

The Quality of Attachment in Premature Infants: An Analysis of Mother-Infant Relationships

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THE QUALITY OF ATTACHMENT IN PREMATURE INFANTS:
AN ANALYSIS OF MOTHER-INFANT RELATIONSHIPS

by

CHRISTY VICTORIA CLARKE

A thesis submitted in partial fulfillment of the requirements
for the Honors in the Major Program in Early
Childhood Development
in the College of Education and Human Performance
and in the Burnett Honors College
at the University of Central Florida
Orlando, Florida

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Thesis Chair: Dr. Anne McDonald Culp

ABSTRACT

The purpose of this study was to conduct a qualitative case study using secondary data on four mothers with premature infants in a home visitation intervention group. Three data points were collected on each mother and infant: the health of the infant, the quality of attachment as seen in play interactions, and maternal life circumstances such as depression, social support and use of community resources. The data was looked at prenatally up until the infants were 15 months old. The results indicated that all four infants were relatively healthy across the first year of their lives. Three out of the four mothers had a secure attachment with their premature infants at 12 months of age and one mother was at risk for an insecure attachment. All four mothers demonstrated some positive play interactions; however, one mother in particular demonstrated low involvement. Of the four mothers, one was highly depressed, and the other three mothers were minimally to moderately depressed. The four mothers were also in a marital or partner relationship, and all reported satisfaction in their support systems as well as very similar uses of community resources. The results of this study can be used to assist Home Visitors in understanding the need to help mothers improve their interactions with their premature infants and to encourage the Home Visitors to refer the mothers who show any signs of depression.

DEDICATIONS

To my amazing mother, Elaine. Ever since I was a little girl, you have always believed in me and thought highly of my ability to succeed no matter what challenges we've come across. Words cannot express my appreciation and gratitude for your unconditional love and support in assisting me on the path to pursue my dreams. Throughout my undergraduate career, I have transformed into a confident, strong woman and I am lucky enough to have adopted those qualities from you. Thank you for being the best mother a daughter could have. I love you.

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Chapter One: Introduction

According to the Centers for Disease Control and Prevention (2013), nearly a half a million babies in the United States are born premature each year. A preterm infant is defined as an infant delivered prior to 37 weeks gestation (Evans, Whittingham, & Boyd, 2012). Mothers and their preterm infants are at risk for attachment difficulties because a preterm birth causes a separation between the mothers and infants that may, in turn, cause mothers to withdraw in a manner that is detrimental to the infants' development (Evans et al., 2012). The separation period is immediate and it is when the premature infant is placed in an intensive care unit, while the mother is in her own hospital room. The mother is usually discharged home while the infant remains in the ICU for up to one to three months of time. This separation not only affects the fragile infant who needs maternal interaction; it also deeply affects the mother and places her at a great risk for maternal depression. The stress of uncertainty with premature birth increases the need for support for mothers struggling to cope with problems arising from early birth (Easterbrooks, 1988).

A major theoretical framework centered on infant-mother interactions is attachment theory. Attachment theory, based on the joint work of John Bowlby (1982) and Mary Ainsworth (1969), is defined as patterns of relationships across the lifespan. Bowlby described attachment as a "lasting psychological connectedness between human beings," namely the infant/caregiver relationship (Holmes, 1993, p. 5). He also shared the psychoanalytic view that early experiences in childhood have an important influence on development and behavior later in life. "Sensitive maternal behavior fosters secure attachment relationships, and mutually rewarding interactions

reinforce the infant's working model of the attachment figure as trustworthy and available” (Bozzette, 2007, p. 2).

Important in forming a secure attachment is the mothers' ability to read and respond to infant behavioral cues. During the first year of life, infants communicate through gazes and gestures, which help them to understand social interactions that are vital for development. The ongoing positive development of the infant is determined by the quality of continuous interaction with their environment: family, social interaction and attachment to their primary caregiver. A variety of research studies have found that premature infants may be less alert, less responsive, and less readily engaged in social play (Brisch, Bechinger, Betzler, Heinemann, Kachele, Pohlandt, & Buchheim, 2005; Divitto & Goldberg, 1979; Udry-Jorgensen, Pierrehumbert, Borghini, Habersaat, Forcada-Guex, & Muller-Nix, 2011).

Chapter Two: Literature Review and Background

Interactions between Mothers and their Premature Infants

Previous studies have utilized a variety of different forms to examine the mother-infant relationship, namely attachment, in preterm infant populations. The research journal articles summarized fell into two categories: 1) maternal attachment representations; and 2) infant attachment. Three studies utilized maternal attachment representations in preterm infants using the Working Model of Child Interview (WMCI) coding system (Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994), with two of the studies (Korja, Savonlahti, Haataja, Lapinleimu, Manninen, Piha, Pipari 2009; Borghini, Pierrehumbert, Milijkovitch, Muller-nix, Forcada-guex, & Ansermet 2006) adding a control group with full-term infants. The WMCI measures maternal attachment using three categories: balanced, disengaged and distorted. The three studies also used the Parent Attachment Interview (Bretherton, 1989).

Across the three studies, the number of balanced secure attachment representations varied from 30 to 68%. Cox et al. (2000) and Korja et al. (2009) showed no differences in ratio of balanced attachment representation between full-term and preterm infants. Cox et al. (2000) was the only study out of the three that included preterm infants up to 36 weeks gestational age. The highest ratio of insecure (disengaged or distorted) attachment representations were found in preterm infants (Borghini et al., 2006). Borghini et al. (2006) also had the lowest level of socio-economic status of the preterm mothers. "Lower socio-economic status increases the risk for problems in mother-infant relationship, especially in the group of preterm infants" (Wille 1991, p. 232). Both Korja et al. (2009) and Borghini et al. (2006) indicated that mothers of preterm infants were less coherent, had a lower level of sensitivity and were less involved than mothers

of full-term infants. Korja et al. (2009) utilized the Edinburgh Postnatal Depression Scale at 6 months old which specified that maternal depressive symptoms are associated with the distorted attachment representation category.

In addition to researching maternal attachment representations, infant attachment was studied within the preterm population. Many studies utilized the Strange Situation and a structured interview to assess past relationship history with mother and current relationship with infant (Brisch et al., 2005; Easterbrooks, 1989; Udry-Jorgensen et al., 2011; Wille, 1991). In the Easterbrooks (1989) study, 30 preterm and 30 full-term infants were observed in the Strange Situation at 13-months and 20-months of age. All the parents involved in the study were married and generally categorized as middle class. At the 13-month period, 63% of infants had secure attachments, and 37% had an insecure attachment. Of those that were insecure, 21% were premature infants.

Udry-Jorgensen et al. (2011) reported that 47% of premature infants were insecurely attached, and 53% were securely attached. The infants with the high medical risks tended to be insecurely attached. In studies by Brisch et al. (2005) and Wille (1991), the numbers of secure attachments were closely matched, with one study having 64.7% and the other study having 67%. Those studies also involved a high-risk sample of preterm infants, with all studies using a full-term control sample except Brisch et al. (2005). Most of the studies involved very low birth weight infants with high medical risks. In general, the findings of the studies on preterm infant attachment concluded that a preterm infant can have a secure attachment; however, the premature infants with higher medical risks were the ones most likely to be insecurely attached.

Maternal Depression

Research shows that maternal depression has been shown to disrupt patterns of mother-infant interactions (Cicchetti, Rogosch, & Toth, 1998) and is a risk factor for the infant's development (Korja, Savonlahti, Ahlqvist-Björkroth, Stolt, Haataja, Lapinleimu, & Lehtonen, 2008). Mothers of premature infants have reported feeling emotionally withdrawn, sadness, and ambivalent feelings after giving birth to their baby. All infants may be vulnerable to the effects of maternal depression; however, the decreased responsiveness and increased need for stimulation places the premature infant at a greater risk (Field, 1995). In a study that examined the relationship between maternal depression symptoms and preterm birth, the results concluded that the combination of subclinical maternal depressive symptoms and preterm birth predicted infant-mother attachment (Poehlmann & Fiese, 2001). Namely, that the mother was more likely to be depressed when the infant was more likely to be at medical risk. The less the infant was at medical risk, the less likely the mother would be depressed. In another comparison study with mothers of premature infants and full-term infants, 70% of the mothers with preterm infants thought the child's birth produced negative effects on the family (Macey, Harmon, & Easterbrooks, 1987).

In two research studies examining the level of depressive symptoms in a group of mothers with premature infants (Davis, Edwards, Mohay, & Wollin, 2003; Korja, Savonlahti, Ahlqvist-Björkroth, Stolt, Haataja, Lapinleimu, & Lehtonen, 2008), the level of depression with the mothers differed: 40% in the 2003 study and 12% in the 2008 study. Davis et al. (2003) reported that mothers who had not completed secondary education were more likely to be depressed compared to those who had completed secondary education. Both studies reported that

maternal depressive symptoms were not conclusively supported by the infant's medical condition, meaning that mothers with smaller, sicker infants would not be at a greater risk for depressive symptoms.

Chapter Three: Methodology

Background Information

A study on the effects of home visitation services on first-time mothers and their infants was conducted by Dr. Anne McDonald Culp and colleagues at Oklahoma State University and the University of Central Florida. This data set is expansive and covers over 250 mothers involved in weekly and bi-weekly home visits that lasted from 30-60 minutes. The data set is large and has been published (Culp, Culp, Howell, Hechtner-Galvin, Saathoff-Wells & Marr, 2004; Culp, Culp, Anderson, & Carter, 2007). The program, conducted through the Health Department, aimed to enroll pregnant women as soon after conception as possible, at or before the 24th week of pregnancy. After their 28th week of pregnancy, women could not enroll in the home visitation program. Enrollment was completely voluntary and was open to residents in five target counties in Oklahoma. The home visitation program accepted community referrals from both public and private sources.

The Home Visitors were degreed in Child Development and received extensive pre-service training as well as ongoing training and were required to follow a detailed curriculum to assist these first-time mothers. The lessons involved, but were not limited to, child development, healthy living, environment health and safety, and the use of community resources. The Home Visitors visited the mothers weekly for the first month after the mothers enrolled in the program and made bi-weekly home visits during the remainder of the pregnancy. In total, they had to visit four times prenatally, however, the Home Visitors resumed weekly visits for the first 12 weeks after the child was born. They needed to have made 45 post natal visits. It is also important to

keep in mind that they had a detailed plan of action for missed visits in order to compensate for time lost.

Additional Background Information

The author of this study is an undergraduate researcher interested in the health and well-being of infants, parent education in low-income communities and attachment. As a result of that interest, a qualitative case study was conducted using the data set previously mentioned, to study four mothers of premature infants who were enrolled in the home visitation intervention program described above. The author of the subsequent qualitative study had the following research questions:

Research Questions

- 1) What is the health status of the infants?
- 2) What does the attachment relationship look like for each of the mothers and their one-year old premature infants?
- 3) What other life circumstances are the mothers experiencing (e.g., depression)?

Variables

Health of the infant. The infant's health was measured by counting how many times the infant was hospitalized and how many emergency room visits were made within the first year of their life. Health conditions at the time of the infant's birth and throughout the first year of life were also noted. The Denver II developmental screening was also used to determine whether or not the infant was at risk for developmental problems.

Attachment. The attachment variables included three mother-infant interaction behaviors that were coded during a ten minute free play session: maternal patience, supportiveness of

mother to baby/responsiveness, and mother's appropriateness during play (Osofsky & Culp, 1982).

Maternal life circumstances. Maternal life circumstances was assessed with four measures: 1) the CES-D depression inventory (Radloff, 1977); 2) the mother's perception of her social support measured by Maternal Social Support Index (Pascoe, Ialongo, Horn, Reinhart, & Perradato, 1988); 3) Community Resources (Culp et al., 2004); and 4) the Home Visitor Record Forms which are notes written by the Home Visitors on their weekly logs.

Measures Collected by Researchers

Mother demographics (Culp et al., 2004). The researchers collected data on the mother's age, race, marital status, birth place, education, employment, and household income. It also included whether or not the mother had a boyfriend or identification of the father of the infant.

Father demographics (Culp et al., 2004). This form included data on the father's age, race, birth place, marital status, education, and employment. This form is only used in the prenatal visit.

CES-D Scale (Radloff, 1977). This is a self-report scale designed to measure symptoms associated with depression. A cut off score of 16 or higher indicates depression.

Denver II (Frankenburg & Dodds, 1989). This is a developmental screening test which assesses the child's performance on age-appropriate tasks in four domains of development which include personal/social, fine motor, language, and gross motor. The Denver II is used to red flag children who may be at risk for developmental problems. This measure was used to determine

whether or not the infant was at risk for developmental problems. This was done by reviewing previously scored tests to see if the infant was within normal range at 12 months of age.

Home Visitation Record Forms (Culp et al., 2004). The Home Visitation Records are forms that the Child Development specialists completed at the end of each visit. The information reflected what occurred during each home visit from the 6-month visits to the 12-month visits. These forms included data on what topics were covered, how much time was spent on the visit and on each topic, the level of the mother's distraction, time spent on treatment, and additional information the Home Visitor noted on the form. This form was not completed in front of the mother, but immediately after the home visit. For this study, data on the time spent on child development lessons and child health were collected.

Infant Newborn File (Culp et al., 2004). This form contained information about the birth of the infant. It included gestational age, birth weight and any trauma associated with the birth.

Infant Health Care and Development (Culp et al., 2004). This form contained information about the child's health, doctor's visits, and emergency room visits. When the infants were 12-months of age, the Denver II (Frankenburg & Dodds, 1998) developmental screening test was administered.

Community Services (Culp et al., 2004). The number of community resources were studied and counted.

Mother-Infant Play Interaction (Osofsky & Culp, 1982). This is a play interaction scale in which the mothers were asked to play with their infant as they do at home. They were videotaped for ten minutes. Codes from the interaction are: 1) Maternal patience, 2)

Supportiveness of mother to baby/responsiveness, and 3) Mother's appropriateness during play.

The codes were verified by the researcher when she watched the videotapes.

Maternal Social Support Index (Pascoe et al.,1988). The mothers' support was measured using the Maternal Social Support Index (MSSI). It assesses the mothers' perceived social support both quantitatively and qualitatively.

Peabody Picture Vocabulary Test Third Edition (PPVT; Dunn & Dunn, 1997). This instrument assesses receptive vocabulary for Standard English. It is highly reliable and correlates with many cognitive assessments in Early Childhood. This measure was used to determine the mother's cognitive ability. No data analysis on language patterns was completed in this study.

This study was approved by the University Institutional Review Board (IRB) (See Appendix A for the Letter of Approval from IRB).

Chapter Four: Results

Case Study One

Infant description and infant health. Case Study One involved a male, born at 26 weeks gestation with a birth weight of 2 lbs., 4 oz. Aside from prematurity, there were no additional medical conditions reported. Within the first year, there were seven emergency room visits. The conditions reported within the seven visits were wheezing, a fever, asthma, croup and bronchitis. The infant was given the Denver II test at 12-months of age and was within normal range.

Mother demographics. The mother of this infant was an 18-year old Caucasian female. At the time of birth, the mother reported living with the father of the infant and a friend of the father in a two-room household. At the time, the mother had only completed ten years of education in high school and was still enrolled. She was unemployed and not currently looking for any work. The income report indicated that the mother was below poverty levels for the state of Oklahoma for most of the study's duration. She did report smoking an average of eight cigarettes during the pregnancy. She also reported using marijuana weekly during the pregnancy.

During the initial intake of demographic information, the mother indicated that she wanted to have a second child, but that she would wait. On the mother's demographic intake form, it was reported that the father of the baby was also her boyfriend. When asked how satisfied she was with the talks she had with the father of the baby in the six month update (from very dissatisfied to very satisfied), the mother checked that she was very dissatisfied. At the 12 month update, she was involved with a new boyfriend who was not the father of the baby, and her satisfaction changed from very dissatisfied to satisfied. The Peabody Picture Vocabulary test

(PPVT Third edition Form A) was administered to the mother. She received a standard score of 89 which placed her in the 19th percentile rank. Her age equivalent was 13-years of age.

Attachment. The mother and infant play interaction scores were:

6 month play scale score, with 9 being the highest score. Maternal patience = 8; Supportiveness of mother to baby/responsiveness = 8; Mother's appropriateness during play = 5.

12 month play scale score, with 9 being the highest score. Maternal patience = 7; Supportiveness of mother to baby/responsiveness = 7; Mother's appropriateness during play = 7.

Maternal life circumstances. The four measures constituted this variable:

Depression. The CES-D depression inventory was given to the mother three separate time periods. The score of 16 and higher indicates depression. The score for each survey is:

Prenatal = 26; *Postnatal* (9 months) = 35; *Postnatal* (15 months) = 23.

Maternal social support. Between six and 12 months, the mother reported that she could count on two-six people in times of need. She also reported that she attended social meetings or groups more than once a month. When asked about the support received from the grandmother, the mother indicated that the grandmother was deceased.

Use of community services. Listed below are the medical and health resources the mother used: Indian health services, Public health services, Nutrition information, Parenting care classes, WIC (supplemental nutrition program for Women, Infants and Children), Medicaid, and Medical services.

Home visitation notes. The notes on the infant/toddler home inventory indicated that the house was very clean and that the mother showed interest in trying to support the child.

Throughout that time, the Home Visitor attempted 37 visits, but only completed 17. For the

missed visits, the Home Visitor recorded the reasons the mother missed the visit. Below is a sample of some of the messages written: *“She wasn’t home. I left a note and will stop back later in the week”;* *“They were moving, so we will resume next week”;* *“I left a note asking her to call me”;* *“Wasn’t home”;* *“Phone call. I cannot locate her”;* *“I have not been able to reach her because she has moved”*

The visits lasted anywhere from 30 to 50 minutes. The topics of interest for this Home Visitor and mother were child development and child health. The Home Visitor estimated that she discussed child health for 1 hour and 24 minutes and child development for 1 hour and 42 minutes. For the completed visits, the mother consistently scored low in problem solving and conflict with the material.

Case Study Two

Infant description and infant health. Case Study Two involved a female, born at 35 weeks gestation with a birth weight of 6 lbs., 6.3 oz. In addition to low-risk prematurity, this infant was born with a heart arrhythmia. Within the first year, there were two emergency room visits. The conditions reported within the two visits were a cut eye and throat infection. The infant was given the Denver II test at 12-months of age and was within the normal range.

Mother demographics. The mother of this infant was a 15-year old Caucasian female. At the time of birth, the mother reported living with a total of ten people in the home with five bedrooms. The boyfriend of the mother was 27-years old; however, he was not the father of the infant. She expressed satisfaction when asked how she felt about the talks she had with her boyfriend. At the time, the mother had only completed eight years of education in high school and was still enrolled. She was employed as a babysitter and worked occasionally. The income

report indicated that the mother was below poverty levels for the state of Oklahoma for most of the study's duration. During the initial intake of demographic information, the mother indicated that she did not know how she felt about becoming pregnant. She reported smoking an average of three cigarettes per day during the pregnancy. There were a variety of tests administered to the mother, one of which being the Peabody Picture Vocabulary Test (PPVT Third Edition Form A). The mother received a standard score of 95, which placed her in the 37th percentile rank. Her age equivalent was 15-years of age.

Attachment. The mother and infant play interaction scores were:

6 month play scale score, with 9 being the highest score. Maternal patience = 5; Supportiveness of mother to baby/responsiveness = 4; Mother's appropriateness during play = 3.

12 month play scale score, with 9 being the highest score. Maternal patience = 4; Supportiveness of mother to baby/responsiveness = 4; Mother's appropriateness during play = 4.

Maternal life circumstances. The four measures constituted this variable:

Depression. The CES-D depression inventory was given to the mother three separate time periods. The score of 16 and higher indicates depression. The score for each survey is: Prenatal = 16; Postnatal (6 months) = 15; Postnatal (12 months) = 18.

Maternal social support. Between 6 and 12 months, the mother indicated that she can count on ten or more people in times of need and that she receives quite a bit of support from her mother. She also reported being a member of an education and social group.

Use of community services. Listed below are the medical and health resources the mother used: Indian health services, nutrition information, parenting care classes, WIC (supplemental nutrition program for Women, Infants and Children), Medicaid, and medical services

Home visitation notes. The notes on the infant/toddler home inventory showed that the living environment was very chaotic, with relatives, neighbors and various kids in and out of the home. There was food left around from days before, flies, and no air conditioning. The grandmother of the baby lived with the mother. The Home Visitor stated that the grandmother discussed questions on parenting using physical punishment in front of the child.

The Home Visitor attempted 68 visits, but only completed 20. For the missed visits, the home visitor recorded the reasons the mother missed the visit. Below is a sample of some of the messages written: *“Out of town until next week”*; *“Phone call. Still out of town”*; *“Called to reschedule for next week”*.

The visits lasted an average of 49 minutes. The topics of interest for this Home Visitor and mother were child development and child health. The Home Visitor estimated that she discussed child health for 1 hour and 12 minutes and child development for 5 hours and 33 minutes

Case Study Three

Infant description and infant health. Case Study Three involved a male, born at 35 weeks gestation with a birth weight of 5 lbs., 6 oz. Aside from low-risk prematurity, this infant was born with no birth defects. Within the first year, there were two emergency room visits. The conditions reported within the two visits were a rash from antibiotics and medication. The infant was given the Denver II test at 12-months of age and was within normal range.

Mother demographics. The mother of this infant was a 19-year-old Caucasian, married female. At the time of birth, the mother reported living with her husband, who is the father of the infant. The mother had completed 13 years of education. She was unemployed and not looking

for a job at that time. The income report indicated that the mother was below poverty levels for the state of Oklahoma for most of the study's duration. She did report smoking an average of ten cigarettes per day and used alcohol one time during the pregnancy. In the initial in-take survey question asking the mother how she felt about becoming pregnant, she expressed that she wanted to be pregnant again but later. There were a variety of tests administered to the mother, one of which being the Peabody Picture Vocabulary Test (PPVT Third edition Form A). The mother received a standard score of 94 which placed her in the 34th percentile rank. Her age equivalent was 14-years of age.

Attachment. The mother and infant play interaction scores were:

6 month play scale score, with 9 being the highest score. Maternal patience = 7;
Supportiveness of mother to baby/responsiveness = 7; Mother's appropriateness during play = 5.

12 month play scale score, with 9 being the highest score. Maternal patience = 8;
Supportiveness of mother to baby/responsiveness = 7; Mother's appropriateness during play = 7.

Maternal life circumstances. The four measures constituted this variable:

Depression. The CES-D depression inventory was given to the mother twice. The score of 16 and higher indicates depression. The score for each survey is: Prenatal = 20; Postnatal (7 months) = 15.

Maternal social support. Between 6 and 12 months, the mother indicated that she can count on ten or more people in times of need. She also reported being a member of an education group.

Use of community services. Listed below are the medical and health resources the mother used: Indian health services, public health services, nutrition information, parenting care classes WIC (supplemental nutrition program for Women, Infants and Children), Medicaid, and medical services

Home visitation notes. The notes on the infant/toddler home inventory indicated that the living environment was very safe and clean. Throughout that time, the Home Visitor attempted 46 visits and completed 32. For the missed visits, the Home Visitor recorded the reasons the mother missed the visit. Below is a sample of some of the messages written: “*Participant called to reschedule for next week due to family emergency*”; “*Participant not home*”; “*Called participant to remind of visit.*”; “*Client requested to reschedule.*”

The visits lasted an average of 40 minutes. The topics of interest for this Home Visitor and mother were child development and child health. The Home Visitor estimated that she discussed child health for 8 hours and child development for 8 hours and 16 minutes.

Case Study Four

Infant description and infant health. Case Study Four involved a male born at 35 weeks gestation, with a birth weight of 6 lbs., 8 oz. Aside from low-risk prematurity, this infant was born with no medical problems. There were no emergency room visits within the first year, but there was a report of bronchitis treated by the pediatrician. The infant was given the Denver II test at 12-months of age and was within the normal range.

Mother demographics. The mother of this infant was a 26-year old Caucasian, married female. At the time of birth, the mother reported living with her husband who is the father of the infant. The mother had completed 18 years of education. She was employed, was not in poverty

and continued working throughout the pregnancy. In the initial in-take survey questionnaire asking the mother how she felt about becoming pregnant, she expressed that she wanted to be pregnant then. She did not mention wanting to be pregnant again. When asked how satisfied she was with the talks she had with her husband, the mother reported she was satisfied. There were a variety of tests administered to the mother, one of which being the Peabody Picture Vocabulary Test (PPVT Third edition Form A). The mother received a standard score of 108, which placed her in 70th percentile rank. Her age equivalent was 22-years of age.

Attachment. The mother and infant play interaction scores were:

6 month play scale score, with 9 being the highest score. Maternal patience = 9; Supportiveness of mother to baby/responsiveness = 9; Mother's appropriateness during play = 9.

12 month play scale score, with 9 being the highest score. Maternal patience = 6; Supportiveness of mother to baby/responsiveness = 7; Mother's appropriateness during play = 6 minutes.

Maternal life circumstances. The four measures constituted this variable:

Depression. The CES-D depression inventory was given to the mother three separate time periods. The score of 16 and higher indicates depression. The score for each survey is: Prenatal = 19; Postnatal (7 months) = 12; Postnatal (13 months) = 14.

Maternal social support. Between 6 and 12 months, the mother reported that she can count on ten or more people in times of need. She reported that the grandmother of the infant provides a lot of support but also indicated that she sees no other relatives and would like to see them more often.

Use of community services. The medical and health resources the mother used are public health services, nutrition information, and parenting care classes.

Home visitation notes. The notes on the infant/toddler home inventory indicated that the living environment was good and that the mother was very active with the child and good at reading the baby's cues. Throughout that time, the Home Visitor attempted 63 visits and completed 57. For the missed visits, the Home Visitor recorded the reasons the mother missed the visit. Some of the messages written were: "*Participant had to leave town*"; "*No visit due to sickness in family*"; "*Mom forgot about appointment;*" "*She wanted to reschedule*".

The visits lasted an average of 60 minutes. The topics of interest for this Home Visitor and mother were child development and child health. The Home Visitor estimated that she discussed child health for 4 hours and 36 minutes and child development for 3 hours and 42 minutes.

Chapter Five: Discussion

Case Study One

From reviewing the home visitation file, the mother was genuinely interested in forming a secure attachment with her infant; however, there were a variety of life circumstances that may have interfered with the mother-infant relationship. This mother gave birth to the youngest premature infant out of the four studied, which could be a factor in the maternal depression from which she suffered. From 6 to 12 months, the mother transitioned into two different relationships. That transition may have affected her mental health and the type of interactions that she shared with her infant. She was the only mother who received high scores on the depression scale, indicating high depression. The highest level was seen when the infant was 9-months old. The new relationship may have provided more support for the mother as her depression score went down to a 23 when her infant was 15 months old. It is unclear whether or not the home visitor discussed the depression with the mother.

From viewing the video-recorded sessions at 6-months and 12-months, the mother seemed interested in developing a positive relationship with her infant. With continued support, she may have improved the mother-infant relationship. She engaged in play appropriately by supporting the infant's choices. The infant appeared to have a strong level of trust toward the mother as well. For maternal patience and maternal supportiveness, the mother's scores were moderately high at both 6-months and 12-months and for her amount of appropriateness she was moderate. So, while she demonstrated patience and supportiveness at 6-months about half the time, she increased those behaviors to 80% of the time at 12-months. For mother's appropriateness, the mother's scores made a slight change at 6-months and 12-months. While she

demonstrated appropriateness almost all the time at six months, at 12-months she decreased those behaviors to 80% of the time. Overall, I believe this mother has a secure attachment with her infant.

Case Study Two

This mother suffered from the most chaotic environment. She struggled in forming a secure attachment with her infant. She also reported smoking while she was pregnant, and it is unknown whether or not the smoking contributed to the infant's heart arrhythmia. Her scores on the CES-D depression inventory did not indicate high levels of depression. I believe the living environment may have affected her ability to bond with her infant. With relatives, neighbors and various children traveling in and out of the home, it was hard to maintain stability and have a consistent routine, which is essential for young children.

From viewing the video-recorded sessions at 6-months and 12-months, the mother seemed to be very disconnected from her child. All scores on the play interaction codes were low. The codes described an impatient and distant mother who demonstrated appropriate parenting only 25% of the time at 6-months, with some improvement at 12-months. For example, she allowed her infant some crawling or walking away and some play with the toys, but this was only occasionally encouraged. The mother is generally distanced from her infant.

There was many times that the infant was crying and the mother made very little attempt to console her. The attempt that she did make when consoling her would not be classified as affectionate or loving. There were also times that I observed the mother sitting alongside her infant watching her play, but not necessarily engaging in play appropriately with her. The lack of

responsiveness with the mother could have affected the level of trust that the infant had in her ability to keep her safe and comforted.

While the mother was linked to several community services, she missed more than half of her home visits which is concerning because the lack of consistency in participating in those visits possibly affected the development of a secure mother-infant relationship. The Home Visitor reported that the mother moved a few times due to a fire at her last permanent residence. The home visits that she missed contained valuable information that could have improved the relationship with her infant. This mother was definitely at-risk for an insecure attachment.

Case Study Three

The mother of Case Study Three appeared to be dedicated to developing a secure attachment with her infant. The Home Visitor of this mother discussed child health and child development for most of her home visits. The time that she devoted to those topics reflected the mother's effort of interacting with her infant. From viewing the video-recorded sessions, the mother was actively involved by playing appropriately with the infant and responding to behavioral cues. The infant looked to the mother for confirmation and support, which indicates a high level of trust in the mother-infant relationship.

For maternal patience and maternal supportiveness, the mother's scores showed a considerably patient and actively supportive mother. At 12-months of age, there was an improvement in maternal patience and appropriateness of mother to baby. While she demonstrated supportiveness at 6-months about half the time, she increased those behaviors to 80% of the time at 12-months. Overall, I believe this mother has a secure attachment with her infant.

Case Study Four

Case Study Four is a mother who was demographically different from the other three mothers. She was the most educated. She was also the only mother whose income did not classify her in poverty for the State of Oklahoma. She lived in a home with a middle social economic class income. This sets this mother apart from the other three as the increase in financial resources relieved the stress of providing for her infant. Her scores on the CES-D depression inventory did not indicate high levels of depression. Her perception of her social support was satisfactory.

The Home Visitor discussed child health and child development for much of the time during the visits. From viewing the video-recorded sessions, I saw differences in the mother's behavior between 6-months and 12-months. At 6-months, the mother's scores showed an encouraging, constantly supportive mother that always played appropriately with her infant. She produced teaching utterances, meaningful interactions, and was supportive in a loving and affectionate manner. At 12-months of age, the mother's scores indicated a fairly patient, actively supportive mother that played appropriately with her infant 80% of the time. She still managed to produce several teaching utterances and was supportive in a loving and affectionate manner; however she did not produce as high a meaningful interaction with her infant as she did at 6-months. She seemed tired and overwhelmed, which may have been a bad day for her. Overall, I believe that this mother had a secure attachment to her infant.

Summary across all four mothers

Similarities across the four mothers: All four mothers gave birth to premature infants who were relatively healthy throughout their first year. The four mothers were in a marital or partner relationship, and all reported satisfaction in their support systems. The four mothers also reported very similar uses of community resources.

Differences across the four mothers: There are two major differences across the four mothers: their play interactions scores and their depression scores. Regarding their attachments to their infants, all four demonstrated some positive play interactions; however, one mother in particular demonstrated low involvement. Another mother had scores that indicated a drop in their interactions at 12-months, and another mother had an increase in their interactions at 12-months. Of the four mothers, one was highly depressed, and the other three mothers had minimal or moderate depression, but would not be classified as clinically depressed.

Looking across four mothers with premature infants was an eye opening experience. Each mother was very unique and dealt with individual problems that could have affected the mother-infant relationship. Mothers and their premature infants continue to be a vulnerable population in need of assistance. Attachment relationships are associated with a young child's development, especially with infants facing medical risks from an early birth. So, when signs are visible of poor interaction and depression, one must take notice. The bond between a mother and infant can be crucial for healthy social-emotional development, the ability to maintain secure relationships with others, and overall positive development as a young child, adolescent and an adult. Studying the four mothers allowed for reflection on possible ways we can improve the

mother-infant relationship of premature infants and the relationship between mothers and Home Visitors.

Implications

After reading and studying the lives of these four mothers, I would recommend to any mother of a premature infant to seek and take advantage of any support system that becomes available to them. When dealing with the trauma associated with prematurity, those extra resources may make the difference between having a secure attachment and an insecure attachment. I would also recommend that mothers pursue professional help when dealing with symptoms of depression and counseling when dealing with issues within a spousal relationship. Home Visitors also need to be immediately responsive to mothers displaying symptoms of depression. Another recommendation I would offer would be for Home Visitors to realize that their services to mothers of premature infants is not a one size fits all treatment.

In addition, it is vital to be knowledgeable about available community resources and the risks and health problems associated with all levels of prematurity. Helping a mother with a 26 week old premature infant will be different than helping a mother of a 35 week old premature infant as the medical risks may be higher. Each mother with a premature infant will be different and will react differently to a premature birth. Some mothers may come from a low-income background as others may come from a middle-class background. All of the mothers in this study were Caucasian. Home Visitors with caseloads of ethnic diversity, will need to attain knowledge of working with underrepresented communities and families from all backgrounds.

Lastly, all mothers will face different life circumstances. As seen throughout the case studies, some mothers do not have financial security, a stable home or a satisfactory relationship and support system. Due to the varying levels of support and crisis, not all mothers of premature infants are going to need the same information or support from their Home Visitor. Each Home Visitor varied the amount of time dedicated to each topic in the curriculum for each of the mothers. The results of this study can be used to assist Home Visitors in understanding the need to help mothers improve their interactions with their premature infants and to encourage the Home Visitors to refer the mothers who show any signs of depression.

Although valuable information about individual mothers of premature infants is within this document, there are additional limitations to this study. The first limitation is that all of the mothers were Caucasian women born in the United States. In addition, this is a case study of four mothers, so the sample size is very small. Thus, generalizability to all mothers of premature infants will be minimal.

Future Research

For my future work with premature infants, a variety of changes would be made in the measures and methods of reviewing attachment and support systems. To begin with, the first change would be the removal of the Denver II developmental screening test. Although the test was a great method during the original study, its lack of culturally sensitivity makes it inappropriate to use in the present day. The second change that would be made is including father involvement as a factor in the attachment relationship formed with the infant. Father-infant relationships would be studied in-depth, in addition to mother-infant relationships. That measure would be open to biological and non-biological father figures in the infant's life.

The third change would be the creation of a support group for all mothers participating in the study. There will be many social events that would allow the mothers to connect, relate and express similar and different concerns, ultimately forming a strong community and an extra source of support. I believe that extra support system between only the mothers will serve as a great tool in measuring how successful they are in forming positive attachment relationships with their infants.' It would also be interesting to see the mother's level of depression and satisfaction in their current support systems with the addition of the mother support group.

The fourth change would be evaluating the role of the grandmothers and whether or not the mother's relationship with the grandmothers has affected the mother's perception of parenting. Many parents choose to raise their children in the same manner in which they were raised. That may be either a positive or negative experience, but it would be valuable to discover where the mother's beliefs stem from.

The last change that would be implemented in the study would be educating the mothers on the link between food insecurity, obesity and school readiness. Families in low-income communities may be especially vulnerable to food insecurity and improper nutrition due to lack of funds and knowledge about the importance of eating healthy. There are many links between children being too hungry to learn and not having the proper nutrition, which may lead to health-related illnesses and delays in development. I would offer a variety of workshops on eating healthy on a budget, portion control and maintaining a well-balanced diet. In addition, I would also educate the mothers on the importance of physical activity and play in supporting their children's development.

Appendix A

IRB Approval



University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: **UCF Institutional Review Board #1
FWA00000351, IRB00001138**

To: **Anne McDonald Culp and Co-PI: Christy Victoria Clarke**

Date: **August 06, 2013**

Dear Researcher:

On 8/6/2013, the IRB approved the following human participant research until 8/5/2014 inclusive:

Type of Review: UCF Initial Review Submission Form
Project Title: The Quality of Attachment in Premature Infants: An Analysis of
Mother-Infant Relationships
Investigator: Anne McDonald Culp
IRB Number: SBE-13-09548
Funding Agency:
Grant Title:
Research ID: N/A

The scientific merit of the research was considered during the IRB review. The Continuing Review Application must be submitted 30 days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at <https://iris.research.ucf.edu>.

If continuing review approval is not granted before the expiration date of 8/5/2014, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Sophia Dziegielewski, Ph.D., L.C.S.W., UCF IRB Chair, this letter is signed by:

Signature applied by Joanne Muratori on 08/06/2013 11:26:52 AM EDT

IRB Coordinator

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