

Self-Efficacy, Social Support, Therapeutic Support and the Initiation and Duration of  
Breastfeeding in Adolescent Mothers

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## Abstract

This longitudinal investigation examines self-efficacy, social support and therapeutic support as predictors of initiation and duration of breastfeeding in adolescent mothers. It proposes that prenatal levels of self-efficacy, social support and therapeutic support are significant predictors of breastfeeding initiation in adolescent mothers. It also proposes that postpartum levels of these variables are significant predictors of the number of days breastfeeding after delivery in adolescent mothers. Sixty-one pregnant adolescents were recruited from home health agencies, childbirth education classes and a teen pregnancy outpatient clinic in the St. Louis community. The three study variables, derived from Bandura's Social Learning Theory, were examined using the Breastfeeding Self-Efficacy Scale, Hughes Breastfeeding Social Support Scale and Therapeutic Support Scale.

Univariate analysis identified no differences between the adolescent mothers who initiated breastfeeding and those who did not initiate regarding scores of self-efficacy, social support and therapeutic support. Analysis of variance showed no differences for those adolescent mothers who initiated or continued breastfeeding when examining prenatal and one-week postpartum scores. Hierarchical regression was calculated predicting number of days breastfeeding based on the adolescent's age, highest grade level completed, therapeutic support scores, social support scores, and self efficacy scores. No significant predictors were identified in the prenatal or postpartum scores regarding days of breastfeeding after delivery, although self-efficacy was closest to approach significance.

In a secondary analysis of self-efficacy, social support and therapeutic support, univariate analysis indicated that each of the variables increased significantly over the

first month postpartum. An examination of the mean plots further illustrated the positive correlation and linear trend of increasing scores across duration of breastfeeding for all constructs measured. The significance of increasing scores of self-efficacy, social support and therapeutic support and the implications for nursing practice regarding the initiation and duration of breastfeeding in adolescent mothers are discussed.

## Table of Contents

Chapter		
I.	Introduction	
	Background.....	2
	Purpose.....	4
	Hypotheses.....	5
II.	Literature Review	
	Breastfeeding Rates.....	6
	Incidence of Breastfeeding in Adolescents.....	7
	Decision to Breastfeed.....	8
	Initiation of Breastfeeding.....	11
	Duration of Breastfeeding.....	13
	Conceptual Model.....	16
III.	Methods	
	Purpose of Study.....	23
	Study Design.....	23
	Setting.....	24
	Power Analysis.....	24
	Sample.....	24
	Conceptual Definitions.....	25
	Operational Definitions.....	25
	Characteristics of the Instruments.....	25

	Procedure for Data Collection.....	27
	Sample Characteristics.....	29
IV.	Results	
	Results for Each Hypothesis.....	32
	Summary.....	41
V.	Discussion	
	Summary of the Problem.....	43
	Summary of the Purpose.....	45
	Discussion of Results.....	45
	Implications for Theory.....	50
	Implications for Nursing Science.....	51
	Implications for Nursing Practice.....	51
	Implications for Further Research.....	53
	References.....	55
	Appendices	
	1. IRB Approval-University of Missouri-St. Louis.....	65
	2. IRB Approval-Barnes-Jewish Hosptial.....	67
	3. IRB Approval-Washington University.....	69
	4. Consent to Participate.....	71
	5. Demographic Questionnaire.....	75
	6. Breastfeeding Self-Efficacy Scale.....	79
	7. Hughes Social Support Scale.....	84
	8. Therapeutic Support Scale.....	91

## List of Tables

Table		
1	Frequency and Percent for Age of Adolescent Mothers in Study of Breastfeeding Initiation and Duration.....	30
2	Frequency and Percent for Race of Adolescent Mothers in Study of Breastfeeding Initiation and Duration.....	30
3	Highest Grade Completed for Adolescent Mothers in Study of Breastfeeding Initiation and Duration.....	31
4	Means and Standard Deviation for Self-Efficacy, Social Support, Therapeutic Support for Adolescent Mothers who did not Initiate Breastfeeding.....	33
5	Analysis of Variance for Effects of Self-Efficacy, Social Support and Therapeutic Support for Four Groups.....	34
6	Analysis of Variance for Effects of Self-Efficacy, Social Support and Therapeutic Support on Duration of Breastfeeding for Three Groups.....	35
7	Hierarchical Regression Summary for Prenatal Scores Predicting Duration of Breastfeeding in Days.....	36
8	Hierarchical Regression Summary for One-Week Scores Predicting Duration of Breastfeeding in Days.....	37
9	Results of Duration vs. Self-Efficacy, Social Support and Therapeutic Support.....	38
10	Reliability of Study Instruments.....	41

## List of Figures

Figure		
1	Breastfeeding Self-Efficacy Framework.....	19
2	Self-Efficacy Mean Scores, Prenatal, One-Week, and One-Month.....	39
3	Social Support Mean Scores, Prenatal, One-Week and One-Month.....	39
4	Therapeutic Support Mean Scores, Prenatal, One-Week and One-Month.....	40

## CHAPTER I

### *Introduction*

In *Healthy People 2010: National Health Promotion and Disease Prevention Objectives* (U.S. Department of Health and Human Services, 2000), the surgeon general identified improved breastfeeding rates as part of a national health objective for the year 2010. The aim of this initiative was that 75% of women would initially breastfeed and that 50% would continue to breastfeed their infants for 6 months. Currently, only 69% of infants born in U.S. hospitals receive breast milk initially and only 36% receive breast milk at age six months, and only 16% for one year (U.S. Department of Health and Human Services, National Immunization Survey, 2003).

The rates of initiation and duration of breastfeeding in the adolescent population fall well below that of mothers who are beyond their adolescent years (Wambach & Cole, 2000). One long-running national infant feeding surveillance study indicated that among women younger than 20 years of age, 57.2% initiated breastfeeding in 2001, increasing from the preceding five years from a rate of 43.3% (Ryan et al. 2002). Breastfeeding adolescent mothers in 2001 had a 19.5% rate of breastfeeding at 6 months as compared to 1996 when this population of mothers had a 9.6% rate of breastfeeding (Ryan et al. 2002).

Children of adolescent mothers are more likely to be low (below 2500 grams) (Allan Guttmacher Institute, 1999) and very low-birth weight (below 1500 grams) (Miller et al. 1996), have childhood health problems such as infections and accidents and be hospitalized for these problems, than those born to older mothers (Cunningham et al. 1999). Many of these health problems, especially the infection rate, can be related to the fact that less than 57% of adolescent mothers initiate breastfeeding, even though the

benefits of breastfeeding have been well documented (Ryan et al. 2002). The Centers for Disease Control and Prevention documents an initiation rate of 54% for adolescent mothers (U.S. DHHS, National Immunization Survey, 2003)

Published research related to adolescents and breastfeeding focuses on three main areas. These are related to the decision to breastfeed, initiation of breastfeeding and duration of breastfeeding. Most research on factors related to initiation and duration of breastfeeding in adolescent mothers has been descriptive in nature. Research focusing on the factors that help and hinder the adolescent's breastfeeding efforts needs to be conducted. Some of these factors which are identified in the literature are categorized as cultural (Caulfield, et al. 1998; Long et al. 1995), psychological (Kessler et al. 1995), social (Burke & Liston, 1994; Morrow et al. 1999), and educational (Humphreys et al. 1998; O'Campo, et al. 1992). Specific factors that may be associated with initiation and duration of breastfeeding include age, income level, educational level, race, experience with breastfeeding, and contact with a breastfeeding role model. Factors such as breastfeeding self-efficacy, social support with breastfeeding, and therapeutic or professional support have not been addressed in the literature with adolescent mothers. Dennis (1999) however, did examine maternal confidence, which is related to self-efficacy, and found that the more confidence a new mother has, the longer she breastfeeds. Dennis (1999) did not examine the differences from the prenatal period to the postpartum period to identify changes in perceived confidence prenatally and the actual duration of breastfeeding. In addition to self-efficacy, other factors such as social support and therapeutic support or professional support need to be examined to explain their relationship with breastfeeding initiation and duration in adolescents. Social support related to breastfeeding has been studied in the literature only with an adult population,

not adolescents. No studies exist that examine social support for breastfeeding and adolescents exclusively. Because research focusing on social support and self-efficacy of breastfeeding in adolescent mothers is non-existent, it was the focus of this study. Therapeutic support, also known as professional support, is also studied less frequently and was included as one of the variables studied in this study. Numerous studies exist that examine the professional support women of all ages receive when breastfeeding but none of these studies specifically examine the adolescent population. Reported study data included both adult and adolescent mothers collectively. No distinction was identified in the adolescent population. No studies involving adolescents using the variables of breastfeeding support, initiation and duration can be identified in the literature. Social support, self-efficacy and professional or therapeutic support are very important aspects related to initiation and duration of breastfeeding, and are fundamental in understanding the reasons why an adolescent mother begins and continues to breastfeed her baby. The framework that was used for this study is based on Bandura's Self-Efficacy Theory, which was derived from Social Learning Theory. The aspects of this framework that impact the adolescent regarding initiation and duration of breastfeeding are performance accomplishments, vicarious experience, verbal persuasion and inferences from physiologic and emotional state. These aspects will provide the foundation for examining the concept of self-efficacy as it relates to breastfeeding adolescent mothers.

#### *Purpose of the Study*

The purpose of this study was to examine the relationship between breastfeeding initiation and duration, self-efficacy, social support and therapeutic support in adolescent

mothers. A secondary purpose was to be able to identify the strongest predictor of duration of breastfeeding related to self-efficacy, social support and therapeutic support.

### *Hypotheses*

H1: Higher prenatal levels of self-efficacy, social support and therapeutic support, will be significant predictors of breastfeeding initiation in adolescent mothers.

H2: Higher prenatal and one-week postpartum levels of self-efficacy, social support, and therapeutic support will be significant predictors of the number of days breastfeeding after delivery in adolescent mothers.

H3: Higher prenatal, one-week and one-month postpartum levels of self-efficacy, social support, therapeutic support, education level and age will be significant predictors of the number of days breastfeeding after delivery in adolescent mothers.

### *Assumptions*

This investigation is based on three assumptions. First, it is assumed that breastfeeding is natural and provides the best source of nutrition for infant. Second, breastfeeding is a positive phenomenon that enhances the psychological and physical health of a mother and her baby. Third, it is assumed that adolescent mothers possess some amount of self-efficacy for breastfeeding.

## CHAPTER II

### *Literature Review*

#### *Breastfeeding Rates*

Breastfeeding is considered the optimal method of infant nutrition. Extensive research on the biology of human milk and on the health outcomes associated with breastfeeding has established that breastfeeding is more beneficial than formula feeding (U.S. DHHS, 2000). As identified by the American Academy of Pediatrics (1997), advantages of breastfeeding include nutritional, immunologic, developmental, psychological, social, economic, and environmental benefits. Lawrence and Lawrence (1999, p. 12), categorize the benefits for the infant as nutritional, infection protection, immunologic protection, allergy prophylaxis, psychological and cognitive. Breastfed infants experience fewer infectious and non-infectious diseases as well as less severe diarrhea, respiratory and ear infections (U.S. Department of Health and Human Services, Blueprint for Action on Breastfeeding, 2000). In addition, breastfed infants have a lower incidence of pneumonia, urinary infections, necrotizing enterocolitis and invasive bacterial infections (U.S. DHHS, Blueprint for Action on Breastfeeding, 2000).

Benefits for the mother include quicker postpartum recovery, lower incidence of obesity later in life, positive psychological benefits, empowerment, and improved health risks (Lawrence & Lawrence, 1999, p. 215). Breastfeeding mothers experience less postpartum bleeding, earlier return to pre-pregnancy weight, and a reduced risk of ovarian cancer and premenopausal breast cancer (U.S. DHHS, Blueprint for Action on Breastfeeding, 2000). Despite these identified advantages, the national breastfeeding initiation rate for all postpartum women was 64% in 1998 and 69% in 2003. This rate falls well short of the 2010 targeted rate of 75% (U.S. DHHS, Healthy People 2010,

2000). One of two major goals of Healthy People 2010 is to eliminate health disparities among different segments of the population (U.S. DHHS, Healthy People 2010, 2000). Racial and ethnic disparities in breastfeeding are wide despite substantial increases in breastfeeding rates in the last decade. In 1998, 45% of African American mothers breastfed their infants in the early postpartum period; 66% of Hispanic mothers and 68% of white mothers did so. At this same time, 54% of low-income Asian and Pacific Islander children and 59% of low-income American Indian and Alaska native children were ever breastfed (U.S. DHHS, Healthy People 2010, 2000). During this same time period, research indicated adolescent breastfeeding initiation rates around 43%. Duration rates among adult mothers were 29% and adolescents' rates were 21% at six-months postpartum (Hannon et al. 2000).

#### *Incidence of Breastfeeding in Adolescents*

Published data that reports the breastfeeding rates among adolescent mothers are sparse in the literature. From the research studies included in this review, the rates of breastfeeding initiation in the adolescent mother population ranged from 9.5% in a rural population (Robinson et al. 1993) to 53% in an urban hospital (Neifert et al. 1988a, 1988b). As far back as 1984, breastfeeding initiation rates for adolescents were as low as 30.2% (Lizarraga et al. 1992). At the same time, adult mothers continued to have higher initiation and duration rates. For example, in 1995, 9.1% of mothers younger than 20 years continued to breastfeed to six months, whereas 15-34% of mothers from all other age groups continued for six months (Ryan, 1997). The most current breastfeeding rates come from the Center for Disease Control and Prevention's National Immunization Data Survey (2003) that indicates rates for women under 19 as 54% for initiation of breastfeeding and 15% at six months.

### *The Decision to Breastfeed*

Many factors are identified as influential in the adolescent's decision to breast or bottle-feed. Both adult and adolescent breastfeeding mothers often choose breastfeeding because it is healthier for the infant and enhances maternal-infant attachment (Maehr et al. 1993; Baisch et al. 1989). Others choose breastfeeding related to demographic and attitudinal variables (Lizarraga et al. 1992). Furthermore, the decision to breastfeed by adolescent mothers is almost always made during pregnancy as opposed to adult mothers. Half of them choose whether to breastfeed or not before pregnancy (Wambach & Cole, 2000; Maehr et al. 1993).

The socioeconomic level or family income level of the breastfeeding adolescent has an impact on her decision to breastfeed. According to Brent et al. (1995), women from low-income groups have a much lower incidence of breastfeeding. The results of this descriptive study of 108 low-income women of all ages indicated that when low-income women were enrolled in a comprehensive breastfeeding promotional program which included education and peer support, the incidence and duration of breastfeeding increased. Adolescents were included in this population of low-income women. Likewise, Schwartz et al. (2002) in a study of 946 women, found that adult mothers' participation in the Women, Infants and Children (WIC) program significantly increased the initiation of breastfeeding in these low-income women. This program was comprised of both breastfeeding advice and support. We cannot assume, though, that just being low-income, young or uneducated is the reason for deciding not to breastfeed. Wambach (2004) found that a common theme among pregnant adolescents was ambivalence and uncertainty related to the decision to breastfeed. Focus groups used in this study identified barriers such as pain, public exposure, and the complexity of breastfeeding.

One could suggest that it is a combination of factors, including income level, education, race, feelings of ambivalence, social and family influences and role modeling. One of the determining factors may be the breastfeeding role model available to the adolescent before she makes this decision. These role models are women who have breastfed previously. These women are usually family or friends.

Wambach and Cole (2000) identified that maternal age and exposure to breastfeeding models are correlated. The older the adolescent, the more potential exposure she has had to breastfeeding women. This correlation is supported in other literature; older adolescents (older than 16 years) chose breastfeeding more often than younger adolescents (Lizarraga et al. 1992; Neifert et al. 1988a; Robinson et al. 1993). Many studies indicate that adolescents who were exposed to role models were more likely to choose to breastfeed (Lizarraga et al. 1992; Wiemann et al. 1998; Hannon et al. 2000). Although most adolescents decide to breastfeed during pregnancy, Maehr et al. (1993) in a comparative study of 96 adult and adolescent mothers, further explained that adolescents who decided to breastfeed before pregnancy had seen a significantly higher initiation rate compared to the adolescents who made this decision during pregnancy or after delivery. The same trend was found when comparing the adolescent with respect to the number of women who they knew that had breastfed. Kennedy (2000) found that lack of breastfeeding role models significantly affected the adolescents' decision to breastfeed. In a focus group study of 42 women, Raisler (2000) concluded that peer counselors who acted as role models were very important in the decision to breastfeed. Overall, the pregnant adolescent who decides to breastfeed has more family and friends who have breastfed and these individuals served as role models.

Some cultural variations are apparent in the decision to breastfeed. Many of the studies examined had very homogeneous groups. Some studies identified differences between ethnic populations. Neifert et al. (1988a) found that Caucasian women were significantly more likely to choose breastfeeding than were women from minority groups. In this study, African American women were least likely to choose breastfeeding than Caucasian, Hispanic or Asian women. Likewise, Lizarraga et al. (1992) in a study of 64 adult and adolescent primiparas, found that those adolescents who intended to breastfeed were significantly older, often married, more likely to be Hispanic and Spanish speaking, and less likely to have been in school. Wiemann et al. (1998), in a study of 646 Mexican American, African American and Caucasian adolescent mothers, found that the perceived benefits and educational exposure were associated with breastfeeding in all groups equally in the Mexican American, African American, and Caucasian population. Forste et al. (2001) reported that race was a strong predictor of breastfeeding. These authors identified that black women were less likely to breastfeed than non-black women. This population included both adult and adolescent mothers. Hannon et al. (2000) in a qualitative study with 35 Latina and African American adolescents found that these two groups had similar reasons for choosing breastfeeding when compared to other populations of adolescents. They identified bonding, baby's health, baby's IQ and convenience as reasons to choose breastfeeding. In the Wiemann et al. (1998) study of 646 Mexican Americans, African American and Asian adolescents, the early timing of the decision was significant to the duration of breastfeeding for Mexican Americans. For this population, if the decision to breastfeed was made early in pregnancy, the adolescent breastfed longer.

### *Initiation of Breastfeeding*

The positive and negative feelings that adolescents have about breastfeeding influence their initiation rates. Currently, statistics related to initiation of breastfeeding range from 9% to 54% in the adolescent population. Estimates of breastfeeding initiation in African American adolescents are around 17% of those adolescents who deliver (Wiemann et al. 1998). Regardless of race, adolescents who had positive attitudes about breastfeeding, tended to initiate breastfeeding more often than those with negative attitudes. Joffe and Radius (1987), in a study of 108 adolescents, found that intent to breastfeed was explained by perceptions of the benefits of breastfeeding. In addition, Hannon et al. (2000) identified three major influences on the adolescents' initiation of breastfeeding. These influences included the adolescent's perceptions of the benefits of breastfeeding, their perceptions of the problems with breastfeeding and the influential people in their lives who promote and mitigate many of these factors. Likewise, Park et al. (2003) in a study of teenage mothers enrolled in a Michigan Women, Infants and Children Program (WIC), identified predictors of breastfeeding initiation included race/ethnicity, education, marital status, and WIC enrollment.

Adolescents also self-reported barriers to breastfeeding in several studies. Adolescents identified return to work or school, restriction on activities and lack of knowledge about breastfeeding as barriers (Wambach & Cole, 2000; Volpe & Bear, 2000; Arlotti et al. 1998; Adams, 2001; Gross et al. 1998). Similarly, Lizarraga et al. (1992) in a study of 64 adolescent primiparas also reported adolescents returning to school or work as a barrier to breastfeeding. In contrast, Joffe and Radius (1987) identified that adolescents did not report returning to school or work as a barrier. Some studies reported that a lack of knowledge about breastfeeding was a barrier (Park et al.

2003, Robinson et al. 1993; Joffe and Radius, 1987; Baisch et al. 1989). An understanding of the health benefits for the baby of breastfeeding was an important influence on the adolescents' initiation of breastfeeding. Both Robinson et al. (1993) and Joffe and Radius (1987), in studies with adolescents, reported that a lack of knowledge about breastfeeding was a barrier to initiating this feeding method. Likewise, Baisch et al. (1989) reported that over half of their sample of adolescents believed that they did not know enough about breastfeeding. Hannon et al. (2000) did identify the sources of breastfeeding education came from a variety of sources including family and friends, health care providers, school, media, and self-initiated reading. This education may influence their attitude about breastfeeding, thus influencing the initiation of breastfeeding.

To add to these studies, Callan and Pinelli (2004) concluded in an analysis of all studies related to initiation and duration of breastfeeding that women who initiated and continued breastfeeding are older, married, better educated and have higher family incomes than women who do not breastfeed. This was an international study that included both adult and adolescent mothers. Therefore, adolescents who have more education, are older and are married have a better chance statistically of initiating and continuing breastfeeding.

The initiation rates for adolescents are influenced by several different factors, such as race, education of breastfeeding, role modeling and social support, as well as their beliefs about breastfeeding. These factors are essential in understanding the issues adolescents believe are important when deciding to initiate breastfeeding, but the issue of continuing breastfeeding once it is started is also significant.

### *Duration of Breastfeeding*

The issue of duration of breastfeeding is not studied as well as initiation in the adolescent population. Few studies use duration as a variable with adult mothers and some of these used a subset of low-income women (Park et al. 2003; Barron et al. 1988; Raisler, 2000). Duration as a variable in studies with adolescents is even more limited. If an adolescent mother begins breastfeeding in the hospital but stops soon after discharge, the baby does not get sufficient benefits from the breast milk. According to the 2003 CDC's National Immunization Data Survey, for which breastfeeding rates were summarized, women under 19 years of age initiated breastfeeding at a rate of 54% and at 6 months 14.9% were still breastfeeding. Historically rates were only available for initiation and one month post delivery. Baisch et al. (1989) identified that 32% of the adolescent population in their study initiated breastfeeding but only 21% were still breastfeeding at one month postpartum. Neifert et al. (1988a) identified 35% of their sample breastfed for less than one month.

The duration of breastfeeding was also influenced by the support that was available after discharge from the hospital. Many studies identified that the initial decision to breastfeed was made by the adolescent but with the influence of significant people in her life (Hannon et al. 2000; Arlotti et al. 1998; Burke & Liston, 1994; Humphreys et al. 1998). These significant people included the adolescents' partner (Sciacca et al. 1995), her mother (Freed et al. 1995); friends and other family members (Lizarraga et al. 1992; Hannon et al. 2000), teachers and school (Hannon et al. 2000) and even the health care team (Neifert et al. 1988b). These people can be very significant in supporting the adolescent mother to continue breastfeeding in the days, weeks and months after delivery.

These social influences have been identified in the literature as social networks or social support members. In some studies, the adolescent's mother and the infant's father were reported as being the most influential in the decision to breastfeed (Robinson et al. 1993) and to continue breastfeeding (Wiemann et al. 1998). Other studies identify the adolescent's mother as the most significant person influencing the decision to initiate and continue breastfeeding (Wambach & Cole, 2000) and this is particularly significant in the African American population (Meyerink & Marquis, 2002).

Many reasons exist for the adolescent weaning of the infant prior to six months. Benson (1996) identified several reasons for weaning including nipple and breast pain, inaccurate advice, too frequent feeding, mastitis, just "not liking it" and perceptions that the infant was not getting enough milk. Neifert et al. (1988b) found similar reasons from adult mothers for weaning, such as sore nipples and perception of insufficient milk supply. Problems especially experienced by the adolescent mother included modesty, return to school, and concern about breastfeeding in public (Neifert et al. 1988b). These concerns are ones specific to this population of adolescents and may be influenced by those significant people in her life. One study exemplifies this by explaining that the adolescents' mother and/or partner either encouraged breastfeeding by urging perseverance in the face of problems and giving advice, or openly discouraged breastfeeding by suggesting switching to formula (Swanson, 1988).

Health care professionals and peer counselors have also been identified as making a significant difference in the decision to wean. In a study of a home-based peer counseling program the duration of breastfeeding was increased by 32% (Morrow et al. 1999). Merewood and Philipp (2003) identified that not only do peer counselors assist to lengthen the duration of breastfeeding, but support the adolescent mothers by decreasing

anxiety, clarifying misconceptions and giving practical, culturally appropriate tips on breastfeeding. Lu et al. (2003) examined the influence of provider encouragement on breast-feeding among women of different social and ethnic backgrounds in the United States and found that provider encouragement significantly increases breastfeeding initiation among American women of all social and ethnic backgrounds. Health care professionals, such as lactation consultants also help to assist the mother to continue breastfeeding.

The findings in this literature review are difficult to interpret in regards to conclusive information about initiation and duration of breastfeeding. Each study examined very different aspects of breastfeeding. Most studies lacked a theoretical framework regarding initiation and duration. There is also some evidence based research related to the decision to breastfeed and subsequently, the initiation of breastfeeding. Support from the health care provider, family, or from a peer counselor program was successful with adolescent mothers in assisting them to initiate and especially continue breastfeeding. This support can be in the prenatal period but needs to be continued throughout the postpartum period as well. Aspects that need to be further explored involve the factors that have a relationship to the length of breastfeeding and the beliefs that an adolescent mother has regarding her ability to breastfeed. Differences related to the adolescent in terms of age, race and socioeconomic status are also very important to examine to identify if relationships are present between these factors and the initiation and duration of breastfeeding. By understanding these aspects of breastfeeding, health care workers can implement interventions that specifically target adolescent mothers or provide appropriate support to these populations.

## *Conceptual Model of Study*

### *Self Efficacy*

Derived from Bandura's Social Learning Theory, self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events (Bandura, 1997). Self-efficacy determines how people feel, think, motivate themselves, and behave. Self-efficacy is a dynamic cognitive process in which an individual evaluates his or her capability to perform a behavior. These perceptions of self-efficacy contribute to how individuals' judge their abilities to perform specific behaviors and greatly influence their choice of and persistence in those behaviors. Highly efficacious people are more likely to master behaviors than those with low self-efficacy (Bandura, 1997). This phenomenon occurs because individuals with low self-efficacy tend to avoid situations that stress their capabilities. For example, adolescent mothers who lack self-efficacy may not even attempt to initiate breastfeeding after giving birth. In contrast, highly efficacious individuals are more likely to initiate new behaviors and persevere in their attempts until mastery is achieved (Bandura, 1986). Therefore, adolescent mothers who possess high self-efficacy theoretically should initiate and continue to breastfeed.

*Self-efficacy reflects individuals' perceptions about their abilities and not necessarily their true abilities (Bandura, 1977). Self-efficacy expectancy is an individual's conviction that he or she can successfully perform certain tasks or behaviors in a given situation and outcome expectancy is an individual belief that a given behavior will lead to a given outcome (Bandura, 1977). This distinction is important because an individual may believe that a certain behavior could help him or her accomplish a specific goal but feel incapable of personally performing the given behavior in the*

particular situation. Therefore, an individual's belief in the outcome of the behavior, alone, does not result in performance unless the individual also believes that the behavior can be executed successfully (Dennis, 1999).

Breastfeeding self-efficacy theory was developed by Dennis (1999) incorporating Bandura's social cognitive theory. Breastfeeding self-efficacy refers to a mother's perceived ability to breastfeed her newborn, and is a salient variable in initiation and duration as it predicts whether a mother chooses to breastfeed or not, how much effort she will expend and whether she will have self-enhancing or self-defeating thought patterns. This theory also refers to how the mother will respond emotionally to breastfeeding difficulties. According to Dennis (1999), efficacious mothers are more likely to choose breastfeeding, persist when confronted with difficulties, employ self-encouraging thoughts and react positively to perceived difficulties with breastfeeding. It is important to identify that a mother may believe a behavior will assist them in initiating or continuing breastfeeding, but have no confidence in her own ability to execute that behavior. To be able to successfully initiate and continue breastfeeding, a mother must both believe she can breastfeed and have confidence in her ability to breastfeed.

Breastfeeding self-efficacy is influenced by four main sources of information (Dennis, 1999). These include performance accomplishments (past breastfeeding experiences), vicarious experiences (watching other women breastfeed), verbal persuasion (encouragement from influential others such as friends, family, and lactation consultants) and physiological responses (fatigue, stress, and anxiety). These sources of influence are the general elements of Bandura's Theory but some differences are evident. Bandura advocated a behavior-specific approach to self-efficacy, arguing that a measure

of general self-efficacy in overall ability would be inadequate for tapping an individual's efficacy in managing tasks associated with a specific behavior like breastfeeding. To test this theory, an instrument specific to the tasks associated with breastfeeding was used. By measuring specific breastfeeding behaviors and beliefs, breastfeeding self-efficacy can be quantified.

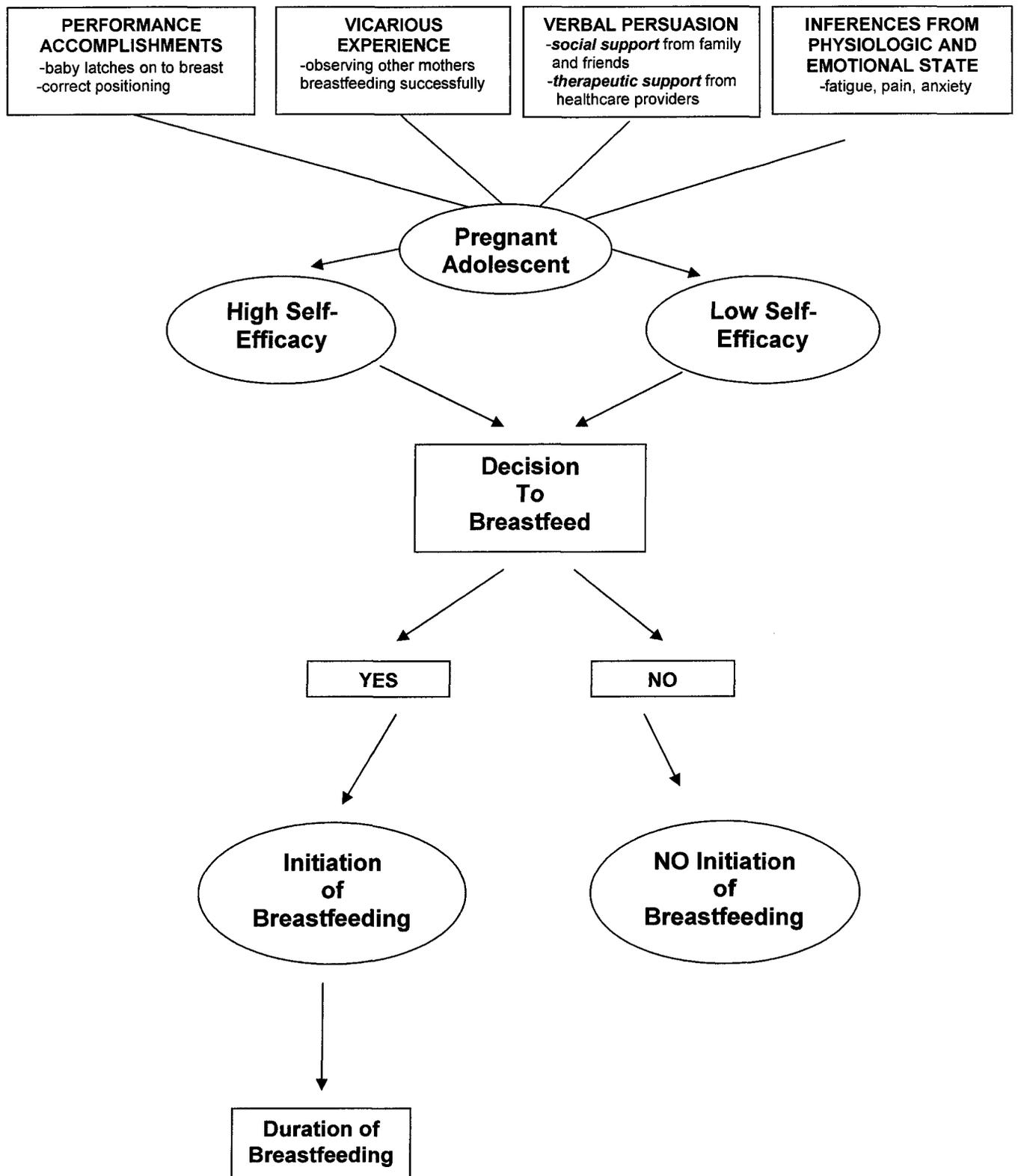


Figure 1. Breastfeeding Self-Efficacy Framework

In Bandura's theory, choosing, performing, and maintaining a behavior, individuals draw from four sources: 1) performance accomplishments, 2) vicarious experiences, 3) verbal persuasion and 4) inferences made from one's physiologic and or affective state (Bandura, 1977) (see Figure 1). Each of these sources is present when an adolescent mother decides, initiates, and continues breastfeeding. A mother determines her capability to breastfeed an infant based on whether she has observed successful breastfeeding by others and received encouragement from significant others to breastfeed. These significant others may include family, friends or healthcare providers. The support provided by these healthcare providers can be a significant factor in her decision, initiation and the duration of breastfeeding. Her current physical and mental state is also an important source of information through which she can evaluate her decision and ability to breastfeed.

### *Social Support*

Support for breastfeeding in the literature focuses on three major sources: family and significant others, peers, and professional or therapeutic support. Limited studies related to adolescent mothers and professional or therapeutic support exist, so an analysis of studies involving both adult and adolescent mothers as the sample will be discussed. Adolescent mothers receive support from various sources as they decide, initiate and continue to breastfeed. Social support can be from family and friends, health care professionals or peer counselors. For purposes of this discussion, social support was the support received from family, friends and peer counselors. Therapeutic or professional support was support received from healthcare professionals and was discussed following social support.

Researchers agree that when a woman has support, she is more likely to breastfeed longer, especially when that social support comes from her significant others (O'Campo et al. 1992; Wambach, 1997; Kessler et al. 1995). Furthermore, the significant others in the mothers life may vary from one culture to another. Biancuzzo (1999) identified that in African American mothers, the primary support person is often a friend or grandmother, while among Hispanics, significant support may come from the mother or mother-in-law. These individuals are the most influential related to the decision to initiate and continue breastfeeding (Biancuzzo, 1999).

#### *Therapeutic Support*

Therapeutic support for breastfeeding in the adolescent and adult mother is described most frequently in the literature as professional support. A meta-analysis by Sikorski et al. (2002) found professional support was beneficial for both exclusive breastfeeding and partial breastfeeding related to duration of breastfeeding. Adult and adolescent mothers were both included in the sample for this study but no definitive conclusions regarding adolescent mothers were made. Several studies have documented that mothers who receive appropriate prenatal counseling and support tend to breastfeed longer and report greater satisfaction than other mothers (Freed et al. 1995; Ryan et al. 1997 and Sciacca et al. 1995). Again, these studies identified populations that included adolescent and adult mothers. In a population of both adolescent and adult mothers, those mothers who did not receive support after delivery from healthcare professionals tended to cease breastfeeding around two weeks (Dennis, 1999).

In an inner city population consisting of both adult and adolescent mothers, Russell et al. (1999) concluded that use of obstetric personnel to provide breastfeeding counseling enhanced the effectiveness of breastfeeding initiation and duration.

Specifically, breastfeeding increased with the education and involvement of obstetric personnel. This finding was supported by the WIC Infant Feeding Practices Study (USDA, 1997). In this study, mothers in WIC who received advice from a professional source other than WIC were more likely to breastfeed and maintain breastfeeding longer than those who did not receive such advice and support.

## CHAPTER III

### *Methods*

#### *Purpose of the Study*

The purpose of this study was to examine the relationship between breastfeeding initiation and duration, self-efficacy, social support and therapeutic support in adolescent mothers. A secondary purpose was to be able to identify the strongest predictor of initiation and duration of breastfeeding among the variables of self-efficacy, social support and therapeutic support.

The specific hypotheses are:

H1: Higher prenatal levels of self-efficacy, social support and therapeutic support, will be significant predictors of breastfeeding initiation in adolescent mothers.

H2: Higher prenatal and one-week postpartum levels of self-efficacy, social support, and therapeutic support will be significant predictors of the number of days breastfeeding after delivery in adolescent mothers.

H3: Higher prenatal, one-week and one-month postpartum levels of self-efficacy, social support, therapeutic support, education level and age will be significant predictors of the number of days breastfeeding after delivery in adolescent mothers.

#### *Study Design*

A longitudinal design was used to examine the relationship of self-efficacy, social support and therapeutic support in predicting initiation and duration of breastfeeding in adolescent mothers. Three points (prenatal, one week postpartum, and one month postpartum) were used for data collection. This study will add to the empirical understanding of the factors related to initiation and duration rates of breastfeeding in

adolescent mothers, which can lead to further investigation regarding interventions aimed at increasing these rates in adolescent mothers.

### *Setting*

Pregnant adolescents were recruited from home health agencies, childbirth classes and a teen clinic in urban and suburban areas of a large Midwestern metropolitan area. Adolescents were recruited between 28 and 40 weeks gestation for this study.

### *Power Analysis*

Power analysis was completed using Power Calculator located on the University of California at Los Angeles' Department of Statistics website (UCLA, 2002). Correlation coefficient power calculations were based at the 0.05 level of significance with a moderate effect size (.45) and a power of .80. The total number of subjects recruited was to be 30. By increasing the sample size to 40, the power increased to .90. This increase will decrease the possibility of a Type II error.

The effect size was based on a study of adult primiparas where breastfeeding self-efficacy was measured (Dennis, 1999). Adults were used since no studies exist that measure breastfeeding self-efficacy in adolescents. The mean and standard deviation of the subjects in Dennis' study were 159.0 and 25.31, respectively.

### *Sample*

A convenience sample of 61 adolescent mothers who met inclusion criteria were entered into the study. Inclusion criteria were as follows: adolescent mothers between the ages of 13 and 18 who had a singleton pregnancy. Exclusion criteria included any mother who had a baby who developed complications prenatally or at the time of delivery.

### *Conceptual Definitions*

*Adolescent mother* is a female between the ages of 13 and 18 years of age who is pregnant with her first baby.

*Breastfeeding* is defined as any feeding in a 24 hour period when the baby is put to breast.

*Breastfeeding Self-efficacy* is the perceived ability to breastfeeding her baby.

*Social Support* is the quality of perceived support from others that the adolescent mother receives.

*Therapeutic Support* is the perceived support from a physician, nurse, lactation consultant, or midwife.

### *Operational Definitions*

*Breastfeeding Self-efficacy* was measured using the Breastfeeding Self-Efficacy Scale (BSES). This scale measures the mother's beliefs and behaviors specifically regarding breastfeeding.

*Social Support* was measured using the Hughes Breastfeeding Support Scale (HBSS). This scale measures the support the adolescent perceives for breastfeeding.

*Therapeutic Support* was measured using Hardin's Therapeutic Support Scale (HTSS). This instrument measures the perceived support from a physician, nurse, lactation consultant, or midwife.

### *Instrumentation*

#### *Characteristics of the Instruments*

##### *Breastfeeding Self-efficacy*

The Breastfeeding Self-Efficacy Scale (BSES) is a 33-item, self report instrument developed to measure breastfeeding confidence. All items are presented positively and

scores are summed to produce a range from 33 to 165, with a higher score indicating higher levels of breastfeeding self-efficacy or maternal confidence. This scale is a 5-point Likert-type scale (1 = “not at all confident” to 5 = “very confident”).

The reliability of the BSES was assessed by using Cronbach’s alpha, corrected item-total correlation coefficient and the alpha estimate when an item was dropped from the scale. The Cronbach’s alpha coefficient for the BSES was .96 (Dennis & Faux, 1999). Corrected item-total correlations were positive and 73% of the items were in the .30-.70 range. Blythe et al. (2002) administered the BSES antenatally, postnatally at 1 week and 4 months and found Cronbach’s alpha coefficients were .97, .96, and .96 respectively.

Construct validity for the BSES was assessed using three methods: factor analysis, comparison of contrasted groups, and correlations with measures of theoretically related constructs. Factor loadings ranged from .31 to .88 on all items. Construct validity was assessed via correlations with the Measures of Achievement Tendency Motivation (QMIDAT). The BSES was positively correlated with the QMIDAT ( $r = .35, p < .001$ ) (Dennis & Faux, 1999).

#### *Breastfeeding Social Support Scale*

Social support was measured using the Hughes Breastfeeding Support Scale (HBSS). The HBSS, a self-report measure of social support, uses a 4-point Likert-type scale (1 = “none at all” to 4 = “as much as I wanted”) to rate 30 items related to the three areas of social support (informational, emotional, and instrumental), each of which is equally represented. The total scale range is 30-120. Content and face validities of the HBSS have previously established (Hughes, 1984). Corrected split half reliability scores were 0.85 for emotional support, 0.85 for instrumental support, and 0.89 for

informational support (Hughes, 1984). These scores were based on 30 primipara women using the Spearman-Brown Prophecy Formula (Hughes, 1984). Internal consistency was demonstrated by Cronbach's alpha scores of 0.85 for emotional support, 0.88 for informational support and 0.83 for instrumental support (Hughes, 1984). A single item added to the scale to measure overall support correlated .60 ( $p < .001$ ) with the HBSS total score, providing evidence for convergent validity. Face validity was established by a panel of six experts who examined the tool during the preliminary pilot study.

#### *Therapeutic Support Scale*

Therapeutic support was measured using Hardin's Therapeutic Support Scale. This scale is designed to measure support received from health care providers. All items are scored on a 5-point Likert-type scale (1 = "not at all" to 5 = "extremely much". The range of possible scores is 16-80. There is no published data related to reliability and validity available on this instrument, so psychometric data from this study was reported.

#### *Procedure for Data Collection*

Permission to conduct the study was sought and received from the Institutional Review Board of the University of Missouri-St. Louis, Barnes-Jewish Hospital and Washington University. Nurses for Newborns and Friend of Moms provided verbal permission to conduct the study.

The pregnant adolescent who met criteria initially met with the principal investigator prenatally at home, childbirth class, or at the clinic to have the study explained. The adolescents' consent was obtained prior to any information being gathered. After the adolescent signed the consent form, the adolescent was given one demographic questionnaire, the BSES, the HBSS and the TSS (See Appendix 1). Each was given the questionnaires individually in a private area. Each adolescent was given the option of

having the questions read to her or completing the written questionnaires on her own. Each participant was given the opportunity to ask questions prior to, during and after the questionnaire administration.

After the adolescent mother gave birth and was discharged from the hospital, a phone call at one week postpartum was completed to record the incidence of breastfeeding among this population and to identify those adolescents who initiated breastfeeding. The demographic questionnaire, the BSES, the HBSS, and the TSS were given and answers were recorded. Those adolescent mothers who initiated breastfeeding and were breastfeeding at one week, were contacted again at one month. The demographic questionnaire, the BSES, HBSS and TSS were given at one month if the mother was still breastfeeding. After the adolescent completed the study she was mailed a \$10 gift certificate to a department store in recognition of her participation in the study.

#### *Data Analysis*

SPSS for windows version 11.0 was used for data analysis. Descriptive statistics were used to characterize the sample. Frequency and percent are reported for age and race and educational level. Mean, standard deviation and range were reported for each. Correlations were completed between scores of the BSES, HSSS and TSS. Hierarchical Multiple Regression was used to examine relationships between age, breastfeeding self-efficacy, social support, therapeutic support, and initiation and duration of breastfeeding.

Specifically, the following statistical analyses were completed for each hypothesis:

H1: Higher prenatal levels of self-efficacy, social support and therapeutic support, will be significant predictors of breastfeeding initiation in adolescent mothers.

Univariate analysis was used for data analysis. This method allows differentiation among groups. The two groups were the adolescent mothers who initiated breastfeeding and the adolescent mothers who did not initiate breastfeeding. Differences between these groups were analyzed in relation to self-efficacy scores, social support scores and therapeutic support scores.

H2: Higher prenatal and one-week postpartum levels of self-efficacy, social support, and therapeutic support will be significant predictors of the number of days breastfeeding after delivery in adolescent mothers.

Univariate analysis was used to differentiate among three groups. These groups were those who breastfed for one day, breastfed for one week and breastfed for one month. Differences between these groups were analyzed in relation to self-efficacy scores, social support scores and therapeutic support scores

H3: Higher prenatal, one-week and one-month postpartum levels of self-efficacy, social support, therapeutic support, education level and age will be significant predictors of the number of days breastfeeding after delivery in adolescent mothers.

Hierarchical regression was used to examine the effect of self-efficacy, social support and therapeutic support on both initiation and duration of breastfeeding.

Prenatal, one-week and one-month are the intervals that were used. The sequence of entering variables were: age, educational level, therapeutic support, social support, and then self-efficacy.

### *Sample Characteristics*

#### *Sample*

Table 1, 2 and 3 summarize the sample characteristics for all adolescent mothers participating in the study. There were a total of 61 subjects admitted to the study. These

mothers were obtained from the teen clinic at Barnes-Jewish Hospital and two home health agencies, Nurses for Newborns and Friend of Moms in St. Louis, Missouri between June 3, 2004 and April 30, 2005.

Of these adolescents, 16.4% (N = 10) were younger than 16 years of age and 83.5% (51) were age 16 or older. The range of ages was 14-18. The median age was 16 years of age.

Table 1.

Frequency and Percent for Age of Adolescent Mothers in Study of Breastfeeding Initiation and Duration

Age	Frequency	Percent
14	3	4.9
15	7	11.5
16	29	47.5
17	16	26.2
18	6	9.8

Table 2 identifies the race/ethnicity of the study population of adolescent mothers. Of these adolescents, 82% were African American (N = 50), 13.1% were Caucasian (N = 8), 3.3% were Hispanic (N = 2) and 1.6% were categorized as Other (N = 1).

Table 2.

Frequency and Percent for Race of Adolescent Mothers in Study of Breastfeeding Initiation and Duration

Race	n	%
African American	50	82.0
Hispanic	2	3.3
Caucasian	8	13.1
Other	1	1.6

Table 3 summarizes the education level of the adolescent mothers in this study. Of the subjects in this study, 4.9% (N = 3) had completed 12 years of school or completed high school. Only 8.2% (N = 5) had completed through the eighth grade.

Table 3.

Highest Grade Completed for Adolescent Mothers

Grade Level Completed	n	%
8	5	8.2
9	17	27.9
10	21	34.4
11	5	24.6

*Confidentiality*

Confidentiality was maintained for all data collected and analyzed. Subjects' names were not used on any questionnaires or databases. Code numbers were assigned. Demographic forms and questionnaires were separated from any identifying numbers. All databases are stored on a portable disc. The disc and paper questionnaires are stored in a locked storage cabinet in the possession of the principal investigator. No information was shared with any other individual. Data are reported as aggregate data only.

## CHAPTER IV

### *Results*

This chapter summarizes a longitudinal study investigating the relationship of self-efficacy, social support, and therapeutic support in predicting initiation and duration of breastfeeding in adolescent mothers. Secondly, this study attempts to identify the strongest predictor of duration of breastfeeding related to levels of self-efficacy, social support and therapeutic support. This study adds to the empirical understanding of the factors related to initiation and duration rates of breastfeeding in adolescent mothers, which can lead to further investigation regarding interventions aimed at increasing these rates in adolescent mothers.

Of the 61 adolescent subjects in this study, 53 initiated breastfeeding in the hospital. At one week after birth, 31 were still breastfeeding. At one month postpartum, 18 mothers continued to breastfeed. No subjects were contacted after one month postpartum.

#### *Results for Each Research Hypothesis*

The following section addresses each research hypothesis and the specific statistical analysis used.

##### *Hypothesis One*

Univariate analysis was conducted to address Hypothesis One: Higher prenatal levels of self-efficacy, social support and therapeutic support, will be significant predictors of breastfeeding initiation in adolescent mothers. Table 4 reports mean differences between those who did and did not initiate breastfeeding. These data evaluate the initiation of breastfeeding of those mothers who breastfed one day or more.

T-tests were used for those mothers who initiated breastfeeding by one day postpartum ( $N = 53$ ) and those who did not ( $N = 8$ ). No differences were found between those who did initiate breastfeeding and those who did not for any of the three variables, self-efficacy ( $t = .19$ ,  $df = 59$ ,  $p = .85$ ), social support ( $t = .76$ ,  $df = 57$ ,  $p = .45$ ), and therapeutic support ( $t = .63$ ,  $df = 59$ ,  $p = .53$ ).

Table 4.

Means and Standard Deviation for Self-Efficacy, Social Support and Therapeutic Support for Adolescent Mothers who Initiated Breastfeeding vs. Adolescent Mothers who did not Initiate Breastfeeding

	Initiated Breastfeeding N = 53		Did not Initiate Breastfeeding N = 8	
	<u>M</u>	<u>SD</u>	<u>M</u>	<u>SD</u>
Self-Efficacy	117.40	27.97	115.38	29.53
Social Support	96.03	17.94	90.75	19.61
Therapeutic Support	62.66	14.62	66.13	13.39

*Hypothesis Two*

An ANOVA Model was used to address Hypothesis Two: Higher prenatal and one-week postpartum levels of self-efficacy, social support, and therapeutic support will be significant predictors of the number of days breastfeeding after delivery in adolescent mothers. To examine whether differences in breastfeeding duration could be identified by assessment of prenatal self-efficacy, social support, and therapeutic support, an ANOVA model was tested for the four groups (Four groups = Did not breastfeed, breastfed one day, breastfed one week, breastfed one month). As indicated on Table 5,

none of the total scores for each variable were found to be significantly different for the subjects' duration of breastfeeding. Since no differences were found for any of the three variables, this suggests that overall breastfeeding duration could not be predicted from prenatal scores of self-efficacy, social support and therapeutic support and that prenatal assessment scores did not differ between subjects who initiated breastfeeding or continued for one week or one month.

Table 5.

Analyses of Variance for Effects of Self-Efficacy, Social Support and Therapeutic Support on Duration of Breastfeeding for Four Groups (Did not breastfeed, breastfed one day, breastfed one week, breastfed one month)

		Sum of Squares	df	Mean Square	F	Sig.
Total BSES (prenatal)						
Self-Efficacy	Between Groups	2501.793	3	833.931	1.073	.298
	Within Groups	44313.158	57	777.424		
	Total	46814.951	60			
Total Hughes BSS (prenatal)						
Social Support	Between Groups	659.782	3	219.927	.661	.580
	Within Groups	18312.726	55	332.959		
	Total	18972.508	58			
Total TSS (prenatal)						
Therapeutic Support	Between Groups	198.790	3	66.263	.308	.819
	Within Groups	12259.406	57	215.077		
	Total	12458.197	60			

To examine whether differences in breastfeeding duration could be identified by assessment of one-week scores for self-efficacy, social support, and therapeutic support, an ANOVA model was used for the three groups (Three groups = breastfed one day, breastfed one week, breastfed one month). As indicated on Table 6, no differences were

identified between the three groups of adolescent mothers who initiated breastfeeding regarding one-week scores and duration of breastfeeding.

Table 6.

Analyses of Variance for Effects of Self-Efficacy, Social Support and Therapeutic Support on Duration of Breastfeeding for Three Groups (Breastfed one day, breastfed one week, breastfed one month)

		Sum of Squares	df	Mean Square	F	Sig.
Total BSES (prenatal)						
Social Support	Between Groups	2473.396	2	1229.648	1.618	.208
	Within Groups	38209.283	50	764.186		
	Total	40682.679	52			
Total Hughes BSS (prenatal)						
Social Support	Between Groups	467.754	2	233.877	.719	.493
	Within Groups	15621.226	48	325.442		
	Total	16088.980	50			
Total TSS (prenatal)						
Therapeutic Support	Between Groups	115.355	2	57.678	.262	.771
	Within Groups	11004.531	50	220.091		
	Total	11119.887	52			

To evaluate Hypothesis Two and Three, hierarchical regression was calculated predicting number of days breastfeeding based on the adolescent's age, highest grade level completed, therapeutic support scores, social support scores and self efficacy scores. No significant predictors were identified in the prenatal scores for any of the variables, but self-efficacy was the closest to approach significance ( $df = 52, p > .05$ ) with an  $R^2$  of

.066. This occurred when the variable of age and highest grade level completed were excluded. When all variables were excluded except self-efficacy, the result was a  $R^2$  of .123. When completing hierarchical regression on on-week scores ( $N = 31$ ), no significant predictors were identified for self-efficacy, social support or therapeutic support.

Table 7.  
Hierarchical Regression Summary for Prenatal Scores Predicting Duration of Breastfeeding in Days ( $N = 61$ )

Variable	<u>B</u>	<u>SEB</u>	<u><math>\beta</math></u>	<u><math>R^2</math></u>	<u><math>\Delta R^2</math></u>
Step 1				.042	.042
Age	.686	1.948	.054		
Education	2.653	1.833	2.24		
Step 2				.074	.032
Therapeutic Support	.194	.144	.229		
Social Support	.105	.103	.155		
Step 3				.123	.049
Self-Efficacy	.115	.066	.262		

\* $p < .05$

Table 8.  
Hierarchical Regression Summary for One-Week Scores Predicting Duration of Breastfeeding in Days (N = 31)

Variable	B	SEB	$\beta$	$R^2$	$\Delta R^2$
Step 1				.042	.042
Age	1.058	1.453	.148		
Education	1.445	1.142	.258		
Step 2				.074	.032
Therapeutic Support	.172	.129	.235		
Social Support	.237	.161	.287		
Step 3				.123	.049
Self-Efficacy	.179	.131	.039		

\* $p < .05$

As a secondary analysis, Repeated Measures MANCOVA, was used to address Hypothesis Three: Higher prenatal, one-week and one-month postpartum levels of self-efficacy, social support, therapeutic support, education level and age will be significant predictors of the number of days breastfeeding after delivery in adolescent mothers. One-month scores were unable to be computed due to the small sample size (N = 18).

To examine the interaction of breastfeeding duration on the three psycho-social constructs measured by the BSES, HBSS and the TSS, repeated measures MANOVA was conducted. Results indicate that there was a significant increase in these dependent measures across time suggesting that for those eighteen mothers that continued to

breastfeed for one month, their perception of self-efficacy, social support, and therapeutic support increased ( $F(3,15) = 7.64, p < .01$ ).

Table 9.

Results of Duration vs. Self-Efficacy, Social Support, and Therapeutic Support

	df	F	Sig.
Self-Efficacy	2	30.757	.000
Social Support	2	30.026	.000
Therapeutic Support	2	8.874	.001

As indicated by Table 9, univariate tests indicated that each of the measures increased across the three time periods (prenatal, one-week, one-month) and this trend was significant at a .01 level. An examination of the mean plots below further illustrates the positive correlation and linear trend of increasing scores across duration of breastfeeding for all constructs measured. Figure 2 illustrates the increase of self-efficacy over the three time periods. Figure 3 illustrates the increase of social support over time and Figure 4 illustrates the increase of therapeutic support over time.

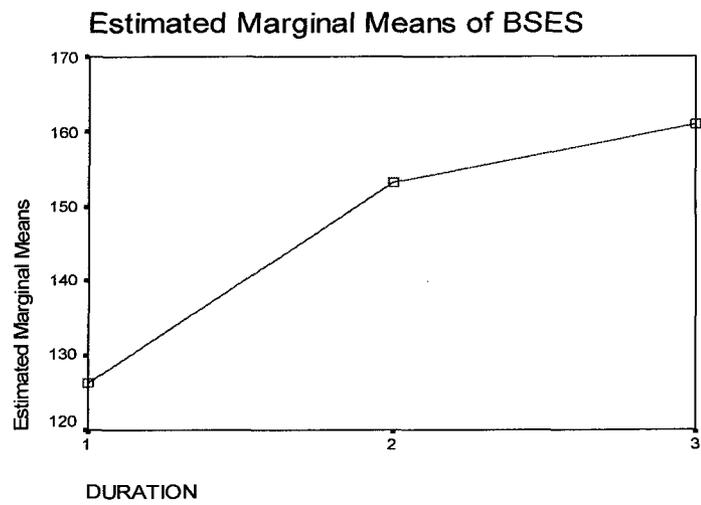


Figure 2. Self-Efficacy Mean Scores Prenatally, One-Week and One-Month

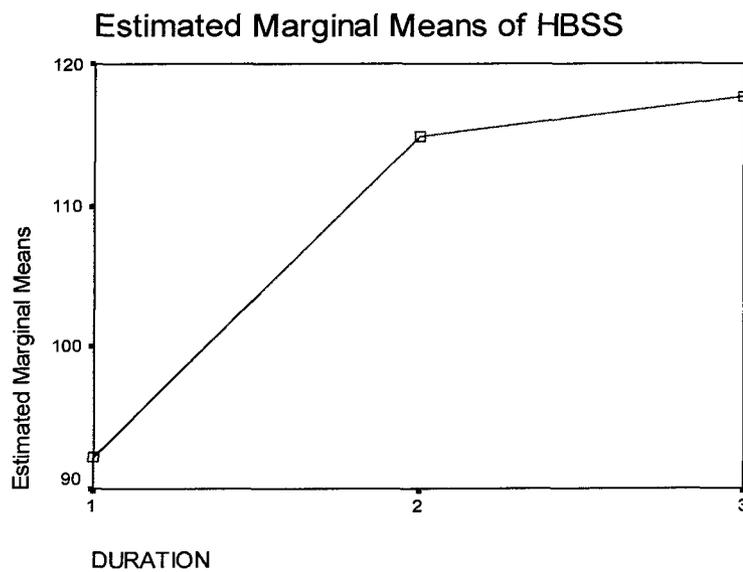


Figure 3. Social Support Mean Scores Prenatally, One-Week, One-Month

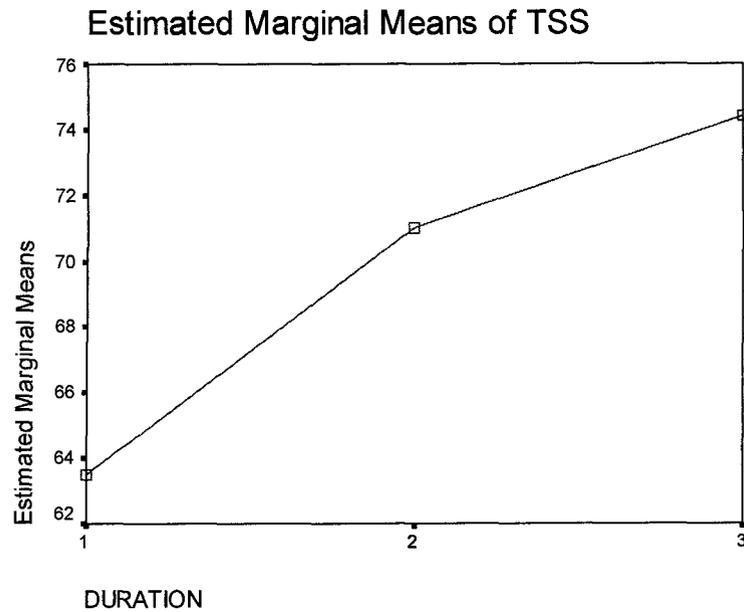


Figure 4. Therapeutic Support Mean Scores Prenatally, One-Week, One-Month

Self-efficacy, social support, and therapeutic support scores increased significantly between prenatal and one-week postpartum. Only self-efficacy significantly increased between one week and one-month postpartum time periods.

Published psychometric data was only available on two of the three instruments, so reliability statistics were analyzed on all three instruments. To examine the internal consistency and reliability of each the three instruments, Cronbachs' alpha were computed. All instruments had high internal consistency suggesting that each reliably measured a single construct. Table 10 summarizes the significance of each instrument: Breastfeeding Self-Efficacy Scale (BSES), Hughes Breastfeeding Support Scale (HBSS), Therapeutic Support Scale (TSS).

Table 10.

Reliability of Study Instruments


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Instrument	No. of Items	Cronbach's Alpha
BSES	33	.974
HBSS	30	.966
TSS	16	.964

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*Summary*

There were 61 pregnant adolescent mothers who participated in this study. Of these mothers, 53 began breastfeeding in the hospital. At one week, 31 continued to breastfeed, and at one month, 18 mothers continued to breastfeed. Descriptive statistics were used to identify characteristics of the study population with regards to age and educational level.

Prenatal levels of self-efficacy, social support and therapeutic support were examined using univariate analysis to identify differences between the adolescent mothers who initiated breastfeeding and those who did not initiate. No differences were found between these two groups in relation to their scores of self-efficacy, social support or therapeutic support but self-efficacy was the closest to significance.

An ANOVA model was used to address differences in breastfeeding duration and prenatal and one-week scores of self-efficacy, social support, and therapeutic support. To examine the prenatal scores of the subjects, they were divided into four groups (did not initiate breastfeeding, breastfed one day, breastfed one week, breastfed one month).

Analysis showed that none of the prenatal scores were predictive of duration of breastfeeding. To examine the scores of one-week postpartum, the mothers were divided into three groups (breastfed one day, breastfed one week, breastfed one month). No differences were identified between the three groups of adolescent mothers who initiated breastfeeding, indicating that these scores are not predictive of duration of breastfeeding.

Hierarchical regression was calculated to identify predictors of duration of breastfeeding. No significant predictors were identified but self-efficacy was the closest to approach significance. When all variables except self-efficacy were excluded, significance was even stronger.

As a secondary analysis of the data, repeated measures MANCOVA was conducted to examine the interaction of duration on self-efficacy, social support, and therapeutic support over time. The results indicated that for those eighteen mothers who continued breastfeeding for one-month after delivery, scores of all three constructs significantly increased. Finally, to examine the internal consistency and reliability of each the three instruments, Cronbachs' alpha were computed. All instruments had high internal consistency.

## Chapter V

### *Discussion*

#### *Summary of the Problem*

Breastfeeding possesses nutritional, infection protection, immunologic protection, allergy prophylaxis, psychological and cognitive qualities which makes it the preferred type of feeding. Despite these well documented advantages, most adolescent mothers do not initiate breastfeeding. If they do begin to breastfeed, they usually wean before one month. Factors related to the decision and initiation of breastfeeding as a method of infant feeding has been well documented. The research related to duration has been less well studied. Both initiation and duration need to be studied from the perspective of a theoretical framework that helps to explain the reasons why an adolescent begins to breastfeed and then why she continues. No studies were found to indicate the reasons or predictors of initiation and continuation of breastfeeding in the adolescent mother and no studies were found to have examined both of these factors based on a theoretical framework. Only published literature was searched. No theses or dissertations were used.

The primary strength of this investigation is its focus on closing the gap in knowledge about breastfeeding adolescent mothers and self-efficacy. Even though self-efficacy did not reach significance, it was the strongest predictor of breastfeeding initiation and duration that has been studied in the adolescent population thus far. Prior research focused on reasons adolescent mothers' ceased breastfeeding but no studies have focused on the adolescent mother and self-efficacy predicting who will initiate and who will continue breastfeeding.

Another strength of this study is the finding that self-efficacy, social support and therapeutic all increased for those breastfeeding mothers who continue breastfeeding. One aspect of Bandura's theory of Self-Efficacy identifies that performance accomplishments are essential in increasing self-efficacy. So adolescent mothers who breastfeed would have increasingly higher self-efficacy the longer they are successful at breastfeeding.

This study is the first step in the exploration of self-efficacy as it applies to adolescents who breastfeed. The findings from this study are the basis for further investigation related to adolescent mothers and the factors that can prolong breastfeeding with this population. Intervention research can follow to examine which interventions will assist these mothers to have higher self-efficacy regarding breastfeeding.

There were limitations to this investigation. First, it was assumed that rates of the breastfeeding adolescent mothers would be similar to that of the greater population. Indeed, the rate of breastfeeding in this population was much greater than the national published rate. Because our rates of breastfeeding initiation were higher, perhaps some other influences helped the adolescent mother to initiate and continue breastfeeding. Next, because of the setting for data collection, the sample size was very homogeneous. The data collection sites were urban and suburban and most were African American. No rural areas were accessed. Thirdly, the adolescents who declined to participate in the study may have been the subjects with the lower self-efficacy scores if able to be recruited. Without the ability to admit these adolescents to the study, we were not able to know if they were simply refusing because of having low self-efficacy or for another reason.

Lastly, the sample size of this study could have been larger so the one month sample could have been analyzed. Since the power analysis was conducted and estimated only 30 as the sample size, and it was increase to 61, the sample size was satisfied. One problem with the adolescent population is the number of available adolescents to recruit. This becomes problematic but for future studies, it is suggested to obtain a larger sample size to increase the validity of the study.

#### *Summary of the Purpose*

The purpose of this study was to examine the relationship between breastfeeding initiation and duration, self-efficacy, social support and therapeutic support in adolescent mothers. This was done by identifying differences in the population and scores on three instruments that measured the constructs of self-efficacy, social support and therapeutic support. In addition, self-efficacy, social support and therapeutic support have been examined for their predictability of duration of breastfeeding in adolescent mothers. Adult mothers have been identified in the literature as possessing breastfeeding self-efficacy and therefore feeling more confident to initiate and continue to breastfeed. This study identifies that self-efficacy may also be the predictor of initiation and duration of breastfeeding in adolescent mothers.

#### *Discussion of Results*

##### *Initiation of Breastfeeding*

An examination of hypothesis One: Higher prenatal levels of self-efficacy, social support and therapeutic support, will be significant predictors of breastfeeding initiation in adolescent mothers. The univariate analysis conducted did not identify any differences in those adolescent mothers who did and did not initiate breastfeeding with regards to self-efficacy, social support or therapeutic support.

Possible explanations for this finding may include the following. First, adolescent mothers initiate breastfeeding for a variety of reasons, including positive attitudes about breastfeeding (Wiemann et al. 1998), perception of the benefits of breastfeeding (Hannon, 2000), and education and marital status (Park et al. 2003). The adolescent mothers in this study may not have had positive attitudes regarding breastfeeding, even though they probably received education about breastfeeding. Attitudes of adolescents in general regarding breastfeeding are documented as negative feelings. As described by Lizarraga et al. (1992) breastfeeding adolescents who had a positive attitude regarding breastfeeding intended to breastfeed more often, and Lawson and Tulloch (1995) found that these mothers initiated breastfeeding more often.

Secondly, adolescent mothers have three major influences on their initiation of breastfeeding. Hannon et al. (2000) identified that these influences included the adolescents' perception of the benefits of breastfeeding, their perceptions of the problems with breastfeeding and the influential people in their lives who promote and mitigate many of these factors, in other words, their social support system. The adolescents in this study may have heard about the benefits of breastfeeding but due to their educational level, some of these adolescents may not have completely been able to fully understand the benefits to her and her baby. If the adolescent did not fully understand, this may have been one reason why she did not initiate breastfeeding.

Thirdly, marital status and education have an influence regarding initiation of breastfeeding. None of the adolescents in this study were married. The median age was sixteen and the median grade level completed in school was the 10<sup>th</sup> grade. Many studies identify that being married and having higher education positively influenced initiation

and duration of breastfeeding (Callan & Pinelli, 2004; Lizarraga et al. 1992; Sikorski et al. 2002).

The social support of the adolescent mothers in this study was evident but the type and amount of social support regarding breastfeeding may not have been enough for the adolescent to help her decide to initiate breastfeeding. An exploration of the adolescent's support system was not conducted in this study. We know that Biancuzzo (1999) found that African American women often had a friend or grandmother as the primary support person. Most of the adolescents in this study were African American and they may not have had a friend or grandmother as support or may just have had a person who was not as supportive as needed to influence her decision to initiate breastfeeding.

Support that was received from the health care professionals did not greatly influence the initiation rate of breastfeeding in these adolescent mothers in this study. Although many studies identified adult and adolescent populations (Sikorski, 2002; Russell et al. 1999; Ryan et al. 1991), no studies specifically examined the therapeutic support from professionals with strictly an adolescent population regarding breastfeeding. All of the adolescents in this study were seeing a health care provider but some may not have asked questions regarding breastfeeding because they were "embarrassed" to discuss the subject. Due to their developmental level, they may not have been comfortable bringing up the subject of breastfeeding if their health care professional did not. The adolescents in this study had midwives, physicians and nurses who were care providers during pregnancy.

#### *Duration of Breastfeeding*

Duration of breastfeeding in this study was difficult to compare to national averages and published research. National averages are reported at six months. The

national average of mothers of all ages who are still breastfeeding at six months is 36%. For adolescent mothers the national average at six months is 19.5%. In this study, the rate of breastfeeding at one month was 30% of the study population of 61. Comparisons are difficult when using the national statistics but easier when looking at published studies. For example, in 1995, 9.1% of mothers younger than 20 years continued to breastfeed to six months, whereas 15-34% of mothers from all other age groups continued for six months (Ryan, 1997). In this study, 30% of the adolescents were still breastfeeding at one month, so we can assume that this would decrease by six months and probably be less than 19.5%.

When examining the construct of self-efficacy and duration in this study, although self-efficacy did approach significance, self-efficacy scores were not significant in predicting the days of breastfeeding duration. Factors that could explain this finding include the fact that self-efficacy may be present but other influences interfered with the ability of the adolescent to continue breastfeeding. These factors are well documented in the published literature and include change in the support person (Hannon, 2000; Arlotti et al. 1998), nipple pain (Benson, 1996), perception of insufficient milk supply (Neifert et al. 1988b), modesty or embarrassment (Neifert et al. 1988b), and returning to work or school (Hannon et al. 2000).

Intervening circumstances can assist these mothers before they discontinue breastfeeding. In this study, no advice was given to the adolescents on follow-up phone calls but many expressed reasons why they stopped breastfeeding. Some of these problems could have been helped with the assistance of a health care professional. Lu et al. (2003) examined the influence on provider encouragement and involvement, and found that the provider significantly increased both initiation and duration of

breastfeeding. These professionals can help the adolescent mother to increase her self-efficacy by encouraging and empowering the adolescent mother in regards to her ability to care for and nourish her infant. This increase in self-efficacy can be the driving force to continue breastfeeding.

Social support was not found in this study to be significant as a predictor of duration of breastfeeding. Although it is well documented that social support is important in both the decision to breastfeed and the initiation, it is almost essential in the continuation of breastfeeding. Most adolescents need some social support to continue any task, especially when it is new. Some studies identified the infant's father as the most important person to encourage the mother to continue (Robinson et al. 1993), other more recent studies identify the adolescent's mother as being the most influential (Wambach & Cole, 2000). Possible reasons that social support was not a predictor of duration in this study could be the sources of these adolescent's support. This support came from a variety of sources, and possibly, they were just not good support systems. Some of these adolescent mothers were not living at home, so their primary support probably was not their mother. Since the literature states that the adolescents' mother is the most influential, these adolescents may not have the most ideal support person and therefore, did not receive adequate support to continue breastfeeding.

Follow-up support for breastfeeding from health care professionals is lacking in our health care system. In this study, therapeutic scores were not predictive of the number of days that the adolescent breastfed. The literature states that support from health care professionals is the most helpful support in the postpartum period, especially if it is in-home care (Morrow et al. 1999). Only five of the adolescents in this study had professional support after discharge from the hospital. These received one home health

visit within the first week at home. By having some kind consistent continuing support from a lactation consultant or nurse, even by phone, may have assisted these adolescent mothers enough so that they could have continued breastfeeding.

### *Implications for Theory*

The theoretical framework that guided this study helped to explain the phenomenon of self-efficacy of adolescent mothers regarding their ability to breastfeed their baby. The theory explains that social support is needed for the adolescent to initiate and continue breastfeeding and the more she believes that she can complete the task, the longer she will breastfeed. This framework also organizes the prediction of which adolescent mothers will breastfeed and which mothers need more specific intervention to *decide to initiate breastfeeding*

Repeated measures MANCOVA identified that the three constructs of self-efficacy, social support and therapeutic support all increased over time for those adolescents who continued breastfeeding. This is evident in the theoretical framework from Bandura in that the more of the sources that are present, the more the pregnant adolescent can increase her self-efficacy. If the adolescent has more experience with performance accomplishments, like correct positioning her baby and achieving proper latch-on, the more empowered she becomes to be able to perform that task. Then, the higher her self-efficacy will be.

Likewise with the construct of social support, the more social support that the breastfeeding adolescent mother receives, the more empowered she will become. She will perceive herself as supported for the acts she is doing for her baby, like breastfeeding. The more social support she receives, the more she will perceive that she is receiving. This support usually comes in the form of verbal persuasion when relating

self-efficacy theory to breastfeeding. The same components can be applied to therapeutic support from health care providers. The more verbal support the adolescent receives, the more likely she is to believe that she can accomplish the task of breastfeeding.

#### *Implications for Nursing Science*

##### *Healthy People 2010: National Health Promotion and Disease Prevention*

*Objectives* (U.S. Department of Health and Human Services, 1990) described national objectives which included breastfeeding rates for all women. The aim of this initiative was that 75% of women would initially breastfeed and that 50% would continue to breastfeed their infants for six months. Currently, only 69% of infants born in U.S. hospitals receive breast milk while in the hospital and only 36% receive breast milk at age 6 months (U.S. DHHS, National Immunization Study, 2003). The rates of initiation and duration of breastfeeding in the adolescent population fall well below that of mothers who are beyond their teen years (Wambach & Cole, 2000). In 2003, only 54% initiate breastfeeding and 15% were still breastfeeding at age 6 months (U.S. DHHS, National Immunization Study).

Breastfeeding is a national health nursing concern because it directly influences the infant mortality rates, especially in the preterm infant. National initiatives are in place to increase the breastfeeding rates, especially in racial minorities, including African Americans, who have the lowest rates of all ethnic groups. By investigating ways to increase breastfeeding in this adolescent population, national initiatives rates for breastfeeding are closer to being met.

#### *Implications for Nursing Practice*

This study identifies that breastfeeding self-efficacy may be one of the ways to identify which adolescents are more likely to initiate and continue to breastfeed.

Although the conclusion from this study is that breastfeeding self-efficacy does not predict how long a mother will breastfeed, it may be significant with a larger sample of adolescent mothers. Since the results of this study regarding self-efficacy approach significance, the larger sample size may prove significant. This information does give the nursing profession some information to continue research in this area. By distinguishing the self-efficacious from the non self-efficacious adolescent mother, initiatives can be put in to place that address the specific deficiencies. Interventions specifically directed at younger adolescent mothers can assist to increase the self-efficacy of these mothers and thus increase the breastfeeding rates.

It is essential that nurses, lactation consultants, nurse practitioners and other health care professionals provide education and support for adolescent mother regarding breastfeeding. The American Academy of Pediatrics recommends that all babies breastfeed for one full year and nurses need to continue to be vigilant in assuring that we target those populations that will benefit most from nursing interventions related to breastfeeding.

This study also identifies that all three constructs studied increase over time for the adolescent mother who continues breastfeeding. When the mother does initiate and continue breastfeeding, the mother's perception of self-efficacy, social support and therapeutic support all increase over time. This information may give us some very important points to further research and intervention programs. Continuing to follow these mothers in the postpartum period is essential in providing comprehensive care of these young breastfeeding mothers.

*Implications for Future Research*

This investigation is the first to examine adolescents' self-efficacy, social support and therapeutic support levels as they continue to breastfeed. This information provides researchers information about breastfeeding mothers who might be able to be applied to the adolescent mothers at risk for discontinuing breastfeeding. In the future, studies should focus on examining comparison groups of adolescents who continue breastfeeding and those who do not continue breastfeeding. By targeting the group who continues, we may be able to distinguish characteristics that are similar and those that are different. Investigators can then identify interventions that target that group of adolescent mothers who need the most assistance to continue breastfeeding. Longitudinal studies would be needed to validate any findings.

Refinement in methodology of studies related to adolescents and breastfeeding could allow for more sophisticated statistical examination of data if subjects were larger in number and more heterogeneous. Due to recruitment strategies, the subjects in this group were mostly African American and 15-17 years of age and urban-dwelling. Thus, little is known about younger, white, rural adolescent mothers.

Recommendations for future studies include a more diverse adolescent population with a longitudinal design of six months or longer. Examining the sources of support and role modeling may prove to be a substantive avenue to explain the sources of self-efficacy in the adolescent. Examining the strength of self-efficacy, social support and therapeutic support over time would be valuable to be able to understand which variable gets stronger over time.

*Summary*

The findings presented in this study are new information concerning adolescent mothers. Since no studies were found that studied the breastfeeding adolescent mother and the constructs of self-efficacy, social support and therapeutic support separately, it is important to have a study that examines these. Although significance was not obtained when examining self-efficacy, it approached significance. It is possible that with a larger sample size of adolescent mothers who continue breastfeeding, significance could have been reached.

The findings of increased scores of self-efficacy, social support and therapeutic support in the population of breastfeeding adolescent mothers are significant. Knowing that these constructs increased over time for these mothers can give a better understanding of what these mothers experience. By understanding that the perception that self-efficacy, social support and therapeutic support increase over time can give us some information about why these mothers continue to breastfeed.

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## Appendix 1



## OFFICE OF RESEARCH ADMINISTRATION

### Interdepartmental Correspondence

Name: Deborah Birk

Title: Self-Efficacy, Social Support, Therapeutic Support and the Initiation and Duration of Breastfeeding in Adolescent Mothers

The chairperson of the Human Subjects Committee for UM-St. Louis has reviewed the above mentioned protocol for research involving human subjects and determined that the project qualifies for expedited review under Title 45 Code of Federal Regulations Part 46.110b. The time period for this approval expires one year from the date listed below. You must notify the Human Subjects Committee in advance of any proposed major changes in your approved protocol, e.g., addition of research sites or research instruments.

You must file an annual report with the committee. This report must indicate the starting date of the project and the number of subjects to date from start of project, or since last annual report, whichever is more recent.

Any consent or assent forms, must be signed in duplicate and a copy provided to the subject. The principal investigator must retain the other copy of the signed consent form for at least three years following the completion of the research activity and they must be available for inspection if there is an official review of the UM-St. Louis human subjects research proceedings by the U.S. Department of Health and Human Services Office for Protection from Research Risks.

This action is officially recorded in the minutes of the committee.

Protocol Number <b>040603B</b>	Date 6-9-04	Signature - Chair 
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## Appendix 2

# Barnes-Jewish Hospital

One Barnes-Jewish Hospital Plaza  
St. Louis, Missouri 63110-1092

**BJC** HealthCare<sup>SM</sup>

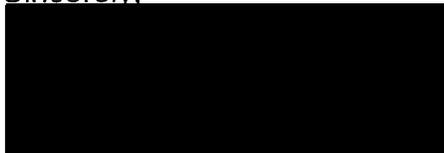
May 12, 2004

Pat Scannell  
Administrator  
Human Studies Committee  
Washington University  


Dear Ms. Scannell:

The study "Self-Efficacy, Social Support, Therapeutic Support Initiation and Duration of Breastfeeding in Adolescent Mothers" has undergone scientific review by members of the Nursing Research committee for Barnes-Jewish Hospital. The study has been approved for human studies committee review. The principal investigator, Ms Deborah Birk has notified appropriate administrators/managers, approving access to the designated patient population. Should the human studies committee members have further questions, please contact the nursing research office at .

Sincerely,

  
Patricia Potter RN, PhD, FAAN  
Research Scientist  
Barnes-Jewish Hospital

### Appendix 3



Human Studies Committee (HSC)

Campus Box 8089  
660 S. Euclid Ave.  
St. Louis, MO 63110-1093  
Office: (314) 633-7400  
FAX: (314) 367-3041

June 2, 2004

Deborah Birk, MSN, RNC  
BJC Nursing  
Box

**RE:** 04-0503

Self-Efficacy, Social Support, Therapeutic Support and the Initiation and duration of Breastfeeding in Adolescent Mothers.

Dear Ms. Birk:

The above-stated protocol was reviewed and approved by the Washington University Medical Center (WUMC) Human Studies Committee (HSC). Following please find specifics of the approval:

Approval Date:	6/2/2004
Date released for subject accrual:	6/2/2004
Expiration Date:	6/2/2005
Research Risk Level:	Minimal
Type of Review:	New ( Expedited )
Reviewing Committee:	07 N E/E
HIPAA Compliance:	Compliant with Authorization

A subcommittee of WUSM HSC members have been designated by the HSC Chair to review all submissions that meet the criteria for "Expedited" review. All actions and recommendations of the subcommittees are reported to a full board committee in accordance with regulatory requirements for "Expedited" review.

The WUMC HSC complies with the regulations outlined in 45 CFR 46, 45 CFR 164, 21 CFR 50, 21 CFR 56, and Section 3 of International Council on Harmonization Guidelines. The OHRP Federal Wide Assurance numbers for WUSM, BJH, and SLCH are FWA00002284, FWA00002281, and FWA00002282 (respectively).

If further information is necessary, please contact the HSC office at 

BJC Health System  
Barnes-Jewish Hospital  
St. Louis Children's Hospital  
Washington University  
School of Medicine

  
Philip Ludbrook, M.D.  
Associate Dean and Chair

CC:

## Appendix 4



**INFORMED CONSENT TO PARTICIPATE IN A RESEARCH STUDY**

Participant \_\_\_\_\_ HSC Approval Number 04-0503

Principal Investigator Birk Deborah RNC, MSN, PhD(c) PI's Phone Number [REDACTED]  
Last First Credentials

Title of Project: Self-Efficacy, Social Support, Therapeutic Support and the Initiation and Duration of Breastfeeding in Adolescent Mothers

You are invited to take part in a research study by Deborah Birk, RN, MSN, PhD(c) and/or colleagues.

Please ask for an explanation of any words you do not understand.

If you do not need treatment right now, you can take home an unsigned copy of this form. It will help you talk about the study with your family or friends before you decide to be in it.

1. **Why Is This Study Being Done?** This study is being done to help understand your feelings about breastfeeding and to find out why some teenage mothers breastfeed and some do not. It is also being done to find out what things may help or discourage a teenage mother from breastfeeding.

2. **What Am I Being Asked To Do?** Answer questions about breastfeeding; one time before and two times after delivery. Before delivery, you will meet with the researcher and complete the questionnaires. Then, after you deliver, the researcher will call you on the phone to complete the questionnaires. Each time you complete the set of questionnaires, it will take approximately 20-30 minutes.

**How Long Will I Be In The Study?** You will be in the study from the time you sign the consent form until one month after your baby is born.

3. **What Are The Costs?** There are no costs to you for being in the study.

4. **What Are The Risks?** You may feel embarrassed when answering the questions about breastfeeding. Some of the questions in the questionnaires may make you uncomfortable. If this happens, please talk to the trained interviewer. You may choose not to answer any question that makes you feel uncomfortable.

5. **Are There Benefits To Taking Part in the Study?** You may learn some new information about breastfeeding. Nurses and doctors may learn more about how to help pregnant teen mothers who are deciding whether they are going to breastfeed or not. This will help us give better care to pregnant teens and help the teens to make healthy choices about feeding their baby.

6. **What Other Options Are There?** Taking part in this research study is voluntary. You may choose not to take part in this research study or you may withdraw your consent at any time. Your choice will not at any time affect the commitment of your health care providers to administer care. There will be no penalty or loss

of benefits to which you are otherwise entitled. Other than not taking part in the research, you may decide to stop at any time during the study.

## 7. What About Confidentiality?

Protected Health Information (PHI) is health information that identifies you. PHI is protected by federal law under HIPAA (the Health Insurance Portability and Accountability Act). To take part in this research, you must give the research team permission to use and share your PHI for the study explained in this consent form.

**In addition to health information that may be created by the study, the research team may access the following sources of your health information to conduct the study:** Your medical record or chart and the delivery log book in Labor and Delivery.

### The research team may share your information with:

- Government representatives, to complete federal or state responsibilities
- Hospital or University representatives, to complete Hospital or University responsibilities
- Your primary care physician if a medical condition that needs urgent attention is discovered

Once your health information is shared with someone outside of the research team, it may no longer be protected by HIPAA.

The research team will only use and share your information as talked about in this form. They will also follow state and federal laws. When possible, they will make sure your information cannot be linked to you.

### Your participation in this study is voluntary. If you decide not to sign this form, it will not affect

- your treatment or the care given by your health provider.
- your insurance payment or enrollment in any health plans.
- any benefits to which you are entitled.

However, it will not be possible for you to take part in the study.

### If you sign this form:

- Your signature and this form will remain in force as long as you wish to participate.
- You may later change your mind and not let the research team use or share your information (revoke your authorization).
  - To revoke your authorization, complete the withdrawal letter, found at <http://medicine.wustl.edu/~hsc/hipaa/>, or you may request that the Investigator send you a copy of the letter.
  - **If you revoke your authorization:**
    - The research team may only use and share information already collected for the study.
    - Your information may still be used and shared if necessary for safety reasons.
    - You will not be allowed to continue to participate in the study.

Do you already have contact restrictions in place with WUMC?

Yes No

(Example – no calls at home, no messages left for you, etc.)

Please specify any contact restrictions you want to request for this study only.

## 8. Who Do I Call If I Have Questions or Problems?

If you have any questions or concerns about the study, call Deborah Birk at [redacted] You may also ask questions or state concerns about your rights as a research subject, or express any feelings of pressure to participate to Dr. Philip Ludbrook, Chairman of the University's Human Studies Committee, at [redacted] or [redacted]. If you have questions or concerns about your privacy and the use of your PHI, please contact Joan Podleski, the University's Privacy Officer, at [redacted].

- 9. Washington University investigators and their staffs will try to reduce, control, and treat any complications from this research. If you feel that you are injured because of the study, please contact the Investigator and/or the Human Studies Committee Chairman from Item 8. Decisions about payment for medical treatment for injuries relating to your participation in research will be made by Washington University.
- 10. Ms. Birk may ask you to not be in the study after you have started. For example, if you deliver early or have any pregnancy problems. The researcher will give you any new information that could change how you feel about continuing in the study.
- 11. This research is not meant to diagnose or treat medical problems not stated in this consent form. Being in a research study does not take the place of routine physical exams or visits to your own doctor.
- 12. At the end of this study, you will be given a gift card to a department store.

**I have read this consent form and have been given the chance to ask questions. I will also be given a signed copy of this consent form for my records. I authorize the use of my PHI and give my permission to participate in the research described above, titled: Self-Efficacy, Social Support, Therapeutic Support and the Initiation and Duration of Breastfeeding in Adolescent Mothers**

Participant's Signature or Legally Authorized Representative \_\_\_\_\_ Date \_\_\_\_\_  
*The HSC does not require participants to re-sign the consent form unless a significant change is made; the investigator, however, may choose to have participants sign annually.*

Signature of person providing Informed Consent \_\_\_\_\_ Date \_\_\_\_\_  
*(If designee, see guideline Who May Obtain Consent)*

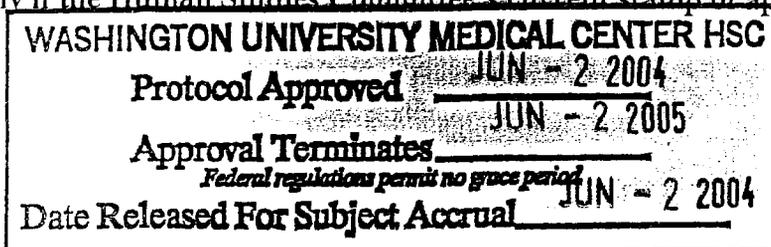
Relationship to Participant \_\_\_\_\_

*Thank you for your important contribution to research studies that are trying to improve medical care.*

The Notice of Privacy Practices is a separate document. It describes the procedures used by WUMC to protect your information. If you have not already received the Notice of Privacy Practices, the research team will make one available to you.

\_\_\_\_\_ I have been offered a copy of the Notice of Privacy Practices.  
Initial

This form is valid only if the Human Studies Committee's current stamp of approval is shown below.



## Appendix 5

Survey # \_\_\_\_\_

**DEMOGRAPHIC QUESTIONNAIRE  
(Prenatal)**

Home phone number \_\_\_\_\_ Other phone \_\_\_\_\_

Birth Date \_\_\_\_\_

Age \_\_\_\_\_

Ethnic origin: **(Circle one, fill in if "other")**

African American

Hispanic

Asian

Caucasian

Other: \_\_\_\_\_

Highest grade completed \_\_\_\_\_

**Answer the following:**

Are you planning to breastfeed your baby?      Yes      No

Do you know someone who has breastfed?      Yes      No

Who was this? \_\_\_\_\_

Who do you live with?      **Circle all that apply.**

Mother      Father      Brothers      Sisters      Friend      Boyfriend

Aunt      Grandmother      Grandfather      Boyfriend's Parents

Other: \_\_\_\_\_

Survey # \_\_\_\_\_

**DEMOGRAPHIC QUESTIONNAIRE**  
**Postpartum (1 week)**

Home phone number \_\_\_\_\_ Other phone \_\_\_\_\_

Birth Date \_\_\_\_\_

Age \_\_\_\_\_

**Answer the following:**

*Did you start breastfeeding after delivery?*                      Yes                      No

**If no**, end questionnaire and thank her for her participation. **If yes**, continue

*Are you still breastfeeding your baby?*                      Yes                      No

**If no**, when did you stop  
breastfeeding? \_\_\_\_\_

**If no**, what was the main reason you stopped  
breastfeeding? \_\_\_\_\_

**If yes**, are you having any problems breastfeeding?                      Yes                      No

**If yes**, what problems are you  
having? \_\_\_\_\_

Who is helping you most with breastfeeding? \_\_\_\_\_

Who are you living with?

**Circle all that apply.**

Mother	Father	Brothers	Sisters	Friend	Boyfriend
Aunt	Grandmother	Grandfather	Boyfriend's Parents		

Other: \_\_\_\_\_

Survey # \_\_\_\_\_

**DEMOGRAPHIC QUESTIONNAIRE**  
**Postpartum (1 month)**

Home phone number \_\_\_\_\_ Other phone \_\_\_\_\_

Birth Date \_\_\_\_\_

Age \_\_\_\_\_

**Answer the following:**

*Are you still breastfeeding your baby?*                      Yes                      No

**If no**, when did you stop breastfeeding? \_\_\_\_\_

**If no**, what was the main reason you stopped breastfeeding? \_\_\_\_\_

\_\_\_\_\_

**If yes**, are you having any problems breastfeeding?                      Yes                      No

**If yes**, what problems are you having? \_\_\_\_\_

\_\_\_\_\_

Who is helping you most with breastfeeding? \_\_\_\_\_

Who are you living with?

**Circle all that apply.**

Mother              Father              Brothers              Sisters              Friend              Boyfriend

Aunt              Grandmother              Grandfather              Boyfriend's Parents

Other: \_\_\_\_\_

Have you returned to school or work?                      Yes                      No

When did you return? \_\_\_\_\_

Are you pumping your breast milk at work/school?    Yes                      No

## Appendix 6

## Appendix 7

## Hughes Breastfeeding Support Scale (PRENATAL)

For each of the following statements, please choose the answer that best describes how you feel right now about your family and friends and breastfeeding. Please mark your answer by circling the number that is closest to how you feel. There is no right or wrong answer.

1 = No help at all  
2 = A small amount of help  
3 = A moderate amount of help  
4 = As much help as I wanted

	1	2	3	4
Reassured me that I will be doing well caring for my baby	1	2	3	4
Will take care of the house	1	2	3	4
Will take me to the store, church, and other places I need to go	1	2	3	4
Will answer my questions about breastfeeding	1	2	3	4
Will take care of the new baby	1	2	3	4
Makes me feel confident even when I make mistakes	1	2	3	4
Prepares meals	1	2	3	4
Answers the telephone	1	2	3	4
Listens to me talk about the baby	1	2	3	4
Does my laundry	1	2	3	4
Will entertain visitors after the baby is born	1	2	3	4
Shows concern when I feel blue	1	2	3	4
Will do correspondence I usually do myself	1	2	3	4
Shops for needed items	1	2	3	4
Believes I will be a good mother	1	2	3	4
Lends or gives me money for myself and the baby	1	2	3	4
Is there for me when I feel lonely	1	2	3	4
Praises me for my efforts to care myself and the baby	1	2	3	4
Makes me feel that I am still an attractive person	1	2	3	4
Shows concern about my physical condition	1	2	3	4
Will give me tips about breastfeeding	1	2	3	4
Tells me about sources of help (i.e. social services or Breastfeeding groups)	1	2	3	4
Will show me how to nurse my baby	1	2	3	4
Will show me how to bathe my baby	1	2	3	4

Used with Permission from Robbie Hughes

1= No help at all  
 2 = A small amount of help  
 3 = A moderate amount of help  
 4 = As much help as I wanted

Will show me how to diaper my baby	1	2	3	4
Will answer my questions about my baby	1	2	3	4
Will help me understand my baby's cries	1	2	3	4
Teaches me how to take care of myself	1	2	3	4
Will show me how to hold my baby	1	2	3	4
Will praise me for my efforts to breastfeed	1	2	3	4

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Used with Permission from Robbie Hughes

## Hughes Breastfeeding Support Scale (POSTPARTUM 1 WEEK)

For each of the following statements, please choose the answer that best describes how you feel right now about your family and friends and breastfeeding. Please mark your answer by circling the number that is closest to how you feel. There is no right or wrong answer.

1 = No help at all  
2 = A small amount of help  
3 = A moderate amount of help  
4 = As much help as I wanted

	1	2	3	4
Reassured me that I was doing well caring for my baby	1	2	3	4
Took care of the house	1	2	3	4
Took me to the store, church, and other places I needed to go	1	2	3	4
Answered my questions about breastfeeding	1	2	3	4
Took care of the new baby	1	2	3	4
Made me feel confident even when I made mistakes	1	2	3	4
Prepared meals	1	2	3	4
Answered the telephone	1	2	3	4
Listened to me talk about the new baby	1	2	3	4
Did my laundry	1	2	3	4
Entertained visitors	1	2	3	4
Showed concern when I felt blue	1	2	3	4
Did correspondence I usually do myself	1	2	3	4
Shopped for needed items	1	2	3	4
Believed that I am a good mother	1	2	3	4
Lent or gave me money for baby things	1	2	3	4
Was there when I felt lonely	1	2	3	4
Praised me for my efforts to care for the baby	1	2	3	4
Made me feel that I am still an attractive person	1	2	3	4
Showed concern about my physical condition	1	2	3	4
Gave me tips about breastfeeding	1	2	3	4
Told me about sources of help (i.e., social services, Breastfeeding groups, etc.)	1	2	3	4
Showed me how to nurse my baby	1	2	3	4
Showed me how to bathe my baby	1	2	3	4

Used with Permission from Robbie Hughes

1 = No help at all  
 2 = A small amount of help  
 3 = A moderate amount of help  
 4 = As much help as I wanted

Showed me how to diaper my baby	1	2	3	4
Answered my questions about my baby	1	2	3	4
Helped me to understand my baby's cries	1	2	3	4
Taught me how to take care of myself	1	2	3	4
Showed me how to hold my baby	1	2	3	4
Praised me for my efforts to breastfeed	1	2	3	4

Used with Permission from Robbie Hughes

### Hughes Breastfeeding Support Scale (POSTPARTUM 4 WEEKS)

1 = No help at all  
2 = A small amount of help  
3 = A moderate amount of help  
4 = As much help as I wanted

	1	2	3	4
Reassured me that I was doing well caring for my baby	1	2	3	4
Took care of the house	1	2	3	4
Took me to the store, church, and other places I needed to go	1	2	3	4
Answered my questions about breastfeeding	1	2	3	4
Took care of the new baby	1	2	3	4
Made me feel confident even when I made mistakes	1	2	3	4
Prepared meals	1	2	3	4
Answered the telephone	1	2	3	4
Listened to me talk about the new baby	1	2	3	4
Did my laundry	1	2	3	4
Entertained visitors	1	2	3	4
Showed concern when I felt blue	1	2	3	4
Did correspondence I usually do myself	1	2	3	4
Shopped for needed items	1	2	3	4
Believed that I am a good mother	1	2	3	4
Lent or gave me money for baby things	1	2	3	4
Was there when I felt lonely	1	2	3	4
Praised me for my efforts to care for the baby	1	2	3	4
Made me feel that I am still an attractive person	1	2	3	4
Showed concern about my physical condition	1	2	3	4
Gave me tips about breastfeeding	1	2	3	4
Told me about sources of help (i.e., social services, Breastfeeding groups, etc.)	1	2	3	4
Showed me how to nurse my baby	1	2	3	4
Showed me how to bathe my baby	1	2	3	4

Used with Permission from Robbie Hughes

1= No help at all  
 2 = A small amount of help  
 3 = A moderate amount of help  
 4 = As much help as I wanted

Showed me how to diaper my baby	1	2	3	4
Answered my questions about my baby	1	2	3	4
Helped me to understand my baby's cries	1	2	3	4
Taught me how to take care of myself	1	2	3	4
Showed me how to hold my baby	1	2	3	4
Praised me for my efforts to breastfeed	1	2	3	4

Used with Permission from Robbie Hughes

Appendix 8

## THERAPEUTIC SUPPORT SCALE

For each of the following statements, please choose the answer that best describes how you feel about the nurses and doctors who care for you concerning breastfeeding. Please mark your answer by circling the number that is closest to how you feel. There is no right or wrong answer.

	Not at all	A Little	Somewhat	Fairly Much	Very Much
1. The nurse supported me	1	2	3	4	5
2. The physician supported me	1	2	3	4	5
3. If I became anxious, I could talk about this with a nurse	1	2	3	4	5
4. If I became anxious, I could talk about this with a physician	1	2	3	4	5
5. If I became depressed, I could talk about this with a nurse	1	2	3	4	5
6. If I became depressed, I could talk about this with a physician	1	2	3	4	5
7. If I became angry, I could talk about this with a nurse	1	2	3	4	5
8. If I became angry, I could talk about this with a physician	1	2	3	4	5
9. A nurse is just a "phone call away"	1	2	3	4	5
10. A physician is just a "phone call away"	1	2	3	4	5
11. I could reach a nurse even if it were late at night	1	2	3	4	5
12. I could reach a physician even if it were late at night	1	2	3	4	5
13. I could reach a nurse even if it were during a weekend	1	2	3	4	5

Adapted and used with permission from Dr. Sally Hardin

	Not at all	A Little	Somewhat	Fairly Much	91 Very Much
14.I could reach a physician even if it were during a weekend	1	2	3	4	5
15.The nurse cared about me	1	2	3	4	5
16.The physician cared about me	1	2	3	4	5

Adapted and used with permission from Dr. Sally Hardin