- Julian, T. A. & Kominski, R.A. (2011). Education and Synthetic Work- Life Earnings Estimates. *American Community Survey Reports*, ACS-14. U.S. Census Bureau, Washington, DC.
- Kamran, A., Shrifirad, G., Mirkarimi, S.K., Farahani, A. (2012). Effectiveness of breastfeeding education on the weight of child and self-efficacy of mothers. *Journal of Education and Health Promotion*, 1(11). doi: 10.4103/2277-9531.98569.
- Kingston, D., Dennis, C.-L., & Sword, W. (2007). Exploring breast-feeding self-efficacy. *Journal of Perinatal and Neonatal Nursing*, 21(3), 207-215.
- Kingston, D., Heaman, M., Fell, D., Dzakpasu, S., Chalmers, B. (2012). Factors associated with perceived stress and stressful life events in pregnant women: findings from the Canadian Maternity Experiences Survey. *Maternal Child Health Journal*, 16, 158-168. doi: 10.1007/s10995-010-0732-2
- Knapp, L. (1996). Childbirth satisfaction: the effects of internality and perceived control. *Journal of Perinatal Education*, 5, 7-16.
- Kramer, M.S. & Kakuma, R. (2012). Optimal duration of exclusive breastfeeding. *Cochrane Database of Systematic Reviews*, 8, Art. No:CD003517. doi: 10.1002/1451858.CD003517.pub2
- Krantz, D.S. & McCeney, M.K. (2002). Effects of psychological and social factors on organic disease: A critical assessment of research on coronary heart disease. *Annual Review of Psychology*, 53, 341-369.
- Kronberg, H. & Væth, M. (2004). The influence of psychosocial factors on the duration of breastfeeding. *Scandinavian Journal of Public Health*, 32, 210-216. doi: 10.1080/14034940310019218
- Larkin, P., Begley, C.M., & Devane, D. (2009). Women's experiences of labour and birth: an evolutionary concept analysis. *Midwifery*, 25, e-49-e59. doi: 10.1016/j.midw.2007.07.010
- Lavender, T., Walkinshaw, S.A., Walton, I. (1999). A prospective study of views of factors contributing to a positive birth experience. *Midwifery*, 15, 40-46.

- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York, NY: McGraw-Hill.
- Lazarus, R.S. & Folkman, S. (1984). *Stress, appraisal, & coping*. New York, NY: Springer Publication Company.
- Lenz, E.R. & Shortridge-Baggett, L.M. (Eds.) (2002). *Self-efficacy in nursing: research and measurement perspectives*. New York, NY: Springer.
- Li, J., Kendall, G.E., Henderson, S., Downie, J., Landsborough, L., Oddy, W.H. (2008). Maternal psychosocial well-being in pregnancy and breastfeeding duration. *Acta Paediatrica*, 97, 221-225. doi: 10.1111/j.1651-2227.2007.00602.x
- Lovibond, S.H. & Lovibond, P.F. (1995). *Manual for the Depression and Anxiety Stress Scales*. Psychology Foundation Monograph: Sydney, Australia.
- Lowe N.K. (1993). Maternal confidence for labor: development of the Childbirth Self-Efficacy Inventory. *Research in Nursing & Health*, 16(2), 141-149.
- Machida, M. & Schaubroek, J. (2011). The role of self-efficacy beliefs in leader development. *Journal of Leadership and Organizational Studies*, 18 (4), 459-468. doi: 10.1177/1548051811404419
- Marut, J.S. & Mercer, R.T. (1979). Comparison of primiparas' perceptions of vaginal and cesarean births. *Nursing Research*, 28(5), 260-266.
- McCarter-Spaulding, D.E. & Dennis, C.L. (2010). Psychometric testing of the breastfeeding self-efficacy scale-short form in a sample of black women in the United States. *Research in Nursing & Health*, 33, 111-119. doi: 10.1002/nur.20368
- McCarter-Spaulding D.E. & Gore, R. (2009). Breastfeeding self-efficacy in women of African descent. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 38(2), 230-243. doi: 10.1111/j.1552-6909.2009.01011.x
- McQueen, K.A., Dennis, C-L., Stremmer, R., & Norman, C.D. (2011). A pilot randomized controlled trial of a breastfeeding self-efficacy intervention with primiparous mothers. *JOGNN*, 40, 35-46. doi: 10.1111/j.1552-6909.2010.01210x
- Meedya, S., Fahy, K., & Kable, A. (2010). Factors that positively influence breastfeeding at 6 months: A literature review. *Women and Birth*, 23, 135-145. doi: 10.1016/j.wombi.2010.02.002
- Mercer, J., Green-Jervis, C., & Brannigan, C. (2012). The legacy of a self-reported negative birth experience. *British Journal of Midwifery*, 20(10), 717-722.

- Mercer, R.T. (1986). *First-time motherhood: Experiences from teens to forties*. New York, NY: Springer.
- Mercer, R.T. (1995). *Becoming a mother: research on maternal identify from Rubin to the present*. New York, NY: Springer
- Mercer, R.T., Hackley, K.C., & Bostrom, A.G. (1983). Relationship of psychosocial and perinatal variables to perception of childbirth. *Nursing Research*, 32(4), 202-207.
- Miller, L.J. (2002). Postpartum depression. *Journal of the American Medical Association*, 287, 762-764.
- Mitra, A.K., Khoury, A.J., Hinton, A.W., & Carothers, C. (2004). Predictors of breastfeeding intention among low income women. *Maternal Child Health Journal*, 8(2), 65-70.
- Moos, D.C. & Azevedo, R. (2009). Learning with computer-based learning environments: a literature review of computer self-efficacy. *Review of Educational Research*, 79(2), 576-600. doi: 10.3102/0034654308326083
- Nichols, J., Schutte, N.S., Brown, R.F., Dennis, C-L., Price, I. (2009). The impact of a self-efficacy intervention on short-term breast-feeding outcomes. *Health Education and Behavior*, 36(2), 250-259. doi: 10.1177/1090198107303362
- Nkansah-Amankra, S., Luchok, K. J., Hussey, J. R., Watkins, K., & Liu, X. (2010). Effects of maternal stress on low birth weight and preterm birth outcomes across neighborhoods of South Carolina, 2000–2003. *Maternal & Child Health Journal*, 14(2), 215-226. doi:10.1007/s10995-009-0447-4
- Noel-Weiss, J., Rupp, A., Cragg, B., Basset, V. & Woodend, A.K. (2006). Randomized controlled trial to determine effects of prenatal breastfeeding workshop on maternal breastfeeding self-efficacy and breastfeeding duration. *Journal of Obstetric Gynecologic and Neonatal Nursing*, 35, 616-624. doi: 10.1111/J.1552-6909.2006.00077.x
- O'Brien, M., Buikstra, E., Fallon, T., & Hegney, D. (2009). Exploring the influence of psychological factors on breastfeeding duration, phase 1: perceptions of mothers and clinicians. *Journal of Human Lactation*, 25(1), 55-63. doi: 10.1177/0890334408326071
- O'Brien, M., Buikstra, E., & Hegney, D. (2008). Exploring the influence of psychological factors on breastfeeding duration. *Journal of Advanced Nursing*, 63 (4), 397-408. doi: 10.1111/j.1365-2648.2008.04722.x

- Odom, E.C., Li, R., Scanlon, K.S., Perrine, C.G., & Grummer-Strawn, L. (2013). Reasons for earlier than desired cessation of breastfeeding. *Pediatrics*, *131* (3), e726-e732. doi: 10.1542/peds.2012-12956
- Otsuka., K., Taguri, M., Dennis, C.-L., Wakutani, K., Awano, M., Yamaguchi, T., & Jimba, M. (2013). Effectiveness of a breastfeeding self-efficacy intervention: Do hospital practices make a difference? *Maternal and Child Health Journal*, *17*(5). doi: 10.1007/s10995-013-12652-2.
- Oliver-Roig, A., d'Anglade-Gonzalez, M.-L., García- García, B., Silva-Tubio, J.-R., Richart-Martinez, M., & Dennis, C.-L. (2012). The Spanish version of the Breastfeeding Self-Efficacy Scale-Short Form: Reliability and validity assessment. *International Journal of Nursing Studies*, *49*, 169-173. doi: 10.1016/j.ijnurstu.2011.08.005
- Pender, N. (2006). *Health promotion in nursing practice*, 3<sup>rd</sup> ed. Upper Saddle River, NJ: Prentice Hall.
- Parry, J.E., Ip, D., Chau, P.Y., Wu, M., & Tarrant, M. (2013). Predictors and consequences of in-hospital formula supplementation for healthy breastfeeding newborns. *Journal of Human Lactation*, *29* (4), 527-536. doi: 10.1177/0890334412474719
- Pérez-Ríos, N., Ramos-Valencia, G., & Ortiz, A.P. (2008). Cesarean delivery as a barrier for breastfeeding initiation: the Puerto Rican experience. *Journal of Human Lactation*, *24*(3), 293-302. doi: 10.1177/0890334408316078
- Polit, D. F & Beck, C.T. (2012). *Nursing research: generating and assessing evidence for nursing practice*, 9<sup>th</sup> ed. Philadelphia, PA: Lippincott, Williams, & Wilkins.
- Pollard, D. & Guill, M. (2009). The relationship between baseline self-efficacy and breastfeeding duration. *Southern Online Journal of Nursing Research*, *9*(4). ISSN: 1538-0696
- Proctor, S. (1998). What determines quality of maternity care? Comparing the perceptions of childbearing women and midwives. *Birth*, *25* (2), 85-93.
- Razurel, C., Bruchon, Schweitzer, M., Dupanloup, A., Irion, O., Epiney, M. (2011). Stressful events, social support and coping strategies of primiparous women during the postpartum period: a qualitative study. *Midwifery*, *27*, 237-242. doi:10.1016/j.midw.2009.06.005
- Razurel, C., Kaiser, B., Dupuis M., Antonietti J.-P., Sellenet C., & Epiney, M. (2013). Validation of the Post-Delivery Perceived Stress Inventory. *Psychology, Health, & Medicine*. doi: 10.1080/13548506.2013.774431

- Reynolds, J.L. (1997). Post-traumatic stress disorder after childbirth: the phenomenon of traumatic birth. *Canadian Medical Association Journal*, *156*, 831-835.
- Robinson, K.M. & VandeVusse (2011). African American women's infant feeding choices: prenatal breastfeeding self-efficacy with narratives from a black feminist perspective. *Journal of Perinatal and Neonatal Nursing*, *25*(4), 320-328. doi: 10.1097/JPN.0b013e31821072fb
- Rodrigues, A.P., Padoin, S.M., Guido, L., Dias Lopes, L. (2014). Pre-natal and puerperium factors that interfere with self-efficacy in breastfeeding. *EEAN*, *18* (2), 257-251. doi: 10.5935/141-8145.20140037
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rossmann, B., Engstrom, J. L., Meier, P.P., Vonderheid, S.C., Norr, K.F., & Hill, P.D. (2011). "They've walked in my shoes": Mothers of very low birth weight infants and their experiences with breastfeeding peer counselors in the neonatal intensive care unit. *Journal of Human Lactation*, *27*(1), 14-24. doi: 10.1177/0890334410390046
- Rowe-Murray, H.J. & Fischer, J.R. (2002). Baby friendly hospital practices: Cesarean section is a persistent barrier to early initiation of breastfeeding. *Birth: Issues in Perinatal Care*, *29*, 124-131.
- Rubertsson, C., Waldenström, U., & Wickberg, B. (2003). Depressive mood in early pregnancy: Prevalence and women at risk in a national Swedish sample. *Journal of Reproductive and Infant Psychology*, *21*, 113-123.
- Scott, J., Shaker, M., & Reid, R. (2004). Parental attitudes toward breastfeeding: Their association with feeding outcome at hospital discharge. *Birth*, *31*(2), 125-131.
- Selye, H. (1956). *The stress of life*. New York, NY: McGraw-Hill.
- Semenic, S., Loiselle, C., & Gottlieb, L. (2008). Predictors of the duration of exclusive breastfeeding among first-time mothers. *Research in Nursing and Health*, *31*, 428-441. doi: 10.1002/nur.20275
- Simkin, P. (1991). Just another day in a woman's life? Women's long-term perceptions of their first birth experience. Part 1. *Birth*, *18*(4), 203-210.
- Simkin, P. (1992). Just another day in a woman's life? Nature and consistency of women's long-term memories of their first birth experiences. *Birth*, *19*(2), 64-81.

- Soet, J.E., Brack, G.A., & Dilorio, C. (2003). Prevalence and predictors of women's experiences of psychological trauma during childbirth. *Birth, 30*(1), 36-46.
- Sorenson, D.S. & Tschetter, L. (2010). Prevalence of negative birth perception, disaffirmation, perinatal trauma symptoms, and depression among postpartum women. *Perspectives in Psychiatric Care, 46*(1), 14-25. doi: 10.1111/j.1744-6163.2009.00234.x
- Tabachnick, B.G. & Fidell, L.S. (2013). *Using multivariate statistics*. 6<sup>th</sup> ed. Upper Saddle River, NJ: Pearson Education, Inc.
- United States Census Bureau (2014). Historical income tables: people. Retrieved from: [www.census.gov](http://www.census.gov)
- United States Department of Health and Human Services (2012). *Healthy People 2020*. Retrieved from <http://www.healthypeople.gov/2020/default.aspx>
- Waldenström, U. (1999). Experiences of labor and birth in 1111 women. *Journal of Psychosomatic Research, 47*, 471-482.
- Waldenström, U. (2003). Women's memory of childbirth at two months and one year after birth. *Birth, 30*(4), 248-254.
- Waldenström, U., Borg, I., Olsson, B., Sköld, M., & Wall, S. (1996). The childbirth experience: a study of 295 new mothers. *Birth, 23*(3), 144-153.
- Waldenström, U., Hildingsson, I., & Ryding, E.L. (2006). Antenatal fear of childbirth and its association with subsequent cesarean section and experience of childbirth, *BJOG: An International Journal of Obstetrics and Gynecology, 113*, 638-646.
- Wambach, K. (1998). Maternal fatigue in breastfeeding primiparae during the first nine weeks postpartum. *Journal of Human Lactation, 14*(3), 219-229.
- Wells, K.J., Thompson, N.J., & Kloeblen, A.S. (2006). Development and psychometric testing of the prenatal breastfeeding self-efficacy scale. *American Journal of Health Behavior, 30*(2), 177-187.
- Wheeler, B. & Dennis, C.L. (2013). Psychometric testing of the modified breastfeeding self-efficacy scale (short form) among mothers of ill or preterm infants. *Journal of Obstetric Gynecologic and Neonatal Nursing, 42*(1), 70-80. doi: 10.1111/j.1552-6909.2012.01431.x
- Wilhelm, S.L., Rodehorst, T.K., Stepan, M.B.F., Hertzog, M., & Berens, C. (2008). Influence of intention and self-efficacy levels on duration of breastfeeding for Midwest rural mothers. *Applied Nursing Research, 21*, 123-130. doi: 10.1016/j.apnr.2006.10.005

- World Health Organization (2011). Statement: Exclusive breastfeeding for six months best for babies everywhere. World Health Organization, Geneva. Retrieved from <http://www.who.int/en/>
- World Health Organization (2014). *Health Topics: Breastfeeding*. Retrieved from <http://www.who.int/topics/breastfeeding/en/>
- 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), 1439-46. doi:10.1016/j.ijnurstu.2006.08.001
- Zanardo, V., Svegliado, G., Cavallin, F., Giustardi, A., Cosmi, E., Litta, P., & Trevisanuto D. (2010). Elective cesarean delivery: Does it have a negative effect on breastfeeding? *Birth: Issues in Perinatal Care*, 37(4), 275-9. doi: 10.1111/j.1523-536X.2010.00421.x.
- Zhu, J., Chan, W.C., Zhou, X., Ye, B., He, H.-G. (2014). Predictors of breastfeeding self-efficacy among Chinese mothers: a cross-sectional questionnaire survey. *Midwifery*, 30 (6), 705-711. doi: 10.1016/j.midw.2013.008
- Zimet, G.D., Dahlem, N.W., Zimet, S.G., & Farley, G.K. (1988). The multidimensional scale of perceived social support. *Journal of Personality Assessment*, 52(1), 30-34.

## APPENDIX A

## Breastfeeding Self-Efficacy Scale – Short Form

For each of the following statements, please choose the answer that best describes how confident you are with breastfeeding your new baby. Please mark your answer by <u>circling</u> the number that is closest to how you feel. There is no right or wrong answer.	Not at all confident	Not very confident	Sometimes confident	Confident	Very Confident
1. I can always determine that my baby is getting enough milk	1	2	3	4	5
2. I can always successfully cope with breastfeeding like I have with other challenging tasks	1	2	3	4	5
3. I can always breastfeed my baby without using formula as a supplement	1	2	3	4	5
4. I can always ensure that my baby is properly latched on for the whole feeding	1	2	3	4	5
5. I can always manage the breastfeeding situation to my satisfaction	1	2	3	4	5
6. I can always manage to breastfeed even if my baby is crying	1	2	3	4	5
7. I can always keep wanting to breastfeed	1	2	3	4	5
8. I can always comfortably breastfeed with my family members present	1	2	3	4	5
9. I can always be satisfied with my breastfeeding experience	1	2	3	4	5
10. I can always deal with the fact that breastfeeding can be time consuming	1	2	3	4	5
11. I can always finish feeding my baby on one breast before switching to the other breast	1	2	3	4	5
12. I can always continue to breastfeed my baby for every feeding	1	2	3	4	5
13. I can always manage to keep up with my baby's breastfeeding demands	1	2	3	4	5
14. I can always tell when my baby is finished breastfeeding	1	2	3	4	5

## APPENDIX B

## Perceived Stress Scale – 10

<p><b>The questions in this scale ask you about your feelings and thoughts <u>during the last month</u>. In each case, you will be asked to indicate by <u>circling</u> how often you felt or thought a certain way.</b></p>	Never	Almost Never	Sometimes	Fairly Often	Very Often
1. In the last month, how often have you been upset because of something that happened unexpectedly?	0	1	2	3	4
2. In the last month, how often have you felt that you were unable to control the important things in your life?	0	1	2	3	4
3. In the last month, how often have you felt nervous and “stressed”?	0	1	2	3	4
4. In the last month, how often have you felt confident about your ability to handle your personal problems?	0	1	2	3	4
5. In the last month, how often have you felt that things were going your way?	0	1	2	3	4
6. In the last month, how often have you found that you could not cope with all the things that you had to do?	0	1	2	3	4
7. In the last month, how often have you been able to control irritations in your life?	0	1	2	3	4
8. In the last month, how often have you felt that you were on top of things?	0	1	2	3	4
9. In the last month, how often have you been angered because of things that were outside of your control?	0	1	2	3	4
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	0	1	2	3	4

©Cohen, Kamarck, &amp; Mermelstein, 1983. Cohen &amp; Williamson, 1988.

## APPENDIX C

### Birth Satisfaction Scale-Revised

Read each statement carefully and once you understand what is being asked, respond fairly quickly. Please respond to following statements and try to be as honest as possible. Please circle your answer.					
1. I came through childbirth virtually unscathed. (Unscathed means without suffering any injury, damage, or harm).	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
2. I thought my labor was excessively long.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
3. The delivery room staff encouraged me to make decisions about how I wanted my birth to progress.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
4. I felt very anxious during my labor and birth.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
5. I felt well supported by staff during my labor and birth.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
6. The staff communicated well with me during labor.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
7. I found giving birth a distressing experience.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
8. I felt out of control during my birth experience.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
9. I was not distressed at all during labor.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
10. The delivery room was clean and hygienic.	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree
Comments:					
Are there any general comments you would like to make?					

## APPENDIX D

### Participant Information Form

Please select or write in the best response to the following questions.

#### Preparing for childbirth

1. Did you participate in a childbirth preparation class?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2. Did you take a breastfeeding class during pregnancy?	<input type="checkbox"/> Yes <input type="checkbox"/> No
3. What other sources of information did you use to get ready to give birth? For example: friends, internet, books, etc. Please write in your answer.	_____
4. How well prepared did you feel for your birth experience?	<input type="checkbox"/> Not at all prepared <input type="checkbox"/> Somewhat unprepared <input type="checkbox"/> Not sure <input type="checkbox"/> Somewhat prepared <input type="checkbox"/> Very well prepared

#### About your birth experience

5. How old is your baby now?	<input type="checkbox"/> Less than 24 hours old <input type="checkbox"/> 1 day old <input type="checkbox"/> 2 days old <input type="checkbox"/> 3 days old <input type="checkbox"/> 4 days old <input type="checkbox"/> 5 days old
6. Please select the response that best describes the type of birth you had.	<input type="checkbox"/> Spontaneous Vaginal Birth (with <b>NO</b> vacuum or forceps) <input type="checkbox"/> Vaginal Birth with forceps or vacuum <input type="checkbox"/> Planned/scheduled cesarean birth <input type="checkbox"/> Unplanned or emergency cesarean birth

7. Please let us know how you managed pain during your birth, if applicable.	<input type="checkbox"/> Epidural <input type="checkbox"/> Medicine in my intravenous line <input type="checkbox"/> Natural childbirth/non-medical strategies <input type="checkbox"/> C-Section epidural or spinal anesthesia <input type="checkbox"/> C-Section general anesthesia <input type="checkbox"/> Other: <hr/>
8. Have you ever had a cesarean section with a previous pregnancy?	<input type="checkbox"/> Yes <input type="checkbox"/> No
9. How would you describe your overall childbirth experience?	<input type="checkbox"/> Very negative <input type="checkbox"/> Negative <input type="checkbox"/> Somewhat negative <input type="checkbox"/> Neutral/not sure <input type="checkbox"/> Somewhat positive <input type="checkbox"/> Positive <input type="checkbox"/> Very positive
10. How many hours long was your labor? Please write in your answer.	<hr/>
11. Who was your birth partner? (e.g. spouse, friend, sister) Please write in your answer.	<hr/>

### **Infant feeding experience**

12. Have you previously breastfed another child?	<input type="checkbox"/> Yes <input type="checkbox"/> No, this is my first child <input type="checkbox"/> No, I chose to formula feed my other child(ren)
13. Please select the extent to which you feel that your partner or spouse supports your decision to breastfeed.	<input type="checkbox"/> Not at all supportive <input type="checkbox"/> Somewhat unsupportive <input type="checkbox"/> Unsure <input type="checkbox"/> Somewhat supportive <input type="checkbox"/> Very supportive
14. Please select the response that best describes your current plans for feeding your baby.	<input type="checkbox"/> I plan to formula feed my baby. <input type="checkbox"/> I am thinking about breastfeeding, but I am not sure I want to do it. <input type="checkbox"/> I plan to try breastfeeding, but I am not sure how long I will do it. <input type="checkbox"/> I plan to breastfeed my baby for at least the first month, but probably not 6 months. <input type="checkbox"/> I plan to breastfeed my baby for at least 6 months.

15. How likely do you feel it is that you will feed your baby only breast milk for the first six months of his or her life?	<input type="checkbox"/> Extremely unlikely <input type="checkbox"/> Unlikely <input type="checkbox"/> Somewhat unlikely <input type="checkbox"/> Neither <input type="checkbox"/> Somewhat likely <input type="checkbox"/> Likely <input type="checkbox"/> Extremely likely
---	--

### **Breastfeeding experience and care in the hospital**

16. Were you informed about the benefits of breastfeeding by hospital staff?	<input type="checkbox"/> Yes <input type="checkbox"/> No
17. Did you hold your baby skin-to-skin on your chest right away after he/she was born?	<input type="checkbox"/> Yes <input type="checkbox"/> No
18. Did your nurse help you start to breastfeed in the first hour after your baby was born?	<input type="checkbox"/> Yes <input type="checkbox"/> No
19. Do you feel that you received enough education about how to breastfeed from hospital staff?	<input type="checkbox"/> Yes <input type="checkbox"/> No
20. Did your baby receive formula while in the hospital?	<input type="checkbox"/> Yes <input type="checkbox"/> No
21. If yes, did your doctor or nurse tell you there was a medical reason that the baby needed formula?	<input type="checkbox"/> Yes <input type="checkbox"/> No
22. Did your baby stay in the room with you throughout the day and night (also called “rooming-in”)?	<input type="checkbox"/> Yes, all of the time <input type="checkbox"/> Yes, some of the time <input type="checkbox"/> No, baby slept in the nursery
23. Did hospital staff encourage you to feed your baby when he gave cues or signals that he was ready to feed, rather than on a fixed schedule?	<input type="checkbox"/> Yes <input type="checkbox"/> No
24. Was your baby given a pacifier while in the hospital?	<input type="checkbox"/> Yes <input type="checkbox"/> No
25. Are you aware of any breastfeeding support groups or resources at the hospital?	<input type="checkbox"/> Yes <input type="checkbox"/> No

**Information about you**

26. What is your age?	_____
27. Please let us know how many living children you have (including this infant):	<input type="checkbox"/> One <input type="checkbox"/> Two <input type="checkbox"/> Three <input type="checkbox"/> Four <input type="checkbox"/> Five <input type="checkbox"/> Six <input type="checkbox"/> More than six
28. Please select the response that best describes your marital status.	<input type="checkbox"/> Single <input type="checkbox"/> Married <input type="checkbox"/> Committed Relationship <input type="checkbox"/> Widowed <input type="checkbox"/> Divorced or Separated
29. Please select the response that best describes your ethnicity:	<input type="checkbox"/> Hispanic <input type="checkbox"/> Non-Hispanic <input type="checkbox"/> Unknown
30. Please select the response that best describes your race:	<input type="checkbox"/> American Indian or Alaskan Native <input type="checkbox"/> Asian <input type="checkbox"/> Black or African American <input type="checkbox"/> Native Hawaiian or other Pacific Islander <input type="checkbox"/> White/Caucasian
31. Please select the response that best describes the highest level of education you have completed.	<input type="checkbox"/> Some high school <input type="checkbox"/> High school diploma or equivalent <input type="checkbox"/> Some college <input type="checkbox"/> Associate's degree <input type="checkbox"/> Bachelor's degree <input type="checkbox"/> Master's degree <input type="checkbox"/> Doctoral or professional degree
32. Which of the following best describes your family's range of income?	<input type="checkbox"/> Less than \$30,000 <input type="checkbox"/> \$30,001-\$50,000 <input type="checkbox"/> \$50,001-\$70,000 <input type="checkbox"/> \$70,001-\$100,000 <input type="checkbox"/> Greater than \$100,000

**Thank you very much for taking the time to complete this survey! Your responses are important and will help to improve care for other moms and babies.**

## APPENDIX E

### Permission for use of BSES-SF

RE: BSES-SF Request

DELETE

REPLY

REPLY ALL

FORWARD

Cindy-Lee Dennis <cindylee.dennis@utoronto.ca>

p dms#iv#kquidg

Tue 4/2/2013 11:53 AM

Re: Katherine Hinic;

You forwarded this message on 4/4/2013 6:55 PM.

1 attachment

BSES-SF.DOC

Dear Kate,

Thank you for your email and interest in my Breastfeeding Self-Efficacy Scale. Attached is the short-form for use in your doctoral dissertation. Good luck with your studies.

Warm regards,

C-L

Cindy-Lee Dennis, PhD

Professor in Nursing and Medicine, Dept. of Psychiatry;

Canada Research Chair in Perinatal Community Health;

Shirley Brown Chair in Women's Mental Health Research, Women's College Research Institute;

University of Toronto

155 College St

Toronto, Ontario

Canada M5T 1P8

Tel: (416) 946-8608

[www.cindyleedennis.ca](http://www.cindyleedennis.ca)



## APPENDIX F

### Permission for use of BSS-R

📎 6 attachments



Action Items

+ Get more apps

Dear Katherine,

I have attached the BSS-R and some papers for your use. Can you let me know how your study goes? If you have spread sheets of SPSS data at the end, could I have a copy to validate psychometrics of the instrument. Good luck.

Best CJ

Prof Caroline J Hollins Martin  
 PhD MPhil BSc ADM PGCE PGCC RMT RM RGN MBPsS  
 Professor in Midwifery  
 Mary Seacole (Room 2.78)  
 School of Nursing, Midwifery, Social Work & Social Sciences  
 College of Health and Social Care  
 University of Salford  
 Frederick Road  
 Salford  
 Greater Manchester  
 M6 6PU  
 Email: [C.J.Hollins-Martin@salford.ac.uk](mailto:C.J.Hollins-Martin@salford.ac.uk)  
 Telephone: 0161 2952 522  
 SEEK PROFILE: <http://www.seek.salford.ac.uk/profiles/CHollinsMartin.jsp>  
 BLOG: <http://carolinejoyhollinsmartin.blogspot.co.uk/>

## APPENDIX G

## Seton Hall University IRB Approval

REQUEST FOR APPROVAL OF RESEARCH, DEMONSTRATION OR  
RELATED ACTIVITIES INVOLVING HUMAN SUBJECTS

**All material must be typed.**

**PROJECT TITLE:** The Relationships Among Perceived Stress, Birth Satisfaction, and Breastfeeding Self-Efficacy in Early Postpartum Women

**CERTIFICATION STATEMENT:**

In making **this application**, I(we) certify that I(we) have read and understand the University's policies and procedures governing research, development, and related activities involving human subjects. I (we) shall comply with the letter and spirit of those policies. I(we) further acknowledge my(our) obligation to (1) obtain written approval of significant deviations from the originally-approved protocol BEFORE making those deviations, and (2) report immediately all adverse effects of the study on the subjects to the Director of the Institutional Review Board, Seton Hall University, South Orange, NJ 07079.

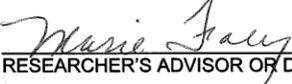
  
RESEARCHER(S) OR PROJECT DIRECTOR(S)

5/6/14  
DATE

Katherine A. Hinic  
PhD Student, College of Nursing

**\*\*Please print or type out names of all researchers below signature.  
Use separate sheet of paper, if necessary.\*\***

My signature indicates that I have reviewed the attached materials and consider them to meet IRB standards.

  
RESEARCHER'S ADVISOR OR DEPARTMENTAL SUPERVISOR

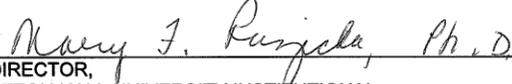
5/6/14  
DATE

Marie C. Foley, PhD, RN  
Associate Professor  
Dissertation Chair Person

**\*\*Please print or type out name below signature\*\***

The request for approval submitted by the above researcher(s) was considered by the IRB for Research Involving Human Subjects Research at the May 2014 meeting.

The application was approved  not approved  by the Committee. Special conditions were  were not  set by the IRB. (Any special conditions are described on the reverse side.)

  
DIRECTOR,  
SETON HALL UNIVERSITY INSTITUTIONAL  
REVIEW BOARD FOR HUMAN SUBJECTS RESEARCH

5/28/14  
DATE

## APPENDIX H

## Hospital IRB Approval



Atlantic  
Health System

## Institutional Review Board

475 South Street  
Morristown, NJ 07960  
Phone: (973) 860-3128  
Fax: (973) 292-7923

Morristown Medical Center  
Overlook Medical Center  
Newton Medical Center  
Chilton Medical Center  
Goryeb Children's Hospital

**TO:** Katherine Hinic, RN, MS, APN

**PROJECT TITLE:** [505279-1] The Relationships Among Perceived Stress, Birth Satisfaction, and Breastfeeding Self-Efficacy In Early Postpartum Women

**REFERENCE #:**

**SUBMISSION TYPE:** New Project

**ACTION:** APPROVED

**APPROVAL DATE:** 5/1/14

**EXPIRATION DATE:** 4/30/15

**REVIEW TYPE:** Expedited

**NUMBER OF APPROVED CONSENT FORMS:** [ 0 ]

**REVIEW CATEGORY:** # [ 7 ]

**CONSENT:**  Obtain Consent  Waiver of Consent  
 Alteration of Consent  Waiver of Documentation of Consent

The submission reviewed for above-referenced protocol has received approval based on applicable federal regulations.

**No investigator involved in the above referenced protocol participated in the vote to approve the study.**

The following items were reviewed with this submission:

- Abstract/Summary - Abstract and Study Identification Information (UPDATED: 04/12/2014)
- Application Form - Form 8 - De-identification Certification (UPDATED: 04/9/2014)
- Application Form - Form 14 - Request for Expedited Review (UPDATED: 04/28/2014)
- Application Form - Unaffiliated Investigator Agreement (UPDATED: 04/21/2014)
- Consent Waiver - Form 7 - Request for Alteration of Consent (UPDATED: 04/9/2014)

- Cover Sheet - Cover Letter to IRB Members (UPDATED: 04/27/2014)
- CV/Resume - Curriculum Vitae (UPDATED: 04/7/2014)
- Letter - Description of Study Participation (UPDATED: 04/27/2014)
- Other - Nursing Research Council Approval Letter (UPDATED: 04/27/2014)
- Protocol - Study Protocol " Perceived Stress, Birth Satisfaction, and Breastfeeding Self-Efficacy" (UPDATED: 04/27/2014)
- Questionnaire/Survey - Study Questionnaire (UPDATED: 04/9/2014)
- Training/Certification - CITI Training Certificate (UPDATED: 04/7/2014)

The following items were approved with this submission:

- Abstract/Summary - Abstract and Study Identification Information (UPDATED: 04/12/2014)
- Consent Waiver - Form 7 - Request for Waiver of Consent Documentation (UPDATED: 04/9/2014)
- Letter - Description of Study Participation (UPDATED: 04/27/2014)
- Protocol - Study Protocol " Perceived Stress, Birth Satisfaction, and Breastfeeding Self-Efficacy" (UPDATED: 04/27/2014)
- Questionnaire/Survey - Study Questionnaire (UPDATED: 04/9/2014)

Report all events that are unanticipated problems, unanticipated problems, which are also adverse events, deaths occurring in subjects enrolled at an AHS facility, and deviations from the approved protocol that would place the subject at greater risk than anticipated, to the AHS IRB in writing immediately.

**The Food and Drug Administration Amendment Act of 2007 requires that Phase II-IV trials of drugs and biologics and trials of devices be registered in ClinicalTrials.gov. The responsibility of registering these trials falls on the sponsor of the trials and/or the Principal Investigator. If you are conducting an "Investigator-initiated" study that fits the criteria above, you must register. If you are conducting a sponsored trial fitting the criteria, you must ensure that the sponsor registers.**

**Modifications to the study must be submitted in writing and approved by the AHS IRB prior to implementation of the changes.**

Investigators are required (by Federal Regulations) to submit reports on the status and/or results of clinical studies approved by the AHS IRB. For the above-referenced study, status/result reports will be due on the basis indicated above and/or within 30 days of the termination of the investigation. It is the Principal Investigator's responsibility to secure continuing approval or notify the AHS IRB of termination of the study.

**No subjects may be enrolled into this study after the above expiration date unless a continuation report is submitted and approved by the AHS IRB.**

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within Atlantic Health System IRB's records.

## APPENDIX I

### Recruitment script

Hello, my name is Katherine Hinic. I am a registered nurse and doctoral student at Seton Hall University College of Nursing. I am doing a research study to understand how new mothers' childbirth experiences, emotions, and breastfeeding confidence relate to each other. Would you like to help nursing and other new mothers by participating in a research study that looks at the childbirth experience, stress, and breastfeeding?

If so, again, my name is Katherine Hinic and I am a doctoral student in the College of Nursing at Seton Hall University. The title of my study is "Perceived Stress, Birth Satisfaction, and Breastfeeding Self-Efficacy." This study will help to provide information about new mothers' experiences and emotions and how this can affect breastfeeding. You are being asked to participate in this study because you have recently had a baby and have expressed an intention to breastfeed. You might have important experiences to share that can help us to understand factors that affect how women feed their babies.

Before I tell you more about the study, may I ask you a few quick questions to see if you can be part of the study?

- Are you age 18 or older? [Must answer "Yes" to be eligible]
- Did you have one baby (not twins or triplets)? [Must answer "Yes" to be eligible]

- Do you plan to breastfeed or breast and formula feed your baby? [Must answer “Yes” to be eligible]
- Has your baby been admitted to the Neonatal Intensive Care/Special Care Unit? [Must answer “No” to be eligible]
- Has your baby been diagnosed with a congenital problem such as cleft lip or palate? [Must answer “No” to be eligible]
- Do you speak, read, and understand English? [Must answer “Yes” to be eligible]
- How many weeks pregnant were you when your baby was born? [must be  $\geq 39$  weeks and 0/7 days and less than 42 weeks and 0/7 days to be eligible] *or*
- What was your due date? [Researcher will calculate gestational age based on this response. Infant must be  $\geq 39$  weeks and 0/7 days and less than 42 weeks and 0/7 days to be eligible]

[If patient is eligible to participate, proceed with recruitment script]

[If not eligible] Thank you very much for taking the time to hear about my study.

Congratulations on the birth of your baby!

This study is completely voluntary which means that you do not have to participate in this study unless you want to. The research study involves completing four (4) questionnaires, which will probably take about 30 minutes. The four questionnaires are the Birth Satisfaction Scale-Revised (BSS-R), Perceived Stress Scale-10 (PSS-10), the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) and Participant Information Form.

Birth Satisfaction Scale-Revised asks you questions about how you feel your labor and birth went. The Perceived Stress Scale-10 asks you questions about stress in your life like “In the last month, how often have you felt nervous or ‘stressed?’” The Breastfeeding Self-Efficacy Scale-Short Form asks you questions about how confident you feel managing specific tasks associated with breastfeeding. The Participant Information Form asks information like how many other children you have and what kind of birth you had. If you have any questions, please let me know and I will be happy to answer them or address any concerns.

You may complete the questionnaires while you are here in the hospital at a time that is convenient for you. You may return the completed questionnaires directly to me or place your sealed study packet in the locked box labeled “Breastfeeding Study” located at the nurses’ station. If you decide later that you do not wish to participate in the study, I would appreciate if you could please return all of the materials to me or place the blank copies in the locked box at the nurses’ station anyway. You will notice that the questionnaires are numbered. This is so that I know that all the pages belong to the same person.

Would you be willing to be a part of the study? [If yes, continue with recruitment script].

[If no], I understand this is a busy time. Thank you very much for your time and congratulations on the birth of your baby!

Thank you for agreeing to participate. I will review the study materials with you now so we can get started. This envelope contains all of the materials you need

for the study. When you have finished the questionnaires, please return them to the large envelope and I will return to pick them up or you can put them in the locked box at the nurses' station.

There is a possibility that you may feel uncomfortable or upset when you answer some of the questions. If this happens, please let me know. If you feel or show any emotional concerns, I will discuss this with your primary nurse who will be able to refer you to a social worker here at the hospital. In addition, the hospital also has mental health services available if you if you feel you need more help.

Please also understand that all information that I receive from you on the questionnaires is confidential and will be kept under lock and key. When I receive all of the completed questionnaires from everyone who wants to participate in the study, I will group all the answers together before writing or presenting any of the information. There will be no way to tell which mother gave which responses. Remember, the decision whether or not to participate in the study is completely voluntary and will in no way affect your care or your baby's care at the hospital.

## APPENDIX J

### Letter of Solicitation & Description of Study Participation

#### DESCRIPTION OF STUDY PARTICIPATION

#### *The Relationships Among Perceived Stress, Birth Satisfaction, and Breastfeeding Self-Efficacy In Early Postpartum Women*

You are being asked to participate in a research study that looks at the issues of stress, childbirth experience, and breastfeeding. The Principal Investigator of this study Katherine Hinic, a registered nurse and a student in the PhD program in the College of Nursing at Seton Hall University.

Your involvement will require the completion of four questionnaires. The questionnaires include the following:

1. Birth Satisfaction Scale-Revised (BSS-R), which asks a woman how she felt her birth went
2. Perceived Stress Scale-10 (PSS-10), which ask questions about stress in a person's life
3. Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF), which asks a woman questions about how confident she feels breastfeeding her new baby
4. Participant Information Form, which asks questions about the woman's life like how many children she has, what type of birth she had, and her plans for feeding this baby.

It will take approximately 30 minutes to answer these questions. We are asking that you complete the questionnaire at a time that is convenient for you and return it either to the locked box at the nurses' station marked "Breastfeeding Study."

There are no direct benefits to you and you will not be paid any money for participating in the study. However, the information we learn from this study will add to what nurses and doctors know about caring for new families and might be used to design programs to help other new mothers. There is no cost for participation.

This study does not involve any more risk to you than you would normally encounter in everyday life, but if you feel upset or stressed while filling out the survey, please let me or your nurse know and we will refer you to the social worker in the hospital or your healthcare provider for assistance. If you feel upset or stressed after you go home from the hospital, it is important that you discuss this with your physician or midwife.

Your participation is voluntary. You are under no obligation to participate. Refusal to participate will not affect your care or your baby's care. You may choose not to participate but we encourage active participation since your responses are very important to understanding the experiences of women who have just given birth and how this may relate to infant feeding. Your return of the questionnaire acknowledges your consent to participate in this study. Your responses will be kept confidential. Do not enter your name or other identifiers onto the questionnaires.

Please return your completed questionnaire to its envelope and put the envelope in the locked box and the nurse's station or return to Katherine Hinic, the

researcher. Please answer the questions on your own, without discussing with family or friends. Thank you for your participation, time, and efforts in this investigation.

If you have any questions, you may contact me at

[katherine.hinic@student.shu.edu](mailto:katherine.hinic@student.shu.edu) or Marie Foley, PhD, RN, my faculty advisor, at [marie.foley@shu.edu](mailto:marie.foley@shu.edu) or 973-761-9282. If you have further questions or concerns about your rights as a research participant, you may contact the Atlantic Center for Research Institutional Review Board at 973-660-3128 or the Seton Hall University Institutional Review Board at 973-313-6314, or by email at [irb@shu.edu](mailto:irb@shu.edu).

Thank you for considering participating in this research!

Sincerely,

A handwritten signature in black ink that reads "Katherine A. Hinic". The signature is written in a cursive style with a large initial 'K' and a distinct 'A'.

Katherine Hinic, RN, MS

[Katherine.hinic@student.shu.edu](mailto:Katherine.hinic@student.shu.edu)