

Breastfeeding Plans, Intentions, and Interactions

by

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ABSTRACT

This study explores the relationships of demographics and psychosocial factors on breastfeeding plans, intentions and mother-infant interactions. Breastfeeding provides many benefits to both mother and child; therefore, understanding the influences on breastfeeding decisions is important for understanding the breastfeeding relationship. This thesis explores the demographic influences on a woman's breastfeeding practices and plans, and further explores the influence of psychosocial factors on intended breastfeeding duration. Women (N=160) were recruited within the first 48 hours postpartum from a county hospital in the southwestern United States. First, the relationship of demographics and psychosocial factors and their impact on a woman's breastfeeding experience in the hospital, and her long term breastfeeding plans are explored. This relationship is explored with a path analysis using AMOS software. Demographics variables including socio-economic status, maternal age, maternal education level, marital status, and ethnicity are factors used in this model. Psychosocial variables in the model include maternal depressive features and maternal-fetal attachment. Socio-economic status, maternal age, education, and marital status are related. In addition, women with higher socio-economic status and married have higher rates of exclusive breastfeeding following delivery. Women planning to return to work planned to breastfeed for fewer months, whereas women exclusively breastfeeding in the hospital planned to breastfeed for more months than women who provided formula supplementation in the hospital. Women with lower education level experienced more depressive features early postpartum. Depressive features did not impact feeding plans or intentions. A multiple group comparison was performed in order to compare marital

status and ethnicity. No group differences were found in either comparison model. However, when comparing the married vs. unmarried model maternal-fetal attachment negatively predicted a woman's plan to return to work. Psychosocial factors were not found to influence breastfeeding practices.

In a 10-14 day follow-up study, using a sub-sample (N=45), the relationship of depressive features at 10-14 days and breastfeeding self-efficacy on duration of a videotaped feeding was explored. Women were interviewed and videotaped breastfeeding when the infant was 10-14 days old. A partial correlation was used to examine this relationship while controlling for demographic factors. Depressive features and breastfeeding self-efficacy do not have a relationship with the length of time a woman is available to breastfeed her infant or the amount of time an infant actually breastfeeds. Depressive features and breastfeeding self-efficacy do have a significant relationship. Women with higher depressive features were found to have lower breastfeeding self-efficacy.

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CHAPTER I

BACKGROUND ON BREASTFEEDING

Given the benefits of breastfeeding to children and mothers, and the economic benefits for the family, both the American Academy of Pediatrics ([AAP]; n.d.) and the World Health Organization ([WHO]; n.d.) recommend breastfeeding exclusively for the first six months of life, and recommend that it continue to at least one year. The Surgeon General's goal for Healthy People 2010 is to have 75% of all new mothers begin breastfeeding, with 60% exclusively breastfeeding at 3 months, 50% breastfeeding when the baby is six months old, 25% exclusively breastfeeding at six months, and 25% breastfeeding at one year (Healthy People 2010, 2000, 2005). Breastfeeding initiation rates have continually increased over the years. In 1993-1994 the breastfeeding rates were 60% and in 1998 they were 64% (Department of Health and Human Services [DHHS], n.d.). The 2004 National Immunization Survey (NIS) found that breastfeeding rates had increased to 73.8% (DHHS, n.d.) and the 1999-2006 National Health and Nutrition Examination Surveys found breastfeeding rates in 2005-2006 had increased to 77% (McDowell, Wang, & Kennedy-Stephenson, 2008). However, as of 2004, any breastfeeding (including supplementation with formula) falls below the 50th percentile by the infant's third month of life (DHHS, n.d.). At two months of age, breastfeeding rates decrease from 70% breastfeeding initiation to only 44.4% exclusive breastfeeding according to the 2004 NIS (DHHS, n.d.).

Benefits of Breastfeeding

Benefits of breastfeeding to both the infant and the mother are greater when breastfeeding continues for longer amounts of time and remains exclusive for the first six

months. Breastfeeding is important due to the many health benefits to both the mother and child. Some of the more common and well known reasons for breastfeeding are breastfed children have fewer allergies, fewer ear infections, and lower rates of colds, flu, childhood cancers, diabetes, and osteoporosis. In addition, children who have been breastfed have higher IQs and are less likely to be overweight as adults (AAP, n.d.; Healthy People 2010, 2000; Huggins, 1999; Le Leche League International [LLLI], 2004; Riordan & Auerbach, 1999; WHO, n.d). Breastfeeding has been found to have analgesic effects, as evidenced by reduced heart and metabolic rates, suggesting reduced sensitivity to pain (Blass, 1994; Blass, 1996; Carbajal, Veerapen, Couderc, Jugie, & Ville, 2003; Gribble 2006). Gray, Miller, Philipp, and Blass (2002) found that breastfeeding an infant while blood was being attained substantially reduced crying and grimacing and prevented the tachycardia that can happen during infant blood collection.

The mother also benefits when she breastfeeds her baby. She is less likely to develop pre-menopausal breast, uterine, and ovarian cancers. She will lose weight faster following delivery and have a lower chance of developing diabetes, arthritis and osteoporosis (AAP, n.d.; Healthy People 2010, 2000; Huggins, 1999; LLLI, 2004; Riordan & Auerbach, 1999; WHO, n.d.;). Hormones released during breastfeeding, such as prolactin, may promote maternal behaviors and reduce vulnerability to stress (Britton, Britton, & Gronwaldt, 2006; Ekstrom & Nissen, 2006; Else-Quest, Hyde, & Clark, 2003; Gribble, 2006).

Breastfeeding is economically beneficial as well. The United States Breastfeeding Committee (USBC; 2002) lists several economic benefits to parents, insurance companies, and the government when an infant is breastfed. Infants who are breastfed

visit the doctor less often, have fewer and shorter hospital stays, and need fewer medications. The amount spent on formula in the United States is estimated to be about \$2 billion per year. Over \$500 million dollars a year is spent by the government to purchase formula for the Womens, Infant and Children (WIC) food supplemental program.

Exclusive Breastfeeding

The Healthy People 2010 initiative added two additional breastfeeding goals at the midcourse review. Those goals pertain to exclusive breastfeeding, with 60% of mothers to be breastfeeding exclusively at three months and 25% breastfeeding exclusively at six months (Healthy People 2010, 2005). Exclusive breastfeeding means that no supplementation is given in any form. Some of the known health benefits are more likely to occur when the infant is exclusively breastfed. Lower incidence rates of some of the childhood cancers and diabetes is only seen in infants who were exclusively breastfed for at least four months (Lawrence & Lawrence, 2005). Additionally, infants who are fed formula have a higher incidence of colic, constipation, and allergic disorders (Huggins, 1999). Maternal benefits of exclusive breastfeeding during the first six months include more than 98 percent protection against getting pregnant during this time (Kennedy, Rivera, & McNeilly, 1989). This protection can reduce the need for hormone based birth control pills, which have been found to reduce milk supply in some women (Hale, 2004; Lawrence & Lawrence, 2005). There are health benefits to a woman's body having one to two years to fully recover from pregnancy and childbirth (Lawrence & Lawrence). Postponing subsequent pregnancies until the body is healthier can result in healthier pregnancies and healthier babies in the future.

The Birthing Unit Experience

Studies have shown that early post-partum events in the hospital can impact the mother's relationship with her infant and the breastfeeding relationship. In 2002, Abbot Laboratories found that while 70% of women in the United States initiated breastfeeding in the hospital only 46% were breastfeeding exclusively when they left the hospital (Dennis, 2006). Early breastfeeding experience in the hospital may contribute to early termination of breastfeeding within the first 48 hours. Given that 24% stopped breastfeeding before leaving the hospital, the indication is that events in the hospital impacted the feeding method chosen. Events in the hospital that have been found to impact the breastfeeding relationship are delayed initiation of breastfeeding after childbirth (greater than one hour), providing supplementation, not breastfeeding on demand (DiGirolamo, Grummer-Strawn, & Fein, 2001; Noel-Weiss, Rupp, Cragg, Bassett, & Woodend, 2006), and early and prolonged separation (Henderson, Evans, Straton, Priest, & Hagan, 2003). One way to help with breastfeeding on demand and minimize separation is to allow rooming-in. Rooming-in allows the infant to stay in the room with the mother at all times in one room as opposed to going to the nursery for procedures and baths. When an infant is in the room with the mother the entire time, the mother is able to breastfeed on demand. DiGirolamo and colleagues used data from the 1993/1994 Infant Feeding Practices Survey conducted by the United States Food and Drug Administration to study what factors influence breastfeeding success. Information about maternal and child health care, delivery and hospital stay, and infant feeding methods were obtained from self-report measures during the prenatal through 12 month postpartum period. DiGirolamo and colleagues found that the most influential steps for

breastfeeding success were exclusivity in the hospital and breastfeeding within the first hour after birth. However, of the 1737 women who responded to the surveys, the majority were Caucasian and married. Due to over 90% of the study population being Caucasian and married, the findings are not generalizable across ethnicities and marital status.

In 1991, WHO and the United Nations Children's Fund (UNICEF) started the Baby-Friendly Hospital Initiative (BFHI). The role of this initiative is to improve maternity services world-wide so that women can have the opportunity to be successful when breastfeeding their infants. This initiative "protects, promotes, and supports breastfeeding" for women worldwide. Currently there are more than 20,000 baby-friendly hospitals in 152 countries (WHO, n.d.; BFHI USA, n.d.; UNICEF, n.d.). The BFHI consists of ten steps to successful breastfeeding. Once the ten steps are completed and reviewed by the BFHI USA in the United States and UNICEF outside of the United States, the hospital can receive a "Baby-Friendly" designation. These steps include providing support for mothers to initiate breastfeeding within the first hour after birth (UNICEF supports within the first 30 minutes), breast milk exclusivity unless medically indicated, infants to stay in the rooms with mothers rather than the hospital nursery, encouragement of unrestricted breastfeeding, and provisions of and referrals to breastfeeding support groups (BFHI, n.d.; UNICEF, n.d.). Hospitals that receive the designation have the benefit of quality improvement, contribute cost containment to their communities in healthier mothers and babies, improved public relations, and marketing prestige (BFHI USA, n.d.). Even hospitals that have not received the designation, have tried to become more breastfeeding friendly by providing various kinds of lactation support to new mothers.

Philipp and colleagues (2001) performed an evaluation study of breastfeeding rates at Boston Medical Center, which had received the baby-friendly designation. They documented a significant increase in breastfeeding initiation rates. The breastfeeding rates used to evaluate the effectiveness of baby-friendly policies on breastfeeding initiation were from a year before implementation of baby-friendly policies, the year during implementation of baby-friendly policies, and a year with the policies in place. The medical records of 200 infants were reviewed for each of the three years. Philipp and colleagues found that regardless of the ethnic and socioeconomic groups, all groups significantly increased breastfeeding in the hospital. However, a potential limitation to this study was that for the period that was evaluated, the accuracy of the recordings of breastfeeding rates are unknown. Another study completed in the Republic of Belarus, modeled after the BFHI steps, found that women who received support, encouragement, and help with breastfeeding, breastfed longer and had more exclusivity than women who did not receive the benefits of the BFHI steps (Kramer et al., 2001).

An important part of the BFHI steps is to provide lactation support. Hospital lactation support programs have broad variation. Some hospitals provide International Board Certified Lactation Consultants (IBCLC), while others provide counselors with lesser certifications or training. Other programs that may be available from the hospitals or in the community are breastfeeding education and support groups. Classes for new and expectant parents may include topics such as: how the body produces milk, latch and positioning techniques, health benefits, food and nutrition, and how to handle possible problems. Mother-to-Mother Breastfeeding Support Groups are offered by some hospitals

and consultants as well. Even though breastfeeding education and support are more readily available, the numbers are still below the Healthy People 2010 goal (DHHS, n.d.).

Demographic Influences on Breastfeeding

Common demographic indicators of breastfeeding rates are socio economic status (SES), education level, maternal age, marital status, and ethnicity (Cooper, Murray, & Stein, 1992; Dennis, 2002; DHHS, n.d.; Else-Quest et al., 2003; Hatton, Harrison-Hoehner, Coste, Dorato, Curet, & McCarron, 2005; Healthy People 2010, 2000; Hendricks, Briefel, Novak, & Ziegler, 2006; McCarter-Spaulding & Horowitz, 2007; Taveras, Capra, Braveman, Jensvold, Escobar, & Lieu, 2003). Women more likely to breastfeed generally have higher SES, a higher education level, are older, and more likely to be married, (Cooper et al., 1992; Dennis, 2002; DHHS, n.d.; Healthy People 2010, 2000; Hatton et al., 2005; Hendricks et al., 2006; Leiferman, 2002; McCarter-Spaulding & Horowitz, 2007; Taveras et al, 2003). See Table 1.

Cooper and colleagues (1992) looked at 243 women in Oxford and another 113 women in Cambridge in order to establish what factors are associated with early termination of breastfeeding. Semi-structured interviews were used to obtain demographic and breastfeeding information. Differences were found in the two groups with the Oxford sample having age and SES significantly associated with breastfeeding termination and in the Cambridge sample, maternal education was associated with early termination of breastfeeding. Ethnicity is another factor that also impacts breastfeeding rates, with Hispanic and Caucasian women having higher breastfeeding rates than other ethnicities (DHHS, n.d.; Healthy People 2010, 2000; McDowell et al., 2008). However, McKee, Zayas, and Jankowski (2004) found that in their study containing only Hispanic

Table 1

National Data on Percent Breastfeeding Based on Demographic Variables

Socio-demographic Factors	<i>N</i>	Ever Breastfed	Breastfed any at 6 months	Breastfed any at 12 months	<i>N</i>	Exclusively Breastfed¹ at 3 months	Exclusively Breastfed¹ at 6 months
US National	21035	73.8	41.5	20.9	17654	30.5	11.3
Race/ethnicity							
Black or African American	3622	60.9	29.3	13.4	2971	22.0	7.9
White	16442	76.1	43.2	21.9	13845	31.9	11.7
Hispanic or Latino	4890	81.0	45.1	24.1	4086	30.9	11.6
Not Hispanic or Latino	16145	70.7	40.0	19.6	13568	30.3	11.1
Black or African American	3010	56.2	26.3	11.9	2477	20.1	7.5
White	12423	73.9	42.5	20.8	10469	32.6	11.8
Maternal Age, Year							
Mom age<20	525	55.8	17.2	8.6	423	16.8	6.1
20<=Mom age<=29	7936	69.8	35.0	16.7	6614	26.2	8.4
Mom age>=30	12574	77.9	48.0	24.9	10617	34.6	13.8
Maternal Education							
<High School	2685	67.7	34.9	18.5	2283	23.9	9.1
High School	4723	65.7	32.2	16.8	3920	22.9	8.2
Some College	4675	75.2	40.9	18.5	4134	32.8	12.3
College Graduate	8952	85.3	55.8	28.2	7317	41.5	15.4
Maternal Marital Status							
Married	15668	79.6	48.3	24.5	13171	35.4	13.4
Unmarried ²	5367	60.0	25.5	12.4	4483	18.8	6.1
Poverty Income Ratio³, %							
Pov-Inc Ratio <100%	3753	65.9	35.1	18.6	3203	23.9	8.3
100%<=Pov-Inc Ratio<185%	3396	70.8	35.0	16.6	2860	26.6	8.9
185%<=Pov-Inc Ratio <350%	4782	75.1	41.5	21.3	4113	33.2	11.8
350%<=Pov-Inc Ratio	6783	81.5	49.8	23.6	5624	37.7	14.0

¹Exclusive breastfeeding information is from 2006 NIS survey data only and is defined as ONLY breast milk — NO solids, no water, and no other liquids.

²Unmarried includes never married, widowed, separated, divorced.

³Poverty Income Ratio = Ratio of self-reported family income to the federal poverty threshold value depending on the number of people in the household.

Source: National Immunization Survey, Centers for Disease Control and Prevention, Department of Health and Human Services

Sample sizes appearing in the NIS breastfeeding tables are slightly smaller than the numbers published in other NIS publications due to the fact that in the DNPA breastfeeding analyses, the sample was limited to records with valid responses to the breastfeeding questions.

and African American women; African American women who were higher educated were more likely to plan to breastfeed and more likely to continue breastfeeding at three months.

Conclusion: Survey Study

Based on findings on the importance of exclusive breastfeeding and findings that demographic variables impact breastfeeding decisions, this survey study explores women's breastfeeding plans and breastfeeding exclusivity as a function of demographic factors. Due to findings on the importance of early breastfeeding experience, women were asked about feeding events in the most recent 24 hours while in the hospital. This study examined women in West Texas for the purpose of establishing whether the national data is generalizable to this sample. SES, education, age, marital status, and ethnicity should predict breastfeeding plans and whether the infant was fed exclusively.

CHAPTER II

BARRIERS

In addition to demographic factors, psychosocial factors have been found to impact breastfeeding in terms of planned duration and whether breastfeeding is exclusive. In particular depression and maternal fetal-attachment will be explored in this regard. There are demographic variables that put some mothers at more risk for depression. Several factors have been found to impact depression: SES, education level, single parenthood (McGrath, Keita, Strickland, & Russo, 1990; Minkovitz et al., 2005), age (Minkovitz et al., 2005), marital status (Depression Statistics, n.d., McGrath et al., 1990, Minkovitz et al., 2005), ethnicity (Leiferman, 2002; Minkovitz, Strobino, Scharfstein, Hou, Miller, Mistry, & Swartz, 2005), and employment status (Glangeaud-Freudenthal, Crost, & Kaminski, 1999). Women who were unemployed during pregnancy have been found more likely to experience negative mood (Glangeaud-Freudenthal et al., 1999). Depression has been found to be more prevalent of women during the childbearing age period (Depression Statistics, n.d.; Minkovitz et al., 2005). Additionally, Minkovitz and colleagues found higher rates of depression in women who are in the 20-29 age group. Surprisingly, married women are more likely to be depressed than single women (Depression Statistics, n.d.; McGrath et al., 1990, Minkovitz et al, 2005).

Depression

The extensive literature on depression reveals that it has an adverse impact on children, adults, family, and friends of a depressed person. Parental depression can affect perceptions of a child, child outcomes, and parenting abilities (Brennan, Hammen, Andersen, Bor, Najman, & Williams, 2000; Donovan & Leavitt, 1989; Leiferman, 2002;

Minkovitz et al., 2005; Seimyr, Edhborg, Lundh, & Sjorgren, 2004; Teti & Gelfand, 1991). Seimyr and colleagues (2004) conducted a longitudinal study looking at maternal depressed mood in 352 women. They found that women who scored high on depression reported having more difficulty in handling daily life and had less overall well-being. In addition, those that scored depressed at both two months and at one year after child birth, indicating long-term depression, experienced motherhood as stressful, had more difficulties coping with being a mother, and providing care for the child was difficult. Donovan and Leavitt's (1989) study of 48 women looked at depression, negative mood, and perceived infant difficulty, and how those features affect the mother's response to the infant and the infant's development. They found that women who experienced depression were more likely to perceive their infant as having difficult personalities. Maternal depression can also impact mother-infant relationship quality. Feldman and colleagues (1999) found that mothers who are depressed are less available and do not enter into the relationship building aspect of bonding as much as non-depressed mothers.

Child outcomes can also be affected by maternal depression. Lyons-Ruth, Easterbrooks, and Cibelli (1997) explored maternal depression as a risk factor during the first two years of a child's life. They looked to see if internalizing behavior and avoidant infant attachment were predictors for externalizing behaviors. They found that in contexts of depression, adversity was associated with later internalizing symptoms. Maternal depression was a direct predictor of the child having externalizing problems later. Maternal depression may also place children at risk for insecure attachment (Donovan & Leavitt, 1989; Lyons-Ruth et al., 1997). Donovan and Leavitt (1989) found that insecurely attached infants had mothers who were more likely to be depressed and had

more illusions of being in control of the infant and childrearing situation. Brennan and colleagues (2000) studied 4953 mothers and their children born between 1981 and 1984 at a hospital in Queensland, Australia to explore maternal depressive symptoms and how they related to children's behavioral and cognitive functioning at age five. They found that children whose mothers reported suffering from more severe and chronic depression were more likely to have behavioral problems and lower vocabulary skills at age five than children of non-depressed mothers.

Negative effects of maternal depression extend to a broad range of health-related parenting behaviors (Brennan et al., 2000; Leiferman, 2002; Minkovitz et al., 2005). In a study regarding the health care that children received in the first three years of life, Minkovitz and colleagues sampled 5,565 families from 15 sites across the country from 1996 to 1998. The data used in this study included a self-administered enrollment survey from the Healthy Steps for Young Children and parent telephone interviews conducted in both English and Spanish. Data were collected when the infant was between two and four months and between thirty and thirty-three months. There was also a review of medical records. During the telephone interviews, mothers were most often the respondents as opposed to other caregivers. Questions in the survey and interview pertained to maternal depressive symptoms, use of acute pediatric care services, and the child's health. They found that when a mother reports depressive symptoms in the first four months of the infant's life, there are decreased odds that her infant will receive age appropriate well-child checks and vaccinations, and there are increased odds of emergency room visits, and hospital stays. In another study, Leiferman (2002) used data from 8,145 respondents from the 1988 National Maternal and Infant Health Survey (NMIHS) and the 1991

NMIHS Longitudinal Follow-up Survey. Measures of depression and health related variables including maternal smoking, vitamin administration, and car seat usage were used. Leiferman found that women who were depressed from both the 1988 and 1991 samples were less likely to give their children vitamins, less likely to properly restrain their infant in a vehicle, and more likely to smoke around their infant.

In addition to depression affecting child outcomes through parenting behaviors, depression also impacts the mother's feeding choice. Galler, Harrison, Biggs, Ramsey, and Forde (1999) showed that depression and anxiety scores at seven weeks postpartum predicted lower rates of breastfeeding, but did not predict the rates at six months. Women who were not breastfeeding at all were more likely to experience early depression (Hatton et al., 2005). Else-Quest and colleagues (2003) measured depression in women six months prior to pregnancy. They found women who were depressed before pregnancy were less likely to breastfeed.

Depressed mothers are more likely to terminate breastfeeding early because they have more problems and negative experiences (Jones, McFall, & Diego, 2004). Women who scored higher on the Edinburgh Postnatal Depression Scale (EPDS) reported more negative experiences with breastfeeding (Seimyr et al, 2004). Women who are depressed are more likely to plan to breastfeed for a shorter amount of time as well as end the breastfeeding relationship sooner than non-depressed mothers (Field, Hernandez-Reif, & Feijo, 2002; Jones et al., 2004; Seimyr et al; Taveras et al., 2003). In a few longitudinal studies, depression has been found to precede the termination of the breastfeeding relationship (Cooper et al., 1992, Henderson et al., 2003). A potential benefit to breastfeeding found by Hatton and colleagues (2005) is that women who are

breastfeeding report fewer depressive symptoms, even after controlling for demographic variables and history of depression. Oddly however, they found women who were breastfeeding and depressed and then stopped breastfeeding showed greater improvement in their depressive symptoms than women who continued to breastfeed. It may be that breastfeeding helps protect against depression and improve depression, but in some cases breastfeeding may in fact make the depression worse. In one study looking at baby blues as measured by a French translation of the Maternity Blue Questionnaire, women who were breastfeeding had a higher frequency or severe blues than women who were supplementing or not breastfeeding (Glangeaud-Freudenthal et al., 1999).

Dennis and McQueen (2007) found that women who felt that there were many difficulties with breastfeeding and felt dissatisfied with breastfeeding during the first week had higher odds of having depressive symptoms and more likely to have discontinued breastfeeding. Dennis and McQueen performed a secondary analysis on a larger longitudinal survey study conducted near Vancouver, British Columbia, Canada. In addition to depression scores and relating perceptions about their breastfeeding progress, mothers also answered the Breastfeeding Self-Efficacy Scale (BSES) (Dennis & Faux, 1999). Women completed the surveys at one, four, and eight weeks postpartum. At one week post-partum 71% were exclusively breastfeeding. Only 55.7% were exclusively breastfeeding at eight weeks. Surprisingly, Dennis and McQueen (2007) found that depression was not related to infant feeding method. Women who felt breastfeeding was progressing poorly and who felt unsatisfied with the method of feeding had a higher risk of developing depressive symptoms at later points in time. However, when mothers who were depressed at one week were removed from the analysis, the likelihood of having

depressive symptoms later disappeared. Furthermore, they found that women who were depressed at one week postpartum were more likely to have discontinued breastfeeding by eight weeks postpartum but not by four weeks. In addition, women depressed at one week postpartum were more likely to perceive breastfeeding as progressing poorly and would not be satisfied with her infant feeding method at four and eight weeks.

Non-Optimal Maternal-Fetal Attachment

Attachment and breastfeeding are important to the development of an infant. Children need attachment figures and need secure attachment in order to grow into resilient, socially competent adults. Breastfeeding benefits families because it is the healthiest feeding choice for the infant, has health benefits for the mother, and it is cost effective. Much of the literature on breastfeeding and attachment is actually literature on breastfeeding and “bonding,” a rather loosely defined term relating to the mother’s feelings of closeness with her infant. Britton and colleagues (2006), distinguish between attachment and bonding by saying, “...bonding is felt to be enhanced by breastfeeding, yet attachment is believed to be fostered by the quality of the dyadic interaction irrespective of feeding method” (p. 1437). Nevertheless, the terms “attachment” and “bonding” have been used loosely and inter-changeably by lay individuals. Britton and colleagues surveyed 152 mothers between thirty-two weeks gestation and twelve months postpartum in order to explore type of feeding and attachment as defined by the Strange Situation. Only full-term, healthy infants vaginally delivered were part of the mother-infant dyads participating in this study. The Ainsworth Strange Situation was used to assess attachment at 12 months. Although, Britton and colleagues (2006) found an association between maternal sensitivity and breastfeeding, they did not find a

relationship between breastfeeding and attachment security. Others have found that women who breastfeed may be more responsive to their infants and provide more responsive caregiving (Feldman, Weller, Leckman, Kuint, & Eidelman, 1999; Gribble, 2006). It is possible that the mother who chooses to breastfeed has a parenting style that will lead to secure attachment regardless of breastfeeding choices.

Bonding can be described as maternal attachment seen as a group of behaviors that function by maintaining proximity and superior interaction with the infant (Maestriperi, 2001). Else-Quest and colleagues (2003) studied 570 women in the Wisconsin-Madison area. A home interview and mailed questionnaire were completed during the second trimester of pregnancy, and at four months and twelve months postpartum. They measured type of feeding, if the mother breastfed during the first week she was considered as breastfeeding. In addition, they looked at demographic factors, psycho-social factors including depression, an attachment survey at four months, and videotaped feeding interactions at four and twelve months. Else-Quest and colleagues (2003) found in their study that in the breastfeeding dyads there was a stronger bond reported at four months but not one year. During the breastfeeding experience mothers may feel closer to their infant but by one year, regardless of feeding method, the feelings of bonding were the same. McKee and colleagues (2004) found that at three months postpartum, participants that were breastfeeding reported more feelings of closeness with their infant than women who were only bottle feeding. Else-Quest and colleagues also found that while mothers reported more bonding at four months if they were in the breastfeeding dyad, they did not report more than the bottle feeding dyad at twelve months, indicating that the effect may be short-term.

Conclusion: Survey Study

In addition to considering contributions of demographics to exclusivity and breastfeeding plans, depression will be considered in this study. This survey study also explores maternal feelings of attachment to the fetus. Since depression has been associated with quality of the mother-child relationship it will be of interest to also consider whether it is linked to mothers' feelings of attachment to the fetus. In sum, we ask whether effects of depression and lesser attachment alter the relationship between demographics and breastfeeding.

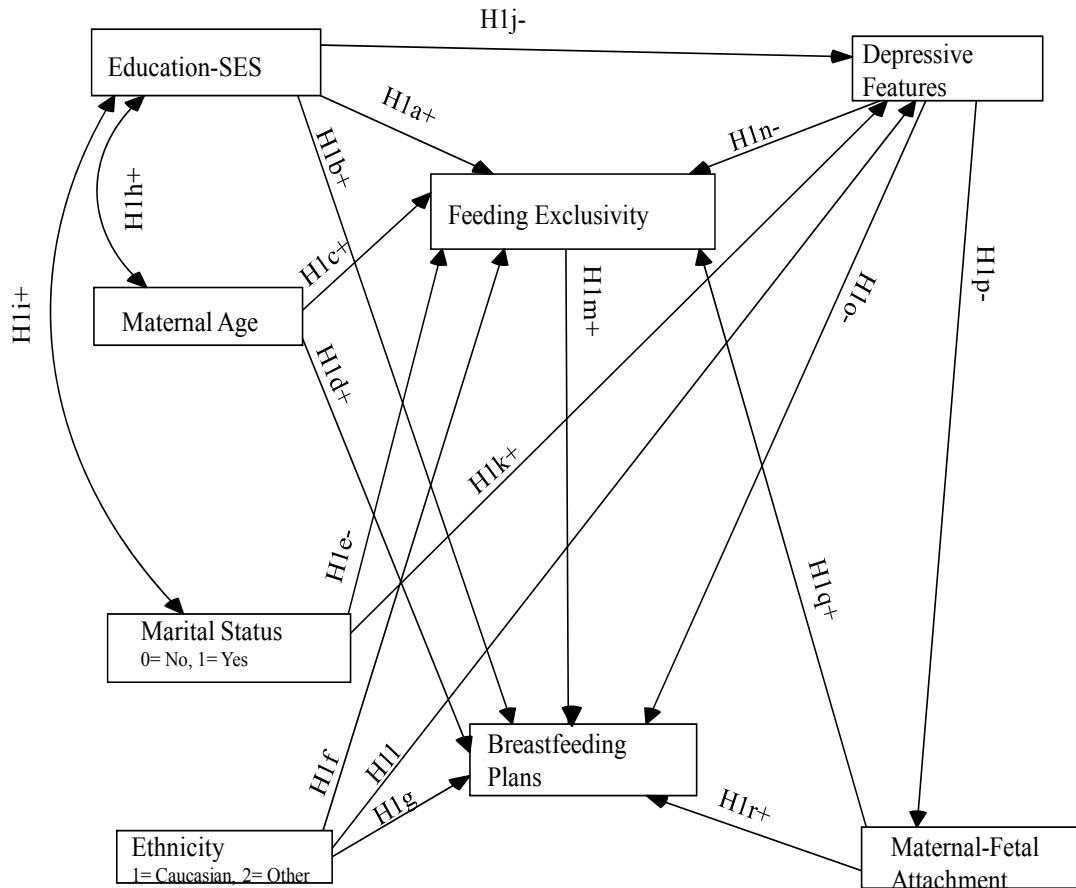
Hypothesis 1

Several demographic factors have been found to play a role in breastfeeding decisions such as SES, mother's education level, and age. Therefore, several hypotheses will be looked at under the overarching expectation that the demographic variables will influence breastfeeding plans and exclusivity in the present sample. However, we predict that these will be mediated by psychosocial factors such as mother's negative mood and feelings of attachment to her fetus. Marital status and ethnicity are also believed to influence breastfeeding decisions and exclusivity and will be explored. A visual representation of hypothesis 1 can be found in Figure 1.

H1a- A women's education combined with SES will predict breastfeeding exclusivity. The higher education and SES will be more likely to breastfeed exclusively.

H1b- A women's education combined with SES will predict feeding plans. The higher education and SES will be more likely to have long-term breastfeeding plans.

H1c- A women's age will predict breastfeeding exclusivity. The older a woman is the more likely she will be breastfeeding exclusively.



Note. Hypotheses with direction on lines.

Figure 1. Model 1: Original model for testing hypotheses 1.

H1d- A women’s age will predict feeding plans. The older a woman is the more likely she will have plans to breastfeed longer.

H1e- Marital status will predict breastfeeding exclusivity, such that married women will exhibit greater exclusivity than will those who are unmarried.

H1f- Ethnicity will predict breastfeeding exclusivity.

H1g- Ethnicity will predict feeding plans.

H1h- Education combined with SES will be related to age. The higher education and SES are the older someone will be.

H1i- Education combined with SES will be related to marital status. Women with higher education and SES will more likely be married.

H1j- A women's education combined with SES will predict her depression level. Women with more education and higher SES will have less depressive features than women with lower education and SES.

H1k- Marital status will predict depression. Married women will have more depressed features.

H1l- Ethnicity will predict depression.

H1m- Breastfeeding exclusivity in the hospital will predict breastfeeding plan. A woman exclusively breastfeeding in the hospital will be more likely to have longer breastfeeding goals.

H1n- A women's level of depressive features will predict breastfeeding exclusivity. The more depressed features a woman has the less likely she will be breastfeeding exclusively.

H1o- A women's level of depressive features will predict her breastfeeding plans. Someone with more depressed features will not plan to breastfeed as long as someone with less depressive features.

H1p- A woman's level of depressed features will impact her level of attachment to her fetus. The more depressed a woman is the less attached she will feel.

H1q- A woman's level of attachment will predict her breastfeeding exclusivity.

The higher attachment a woman felt to her infant while pregnant, the more likely she will breastfeed exclusively.

H1r- A woman's level of attachment will predict her feeding plans. The higher attachment a woman felt to her fetus, the more likely she will be to plan to breastfeed longer.

Research Questions. (See Figure 2.)

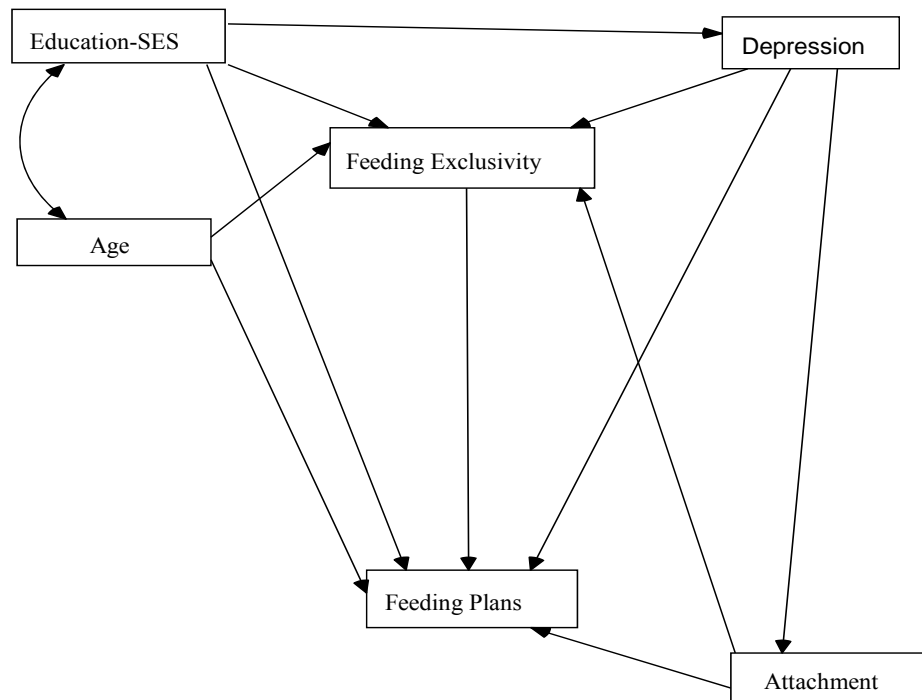


Figure 2. Multiple group analysis: Original model for testing research questions 1 and 2.

RQ1- The overarching relationship will again be examined but the married group will be compared to the unmarried group. Is there a difference in the relationship of

demographic factors, psychosocial factors, and breastfeeding plans and exclusivity between women who are married and women who are not married?

RQ2- The overarching relationship will be examined again but different ethnicities will be compared. Is there a difference in the relationship of demographic factors, psychosocial factors, and breastfeeding plans and exclusivity between different ethnicities?

CHAPTER III

BREASTFEEDING INTERACTIONS

In addition to survey research, research has also explored breastfeeding behavior. Research has shown that in comparison with formula-feeding mothers, breastfeeding mothers tend to be more responsive, touch their infants more during feedings and playtime, and have more eye or gaze contact (Else-Quest et al., 2003). Else-Quest and colleagues also found that breastfed dyads had higher quality interactions at 12 months, both in feedings and play interactions that were videotaped. In another study by Lavelli and Poli (1998), thirty-two mother-infant dyads were videotaped during and after feeding at three days, ten days, one month, and three months after childbirth to assess whether interactions were different between breast- and bottle-fed infants. They found that breastfeeding mothers both gazed and caressed their infants more than bottle-feeding mothers. They also found that the breastfeeding mother-infant dyads had more mutual touch and mutual gaze.

Within breastfeeding groups there are differences in quality of interactions. According to Ruth Lawrence, some infants feed on one side and then on the other side. Some mothers are clock watchers and make sure the infant feeds anywhere from ten to thirty minutes on each side. Other mothers let the infant eat and follow the infant's cues. The optimal feeding pattern is to let the infant finish on one breast and then offer the second. Other feeding patterns are one breast at one feed and the other breast at the next feed, while others will go back and forth every five minutes (recommended when needing to increase supply). The most successful nursing mothers adapt to infant cues and do not follow "textbook" rules (Lawrence & Lawrence, 2005). Many different feeding positions

are used as well. Some mothers use the cradle or cross cradle hold, others use the football or modified football hold, and some lie down and breastfeed. No one feeding position is technically better. When some infants have certain difficulties, one feeding position may be recommended over another. The best feeding position is one where mother and baby are both comfortable and relaxed (K. Cadwell, Lactation Counselor Certificate Training Program, March 5-9, 2007).

Depression

Mother-infant breastfeeding interactions can be impacted by depression. Jones and colleagues (2004) assessed 78 women-infant dyads at one month and 63 women-infant dyads at three months. Self-report instruments for measuring depression and feeding practices were used, as well as the Brazelton Neonatal Behavioral Assessment Scale (BNBAS) developed in 1995 by Brazelton and Nugent, and a three-minute videotaped face-to-face interaction of the mother and infant. Controlling for demographic factors, they found benefits for infants of non-depressed mothers and infants of depressed mothers who were breastfeeding. Furthermore, they found that a stable breastfeeding relationship, even in depressed mothers, was associated with positive dyadic interactions at both one and three months of age. Field and colleagues (2002) investigated maternal depression in breastfeeding mothers, who were asked to report how many times a day they nursed and how long the infants' nursed at each feeding. Women were recruited during a prenatal visit and assigned to depressed or not-depressed group based on depression scores. The groups included 20 depressed and 20 non-depressed women. They found that in the depressed group fewer women had decided to breastfeed. Depressed women also terminated breastfeeding earlier. They found no difference between

depressed and non-depressed mothers in terms of the duration of a feeding or how many times a day a mother nursed.

Self-Efficacy

Maternal depression affects parenting, breastfeeding relationships, and long term child outcomes. In addition, maternal depression affects breastfeeding self-efficacy. Breastfeeding self-efficacy is a woman's confidence in her ability to breastfeed her infant. Based on Bandura's (1977) definition of self-efficacy, breastfeeding self-efficacy is the cognitive process of a woman's confidence in her perceived ability to control her motivation to breastfeed, her thought processes about breastfeeding, her emotional state during breastfeeding, and the impact of her social environment or support for the breastfeeding role.

Teti and Gelfand (1991) studied 86 women looking at self-efficacy as a mediator of parenting behavior in regard to depression. They found that low self-efficacy and higher scores of depression have been found to be inter-related. Dennis and McQueen (2007) in their study on maternal depression and infant feeding found that women with lower breastfeeding self-efficacy scores at week one had higher depression scores at week four. However, no difference was found with the depression scores at week eight, indicating that lower breastfeeding self-efficacy scores may have a short term affect on depression. In addition, they found that women with high depression scores had significantly lower mean Breastfeeding Self Efficacy Scale (BSES) scores than women with low depression scores at both four and eight weeks postpartum.

Women who feel competent in parenting ability are more likely to have high self-efficacy and low depressive features (Teti & Gelfand, 1991). Women with low self-

efficacy and high depression are more likely to have higher levels of illusion of control over their infant and their situation than women with high self-efficacy and low levels of depression (Donovan & Leavitt, 1989). Furthermore, Teti and Gelfand found women who have low self-efficacy are more likely to perceive their infant as difficult and have lower feelings of competence than women with high self-efficacy. They found maternal self-efficacy to be extremely low with depressed mothers who perceived their infants as being difficult. However, depressed mothers who found their infants to be easier had higher self-efficacy.

Breastfeeding mothers have been found to be more confident in their parenting skills (Field et al, 2002). Bandura's self-efficacy theory has been used to describe the development of the breastfeeding relationship between mother and child in numerous studies (Baghurst, Pincombe, Peat, Henderson, Reddin, & Antoniou, 2007; Creedy, Dennis, Blythe, Moyle, Pratt, & De Vries, 2003; Dennis, 1999; Dennis 2006). A breastfeeding relationship that starts off with some minor problems that are overcome can increase a woman's breastfeeding self-efficacy. However, a breastfeeding relationship that starts off with major difficulties that are not overcome can decrease breastfeeding self-efficacy. Some have found that breastfeeding self-efficacy can be used to predict the length of a breastfeeding relationship (Baghurst et al., 2007; Creedy et al., 2003; Dennis, 2006; Dunn, Davies, McCleary, Edwards, & Gaboury, 2006; Taveras et al., 2003), and it has been used to describe the development of the breastfeeding relationship. Dunn and colleagues (2006) found breastfeeding confidence to be the most influential factor on early termination of the breastfeeding relationship. In their study involving 317 full-term primiparous women (first time mothers) intending to breastfeed, Baghurst and colleagues

found that breastfeeding self-efficacy could predict the duration of the breastfeeding relationship up to six months post-partum. The breastfeeding status was obtained by a telephone interview when the infant was six months old. The women in the study were representative of women delivering in the Adelaide, Australia hospital with Caucasians women being overrepresented.

Besides breastfeeding self-efficacy predicting the length a woman will breastfeed, it can also predict how likely she is to be exclusively breastfeeding (Blythe, Creedy, Dennis, Moyle, Pratt, & De Vries, 2002). Blythe and colleagues recruited 348 women in the last trimester of pregnancy who intended to breastfeed. Recruitment and surveys were completed while the women waited for a prenatal appointment in the surrounding area of Brisbane, Australia. Participants were called one week and four months after delivery to obtain infant feeding method and to re-administer the BSES.

Self-efficacy can serve as a causal agent in the development of the breastfeeding relationship, and it can be a result of how the breastfeeding relationship develops. The development of the breastfeeding relationship is circular. The infant plays a role and the mother plays a role and each impacts the development of the relationship. Through a bi-directional process, the development of the breastfeeding relationship between a mother and child impacts a woman's breastfeeding self-efficacy. In turn, her breastfeeding self-efficacy influences the development of the breastfeeding relationship. Not only does a woman's self-efficacy develop, grow, and change over the course of the breastfeeding relationship, but the breastfeeding relationship grows and is enhanced as the woman's breastfeeding self-efficacy grows. This circular relationship continually feeds development in both domains. This thesis draws on self-efficacy theory toward exploring

the manner in which the newly emerging breastfeeding relationship is established. In addition, this thesis will look at the breastfeeding relationship as it develops in light of breastfeeding self-efficacy.

According to Bandura (1977) verbal persuasion can impact self-efficacy. The more credibility, prestige, or trustworthiness a person has, the more believable that person is and the more likely efficacy expectations are to change. For example, a medical doctor reinforcing a mother's breastfeeding may have a bigger impact than just her nurse's reinforcement, if the woman values the doctor's opinion more than a nurse's. Many hospitals provide professional lactation support because of the important role of verbal persuasion. One of the ten steps of the BFHI is that all health care staff be trained in the skills necessary to implement the breastfeeding policy (BFHI, n.d.; UNICEF, n.d.). Based on self-efficacy theory, a woman who receives breastfeeding education prior to giving birth would be more likely to have a higher breastfeeding self-efficacy than a woman who does not receive breastfeeding education. Providing breastfeeding counseling and support is another step that can make a difference in the breastfeeding relationship. Ekstrom and Nissen (2006) found that when women receive consistent and ongoing breastfeeding counseling and after birth care they enjoyed resting with their infants more than women who did not receive breastfeeding counseling. They also saw their infant as more strongly "their own," enjoyed breastfeeding more, talked more to their infants, and saw their infants as more beautiful than other infants.

Social environment affects self-efficacy, thus it is not surprising that Teti and Gelfand (1991) found a significant relationship between social-marital support and self-efficacy. In addition, they found that self-efficacy plays a role in the mother's behavior

toward her infant and that may affect infant attachment status. However, Blythe and colleagues (2002) found education level, age, marital status, and ethnicity were not associated with differences in breastfeeding self-efficacy. Given the known impact of demographics factors on breastfeeding duration, it is of interest to note that Blythe and colleagues found that a woman's self-efficacy score increased the variance in accounting for breastfeeding duration when added to the role of demographics.

Bandura (1977) developed self-efficacy theory on the assumption that internal psychological processes create and strengthen the belief that one can successfully perform the behavior that is needed to produce the desired outcome. Bandura says that perceived self-efficacy influences the initial choices individuals make. Research using Bandura's theory has established that self-efficacy can impact behaviors related to individual health (for a review see Greca, 1989). For example, someone who does not believe they can breastfeed will not initiate breastfeeding. However, one cannot say that all women who choose to formula feed lack self-efficacy in regard to breastfeeding. A woman may choose not to breastfeed for reasons that have nothing to do with her belief in whether or not she can breastfeed. In addition, there are many women who choose to breastfeed who have low self confidence in their abilities (Dunn et al., 2006) or low breastfeeding self-efficacy (Baghurst et al., 2007).

Bandura's (1977) self-efficacy theory states that an individual's expectation of success with a task can impact the amount of effort that is used when coping with difficulties, overcoming difficulties, and succeeding at the task. A woman who has a strong belief in the value of breastfeeding her child will have a better chance at overcoming obstacles along the way. A woman who is determined to succeed at the task

of breastfeeding, feels that breastfeeding is the best way to feed her child, has high self-efficacy in her ability, and has social support is more likely to overcome any obstacles or difficulties she experiences along the way.

Efficacy expectations can differ in magnitude, generality, and strength (Bandura, 1977). If a woman has a very difficult breastfeeding experience and has more intense problems to overcome, then her self-efficacy could be low or may begin to decrease. Women who are breastfeeding at one week have higher breastfeeding self-efficacy than women who are supplementing or have discontinued breastfeeding (Blythe et al., 2002). However, if she perseveres and overcomes the more difficult obstacles, her self-efficacy regarding breastfeeding will be higher than what it was before. Women who continue to breastfeed show a consistent increase in breastfeeding self-efficacy over time (Blythe et al., 2002).

While performance attainments are important in developing self-efficacy, if one's accomplishment is mainly from ability, it will create a stronger sense of self-efficacy (Bandura, 1977). If one's accomplishments are mainly due to effort, then that reinforces the sense of having less ability in successfully breastfeeding which can then lead to a lower sense of self-efficacy (Bandura, 1977). A woman who does not experience any problems and finds breastfeeding to be easy will have higher breastfeeding self-efficacy than a woman who has to extend effort in developing the breastfeeding relationship. If a woman experiences high self-efficacy from her breastfeeding experience, it may generalize to other areas of parenting. This might result in greater confidence of her overall parenting ability and being able to overcome other concerns such as infant sleep difficulties or colic issues. Teti and Gelfand (1991) found that self-efficacy is a crucial

mediator in a mother's behavioral response to her infant. However, if she stops breastfeeding and feels that she has failed; her breastfeeding self-efficacy may become lower and could result in negative feelings regarding other parenting issues. When a baby is difficult or irritable a woman's efficacy as a mother will decrease (Teti & Gelfand, 1991).

Another factor that impacts breastfeeding self-efficacy expectations is the strength of those expectations. In order to adequately understand expectancy it is essential to assess the magnitude, strength, and generality of the efficacy expectations. There are four main sources that predict self-efficacy expectations: performance accomplishments (overcoming difficulties, past breastfeeding experiences), vicarious experiences (watching other women breastfeed in support groups or on video), verbal persuasion (from friends, family, medical professionals, and lactation professionals), and physiological responses (stress, fatigue, anxiety) (Bandura, 1977; Creedy et al., 2003; Dennis, 1999, 2006). If a woman has high expectations and beliefs in her ability to succeed at breastfeeding, then problems are more likely to be overcome, which will increase her breastfeeding self-efficacy a small amount (Bandura, 1977). However, if her expectations are high and she stops breastfeeding and feels as if she has failed this could have a devastating blow to her breastfeeding self-efficacy. If her expectations are weak then breastfeeding will more likely be discontinued even if minor problems are experienced (Bandura, 1977). Dennis and Faux (1999) developed a breastfeeding self-efficacy scale (BSES) using these four principles to measure a woman's breastfeeding self-efficacy. Based on the BSES it has been established that a woman with high breastfeeding self-efficacy will be more likely to have been successful at breastfeeding a

previous child, which may or may not include having overcome breastfeeding difficulties. She is also more likely to have breastfeeding support, perhaps from a partner or from other family or friends that are close to her and encourage her to breastfeed. As a result of these positive experiences she may experience lower stress, fatigue, and anxiety. A woman with low breastfeeding self-efficacy is more likely to have low self confidence about breastfeeding, due to lack of support and encouragement, which may result in high stress, fatigue, and anxiety. The BSES has also been found to be a predictor of early weaning when women have low scores on breastfeeding self-efficacy (Baghurst et al., 2007; Creedy et al., 2003; Dennis, 2006; Dunn et al., 2006).

While the above expectations are important to a mother's self-efficacy, the affect of the expectations depends on how the individual perceives the information. Social factors such as support from family and friends as well as situational circumstances will play a role (Bandura, 1977). If a person overcomes great difficulty regarding breastfeeding and the social situation is not conducive to breastfeeding or there is a situation, such as the infant is sick and ends up in Intensive Care Unit (ICU), the breastfeeding relationship may fail regardless of the factors that contribute to high self-efficacy. When dealing with situational circumstances that result in failure, the impact on reduced self-efficacy will be less than if the failure was related to skill level (Bandura, 1977). A woman who stopped breastfeeding one child because that child was hospitalized and unable to breastfeed will not experience lower breastfeeding self-efficacy with another child. On the other hand, a woman who stopped breastfeeding for reasons such as lack of support or nipple pain may experience lower breastfeeding self-efficacy with subsequent children. The woman who quit for reasons that were not situational may feel

as though she failed at breastfeeding and will have lower breastfeeding self-efficacy as a result of feeling that she failed.

As stated previously, development of the breastfeeding relationship impacts a woman's breastfeeding self-efficacy. Her breastfeeding self-efficacy also influences the development of the breastfeeding relationship. A woman who has breastfed before and receives breastfeeding support from family, friends, and counselors is more likely to have high breastfeeding self-efficacy. Ekstrom and Nissen (2006) found that when women receive consistent post-partum care, which includes breastfeeding counseling, they experience greater confidence in caring for their infant and felt closer to their infant. With support, a mother will begin a breastfeeding relationship with confidence in her ability to breastfeed successfully. Since confidence in one's ability to care for an infant impact one's self-efficacy, this support is important in the development of her breastfeeding self-efficacy. If difficulties are experienced, such as sore nipples, she will have more confidence in her ability to correct the infants latch or resolve the issue causing the soreness. She is also more likely to have confidence that her nipples will heal and she will know that breastfeeding does not and should not hurt. A woman with high breastfeeding self-efficacy will also have confidence that her body will supply her baby with enough milk. She will not worry about the milk her body makes. She will be confident that there is the right amount of milk for her baby. This in turn will help her deal with other stressors that may arise, such as fatigue. On the other hand, a woman who has no breastfeeding support, has never breastfed before, and is fatigued, will be more likely to have low breastfeeding self-efficacy. This woman will be more likely to feel stressed and worry about her milk supply. She is more likely to doubt herself and more

likely to end the breastfeeding relationship before she originally intended. She may cite reasons such as low milk supply, sore nipples, or it just being too hard.

Bandura's (1977) self-efficacy theory provides a framework for explaining a woman's development and ways she may face obstacles in the breastfeeding relationship. A woman who has high breastfeeding self-efficacy will be more likely to work through issues such as sore nipples and help her infant learn how to suckle at the breast in a manner that works well for successful breastfeeding. On the other hand, a woman with low breastfeeding self-efficacy may be more likely to stop breastfeeding when facing the same breastfeeding difficulties.

Conclusion: Interaction Study

There are many factors that contribute to the quality of breastfeeding interactions. Some factors that sometimes play a role are a woman's education level, age, depression, and self-efficacy (Dunn et al., 2006; Henderson et al., 2003). In this interaction study, a women's breastfeeding self-efficacy is assessed to help explain differences in feeding behaviors. Since self-efficacy has been found to have a direct impact on consequences for individuals (Grecas, 1989), a further exploration of breastfeeding self-efficacy and effects on feeding behaviors will be explored. In light of mixed findings on depression (Field et al., 2002; Jones et al., 2004), this interaction study will examine its contribution to the extent of time a women is available for a feeding and how long the infant is latched on to the breast. Findings may show superior breastfeeding among mothers with high breastfeeding self-efficacy and lower depression.

Hypothesis 2

It is hypothesized that women who have lower breastfeeding self-efficacy and higher depression will keep the infant at the breast for shorter durations and will have infants who remained latched to the breast for shorter durations.

CHAPTER IV

METHOD

Participants and Procedure

One hundred sixty women were recruited during their postpartum stay at a maternity unit of a university hospital in the southwestern United States. The majority of the women (95%) delivered full-term healthy infants. Only five percent of the women delivered before 37 weeks gestation. All infants born before 37 weeks gestation were healthy and did not spend any time in neonatal intensive care. Only adults who had initiated breastfeeding were eligible for inclusion in the study. Since survey instruments are available only in English, all participants were English speaking. Consent (Appendix 1) was administered verbally and in writing by the researcher after explaining the purpose and procedure of this study. Women then answered survey questions while in the hospital.

A sub-sample ($N=45$) was seen when the infant was 10-14 days old. This took place either at the participant's home or in a video lab at Texas Tech University. During the visit the infants were breastfed while being videotaped using the Sony Handycam DCR- HC90 NTSC, wide LCD. Women were paid with a \$20, \$40, or \$60 Wal-Mart gift card after completing the 10-14 day portion of the study. The payment amount was raised over time so the denomination was dependent upon when the women were recruited into the study.

Mother's demographic and psychosocial information in the full- and sub-sample are presented in Tables 2 and 3. The infants in the full sample were 51.3% male. The sub-sample included 48.9% male.

Table 2

Descriptive Statistics for Continuous Variables: Full Sample and Sub-Sample

	Valid <i>N</i>	Missing <i>N</i>	Mean	<i>SD</i>	Range
Mother's Age					
Full-Sample	151	9	26.18	5.04	18-41
Sub-Sample	45	0	27.87	4.52	19-38
SES					
Full-Sample	134	26	3.01	1.20	1-5
Sub-Sample	42	3	3.57	1.17	2-5
Breastfeeding Plans					
Full-Sample	151	9	8.59	3.79	1-13
Sub-Sample	44	1	9.57	3.77	1-13
Mean Maternal Fetal Attachment					
Score	144	16	3.21	.37	2.13-3.94
Full-Sample	43	2	3.22	.34	2.13-3.77
Sub-Sample					
Depression Score- Hospital					
Full-Sample	156	4	6.06	4.09	0-19
Sub-Sample	42	3	6.67	4.09	0-15
Depression Score- Visit					
Sub-Sample	45	0	5.71	3.99	0-16
Breastfeeding Self-Efficacy					
Total	45	0	130.98	16.71	84-159
Mean	45	0	3.28	.42	2.10-3.98

Note. Total *N*=160 (*n*=45); due to missing data, each demographic factor has a different number of Valid *N*

Table 3

Descriptive Statistics for Categorical Variables: Full Sample and Sub-Sample

	Full Sample	Full Sample	Sub-Sample	Sub-Sample
	Valid N	%	Valid N	%
Mother's Ethnicity	152 (8)		45 (0)	
Caucasian	82	67.3	31	68.9
Hispanic	53	16.3	6	13.3
African American	11	7.1	5	11.1
Native American	2	1.3	1	2.2
Other	4	2.6	2	4.4
Mother's Education	151 (9)		45 (0)	
< High School	15	9.9	1	2.2
High School Diploma	43	28.5	8	17.8
Some College	44	29.1	12	26.7
Undergraduate Degree	32	21.2	12	26.7
Graduate Degree	17	11.3	12	26.7
SES	134 (26)		42 (3)	
1- Lowest	12	9.0	0	0
2- Low	40	29.9	11	26.2
3- Middle	35	26.1	8	19.0
4- High	28	20.9	11	26.2
5- Highest	19	14.2	12	28.6
Marital status	151 (9)		45 (0)	
Married	98	64.9	34	75.6
Unmarried	53	45.1	11	24.4
Breastfeeding Exclusivity	159 (1)		45 (0)	
Breastmilk Only	104	68.9	35	77.8
Infant Gender	153 (7)		45 (0)	
Male	82	53.6	22	48.9
Female	71	46.4	23	51.1

Note. Total $N=160$ ($n=45$); due to missing data, each demographic factor has a different number of Valid N .

Measures

Survey Instruments

The variables that were measured are months of planned breastfeeding, *breastfeeding plans*, and breastfeeding exclusivity in the past 24 hours, *breastfeeding exclusivity* (see Appendix B.2), maternal education, socio-economic status (SES), marital status, maternal age, and maternal ethnicity (see Appendix B. 1). Using surveys, women were asked how long they intended to breastfeed in months (for approximately how many months do you plan to breastfeed?). The few women planning to breastfeed beyond 12 months were given a score of 13. Women were also asked how they had breastfed their infant during the last 24 hour period and the degree to which it was exclusive (fully exclusive involves only breast milk being provided to the infant with no water or formula supplementation) (Labbok & Krasovec, 1990). The survey also asked about mother's age, education, marital status, and SES. Education was scored, on a numerical scale with 1 meaning less than high school, and 5 meaning having a graduate degree. SES was calculated on the basis of family income and employment using the Hollingshead four-factor index (Hollingshead, 1978). The Hollingshead has highest SES as 1 and lowest SES as 5. In this sample it was reverse coded so that a higher score on the Hollingshead represented higher SES.

Edinburgh Postnatal Depression Scale

The Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987; see Appendix B.3) was used to measure depressive symptoms, partly because it is simple to administer and score, reducing the burden on participants. It was designed to measure depression following pregnancy, therefore, it does not include items pertaining

to weight changes, fatigue, and disinterest in sex since these are normal occurrences during pregnancy and after delivery. The EPDS has been used extensively and has been validated across ethnicities and countries (Cox et al, 1987; Moses-Kelko & Roth, 2004; Murray & Cox, 1990). The questions used in the development of the EPDS were a collection of questions that were found to be suitable from the Irritability, Depression and Anxiety Scale (IDA) developed by Snaith, Constantopoulos, Jardine, and McGuffin in 1978, the Hospital Anxiety and Depression Scale (HAD) developed by Zigmond and Snaith in 1983, and the Anxiety and Depression Scale of Bedford and Foulds developed in 1978, and newly constructed questions Cox and associates found to be relevant in detecting postnatal depression, totaling 21 questions. After a pilot study, 13 items were used to establish validity using 63 puerperal women at a health center in Livingston. After conducting the factor analysis, three items were removed. Further validation of the 10 item scale was completed with 84 mothers participating in a study regarding treatment of postpartum depression living in Edinburgh or at Livingston. Women first completed the 10-item EPDS, which was then sealed in an envelope, they were then interviewed using Goldberg's Standardised Psychiatric Interview (SPI). Depression was diagnosed by criteria defined in the Research Diagnostic Criteria (RDC) of Spitzer, Endicott, and Robins. Cox and colleagues found that all of the 21 women with an RDC diagnosis of major depression were found with a cut off score of 12/13 on the EPDS. The EPDS correctly predicted 86% of the women to be depressed as defined by RDC, and correctly labeled 78% of the women who were not depressed. When looking at only women who were interviewed ($n=60$) the split-half reliability was .88 with a standardized α -coefficient of .87. A limitation of this study is that three of the highest false positive

scorers and three of the four false negative scorers had a family member present during the interview possibly impacting the responses given. Murray and Cox (1990) tested the use of the EPDS during pregnancy by comparing it to RDC for major and minor depression. One hundred women between 28-34 weeks gestation completed the EPDS and were interviewed using a standardized psychiatric interview. Murray and Cox found that a 14/15 score cut-off on the EPDS was the best predictor of major depressive disorder with only a 4% false positive. However, 23 of the 24 women were correctly identified with RDC major depression using the 12/13 cut off score. When screening for both major and minor depression a cut off score of 12/13 is recommended. While a discussion of the accepted cut off score for identifying women as either depressed or not is important to understanding the validity of the measure, in this study no cut-off score was used. There were so few women who met the criteria to be termed depressed, this measure is being used as a continuous score with higher values representing the presence of more depressive features.

Breastfeeding Self-Efficacy Scale

The Breastfeeding Self-Efficacy Scale (BSES; Dennis & Faux, 1999; see Appendix B.4) measures confidence, satisfaction, and social support perceived by the breastfeeding mother. The BSES is a 43-item instrument, each with a four point scale. There are four possible responses from: 1 - *Not Sure at all*, to 4 - *completely sure all of the time* (Dennis & Faux, 1999). Interitem reliability was assessed by a Cronbach's alpha coefficient of .96 with 73% all corrected item-total correlations being positive in the .30-.70 range (Dennis & Faux, 1999). No other forms of reliability were obtained. Dennis and Faux established content validity, face validity, construct validity, and predictive validity.

The overall content validity for BSES was 86%. Face validity was established with a pilot test of 23 breastfeeding women followed by a debriefing session. Internal consistency was found with a .95 Cronbach's alpha coefficient for BSES. Construct validity was supported with three different methods: factor analysis, comparison of contrasted groups, and correlations with measures of theoretically related constructs. Internal consistency was found during the factor analysis and score above .70 alpha. Factor based sub-scales were also developed, which helped support construct validity. The BSES was found to have very strong predictive validity. The BSES showed that mothers who had higher self-efficacy scores were in fact more likely to still be exclusively breastfeeding at six weeks postpartum (Dennis & Faux, 1999). This instrument has been found to be a useful predictor of how long a woman will breastfeed, with higher scores predicting longer breastfeeding (Baghurst et al., 2007). This instrument was administered during the 10-14 day visit.

Fetal Attachment Questionnaire

The Fetal Attachment Questionnaire (FAQ; see Appendix B.5) consists of Cranley's (1981) Maternal Fetal Attachment (MFA) scale and eleven additional questions developed by the researcher. The MFA scale is a 24-item scale with 5 sub-scales which has been used in research on maternal-fetal attachment during pregnancy. There are five possible responses, ranging from a score of 4 - *definitely yes* to a score of 0 - *definitely no*. The FAQ was worded in the past tense, asking the mothers to think back to when they were pregnant. As mothers were within 48 hours post-partum it is believed that their recollection of thoughts while pregnant was representative.

In this study three subscales pertaining to the mother's feelings about becoming a mother, attachment questions relating to how close or attached the mother feels towards the infant, and social support items relating to support received from family and friends were measured. As sometimes recommended by Cranley and by other researchers, one item "I feel my body is ugly" was not used in computing the mean score (Grace, 1989). Cranley (1981) has reported .85 on the original scale, and Grace reported .86 and .91 on the original scale minus the body image question. In order to achieve a Cronbach's alpha of .80 on the FAQ, three of the added questions were dropped to create the final scale. A mean score was computed to account for any missing items.

Behavioral Measures

Behavioral data was based on information derived from the video taped breastfeeding session at 10-14 days. The first variable is *maternal duration* which consists of how long the mother was available for the breastfeeding (from the time she became ready to breastfeed, which would be seated with shirt open, to the time she ended her availability, which would be when she closed her shirt or stood up). The second variable is *infant latched-on*, which is based on the time the infant was latched-on to mother's breast. The coding of the infant latched to breast was based on the time stamp displayed in the Windows Media Player software program which displays in one-second intervals.

Data Analysis

Hypothesis 1

The first hypothesis (see Figures 1 and 2) is that demographic variables such as SES, maternal education, and age would not only impact the breastfeeding plans and

breastfeeding exclusivity, but be mediated by her mood and fetal attachment. In addition, marital status and ethnicity will influence breastfeeding plan and breastfeeding exclusivity. In order to explore this hypothesis, a path analysis was run using AMOS software (Arbuckle, 2006). As stated previously, SES was reverse coded since the Hollingshead gives a score of 1 to the highest SES and a score of 5 to the lowest SES. By reverse coding the score, the scores can be interpreted more intuitively because a higher score will reflect a higher SES. In addition, SES and education were combined into a composite variable since they were highly correlated. Two types of analyses were done. First, in the full sample, marital status and ethnicity were included as a dummy-variable predictor. Then, multiple-group analyses were conducted, looking at the basic model separately in the married vs. unmarried subgroups. Due to small sample size of minority groups all minority groups were combined to one so that Caucasian was compared to non-Caucasian. Prior to combining the minority groups, they were compared in regards to breastfeeding, depression, and fetal attachment. Analysis of Variance (ANOVA) was used to compare the group differences. No statistically significant differences were found on any of the outcome variables among the non-Caucasian groups.

Hypothesis 2

Hypothesis two explores whether mothers with higher depressive features and lower breastfeeding self-efficacy will keep the infant at the breast a shorter amount of time during the feeding and will have infants that stay latched to the breast a shorter amount of time. This will be evaluated with Pearson's *r*.

The data was checked for missing variables. The researcher did not ask four questions from the BSES. A Cronbach's alpha of .91 was obtained on the questions

asked. The questions kept had full information except that one participant missed answering one question. To calculate a composite scale score, a mean score was computed. The mean BSES was used for the data analysis. A mean score was also computed for the depression scale during the home visit. Frequency scores were calculated for each question in the EPDS used at the 10-14 day visit. All items were answered by all 45 participants. A Cronbach's alpha of .81 was obtained. Forty-two of the forty-five participants completed the video-taping of the feeding at the breast.

CHAPTER V

RESULTS

Survey Study

In the first hypothesis, the demographic variables: SES, mother's education, and age will impact the breastfeeding plans and breastfeeding exclusivity, will be mediated by mother's mood and fetal attachment. Also, marital status and ethnicity will influence breastfeeding plan and breastfeeding exclusivity. A path-analysis model was created using AMOS software (Arbuckle, 2006). A path analysis was chosen due to the small sample size. In addition, most of the predictor variables were single indicators, therefore, path analysis was chosen over a multiple-indicator latent-variable model. The analysis was run using the Full Information Maximum Likelihood extraction method. This method calculates the means and intercepts to correct for any missing data. Several areas of the model did not seem to relate to each other, as will be discussed below, this model was ultimately discarded for a new model. This model (Model 1, see Figure 1) did not have a good fit, $\chi^2(10) = 26.569, p < .01$. Chi square is a measure of discrepancy, therefore, a significant result indicates a poor fit. Chi square is sensitive to study features such as sample size; therefore, other measures of fit were looked at based on Berndt's (1998) research. These measures of fit include the Root Mean Square Error of Approximation (RMSEA) and the Comparative Fit Index (CFI). According to Kenny (2008) indices that have the word "fit" in their name should have high values, between .90 and 1.0 to be a good fit. Indices that have the word error or residual should be a small value for a well fitting model (closer to zero). Kenny says that an RMSEA below .05 is good and anything above .10 is poor. The Normed Fit Index (NFI = .790) and the Comparative Fit

Index (CFI = .817) indicated that this model has a poor fit. However, Berndt (1998) found that the Tucker-Lewis Index (TLI) tends not to be biased upward or downward by study features, making this a better measurement. The TLI (.340) is well below acceptable levels. The RMSEA (.102) also indicates poor fit.

In this model only two pathways and the correlations were significant. The results in Model 1 guided the changes made in order to improve fit. The composite variable of SES_Education (H1a) positively predicted breastfeeding exclusivity ($\beta = .26, p < .01$), however it was found that when separated SES alone predicted breastfeeding exclusivity ($\beta = .29, p < .05$) but education alone did not ($\beta = .00, p < .99$). Therefore, all future models were run with education and SES as individual variables in the model. In this model ethnicity did not predict breastfeeding exclusivity (H1f), feeding plans (H1g), or depression (H1i) and was therefore deleted from all future models.

Further literature review also led to adding another variable of a mother's plan to return to work, which was asked by one of the surveys. This additional variable will be further elaborated on in the discussion. Model 1 (which can be seen in Figure 1) was discarded in order to add the variable, mother's plan to return to work (Figure 3). Return to work was coded on a Likert type scale with scores ranging from 1- representing definitely will not return to work, to 9 - representing definitely will return to work. Return to work was only answered by 109 participants, 43% definitely planned to return to work and 29% definitely did not plan to return to work. It was further hypothesized that a woman's marital status would influence her plan to return to work and married women would be less likely to return to work. It was also hypothesized that a woman's fetal attachment score would negatively predict her return to work, the more feelings of

attachment the less likely she would be to return to work. Return to work is hypothesized to negatively predict months of planned breastfeeding, women planning to return to work will not plan to breastfeed as long as women who plan to stay at home with their infant.

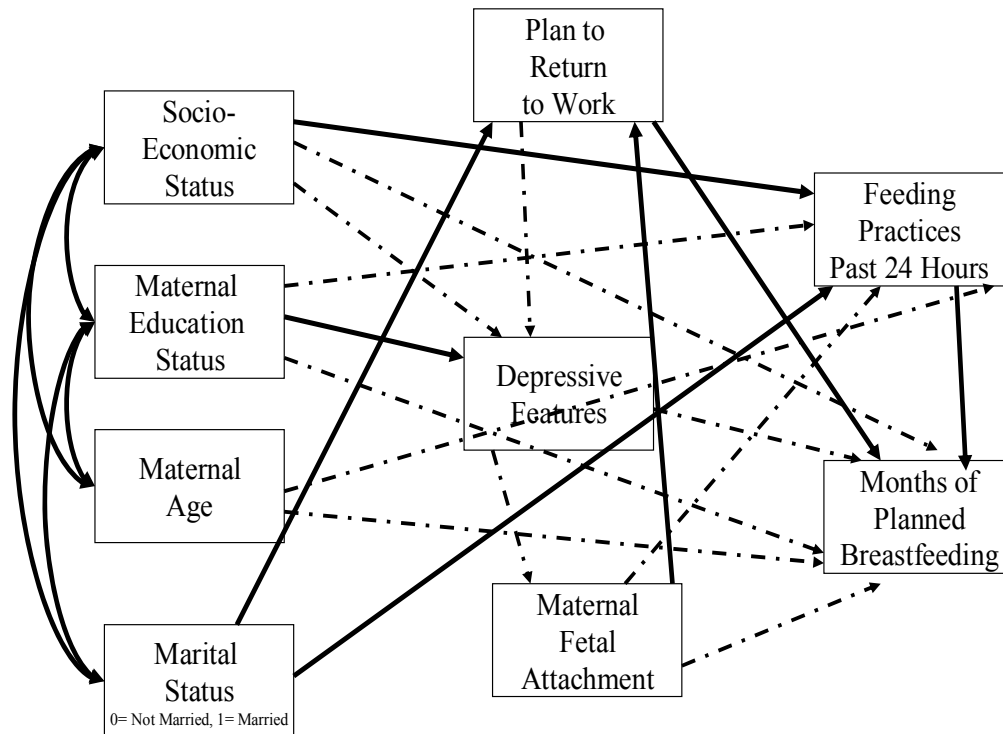


Figure 3. Model 2: Accepted full model.

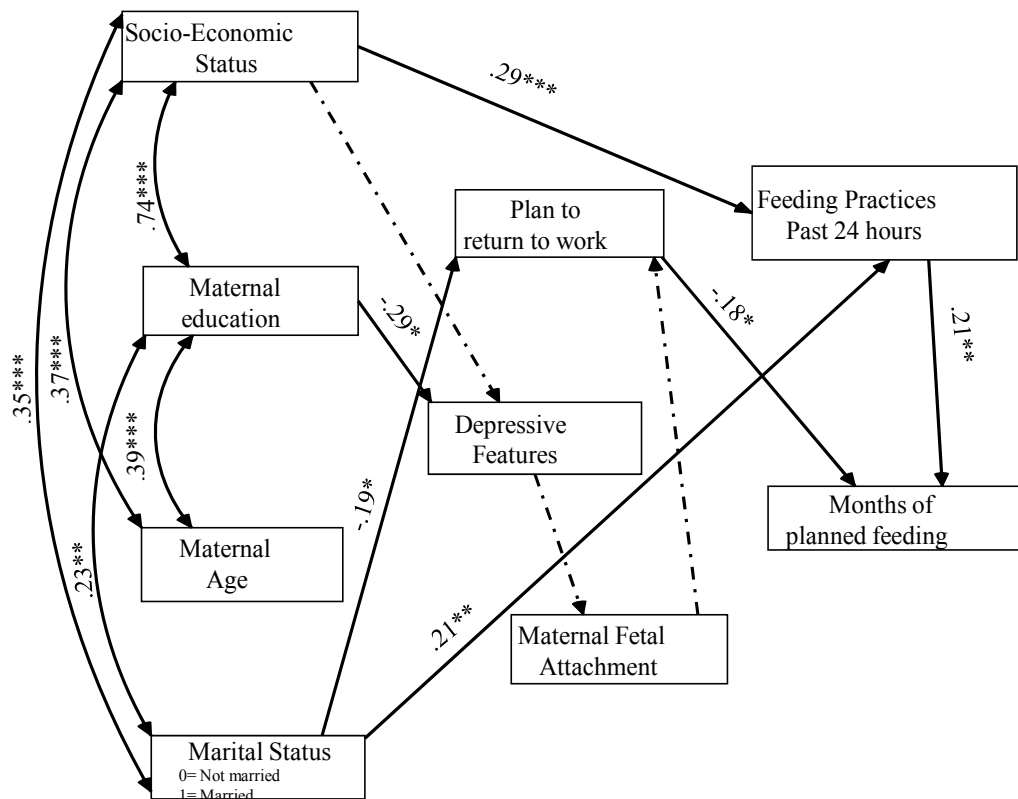
Model 2 (found in Figure 3) differed from Model 1 (Figure 1) in the following ways: a) socio-economic status and education were split, b) ethnicity was removed entirely, c) the pathway from marital status to depressive features (H1k) was removed, and d) the variable return to work and appropriate paths to and from this variable were added. Some of the pathways are significant. Model 2 was found to be significant, $\chi^2(12) = 24.591, p < .05$ indicating a poor fit. However, NFI (.903) and CFI (.940) indicate that

this model has an acceptable fit. The RMSEA (.081) also informs us that this model had an adequate, but not good, fit. However, TLI (.774) is below acceptable levels.

In regards to the individual hypotheses, since education (H1a) did not predict breastfeeding exclusivity in Model 2 the pathway was deleted for the Model 3 (Figure 4). SES (H1a) did significantly predict breastfeeding exclusivity ($\beta = .29, p < .05$) and this pathway was retained in all future models. In Model 2 neither SES nor education (H1b) predicted months of planned breastfeeding and the pathways were deleted for all future models. Maternal age did not predict breastfeeding exclusivity (H1c) or feeding plans (H1d) and both paths were deleted from all future models. Marital status (H1e) did significantly predict breastfeeding exclusivity ($\beta = .20, p < .05$) and was therefore retained. In addition, marital status did negatively predict plans to return to work ($\beta = -.20, p < .05$) and the path was retained for all future models. The original hypothesis (H1h) that education and SES combined would be related to age was significant ($r = .40, p < .001$) in Model 1. In Model 2 education is related to maternal age ($r = .39, p < .001$) and SES is related to age ($r = .37, p < .001$). The original hypothesis (H1i), that education and SES combined would be related to marital status, was significant ($r = .30, p < .001$) in the first model, in the second model education is related to marital status ($r = .23, p < .01$) and SES is related to marital status ($r = .35, p < .001$). The original hypothesis (H1j), that education and SES combined would predict depressive features, was not significant ($\beta = -.14, p = .10$), however, while SES did not predict depressive features in the new model ($\beta = .16, p = .19$) it was retained based on previous studies which support that women with low SES have higher depressive features. A woman's education level did negatively predict depressive features ($\beta = -.29, p < .05$) and was

retained in all future models. In Model 1 marital status did not predict depression (H1k) and the pathway was deleted before running Model 2. Breastfeeding exclusivity (H1m) did predict months of planned feeding ($\beta = .17, p < .05$) and the pathway was retained for all future models. Depressive features did not predict breastfeeding exclusivity (H1n) or months of planned feeding (H1o) and the pathways were deleted. Depressive features (H1p) did not predict maternal fetal attachment; however, based on prior literature of depression impacting attachment and quality parent/child interaction the pathway was retained for future models. Maternal fetal attachment scores did not predict breastfeeding exclusivity (H1q) or months of planned feeding (H1r) and the pathways were deleted. Maternal fetal attachment did not predict plan to return to work ($\beta = -.17, p = .078$), however this pathway was retained since it approached significance. Return to work did not predict breastfeeding plans ($\beta = -.17, p = .073$) but approached significance and the pathway was therefore retained.

A third model was run with the deleted pathways described above. The removal of these paths did not significantly harm the fit and this modified model (Model 3, seen in Figure 4) was accepted because it is a more parsimonious model. The delta chi square table can be seen in Table 4. Model 3 was not significant, $\chi^2(22) = 29.531, p = .13$, indicating this model has good fit. The NFI = .884 indicated a less than ideal fit; however, the CFI (.964), TLI (.926) and RMSEA (.046) indicate this model has a good fit. SES (H1a) positively predicted breastfeeding exclusivity ($\beta = .29, p < .001$). In addition, marital status (H1e) positively predicted breastfeeding exclusivity ($\beta = .21, p < .01$). SES (H1h) did not predict depressive features but maternal education did ($\beta = -.29, p < .05$). Marital status (H1i) is positively related to SES ($r = .35, p < .001$) and to maternal



Note. Dashed lines, n.s., * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 4. Model 3: Accepted full model with standardized regression weights and non-significant paths deleted.

Table 4

<i>Chi Square Change for Models with and without Deleted Paths</i>			
Model	χ^2		<i>df</i>
Model 3 with paths deleted	29.531		22
Model 2 with paths retained	24.591		12
$\Delta \chi^2$	4.940	Δdf	10

education ($r = .23, p < .01$). SES (H1j) did not predict level of depressive features.

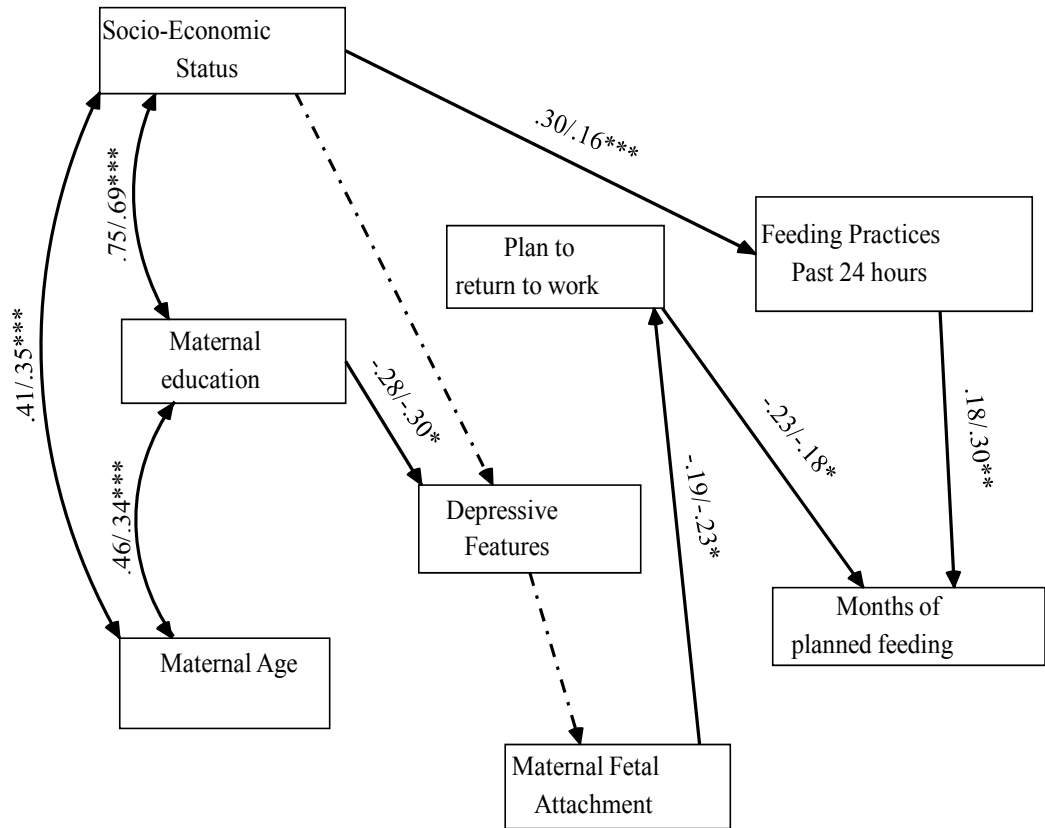
Breastfeeding exclusivity (H1m) did predict breastfeeding plans ($\beta = .21, p < .01$).

Depressive features (H1p) did not predict level of fetal attachment. The level of fetal attachment did not predict plan to return to work but again approached significance ($\beta = -.17, p = .075$).

The next step was to examine Research Question 1 by performing a comparative model test with the married group versus the unmarried group. Marital status was removed from the model in order to compare the two groups. The model was run first with both groups allowed to differ (unconstrained) and then with both groups forced to equality in the unstandardized solution (constrained). The unconstrained model had a significant chi square, $\chi^2(36) = 51.777, p < .05$ indicating poor model fit. The constrained model also had a significant chi square, $\chi^2(46) = 69.102, p < .05$. A delta chi square test was performed (see Table 5). The delta chi square change was not significant so forcing the groups to equality did not significantly harm the fit. See Figure 5 for comparison of the married group versus the unmarried group. By removing marital status from the groups, the pathway from maternal fetal attachment to plan to return to work became significant ($p < .05$). The fit indices were less than adequate, NFI (.693), TLI (.764), and CFI (.849). However, the RMSEA (.058) had adequate fit.

Table 5

<i>Comparative Model Test for Marital Status</i>			
Model	χ^2		<i>df</i>
Constrained model	69.102		46
Unconstrained model	51.777		36
$\Delta \chi^2$	17.325	Δdf	10



Note. Dashed lines, n.s., * $p < .05$, ** $p < .01$, *** $p < .001$. β scores shown are the standardized solutions. In the constrained model all unstandardized solutions are the same, however the standardized solutions are different due to each group having different standard deviations.

Figure 5. Comparative model test of marital status with standardized regression weights.

The final model was testing Research Question 2 by conducting a comparative model test with the Caucasian women versus minority women on demographic and psychosocial factors impacting breastfeeding plans and exclusivity. Marital status was included in this model. The model was run with both groups allowed to differ

(unconstrained) and then with both groups forced to equality in the unstandardized solution (constrained). The unconstrained model did not have a significant chi square, $\chi^2(44) = 40.735, p = .612$ indicating good model fit. The constrained model also had a non-significant chi square, $\chi^2(58) = 56.073, p = .547$. A delta chi square test was performed (see Table 6). The delta

Table 6

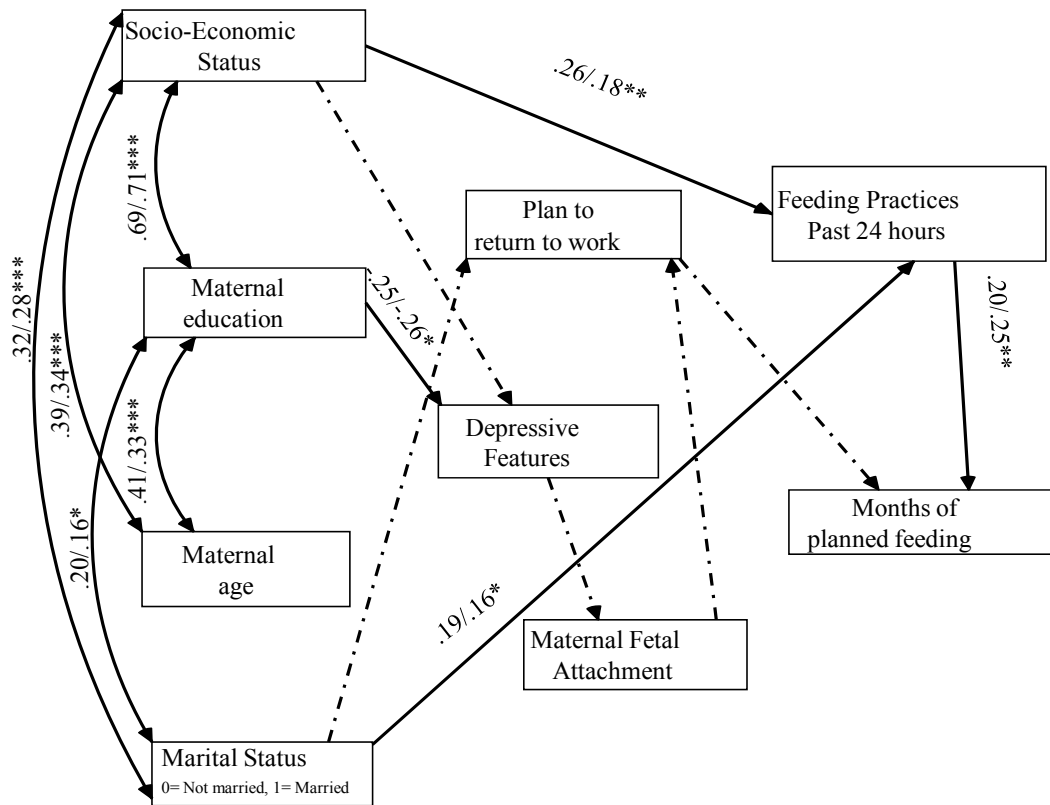
Comparative Model Test for Ethnicity

Model	χ^2		<i>df</i>
Constrained model	56.073		58
Unconstrained model	40.735		44
$\Delta \chi^2$	15.338	Δdf	14

chi square change was not significant; therefore forcing the two groups to equality did not significantly harm the fit. Meaning there is no difference between ethnic groups. See Figure 6 for comparison of the Caucasian group compared to the minority group. Most of the fit indices were very good in this model (CFI = 1.000, TLI = 1.020, RMSEA = .000). However, the NFI (.768) indicated a less than adequate fit.

Interaction Study

A Pearson's *r* was used to explore the relationship between maternal depression ($M = 5.71, SD = 3.99$), mean breastfeeding self-efficacy ($M = 3.27, SD = .419$), time mother was available for feeding ($M = 20$ min 52 sec, $SD = 10.89$), and time infant fed at the breast ($M = 16$ min 25 sec, $SD = 9.47$). A partial correlation ($n = 39$) was used to control for SES ($M = 3.46, SD = 1.14$), education ($M = 3.59, SD = 1.14$), maternal age ($M = 28.21, SD = 4.61$), marital status (75.6% married), and ethnicity (68.9% Caucasian).



Note. Dashed lines, n.s., * $p < .05$, ** $p < .01$, **** $p < .001$. β scores shown are the standardized solutions. In the constrained model all unstandardized solutions are the same, however the standardized solutions are different due to each group having different standard deviations.

Figure 6. Comparative model test of ethnicity with standardized regression weights.

As expected a negative relationship was found between maternal depression score and breastfeeding self-efficacy ($r = -.545, p < .001$). This negative correlation is interpreted such that the more depressive symptoms go with less confident answers on the BSES. Also, as expected, the amount of time a mother was available for a feeding was strongly correlated with amount of time the infant fed ($r = .889, p < .001$). However, no relations

were found between: maternal depressive symptoms and time available ($r = -.121, p = .496$); maternal depressive symptoms and time infant fed ($r = -.073, p = .682$); breastfeeding self-efficacy and time available ($r = .037, p = .837$); or breastfeeding self-efficacy and time infant fed ($r = .062, p = .729$). The correlation matrix is found in Table 7.

Table 7

Partial Correlations of Depression, Breastfeeding Self-Efficacy, and Infant Feeding Times

	Time Mother Available	Time Infant Fed	Maternal Depression	Breastfeeding Self-Efficacy
Time Mother Available	-	.889***	-.121	.037
Time Infant Fed		-	-.073	.062
Maternal Depression			-	-.545***
Breastfeeding Self-Efficacy				-

Note. $N=32, ***p<.001$

CHAPTER VI

DISCUSSION

Survey Study

Demographic Variables

In this study in order to improve model fit several hypothesized pathways were deleted. The final full model achieved adequate fit and the multiple group model comparing ethnic groups indicate that socio-demographic factors impact early breastfeeding, breastfeeding plans, and a mothers' plan regarding if/when she returns to work. Previous literature supports that SES, education, age, and ethnicity impact breastfeeding (Cooper, Murray, & Stein, 1992; Dennis, 2002; DHHS, n.d.; Else-Quest et al., 2003; Hatton, Harrison-Hoehner, Coste, Dorato, Curet, & McCarron, 2005; Healthy People 2010, 2000; Hendricks, Briefel, Novak, & Ziegler, 2006; McCarter-Spaulding & Horowitz, 2007; Taveras, Capra, Braveman, Jensvold, Escobar, & Lieu, 2003). As previous literature reports, the higher the SES the more likely a woman is to breastfeed. This study adds that demographics such as SES also indicate that women are more likely to exclusively breastfeed. However, SES did not impact the long term breastfeeding goals, only the immediate breastfeeding experience. Additionally, previous literature informs that the higher the education level the more likely a woman is to breastfeed her infant (McKee et al., 2004). This study found no relationship between education level and breastfeeding exclusivity or months of planned breastfeeding. This may be a result of the sample only including breastfeeding mothers. Therefore, education level may predict choice to breastfeed but does not predict a woman's choice of exclusive breastfeeding. While McKee and colleagues found higher educated women are more likely to plan to

breastfeed this study did not find a link for how long a woman plans to breastfeed and education level. Interestingly, education level did predict level of depressive features. The more educated women had less depressive features. It may be that more educated women have less stressors that contribute to depression. The maternal education level has a strong relationship with SES, and moderate relationships with age and marital status. While SES, age, and marital status did not predict depressive features they are known to impact depression (Depression Statistics, n.d., McGrath et al., 1990, Minkovitz et al., 2005). Therefore, the relationship each had with education may impact this relationship. However, it may be that education level is a more important factor for exploring depressive feelings.

Surprisingly, age was not found to have an impact on breastfeeding exclusivity or months of planned feeding. This may mean that age influences choices of breastfeeding or bottle feeding but not the exclusive breastfeeding or how long a woman plans to breastfeed. A relationship was also found between marital status and plans to return to work with unmarried women more likely to have plans to return to work. It may be because they are the only income earner for the household and do not have a choice. Marital status was also related to feeding practices in the past 24 hours. Married women were more likely to be exclusively breastfeeding than unmarried women. This may be because they have more support in breastfeeding and/or more help in other early caregiving activities. Unmarried women may be completing all childcare activities alone and may feel more tired. Thus, the readymade formula bottles in the hospital may seem easier and quicker than trying to establish the breastfeeding relationship. In addition, unmarried women may receive less encouragement and emotional support. Despite

married women having higher rates of breastfeeding exclusivity the model comparison yielded no significant differences between married women and unmarried women in terms of the pattern of relationship among the other variables in the model. One interesting finding that was discovered as part of this multiple group modeling was that the removal of marital status resulted in a significant negative relationship between Fetal Attachment and plan to return to work, such that higher maternal fetal attachment was related to less likelihood to plan to return to work. It is possible that stronger feelings of attachment led to a stronger desire to be home with the new baby and not work.

In this study, ethnicity did not have an impact on the variables and was deleted from the full model. In the model comparison, no group differences were found regarding ethnicity. However, Hispanic women are just as likely to breastfeed as Caucasian women according to National data (DHHS, n.d). Unfortunately there were not enough other ethnicities in the sample to compare any ethnicity that has been reported as having low breastfeeding rates. Further studies would benefit from having a larger variety of participants in ethnic groups known to have low breastfeeding rates. The optimal way to run this model to compare ethnicities would be to combine Caucasian and Hispanic groups and compare to a larger group consisting of ethnicities with low breastfeeding rates.

This study does support that breastfeeding in the hospital impacts how long a woman plans to breastfeed her infant. What is unknown is whether the hospital experience itself, support received in the hospital, or other factors impact how long a woman plans to breastfeed her infant. However, in this study the more exclusive a woman is in breastfeeding the longer she plans to maintain the breastfeeding relationship.

The literature also reports these variables as impacting the total time (in months) breastfeeding. This model measured exclusivity; therefore, every person in this sample was breastfeeding. This model also measured women's plans of how many months they intended to breastfeed as opposed to how long they actually breastfed. The length of time the participants actually breastfed is unknown.

Women's plans to return to work influenced how long they intended to breastfeed. Many women may have felt that once returning to work they would be unable to maintain the breastfeeding relationship as they would no longer have access to their infant. Looking beyond this study at the connection between work and breastfeeding, in 1999, the Bureau of Labor Statistics (BLS) reported that women working full-time in the U.S. labor force had increased to 50.2% as compared to only 27.5% in 1969. As of 2006, the Bureau of Labor Statistics (2007b) report that 61.6% of women were employed with little change from the previous year. Specific to working women with children under the age of 18, the rates went from 47% in 1975 to 73% in 2000. In 2004 the rates of working mothers decreased to 71%, where it has remained through 2006 (BLS, 2007a). Galinsky, Bond, and Friedman (1993) reported that 50% of all workers consisted of dual earner households. With more women in the workforce it is not surprising that returning to work has an impact on breastfeeding choice.

Psychosocial Variables

Depressive features did not impact maternal-fetal attachment or feeding choices. Since several previous studies (Field et al., 2002; Jones et al., 2004; Seimyr et al., 2004; Taveras et al., 2003) found a relationship between depression and planning to breastfeed for a shorter amount of time, it was surprising that this study did not find such a

relationship. It may be that not enough of the sample had high enough depressive features to be identified as depressed, in which case, had no impact on the measured breastfeeding choices in this study. Actual depression and not depressive features have the impact on breastfeeding choices. Maternal-fetal attachment did not impact breastfeeding exclusivity or breastfeeding plans. After the initial model it was not tested further. However, in the full model and in the ethnicity model maternal-fetal attachment approached significance in impacting plans to return to work which in turn impacted planned feeding.

In addition it is important to note that this model is only one possible model to explain the relationships among the variables and breastfeeding outcomes. As MacCallum (1998) advises no model is correct but only parsimonious and substantively meaningful with regards to the structure or design of it. For example, in this analysis it was hypothesized that maternal-fetal attachment would impact return to work plans. However, it could be that plans to return to work impacted the development of the maternal-fetal attachment. Therefore, the arrow could be reversed in the model and looked at differently. Running this model another way could be just as parsimonious and fit just as well.

Interaction Study

Previous studies have found that women who are depressed interact differently with their infants (Field et al.2002; Jones et al., 2004). Jones and colleagues (2004) found positive dyadic interactions for breastfeeding infants even when the mother was depressed. This led to the hypothesis (2) that the infant would stay latched to the breast longer if the mother had lower depressive symptoms. Infants that stay latched during a feeding rather than coming off and getting back on intermittently were considered to have

a more positive interaction and were at the breast longer than infants that were fussy and fought latching and staying on the breast. Since Feldman and colleagues (1999) found that mothers who are depressed are less available to their infants, it was hypothesized that depressed mothers would not be available for as long during a feeding. However, analogous to the findings of Field and colleagues (2002), in this study duration of breastfeeding both in terms of mothers' availability and infants' use of time at the breast, did not have a relationship to maternal depression. Similar to findings by Dennis and McQueen (2007) and Teti and Gelfand (1991) depression and breastfeeding self-efficacy were found to be related in this study as well. Even though breastfeeding self-efficacy has been found to relate to breastfeeding behaviors (such as how long or how exclusive one breastfeeds), it does not have a relationship with the time a mother is available or the time an infant uses the mother's availability for a feeding.

Limitations and Future Directions

A potential limitation in this study is that only three (6.7%) of the forty-five participants actually scored high enough on the EPDS to be considered depressed. In addition, 80% of the participants scored high on the BSES. It may be that only women who felt confident and did not experience depression during the pregnancy to begin with agreed to participate in this study. Another possibility is that anyone with low breastfeeding self-efficacy or experiencing depression dropped out of the study. Women who dropped from the study were either unreachable (no valid phone service or did not return phone calls) at one week postpartum or were no longer breastfeeding.

This study has a good sampling of SES and education. One interesting observation is that all of the women in the lowest SES group dropped from the study. The

full sample had 14.2% in the lowest SES, whereas, the 10-14 day sample had no one from the lowest SES category. This was an interesting finding since this study paid the participants. Due to the high dropout rate, the amount of the gift card was raised two times in \$20 increments. The final amount was \$60. Unfortunately, as many participants had disconnected phones or did not return calls it is unknown if they were still breastfeeding. This group was harder to maintain contact with, and therefore difficult to retain.

One possible future direction for study, would be to have a larger depressed group. Interactions between the mother and infant during the feeding have been found to give more information than looking at time available or time spent at the breast. Therefore, another possible future direction for research is the observation of mothers' interactions and the quality of touch, which would be better for exploring maternal depressive symptoms and breastfeeding self-efficacy than time. Despite these limitations and suggestions for future research, this study still represents an important contribution to understanding how demographic and psychosocial factors contribute to breastfeeding among women in West Texas.

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APPENDIX A
CONSENT FORM

**TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER
CONSENT TO TAKE PART IN A RESEARCH STUDY
Signed copy to be provided to subject or authorized representative**

This is a research study which includes subjects who voluntarily choose to take part. Please take your time to make a decision, and discuss the study with your personal doctor, family members, and friends if you wish.

STUDY TITLE: Breastfeeding and Maternal Depression – Videotape

INVESTIGATOR(s): Sybil L. Hart, Ph.D. 742-3031

Kellie Flood-Shaffer, M.D. 743-2295

(You may contact the investigator(s) at the number(s) listed above at any time if you develop any of the conditions listed in the risks and discomforts section of this consent form or if you have any unexpected complications.)

INSTITUTION: Texas Tech University and Texas Tech University Health Sciences Center

1. Why is this study being done?

This research examines women's moods and attitudes about breastfeeding and how these may affect her baby.

2. How many people will take part in this study?

128 mothers and their babies will take part in this study, 256 people in all.

3. Why am I being asked to take part in this research study?

You are a mother with a baby that is less than 2 months old and you are breastfeeding your baby.

4. What will happen during this study? What will be done that is different from my usual care?

You will be asked to come to a building on the Texas Tech University campus. You will be asked to fill out some questionnaires about who you are and about your feelings. You will then be asked to breastfeed your baby while you are being videotaped. You and your baby will be in a private room and the camera will be on, but no one will be in the room with you. You and your baby will be weighed before and after feeding. We will also measure the thickness of your baby's arm before feeding. One of the researchers who is part of the study will watch the videotape later.

5. How long will I be in this study? How much of my time will this take?

The questions and weighing will take about 30 minutes. You will then feed your baby for as long as you would normally and you and the baby will be weighed again. Typically, everything takes between 45 minutes and 1 and ½ hours.

6. What are the risks and/or discomforts to me if I join this study?

You may feel a little uncomfortable answering some of the questions or being videotaped. Your baby may object to being weighed or having arm thickness measurements taken. You can stop participating at any time and for any reason.

7. Will there be any added risks to me from this study if I am a female?

No

8. Are there any benefits to me if I take part in this study?

If the questionnaires determine that you may be depressed, we will help you find assistance, but you will have to pay for the assistance if necessary. You will find out how much breast milk your baby consumed during the feeding.

9. What other choices do I have if I don't take part in the research study?

This study does not involve treatment. You do not have to take part in this study.

10. What about confidentiality and the privacy of my records?

We will keep your involvement in this research study confidential to the extent permitted by law. You will be identified in the study records by a code. In addition to the research carrying out this study, others may become aware that you are in this study such as federal regulatory agencies, Texas Tech University Health Sciences Center (TTUHSC) representatives, and the TTUHSC Institutional Review Board (a committee that reviews and approves research). These people may review and copy records involving this research.

Study results that are used in publications or presentations will not use your name

To protect your identity, your records and results will be given a number, and all records will be reported as group results. When this study is finished, we will destroy anything that can identify you (except this consent form). The videotape will also be destroyed.

11. Who is funding this study?

We have funding from Texas Tech University Department of Human Development and Family Studies and the C. R. Hutcheson Professorship for supporting data collection and for the gift you will receive for participating.

12. Will it cost me anything to take part in this research study?

No.

13. Will I receive anything for taking part in this research study?

For participating in this research you will receive a gift. You may receive a Wal-Mart gift card worth 60.00 dollars today, or a copy of the videotape of the breastfeeding session on DVD which we will mail to you within a week. You will choose which gift you will receive, and you will receive it even if you stop before finishing the study.

14. Does anyone on the research staff have a personal financial interest in this study?

No.

15. What if I am hurt by participating in this study?

If you have a research related illness or injury, care will be available to you as usual, but you and/or your medical or hospital insurance company will be responsible for the cost of treatment. Before entering this study, you should check whether your insurance company might limit your insurance coverage if you take part in a research study. Texas Tech University Health Sciences Center and its affiliates do not offer to pay for or cover the cost of medical treatment for research related illness or injury. No funds have been set aside to pay or reimburse you in the event of such injury or illness unless specifically stated.

16. What are my rights as a voluntary participant?

- Taking part in this study is your choice. You may choose not to be in it. If you decide not to be in the study, it will not affect any medical care, benefits or rights to which you are entitled.
- If you sign this form, it means that you choose to be in the study. If new information becomes available during the study that may affect your willingness to take part in the study, you will be told.

17. Can I stop being in the study?

- You may leave the study at any time. If you do so, discuss it with the investigator, who will help you leave the study in the safest way.
- If you leave the study, your right to standard medical care will continue.
- While you are in the study, some information may be collected without being identified as belonging to you. We cannot remove this information if you drop out of the study. The data that is identified as yours can be removed if you submit a request in writing.

18. Can someone else end my participation in the study?

Under certain circumstances, the investigators, TTUHSC, or the study sponsor may decide to end your participation in this research study earlier than planned. This might happen because the study has ended.

19. What if I have questions?

For general questions about the study, contact the Investigator, Dr. Sybil Hart at the following telephone number: 806.742.3000.

If you would like to speak to someone who is not involved in the study about your rights as a participant, or any other matter related to the study, you can contact the Human Research Protection Office at 1-800-396-0918.

Your signature indicates that this research study has been explained to you, that you've been given the opportunity to ask questions, and that you agree to take part in this study. **Your signature also indicates that you are providing consent for your baby to be weighed, have his/her arm measured and to be videotaped.** You will be given a signed copy of this form.

Printed Name of Subject

Signature of Subject Date

I have discussed this research study with the subject and his or her authorized representative, using language that is understandable and appropriate. I believe I have informed the subject of the possible risks and benefits, and I believe the subject understands this explanation. I have given a copy of this form to the subject.

Signature of authorized research personnel who conducted the informed consent discussion Date

NOT VALID WITHOUT TTUHSC IRB
SEAL OF APPROVAL

APPENDIX B
SURVEYS

Section B.1 Background Information

Name _____

Subno. _____

Background Information

Date of Delivery _____ Baby's Present Age _____ Previous Children? Yes/No If so, did you breastfeed? ____ # of months you breastfed? ____		Your Age _____ Baby's Father's Age _____ Married? Yes/No Live together? Yes/No How long have you known each other? _____	
Your racial/ethnic background: 1. Caucasian 2. Hispanic 3. African-American 4. Native American 5. Other		His racial/ethnic background: 1. Caucasian 2. Hispanic 3. African-American 4. Native American 5. Other	
Your highest level of education: 1. High school not completed 2. High-school graduate 3. 1-3 years of college 4. Bachelor's degree (BA, BS) 5. Graduate school degree (MA, MS, MD, Ph.D.)			
In your home, who is the person with the largest income? _____ What is that person's occupation? _____		His highest level of education: 1. High school not completed 2. High-school graduate 3. 1-3 years of college 4. Bachelor's degree (BA, BS) 5. Graduate school degree (MA, MS, MD, Ph.D.)	

Are you currently working outside of the home? Yes No

If so, how many hours per week? _____

If not, do you plan to go to work/school (circle one) within 6 months of delivery?

Definitely No				Maybe					Definitely Yes
1	2	3	4	5	6	7	8	9	

How were you fed as an infant? Breastfed Formula Other Not Sure

How was the baby's father fed as an infant? Breastfed Formula Other Not Sure

Section B.2 Feeding Practices

Name _____

Subno. _____ .

Feeding Practices A, B, C

1. Current Feeding Practices

For the past 24 hours, please circle the response that best represents your feeding method:

1. Formula only
1. More Formula than Breast Milk
2. Equal Part Formula and Breast Milk
3. More Breast Milk than Formula
4. Breast Milk Only

For each week column please place an X in the box that best represents your feeding methods for that week.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 6+
Formula Only							
More Formula than Breast Milk							
Equal Part Formula and Breast Milk							
More Breast Milk than Formula							
Breast Milk Only							

2. Expected Feeding Practices

For approximately how many months do you plan to breastfeed?

0	1	2	3	4	5	6	7	8	9	10	11	12	more than 12
---	---	---	---	---	---	---	---	---	---	----	----	----	--------------

Do you plan to feed your baby with any formula during the first 6-months?

Yes	No
-----	----

3. Feeding behaviors

When was the last feeding?	_____	
How long was the last feeding?	_____	
Was the last feeding at breast?	YES	NO
If bottle, how much did baby eat?	_____	
If bottle, what did baby drink/eat?	Breastmilk	Other
Do you give your baby any solids?	YES	NO
Does your baby use a pacifier?	YES	NO
Does your baby suck his/her thumb/hands?	YES	NO

Section B.3 Depression Measure

Name _____ Subno. _____

EPDS A

Please circle the answer the answer which comes closest to how you have felt during the past 7 days.

1. I have been able to laugh and see the funny side of things.
 - a. As much as I always could
 - b. Not quite so often
 - c. Definitely not so much now
 - d. Not at all
2. I have looked forward with enjoyment to things.
 - a. As much as I ever did
 - b. Rather less than I used to
 - c. Definitely less than I used to
 - d. hardly at all
3. I have blamed myself unnecessarily when things went wrong.
 - a. Yes, most of the time
 - b. Yes, some of the time
 - c. Not very often
 - d. No, never
4. I have been anxious or worried for no good reason.
 - a. No, not at all
 - b. Hardly ever
 - c. Yes, sometimes
 - d. Yes, very often
5. I have felt scared or panicky for no very good reason.
 - a. Yes, quite a lot
 - b. Yes, sometimes
 - c. No, not much
 - d. No, not at all
6. Things have been getting the best of me.
 - a. Yes, most of the time I haven't been able to cope at all
 - b. Yes, sometimes I haven't been coping as well as usual
 - c. No, most of the time I have coped quite well
 - d. No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping.
 - a. Yes, most of the time
 - b. Yes, sometimes
 - c. Not very often
 - d. No, not at all
8. I have felt sad or miserable.
 - a. Yes, most of the time
 - b. Yes, quite often
 - c. Not very often
 - d. No, not at all
9. I have been so unhappy that I have been crying.
 - a. Yes, most of the time
 - b. Yes, quite often
 - c. Only occasionally
 - d. No, never
10. The thought of harming myself has occurred to me.
 - a. Yes, quite often
 - b. Sometimes
 - c. Hardly ever
 - d. Never

Section B.4 Breastfeeding Self- Efficacy Scale

Name _____

Subno. _____

Breastfeeding Self-Efficacy _A

1. I can always hold my baby comfortably during breast-feeding.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

2. I can always position my baby correctly at my breast.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

3. I can always focus on getting through one feed at a time.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

4. I can always find breastfeeding information when I need it.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

5. I can always recognize the signs of a good latch.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

6. I can always take my baby off the breast without pain to myself.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

8. I can always determine that my baby is getting enough milk.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

9. I can always successfully cope with breastfeeding like I have with other challenging tasks.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

10. I can always depend on my family to support my decision to breastfeed.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

11. I can always motivate myself to breastfeed successfully.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

12. I can always monitor how much breast milk my baby is getting by keeping track of my baby's urine and bowel movements.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

13. I can always breastfeed my baby without using formula as a supplement.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

14. I can always ensure that my baby is properly latched on for the whole feeding.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

15. I can always express my breast milk if I need to.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

17. I can always safely store my breast milk in the fridge.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

18. I can always manage the breastfeeding situation to my satisfaction.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

20. I think that I can always safely store my breast milk in the freezer.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

21. I can always manage to breastfeed even if my baby is crying.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

22. I can always keep my baby awake at my breast during a feeding.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

23. I can always seek out breastfeeding support in my community.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

24. I always feel that I can refrain from bottle feeding for another few weeks.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

25. I can always feed my baby with breast milk only.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

26. I can always stay motivated to breastfeed my baby.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

27. I can always maintain my milk supply by using the supply and demand rule.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

28. I can always count on my friends to support my decision to breastfeed.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

29. I can always keep wanting to breastfeed.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

31. I can always feed my baby every 2-3 hours,

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

32. I can always keep feeling that I really want to breastfeed my baby for at least six weeks.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

33. I can always comfortably breastfeed with my family members present.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

34. I can always be satisfied with my breastfeeding experience.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

35. I can always comfortably breastfeed in public places.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

36. I can always deal with the fact breastfeeding can be time consuming.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

37. I can always finish feeding my baby on one breast before switching to the other breast.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

38. I can always continue to breastfeed my baby for every feeding.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

39. I can always feel if my baby is sucking properly at my breast.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

40. I can always accept breastfeeding help from my community.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

41. I can always accept the fact that breastfeeding may temporarily limit my freedom.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

42. I can always manage to keep up with my breastfeeding demands.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

43. I can always recognize that my baby is finished breastfeeding.

1	2	3	4
Not Sure	Sometimes	Usually	Definitely Always

44. I worry that there may be something wrong with my milk

1	2	3	4
Sometimes	Often	Usually	Definitely Always

45. It occurs to me that my baby may not like my milk

1	2	3	4
Sometimes	Often	Usually	Definitely Always

46. I worry about feeling guilty if I decide to stop breastfeeding.

1	2	3	4
Sometimes	Often	Usually	Definitely Always

47. I feel pressured to feel happy about breastfeeding.

1	2	3	4
Sometimes	Often	Usually	Definitely Always

Section B.5 Fetal Attachment Scale

Name _____

Subno. _____

Fetal Attachment Scale

Please respond to the following items about yourself and your feelings about the baby while you were pregnant. There are no right or wrong answers. Your first impression is usually the best reflection of your feelings. **Mark only one answer per sentence.**

I thought or did the following:

	True or Definitely Yes	Yes	Uncertain	No	False or Definitely No
1 I talked to my baby					
2 I felt that all the trouble of being pregnant was worth it.					
3 I enjoyed watching my tummy jiggle as my baby kicked inside.					
4 I pictured myself feeding the baby.					
5 I wanted this baby.					
6 I looked forward to seeing what the baby would look like.					
7 I wondered if the baby felt cramped in there.					
8 I needed help in preparing to care for this infant.					
9 I referred to my baby by a nickname.					
10 I imagined myself taking care of my baby.					
11 I was sorry I became pregnant.					
12 I could almost guess what my baby's personality would be from the way s/he moved.					
13 I had decided on a name for a girl baby.					
14 This pregnancy interfered with my relationship with my mate.					

	True or Definitely Yes	Yes	Uncertain	No	False or Definitely No
15 I did things to try to stay healthy that I don't do when I am not pregnant.					
16 I wondered if the baby could hear inside of me.					
17 This pregnancy was unplanned.					
18 I had decided on a name for a boy.					
19 I wondered if the baby had thoughts and feelings inside me.					
20 I ate more meat and vegetables to make sure my baby got a good diet.					
21 It seemed that my baby kicked to tell me it's eating time.					
22 My family has supported this pregnancy.					
23 I would poke the baby to get him/her to poke me back.					
24 I could hardly wait to hold the baby.					
25 My mate did not want this pregnancy.					
26 I tried to picture what the baby would look like.					
27 I stroked my tummy to quiet the baby when there was too much kicking.					
28 I did not like this thing inside of me.					
29 My family will help in the care giving of this baby.					
30 I could tell when the baby had hiccoughs.					
31 I felt that my body was ugly.					

	True or Definitely Yes	Yes	Uncertain	No	False or Definitely No
32 I felt that the baby was my own.					
33 I gave up certain things because I wanted to help my baby.					
34 This pregnancy interfered with my lifestyle.					
35. I used to grasp my baby's foot through my tummy and move it.					

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