I, Adryan R Eastin, hereby submit this original work as part of the requirements for the degree of Master of Science in Health Education.

It is entitled:
Using the Social Cognitive Theory to Predict Initiation and Duration of Breastfeeding in African-American Women

Student’s name: Adryan R Eastin

This work and its defense approved by:

Committee chair: Manoj Sharma, M.B.B.S., Ph.D.

Committee member: Laura Nabors, Ph.D.
Using the Social Cognitive Theory to Predict Initiation and Duration of Breastfeeding in African-American Women

A thesis submitted to the
Graduate School
of the University of Cincinnati
in partial fulfillment of the
requirements for the degree of

Master of Science

in the Department of Health Education
of the College of Education, Criminal Justice, and Human Services

by

Adryan Eastin

B.A. University of Cincinnati

December 2009

Committee Chair: M. Sharma, M.B; B.S., MCHES, Ph.D.
Committee Member: L. Nabors, PhD
Abstract

Research continues to reveal the disparity in breastfeeding rates among African-American women. Research has also shown this disparity translating into more serious and chronic illnesses during infancy and sometimes continuing into childhood. The specific purpose of this study is to apply Bandura's Social Cognitive Theory (SCT) to predict breastfeeding initiation and duration in African-American women in a community sample drawn predominantly from a Midwestern state. A total of 238 African-American women completed a 50 item valid and reliable questionnaire assessing their knowledge, expectations, self-efficacy, self-efficacy in overcoming barriers and self-control in initiation and duration of breastfeeding. Stepwise multiple regression and logistic regression were used to model the SCT predictors of breastfeeding initiation and duration in African-American women. Regression results indicated that self-efficacy for initiation and self-efficacy in overcoming barriers for initiation were significant predictors for initiation of breastfeeding in African American women. Logistic regression revealed that self-efficacy to breast fed for more than six months and self-control for duration were significant predictors. Recommendations have been offered to develop interventions that will increase self-efficacy for initiation and duration, self-efficacy in overcoming barriers and self-control in breastfeeding among African-American women. This investigation provides a critical framework for the development of future research and interventions that promote breastfeeding in African-American women which is an understudied population.

**Key words:** Black, African American, breast feeding
# Table of Contents

Abstract .............................................................................................................2  
List of Tables .................................................................................................5  
Introduction ....................................................................................................6  
Instrumentation .............................................................................................11  
Procedures .......................................................................................................12  
Data Analysis ..................................................................................................12  
Results ...........................................................................................................12  
Limitations ......................................................................................................15  
Implications for Practice ....................................................................................16  
Bibliography .....................................................................................................18
## List of Tables

<table>
<thead>
<tr>
<th>Tables</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Means and standard deviations of the five constructs of Social Cognitive Theory used to predict initiation and duration as well as intention to breastfeed</td>
</tr>
<tr>
<td>Table 2</td>
<td>Parameter estimates from the final regression model for intent to breastfeed as predicted by self-efficacy in initiation of breastfeeding and self-efficacy in overcoming barriers</td>
</tr>
<tr>
<td>Table 3</td>
<td>Logistic regression model for duration of breastfeeding as predicted by duration self-control and self-efficacy to breastfeed for 6 months</td>
</tr>
</tbody>
</table>
Introduction

Breastfeeding, also referred to as nursing, is defined as the infant having received breast milk direct from the breast or expressed (Labbok & Krasovec, 1990). For nearly all infants, breast milk provides the most immediate nutrition to sustain the life and boost the health of the infant. Nutritionally, human milk offers protection from a host of infectious and chronic diseases, and numerous short and long-term health benefits (American Academy of Pediatrics, 2012; U.S. Department of Health and Human Services, 2011). Human milk is enriched with high water content for hydration; serum and other proteins for digestive and growth factors; amino and fatty acids, fat and cholesterol for brain, eye and liver development (do Nascimento & Issler, 2003). The bioactive agents in human milk strengthens the immune system of the infant, protecting against potentially harmful infections (Oddy, 2002).

This practice of infant feeding has been around for centuries; however, the link between human milk and health was abstract (Wolf, 2003). In all cases, an infant is considered breastfed if he/she ever received human milk. More recently, the health benefits of breast milk has been shown to serve as a protective barrier against a host of illnesses to the infant. Research has shown that breastfed infants experience fewer occurrences of lower respiratory illness and acute otitis media (American Academy of Pediatrics, 2012; Ip et al., 2007), sudden infant death syndrome (Chung, Raman, Trikalinos, Lau, & Ip, 2008); childhood obesity (Department of Health and Human Services, 2011).

Research has shown that breastfeeding offers many benefits to the mother. On average, mothers who initiate breastfeeding immediately following childbirth experience less postpartum bleeding (Leon-Cava, Lutter, Ross, & Luann, 2002) than women who do not breastfeed. Oxytocin, a hormone that is released after repeated suckling of the infant, sends a signal to the
breast to produce milk and to uterus to begin contracting. Such contractions result in a reduction of vaginal bleeding and involution of the uterus. Oxytocin has further been associated with the reduction of the blood pressure in breastfeeding women (Jonas et al., 2008). Data shows that the release of the hormone increases calm feelings and maternal bonding with the infant, which reduces the mother’s blood pressure level. Maternal blood pressure was found to remain lower with continued breastfeeding at six months and last beyond breastfeeding has ended. Furthermore, the positive effects of continued breastfeeding serve as a buffer to protect against the development of cardiovascular diseases like hypertension (Lee, Kim, Jee, & Yang, 2005) and Type II diabetes (Godfrey & Lawrence, 2010; Stuebe, Rich-Edwards, Willett, Manson, & Michels, 2005).

Connections in the various health outcomes have are profound because they establish the importance not only of breastfeeding initiation, but also duration and exclusivity. In 2012, the American Academy of Pediatrics released a revision to its 2005 policy statement, reaffirming its recommendation advising pediatricians to promote exclusive breastfeeding for about six months, followed by a combination of breast milk and supplementary foods, and with continued breastfeeding for 1 year or longer as mutually desired by mother and infant (American Academy of Pediatrics, Breastfeeding and the Use of Human Milk, 2012). Contemporary research has shown that the benefits of initiation have been found to be minimal compared to the continuation of breastfeeding until the infant’s first birthday (DiGirolamo, Thompson, Martorell, Fein, & Grummer-Strawn, 2005). Such is especially true in the cases of neurodevelopmental outcomes, diabetes and childhood leukemia (American Academy of Pediatrics, 2012; U.S. Department of Health and Human Services, 2011). The longer the mother breastfeeds, the higher the chances are of the infant receiving the greatest health benefits. Exclusive breastfeeding for 6 months and
continued breastfeeding until the child’s first birthday is instrumental in sustaining the health of the infant and mother (Wolf, 2003). Together, initiation, duration and exclusivity have translated into meaningful predictors of infant health.

**Determinants of Breastfeeding**

Research has shown that breastfeeding initiation and duration are influenced by a variety of factors that are associated with the mother, child and their environment. Factors that affect most women include knowledge of the benefits of breastfeeding, beliefs about breastfeeding, hospital practices and the need to return to work (Lewallen & Street, 2010; Scott, Binns, Oddy & Graham, 2006. In this research, I will focus on the interaction between the mother’s race/ethnicity and how culture influences personal beliefs about breastfeeding.

**Race/Ethnicity**

In the United States, major health disparities exist in breastfeeding rates and practices among different races. In 2013, the CDC highlighted the following information in their Morbidity and Mortality Weekly Report “although differences might be decreasing between black infants and white and Hispanic infants, consistently lower prevalence of breastfeeding among black infants warrants increased attention and action. This persistent gap in breastfeeding rates between black women and women of other races and ethnicities might indicate that black women are more likely to encounter unsupportive cultural norms, perceptions that breastfeeding is inferior to formula feeding, lack of partner support, and an unsupportive work environment” (CDC, Morbidity and Mortality Weekly Report, 2013). In 2011, the Surgeon General’s Call to Action on Breastfeeding reveals the following information:
• African-American mothers (58.1%) have the lowest rate of breastfeeding when compared to Asian-American (83%), Hispanic-American (80.6%), Non-Hispanic White (76.2%), American Indian women (73.8%).

• Breastfeeding rates among African-American women are 50% lower than that of White women at six and twelve months even after controlling for income and education level.

Culture

Culture plays a significant role in influencing women’s breastfeeding perceptions and practices. Overall, it is “normal” to bottle-feed infants in the U.S. For the past century, American women have supplementing their own milk with a variety of substitutes to wean their infants off of the breast (Wolfe, 2003). Access and exposure to these human-milk supplements continues to this day, further adding fuel to the fire. Another social norm that reinforces the decision to bottle-feed their infants is that “bigger is better” and/or “bigger is healthier” (Surgeon General’s Call to Action, 2011). In most cases, breastfed infants are not as big as formula-fed infants. This observation can lead mothers to feel as if their breast milk is not enough, or that something may be wrong with their infant. Having breastfed two children, I have experience this confusion first hand. In order to achieve “bigger infants”, some mothers begin adding supplements to their breastfeeding or infant formula long before the infant is six months of age.

The present study represents the first attempt to investigate breastfeeding initiation and duration among African- American women using Albert Bandura’s Social Cognitive Theory (1985). The SCT offers a robust behavior change model (Sharma & Romas, 2012). The proposed study focused on five constructs from SCT. These are knowledge of breastfeeding,
expectations for initiation and continuation of breastfeeding (multiplicative score of outcome expectations and outcome expectancies), self-efficacy for initiation and continuation of breastfeeding, self-efficacy in overcoming barriers for initiation and continuation of breastfeeding and self-control in initiation and continuation of breastfeeding. These constructs were assessed to predict breastfeeding initiation and duration among African-American women.

The population for this study consisted of African American women. The sample of participants was a convenience sample of African-American women. For the purposes of this study, African-American was defined by two requirements. Women were born to one or more African-American parents in the United States. Or women met all of the following: African descent; born outside of the country but now residing in the U.S.; self-identify as African-American. Participants included women who were single, married, separated, divorced, and those with and without children. Participants were recruited on the campus of a Midwestern University, its African-American Resource and Cultural Center, local community events, Every Child Succeeds support groups and via social media. Participants were either personally approached by the first author or contacted by email to participate in the study. The request to complete the online survey was sent to women who agreed to participate in the study and do not complete a hard copy survey. Survey Gizmo was used to provide an electronic version of the survey. All participants were assured of the voluntary and confidential nature of the study.

The design for this study was a cross sectional design. Inherent in such design, data will only be collected at one time point, and comparing different participants at different stages (Baltes, Reese, & Nesslroade, 1988). While the design can establish association, causality cannot be determined.
The independent variables consisted of constructs of social cognitive theory, namely, (1) knowledge about breastfeeding, (2) expectations about initiation and duration of breastfeeding which were obtained by multiplying outcome expectations with outcome expectancies, (3) self-efficacy about initiation and continuation of breastfeeding, (4) self-efficacy in overcoming barriers about initiation and continuation of breastfeeding, and (5) self-control in initiation and continuation of breastfeeding. The dependent variables measured breastfeeding initiation, breastfeeding duration, and intention to breastfeed and the independent variables were the constructs of SCT.

**Instrumentation**

A 50 item instrument was employed for this study. The authors designed the instrument based on key information noted while reviewing the literature and the SCT constructs decided upon. Once drafted, the face and content validity of the instrument was established by a panel of four experts. The panel consisted of two subject experts, and two instrument experts. The experts reviewed and established face and content validity of the instrument in a two round process. The authors provided them with the original instrument complete with scoring and operational definitions. The experts made their initial edits and sent it back to the first author for revisions. The first author revised the instrument and sent it back to them for final approval. The instrument is divided into 2 sections. The first section of the instrument contains 44 items and assessed breastfeeding intentions, behaviors and five constructs of the SCT. The items examined the participant’s breastfeeding knowledge, perceived willingness, expectations, importance and ability to initiate and sustain breastfeeding for six months. The second section contained 6 items and briefly assessed the participant’s demographic information. Demographic variables included age, state, marital status, education level, and economic status (as measured through self-report).
Procedures

Institutional Review Board (IRB) permission was obtained to conduct the study. The survey was made available on SurveyGizmo™ and tested by the student researcher. Emails were sent via Blackboard, and the African-American Resource and Cultural Center containing the link to complete the survey. Surveys were collected from August to December 2013. To maximize data accuracy and integrity, the online survey was set up with the default setting to only allow one response per participant. All completed surveys received a unique ID and responses were either exported or entered into an SPSS 20.0 database.

Data Analysis

Basic statistical tests were used to analyze the responses. Descriptive and inferential statistics were used. Frequencies, means and other descriptive statistics were carried out on the demographic data to analyze the sample. For inferential statistics stepwise multiple regression and logistic regression were used to model the SCT predictors of breastfeeding initiation and duration in African-American women. The apriori criteria of probability of F to enter the predictor in the model for multiple regression were less than or equal to 0.05 and removing the predictor will be greater than or equal to 0.10. All data were analyzed using the Statistical Package for the Social Sciences (SPSS) software, Version 20.0 on a Microsoft Windows XP™ operating system. The alpha level for significance testing was set at 0.05.

Results

This survey was completed by 238 African-American women between the ages of 18 and 77 years. The median age was 30 years old and mean was 31.45 years (SD 10.35). One hundred twenty-five (52.5%) reported being a parent. One hundred-forty-two (59.9%) reported being single and seventy-six (32.1%) reported being married. Seventy-four (31.1%) held advanced
degrees, seventy-three possessed some college education (30.7%), and sixty-eight (28.6%) held bachelor’s degrees. Half of the respondents (53.1%) reported using a combination of breast and infant formula to feed their child during their first year of life. When asked to rate their comfort level of the idea of breastfeeding, 88.2% reported feeling Very comfortable or Somewhat comfortable. When asked to their comfort level of the idea of using infant formula, 62.2% reported feeling Very uncomfortable or Somewhat uncomfortable. Finally, one hundred sixty-nine (71%) respondents reported that they would breastfeed for more at least six months.

Means and standard deviations of the constructs of social cognitive theory namely, knowledge about breastfeeding, expectation for initiation and duration, self-efficacy for initiation and duration, self-efficacy in overcoming barriers for initiation and duration, self-control for initiation and duration as well as intention to breastfeed are presented in Table 1.

Table 2 summarizes the parameters estimates from the final regression model for intention to breastfeed as predicted by self-efficacy in initiation of breastfeeding and self-efficacy in overcoming barriers. The significant predictors of intent to breastfeed are self-efficacy in overcoming barriers for initiation and self-efficacy. Together the two account for 43% of the variance. Initiation of breastfeeding is dependent on several factors from which the confidence that a mother has in her ability to breast feed the child (self-efficacy for initiation) and the confidence that a mother has in overcoming barriers that might arise while she starts breast feeding (self-efficacy in overcoming barriers for initiation) are important determinants supported by social cognitive theory.

Table 3 summarizes the parameters estimates from the logistic regression model for duration of breastfeeding (more than 6 months or less than six months) as predicted by self-control for duration and self-efficacy to breastfeed for six months. The significant predictors for
duration of breastfeeding are self-control duration and self-efficacy to breastfeed for six months. Building self-control, setting goals and developing plans to accomplish those goals have proven to be very important skills that positively influence breastfeeding duration.

**Discussion**

This study applied Bandura's Social Cognitive Theory (SCT) using selected constructs (knowledge, expectations, self-efficacy for initiation an duration, self-efficacy in overcoming barriers, self-control for initiation and duration) to predict breastfeeding initiation and duration in African-American women. Results of the study found that at least two constructs from the social cognitive theory were significant predictors for breastfeeding initiation and duration.

Parameter estimates from the final regression model indicated that two constructs, self-efficacy in initiation of breast feeding and self-efficacy in overcoming barriers were significant predictors of breastfeeding initiation. Consistent with past research conducted by Nommsen-Rivers et al, breastfeeding self-efficacy was a significant predictor of initiation in this study. Self-efficacy for initiation can be built in health education programs by having the new mother practice breast feeding in small steps (for example, breaking down the whole breastfeeding into doable steps and then practicing each step and gaining mastery), and including the child’s father in the breastfeeding process. Relationship with the father of the child is known to be a critical factor in a woman’s decision to breastfeed. Bar-Yam and Darby found that fathers influence breastfeeding in the following four ways: the breastfeeding decision, assistance at first feeding, duration of breastfeeding, and risk factors for bottle feeding (Bar-Yam and Darby, 1997).

Logistic regression model for duration of breastfeeding (more than 6 months) indicated that two constructs, self-control and self-efficacy to breast feed for 6 months were significant predictors of breastfeeding duration. Health education interventions can help mothers set long-
term goals for enhancing the duration of breast feeding. A mother can also learn to self-monitor and give herself personal rewards on accomplishing goals. Likewise self-efficacy for duration can be developed by making small steps for accomplishing breast feeding goals and involving the child’s father. The father’s role could either support or hinder breastfeeding duration. On the contrary, supportive fathers are often perceived as providers. Sharma and Petosa (1997) found that when men are more knowledgeable, particularly about the health benefits of breast-feeding for the child, they tend to be more supportive.

The constructs of knowledge and expectations were not found to be significant predictors. Knowledge was measured on four items that were rated as correct or incorrect. This may have been insufficient operationalization of the construct and measurement error may have accounted for this variable not being significant predictor. For expectations for initiation and expectations for duration the scores were very low. So once again it could be due to error in measurement whereby salient expectations could not be tapped. This study relied on only four experts to identify the expectations. Ideally the target population would be involved through focus groups to identify these expectations which future research must do.

Limitations

In this study there were a few women over the age of 45. Ideally, only African-American women between the ages of 18 and 45 years should be recruited for such studies. The results in this study were based upon self-reported responses and may include participant bias and/or dishonesty. Being a survey based study; participants may not have fully understood or misinterpreted some questions. This study did not utilize focus groups and/or pilot testing which could have reduced the ambiguities of the survey. As mentioned earlier there could have been measurement error because only four experts were used and some of the psychometric properties
such as test-retest reliability were not measured. Being a survey based study with constructed responses; participants may not fully be able to express their unique views and/or opinions. Future research should look at mixed methods. Participants either reside in or have ties to someone residing in a Mid-western state sampled in this study. There will not be any form of pre-notification done to alert potential participants that this type of study is being conducted. Finally, this was a cross sectional study and as such nothing much can be said about the temporal sequence or cause and effect relationship between the variables.

**Implications for Practice**

This study found that self-efficacy in overcoming barriers for initiation and self-efficacy were significant predictors of an African-American woman’s intent to breastfeed. Also that self-control for duration and self-efficacy to breastfeed for six months were significant predictors in their attempt to breastfeed for duration of at least six months. This study found that African-American women possessed low knowledge and expectations of outcomes for breastfeeding. Based on these results, interventions should occur as early as possible and include a trained Peer Counselor and/or a health professional with specific knowledge on breastfeeding. Our recommendations are similar to those express by Chapman and Perez-Escamilla (2012). Furthermore, breastfeeding mothers should utilize ways to include the father. Sharma and Petosa (1997) recommend that men can feed the baby with a breast-pumped bottle while the mother is working, or while she catches a much-needed nap. Overall, breastfeeding duration scores were lower than those for initiation. A solution to change this outcome is to have regular interaction between mothers and breastfeeding professionals where barriers are discussed and ongoing support is provided. This investigation provides a critical framework for the development of
future research and interventions that promote breastfeeding in the African-American women which is an understudied population.
Bibliography


<table>
<thead>
<tr>
<th>Construct</th>
<th>n</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge about breastfeeding</td>
<td>238</td>
<td>.00</td>
<td>4.00</td>
<td>1.2815</td>
<td>.84229</td>
</tr>
<tr>
<td>Expectation for Initiation</td>
<td>238</td>
<td>.00</td>
<td>64.00</td>
<td>20.3277</td>
<td>13.16472</td>
</tr>
<tr>
<td>Self-Efficacy for Initiation</td>
<td>238</td>
<td>.00</td>
<td>4.00</td>
<td>3.30</td>
<td>1.162</td>
</tr>
<tr>
<td>Self-Efficacy in Overcoming Barriers for Initiation</td>
<td>238</td>
<td>.00</td>
<td>20.00</td>
<td>15.2017</td>
<td>5.81730</td>
</tr>
<tr>
<td>Self-Control for Initiation</td>
<td>238</td>
<td>.00</td>
<td>8.00</td>
<td>5.1218</td>
<td>2.65090</td>
</tr>
<tr>
<td>Expectation for Duration</td>
<td>238</td>
<td>.00</td>
<td>64.00</td>
<td>14.3025</td>
<td>10.06733</td>
</tr>
<tr>
<td>Self-Efficacy for Duration</td>
<td>238</td>
<td>.00</td>
<td>4.00</td>
<td>2.49</td>
<td>1.604</td>
</tr>
<tr>
<td>Self-Efficacy in Overcoming Barriers for Duration</td>
<td>238</td>
<td>.00</td>
<td>20.00</td>
<td>12.2017</td>
<td>6.29591</td>
</tr>
<tr>
<td>Self-Control for Duration</td>
<td>211</td>
<td>.00</td>
<td>8.00</td>
<td>4.4882</td>
<td>2.71917</td>
</tr>
<tr>
<td>Intention to breastfeed</td>
<td>238</td>
<td>1.00</td>
<td>5.00</td>
<td>4.5210</td>
<td>.89394</td>
</tr>
</tbody>
</table>
### Table 2. Parameter Estimates from the Final Regression Model for Intent to Breastfeed as Predicted by Self-efficacy in Initiation of Breastfeeding and Self-efficacy in Overcoming Barriers

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>Self-efficacy in overcoming barriers for initiation</td>
<td><strong>.057</strong></td>
<td><strong>.011</strong></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td><strong>.267</strong></td>
<td><strong>.053</strong></td>
</tr>
</tbody>
</table>

n=238

### Table 3. Logistic Regression Model for Duration of Breastfeeding (more than 6 months or less than six months) as Predicted by Duration Self-control and Self-efficacy to Breastfeed for 6 Months

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>S.E</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
<th>95% C.I. for EXP (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Self-control Duration</td>
<td><strong>.209</strong></td>
<td>.084</td>
<td>6.205</td>
<td>1</td>
<td>.013</td>
<td>1.233</td>
<td>1.046</td>
</tr>
<tr>
<td>Self-Efficacy to breastfeed for 6 months</td>
<td>.529</td>
<td>.126</td>
<td>17.580</td>
<td>1</td>
<td>&lt;.001</td>
<td>1.697</td>
<td>1.325</td>
</tr>
</tbody>
</table>

(n=211)