

CALIFORNIA STATE UNIVERSITY NORTHRIDGE

WHY ARE BABIES PACIFIED? A REVIEW OF MOTHERS' CHOICES TO OFFER
PACIFIERS AND HOSPITAL PACIFIER POLICIES

A graduate thesis submitted in partial fulfillment of the requirements

For the degree of Master of Art in Education,

Educational Psychology

By

Lindsey Flam

August 2014

The graduate thesis of Lindsey Flam is approved:

Sloane Lefkowitz Burt, M.A.

Date

Joannie Busillo-Aguayo, Ed.D.

Date

Carrie Rothstein-Fisch, Ph.D., Chair

Date

DEDICATION

My thesis is first and foremost dedicated to each child that has entered my life and had an impact on my personal early childhood philosophies. These children have served as an inspiration for my research and my passion for the field of Early Childhood Education. Their curiosity and excitement for discovery has allowed me to look at the world through a different lens and will continue to influence me the rest of my life.

Next, this thesis is dedicated to my husband, Justin. Words cannot express how fortunate I am to have found someone who will support me to the moon and back. No matter how overwhelmed I get, he is there anchoring me, helping me figure out the next solution, and showing patience when I get frustrated. The past year had its trials and tribulations, but it only brought us closer and strengthened our connection. In the moments where I only see my weaknesses, he only sees my strengths. Justin, I will love you forever. Our lives together have only just begun.

My family, (Mom and Rick, Dad and Susan, Brooke and Eric, Mikayla, Bubbi, Hanna and Judah) also receives a piece of this dedication. I remember in orientation they mentioned that at times your family might not understand that you cannot attend a family function because of school. However, this was never the case for me. My family has always been my number one fans who I can never let down. They go the extra mile to make sure each day I know that I am loved. I am so lucky to have a family unit that is always there to serve as my rock.

Without my mom, I would never be where I am at today. She has always been there as my constant support. Growing up, she edited my papers and worked with me to become a better writer. Although at times I grew frustrated with her corrections, she

provided me with skills that allowed me to become an accomplished student in and out of the classroom. What she has taught me about being a student and life will always stay with me.

It is in the big accomplishment that I also remember my three grandparents (Honey, Pa, and Zaidi) who are no longer with me knowing how proud they would have been at my achievement.

Lastly, this thesis is dedicated to my mentor and thesis chair, Dr. Carrie Rothstein-Fisch. Through her eyes, I have begun to see my own potential and know that I can reach for the stars. During the entire program, she has been an inspiration through her passion and devotion to the field of Early Childhood Education. Her brilliant mind helped guide me on my journey through the Masters program including my thesis. In moments of confusion, she helped bring clarity to my thoughts and work. I have been incredibly fortunate to be inspired by her the past two years and look forward to continue my work with her. She is the definition of what is to be a teacher evidenced in the way she connects to students, educates them, and motivates them to be visionaries like herself. The field of Early Childhood Education is fortunate to have a mind like hers in the field.

ACKNOWLEDGEMENTS

In addition to the people mentioned in my dedication, this thesis would not have been possible without these people.

Sloane Lefkowitz Burt – Thank you so much for the time and energy you have put into my thesis. Without your keen eye for detail, my thesis would not have come together so smoothly. You are meticulous in your work and I appreciate all of your help throughout this process.

All my teachers who have helped me along my path as a student (including, but not limited to: Mr. Greene, Mrs. Horowitz, Mr. Leff, Mr. Dean, Mr. Totheroh, Mrs. Claflin, Mrs. Ortiz, and Professor Stables) – I have more gratitude than I can express for your dedication to my education and the education of all children. Without your influences in my life, I would not have become the adept student that I am today. I feel fortunate to have been surrounded by such adept educators who were able to challenge me and strengthen my knowledge as a scholar and person. It is my hope that children in the future are as lucky as me to have teachers, like you, who are as invested in the work of their students as you were in mine.

Katie Leon – I do not know where I would have been this year without you. You were my go to person when I needed someone who understood what I was going through at school. Our phone calls kept me sane when I felt crazy for taking on so much work this year.

Carol Bovill – Thank you for taking a chance on me as a teacher when I was struggling to find a job. Your guidance and confidence in my abilities led me to enter this Masters program. I am proud to be an alumna of the same program as you.

Sherrie Zadok and all of my coworkers at Wilshire Boulevard Temple – I am lucky to have an incredibly supportive group of colleagues. I appreciate your encouragement throughout my program and understanding when school took me away from work.

Rex – Your love and cuddles were much needed on my roughest days. Thanks for keeping me company as I completed all my schoolwork.

Lindsay, Sarah, and Steph – Thank you for listening to me talk endlessly about my research and school over the past two years. I am lucky to have supportive friends like you girls.

TABLE OF CONTENTS

SIGNATURE PAGE ii

DEDICATION iii

ACKNOWLEDGEMENTS v

ABSTRACT xii

CHAPTER ONE: INTRODUCTION 1

 Statement of the Problem 2

 Purpose of the Study 3

 Significance of the Study 3

 Terminology 4

 Preview of Thesis 5

CHAPTER TWO: LITERATURE REVIEW 7

 Introduction 7

 Origins of Pacifiers 8

 Early Versions of Pacifiers 8

 Modern Pacifiers 9

 Benefits and Risks of Pacifier Use 10

 Benefits 10

 Risks 12

 Overall Recommendations for Pacifier Use 15

 Pacifiers and Their Effects on Facial Mimicry and Emotional Competence 15

 Hypothesis 15

 Study One 16

 Study Two 18

 Study Three 19

 Findings 20

 Discussion 22

 Effects of Pacifier Attachments on Mother-Child Attachment 23

 Hypothesis 23

 Subjects 23

 Methodology 23

 Findings 25

 Conclusion 26

 Pacifiers as Soothers 26

 Research Question 26

 Subjects 27

 Methodology 27

 Findings 28

 Conclusion 29

 Austrian Mothers' Opinions on Pacifier Use 30

 Research Question 30

 Subjects 30

 Methodology 30

 Findings 31

 Conclusions 32

Australian Mothers' Opinions on Pacifier Use	33
Research Questions.....	33
Sample	33
Methods	33
Results	34
Conclusions	35
Synthesis of the Review of the Research	35
CHAPTER THREE: METHODS	37
Introduction	37
Study One: Mothers' Choices to Offer Pacifiers.....	37
Sample	37
Instrument.....	39
Research Design	41
Procedures	41
Study Two: Hospital Pacifier Practices.....	42
Sample	42
Instrument.....	43
Research Design	43
Procedures	43
CHAPTER FOUR: RESULTS	45
Introduction	45
Study One: Mothers' Choices to Offer Pacifiers.....	45
Sample	45
Results	45
Study Two: Hospital Pacifier Practices.....	57
Sample	57
Results	58
CHAPTER FIVE: DISCUSSION.....	64
Summary of Study One: Mothers' Choices to Offer a Pacifier.....	65
Summary of Study Two: Hospital Pacifier Policies.....	66
Discussion.....	66
Influence of Medical Professionals	67
Social and Emotional Development and Pacifiers	71
Language Development.....	77
Oral Stimulation	78
Dentition.....	79
Sleep Habits.....	79
Weaning.....	81
Culture	82
Implications for Policy	83
Breastfeeding.....	85
Preterm Infants and "Drug Babies"	85
Analgesia (Pain Relief).....	85
SIDS.....	86
Infection.....	86
Otitis Media	86

Social, Emotional, and Language Development	87
Attachment.....	88
Children with Special Needs	88
Dentition	89
Recommendations for Pacifier Types and Safety.....	89
Suggestions for Future Research	90
Security of Attachment and Pacifier Attachment	92
Soothing and Pacifiers	92
Conclusion	92
CHAPTER SIX: AFTERWORD.....	94
REFERENCES	97
APPENDIX A: Study One Interview	102
APPENDIX B: Study One Initial Contact.....	104
APPENDIX C: Adult Consent Form.....	106
APPENDIX D: Human Subjects Protocol Approval	110
APPENDIX E: Study Two Interview	111
APPENDIX F: Study Two Initial Contact	112
APPENDIX G: Pacifier Use.....	113
APPENDIX H: Reasons to Offer a Pacifier	114
APPENDIX I: Reasons for Continued Pacifier Use.....	115
APPENDIX J: Reasons Not to Use a Pacifier	116
APPENDIX K: Times of Pacifier Use, Frequency of Use, and Pacifier Control	117
APPENDIX L: Pacifier Weaning.....	118
APPENDIX M: Hospital Pacifier Policies	119
APPENDIX N: Hospital Pacifier Protocols	120
APPENDIX O: Who Determines the Breastfeeding Policies and Pacifier Protocols? ...	122
APPENDIX P: Written Documentation on Pacifiers	123

LIST OF FIGURES

Figure 2.1. Madonna and child with Sugar Rag (1506)	8
Figure 4.1. When Pacifier Was First Offered	46
Figure 4.2. End of Pacifier Use	47
Figure 4.3. Influences on Mothers Choices to Offer a Pacifier	48
Figure 4.4. Reasons for Continued Pacifier Use (use past 6 months of age)	51
Figure 4.5. Influences on Mothers Choices Not to Offer a Pacifier	52
Figure 4.6. Number of Pacifiers	55
Figure 4.7. Do Hospitals Have Pacifier Policies?	58
Figure 4.8. Hospital Protocol Classifications	60
Figure 4.9. Number of Hospital in Each Protocol Classification	61
Figure 5.1. Recommendations on Pacifier Types and Tips for Pacifier Safety	90

LIST OF TABLES

Table 5.1. Suggestions for Pacifier Use	84
---	----

ABSTRACT

WHY ARE BABIES PACIFIED? A REVIEW OF MOTHERS' CHOICES TO OFFER PACIFIERS AND HOSPITAL PACIFIER POLICIES

By

Lindsey Flam

Master of Arts in Education,

Educational Psychology

In the United States, the use of pacifiers appears to be a common practice, potentially as a result of lowering Sudden Infant Death Syndrome or as a way to soothe a baby. However, information detailing how often, when, and why mothers from the United States offer and ultimately use pacifiers for their babies is lacking. The current thesis contains two studies: the first explores reasons behind mothers' experiences using pacifiers with their young children, while the second seeks to better understand how hospitals' practices that may support or hinder pacifier use among newborns. Ten mothers of children between the ages of 18-and-36 months were interviewed to determine the factors involved in their decisions to use or not to use pacifiers with their babies. In addition, nurses or supervisors from six hospitals in the greater Los Angeles area were interviewed about their practices regarding pacifiers for newborns. Results indicate that all the mothers attempted to offer pacifiers to their children, but for a variety of reasons, many stopped early on. New hospital practices also emerged in the second study, which may have an impact on encouraging pacifier use. Practices and policies related to pacifiers are also discussed.

CHAPTER ONE

INTRODUCTION

“Pacifiers are too often used as plugs. The siphoning off of important energy into the oral sphere at a time when it could be used for exploring and learning in other areas and should certainly be weighed against the immediate convenience of ‘plugging up’ a demanding child.” Brazelton, 1989, p. 14

Pacifier use before the age of two appears to be prevalent throughout the United States. Walking into any baby supply store, there are usually multitudes of brands and styles of pacifiers leading one to believe that sales for pacifiers within the United States are high. However, trying to find out the true pervasiveness of pacifiers, reasons for pacifier use, duration (length of time) of use, and frequency (how often during the day) of use is far more complicated than it might seem. Financial statements from pacifier manufacture companies such as Nuk, Philips Avent, and Playtex showed no data specific to the number of pacifiers sold or amount of profit from pacifiers in the United States. In an effort to gather such data, Nuk executives were contacted to inquire about pacifier sales, but they did not respond with data. In addition, the American Academy of Pediatrics (AAP, 2014), American Academy of Family Physicians (AAFP; Sexton and Natale, 2009), and American Academy of Pediatric Dentistry (AAPD, 2013) identify recommendations for use, but do not discuss the scope of pacifier use. Endless searches on pacifiers in research journals showed a lack of information regarding pacifier use in the United States.

Among the studies published about pacifier use worldwide, there appears to be a wide range of reported use from 13% (Nelson, Yu, Williams, & the ICCPS, 2005) to 82%

(Pansy et al., 2008). Even so, the statistics on pacifier use vary greatly across South America, Northern Europe, Southern and Eastern Europe, Asia, and Australia (Howard, et al., 1999; Kelmanson, 1999; Nelson et al., 2005; Niemela, Pikhari, Pokka, Uhari, & Uhari, 2000) with countries in Asia such as Japan and China showing the lowest use (13 % - 42 %) and the highest use across Europe (45 % - 82 %). Further notable information included one study identifying that 45 % of infants from Finland used pacifiers throughout the day (Niemela et al., 2000) and another study revealing that 68 % ($N = 265$) of participating infants from Rochester, New York who were given pacifiers before 6-weeks of age (Howard et al., 1999). Although information is limited, there does appear to be a large amount of pacifier users across the globe, especially in Westernized countries.

Statement of the Problem

While pacifier use among babies appears to be a common practice in the United States, there is limited data that quantifies the prevalence of pacifier use and why pacifiers are used (Nelson, 2012). Are pacifiers useful for babies, unnecessary, or as Brazelton states in the opening of this chapter, a hindrance/obstacle/risk factor onto themselves?

With so little known about pacifier use and considering the pros and cons of their use it is important to consider: What factors are mothers' considering when they choose to offer their children pacifiers? Furthermore, postpartum and lactations nurses are often the first influence on mothers choices to offer pacifiers once the baby is born. What policies and practices do hospitals implement regarding pacifier use?

Purpose of the Study

Accordingly, the thesis contains two studies that seek to better understand current pacifier use with infants and toddlers. Study one focused on mothers' choices on whether or not to offer pacifiers through interviews with mothers to discover the reasons behind their decisions. Specifically, what influences their decision to offer a pacifier to a baby and how long do children seem to need/want them? In study two, hospital nursery personnel (nurses or an supervisor) described their policies as the first-line of caring with neonates.

Significance of the Study

Through interviews with mothers of 18-to-36-month old children in the greater Los Angeles area, this study will provide insight to some of the reasons behind mothers' choices to use pacifiers as well as the frequency and length of time children tend to use pacifiers. While there is research on the medical impact of pacifier use, there is a lack of empirical data on the actual reasons mothers choose to offer their children pacifiers, until what age children are using pacifiers, and the frequency of pacifier use. Thus, this exploratory study may serve to explain the influences on mothers' choices to use pacifiers and gauge if mothers are aware of the reasons behind their decisions.

Understanding why mothers are offering pacifiers, medical professionals and childcare or early childhood education professionals can use the knowledge learned when discussing pacifier use with mothers. The data on the frequency and length of pacifier use may be a starting point to guide future research exploring the scope and potential problems of pacifier use. In study two, hospital practices related to pacifiers will be explored.

Terminology

The following terms are defined here, as they are pertinent to this study.

Analgesia – “pain relief” (Sexton & Natale, 2009, p. 681)

Dental malocclusion - “misalignment of the teeth, such as open bite, crossbite, or overjet” (Sexton & Natale, 2009, p. 683)

Emotional empathy - “feeling what another person is feeling” through emotional contagion or the “tendency to mimic the verbal, physiological and/or behavior aspects of another person’s emotional experience, and thus to express/experience the same emotions oneself” (Sonnyby-Borgstorm, 2002, p. 433).

Emotion understanding - differs from empathy because it focuses on simply recognizing rather than feeling the emotions of another person. This study follows the premise that toddlers understand “simple emotions such as happiness, anger, and sadness,” “show some understanding of how situations relate to emotions,” and use “others’ emotional expressions to interpret others’ desires” (Ensor & Hughes, 2005, p. 344).

Facial mimicry – Facial mimicry will be defined as “an internal simulation of perceived facial expression in order to facilitate understanding of other’s emotion” (Oberman, Winkielman, & Ramachandran, 2005, p. 167). For example, seeing a person smiling and automatically smiling back.

Otitis Media – “type of ear infection that is usually painful...Symptoms of [acute otitis media] include pain, redness of the eardrum, pus in the ear, and fever” (CDC, 2013).

Pacifier - The U.S. Consumer Product Safety Commission (U.S. CPSC, 2001) defined pacifiers as “an article with a nipple intended for a young child to suck on, but that is not designed to help a baby obtain fluid” (p. 1). Furthermore, pacifiers are required to have a

guard or shield at the base of the nipple that is large and not flexible enough to swallow to protect children from choking. The nipple must be well attached as to not fall off when being pulled with a force of 2-pounds for 10-seconds. In addition, the pacifier may have a handle or ring on the opposite side to hold or grasp the pacifier (U.S. CPSC, 2001).

Prosocial behaviors/positive social behaviors - The terms prosocial behaviors and positive social behaviors will be used interchangeably incorporating behaviors such as sharing, comforting, and “other deliberate efforts to aid or support others” (Ensor & Hughes, 2005, p. 343). It will also be presumed that those who exhibit prosocial behaviors with peers will participate more in cooperative and developmentally advanced play (Ensor & Hughes, 2005).

SIDS (Sudden Infant Death Syndrome) - “sudden death of an infant that was unexpected by history and unexplained by postmortem examination that includes a case investigation, complete autopsy, and examination of the death scene” (Hauck, Omojokun, & Siadaty, 2005, p. e716).

Preview of Thesis

To gain a better understanding of the reasons why mothers may or may not offer their babies pacifiers, the Literature Review in Chapter Two will examine the origins and the risks, benefits, and reasons for pacifier use. Additionally, because no study has discussed why American mothers’ give (or do not give) their babies pacifiers, studies from Austria and Australia will be reviewed for potential explanations of pacifier use. Next, Chapter Three will discuss the methodology including sample, research design, and procedures that were used in both the mother and the hospital studies. Chapter Four will

analyze the data accumulated from the interviews with mothers (Study One) and hospital nurses/supervisors (Study Two) and synthesize the results and major findings. Lastly, Chapter Five will conclude the thesis with a discussion of the outcomes, limitations of the study, potential future research, and overall conclusions of the study.

CHAPTER TWO

LITERATURE REVIEW

Introduction

To best understand what is currently known about the reasons to use or not to use pacifiers, the literature review will be separated into three sections: (1) origins of pacifiers, (2) benefits, risks, and reasons for pacifier use, and (3) mothers' opinions on pacifier use. The opening section will focus on information about pacifiers including the history of pacifiers to provide background information on the early uses and evolution of pacifiers. After understanding the reasons behind the development of pacifiers, an article by Sexton and Natale (2009) will review the guidelines and recommendations of pacifier use from the American Academy of Pediatrics (AAP) and the American Academy of Family Physicians (AAFP) based on current research. To review the potential effect pacifiers have on emotional competence, a study by Niedenthal et al. (2012) will be evaluated to provide information on facial mimicry and how pacifier use may negatively impact emotional competence. Next, a study by Lehman, Denham, Moser, and Reeves (1991) will evaluate pacifiers' role in the development of attachment to the mother or primary caregiver followed by a study by Kramer et al. (2009) on pacifiers' impact on cry/fuss behavior.

Lastly, two studies (Pansy et al., 2008; Mauch, Scott, Magarey & Daniels, 2012) will be used to identify reasons why mothers chose to give or not to give their babies pacifiers and the influences behind their decisions. In this chapter the method, findings, and conclusions of each study will be discussed followed by a synthesis of the review of the research.

Origins of Pacifiers

Reviewing the origins and evolution of pacifiers provides insight as to how and why modern pacifiers came to be a common practice. Most of the literature on pacifiers prior to the 1900s was in German (Marter & Agruss, 2007). The term pacifier itself was not documented in the English language until the early 1900s and some alternate phrases for a pacifier included sugar rag, binky, dummy, soother, sucky, silver spoon and coral. The first pictorial representation of a pacifier was in 1506 in the painting *Madonna and Child* by German painter Albrecht Durer. The painting displayed the Child holding in his hand an early form of a pacifier called a sugar rag as shown in *Figure 2.1* (Marter & Agruss, 2007).



Figure 2.1. Madonna and child with Sugar Rag (1506)

Early Versions of Pacifiers

Sugar rags were strips of cloth knotted into a ball and stuffed with different types of food such as bread, milk, or sugar and sometimes were soaked in alcohol (Marter & Agruss, 2007; Whitmarsh, 2008). Even in the 1800s sugar rags were controversial as physician Christian August Struve criticized the use to feed or quiet a child and the

possible health ramifications of a dirty cloth that was dropped on the ground and put back in the child's mouth. Following sugar rags, "gum sticks," made from animal bone, coral, or silver, were developed for teething because they were cold on a child's gums.

Towards the mid 1800s, the use of rubber became more commonplace and the sugar rags started to become obsolete (Marter & Agruss, 2007).

In the early 1900s, pacifiers were produced with a latex rubber teat, a handle and guard (Whitmarsh, 2008; Schwartz & Guthrie, 2008). The purpose of the pacifier was to help soothe cranky or colicky babies, promote and continue restful sleep, and to reduce the pain of teething. In addition, according to Schwartz and Guthrie (2008), it was used to aid infants' drive to suck, which becomes stronger when they are tired, anxious, or uncomfortable.

Modern Pacifiers

Currently, pacifiers are made from silicone rather than latex because of latex allergies and "the fact that latex surface is conducive to biofilm production [microorganisms that stick to the surface] and contamination by oral flora [bacteria in the oral cavity] and that latex fails to retain its firmness and surface integrity after repeated exposure to warm water or saliva" (Schwartz & Guthrie, 2008, p. 327). Silicone, however, is made from "synthetic polymers that are relatively chemically inert, are stable at high temperatures, do not fissure, and are resistant to oxidation" (Schwartz & Guthrie, 2008, p. 327). Today, parents have an abundance of pacifiers to choose from, but what are the benefits and risks of pacifier use?

Benefits and Risks of Pacifier Use

In their article on pacifier use, Sexton and Natale (2009) compiled results from multiple studies performed by numerous other researchers to identify information on the medical benefits and risks of pacifier use. They identified nonnutritive sucking (NNS) as a natural reflex for both fetuses and newborns. In utero, fetuses are often seen sucking a hand or finger and once babies are born, pacifiers are used to help fulfill the desire to suck (Sexton & Natale, 2009). First, the possible benefits of pacifier use (analgesia, preterm infants, and Sudden Infant Death Syndrome) will be examined as reasons why mothers' might offer pacifiers followed by a review of the potential risks (breastfeeding, dental health, infection, and otitis media) of pacifier use. Finally, overall recommendations from the American Academy of Pediatrics (AAP) and American Academy of Family Physicians (AAFP) will present the current guidelines for doctor recommendations. Sexton and Natale's (2009) compilation of relevant studies to review of the benefits and risks of pacifier use may explain why there currently are mixed opinions on use of pacifiers.

Benefits

Analgesia. Pacifiers are identified by the American Academy of Pediatrics (AAP) as one of the key methods for pain and anxiety reduction for children less than six months of age (Sexton & Natale, 2009). Pacifiers are used for minor procedures to calm and soothe the infant. The combination of giving a pacifier with a sucrose solution has been empirically proven to be more effective than providing the sucrose solution alone. The AAP has recommended or studied pacifier use for procedures such as "cathertization, circumcision, heel sticks, immunizations, insertion of an intravenous line,

lumbar puncture, screening for retinopathy of prematurity, and venipuncture” (Sexton & Natale, 2009, p. 681).

Preterm infants. A Cochrane review (a review of primary research in health care) by Pinelli & Symington (2005) revealed that NNS for preterm infants results in “shorter hospital stays, earlier transition to bottle from tube feeding, and improved bottle feeding” (as cited in Sexton & Natale, 2009, p. 681). Currently, studies have not found an association between pacifier use and weight gain, behavior, energy intake, heart rate, oxygen saturation, intestinal transit time, and age at full oral feeds for preterm infants. However, so far, research has shown a lack of harmful effects from pacifier use, so they are currently considered a practical and economical option for preterm infants (Sexton & Natale, 2009).

Sudden Infant Death Syndrome. The AAP guidelines recommend pacifier use for infants as a method of Sudden Infant Death Syndrome (SIDS) prevention (Sexton & Natale, 2009). However, they warn against use for infants younger than 1 month old due to possible negative effects on breastfeeding; it is recommended that pacifier use should be used up until six months to prevent SIDS. While extensive research, including a meta-analysis of seven control studies, has revealed a positive correlation between pacifier use and SIDS prevention, there is still not a definite answer for *why* pacifiers reduce the rate of SIDS (Sexton & Natale, 2009). Some suggested reasons that are still being investigated include that “pacifier use may decrease the likelihood of rolling into the prone position, increase arousal, maintain airway patency, decrease gastroesophageal reflux and resultant sleep apnea, or increase respiratory drive with carbon dioxide retention” (Sexton & Natale, 2009, p. 682). The AAP suggests that infants should not be

forced to use pacifiers and that pacifiers should not be reinserted into infants' mouths after they spit it out while sleeping.

Risks

Breastfeeding. According to Sexton and Natale (2009), research has shown varying results about the effects of pacifier use on breastfeeding. Multiple observational studies (Aarts, Hörnel, Kylberg, Hofvander, & Gebre-Medhin, 1999; Howard, Howard, Lanphear, deBlieck, Eberly, & Lawrence, 1999; Vogel, Hutchinson, & Mitchell, 2001) and a randomized control study (Howard et al., 2003) showed an association between pacifier use and early weaning (as cited in Sexton & Natale 2009). Conversely, another randomized control study that evaluated 281 mother-infant pairs for three months postpartum found that while there was an “observational association” (Kramer et al., 2001 as cited in Sexton & Natale, 2009, p. 682) between pacifier use and early weaning though an intervention of avoiding pacifier use did not significantly decrease weaning at 3-months. Therefore, the researchers concluded that pacifiers may not be the cause of early weaning, but may be an indicator of breastfeeding difficulties (Sexton & Natale, 2009). Additionally, a lack of significant difference in crying or fussing between the intervention group and control group implied that other soothing methods might be as effective as pacifier use (Sexton & Natale, 2009).

The differing results from studies on the effect of pacifier use on breastfeeding have led the AAFP to suggest that physicians provide families with information regarding the risks of offering a pacifier “in the immediate postpartum period” (Sexton & Natale, 2009, p. 682). Likewise, the AAP advises to hold off on pacifier use for full term infants

until the mother and children have established strong breastfeeding habits (Sexton & Natale, 2009).

Dental health. For children between the ages of 0- and 24-months, there has been inconclusive evidence about the effect of pacifier use on dental health. A meta-analysis by Poyak (2006) revealed that after the age of three, there was a correlation between pacifier use and increased malocclusion (incorrect alignment) of the jaw (as cited in Sexton & Natale, 2009). Another study (Warren, Bishara, Steinbock, Yonezu, & Nowak, 2001, as cited in Sexton & Natale, 2009) found that the malocclusion was prevalent in approximately 71 percent of children who used a pacifier or sucked a digit (finger or thumb) beyond 48-months-old compared to 32 percent of children who stopped sucking between 36-and-48 months and 14 percent who gave up sucking before 24-months. Other studies have also shown a higher rate of dental health issues for children who continue to use pacifiers beyond two years-of-age. Because of these results, the American Dental Association (ADA) and American Academy of Pediatric Dentistry (AAPD) suggest that pacifier use be discouraged after children turn four-years-old (Sexton & Natale, 2009).

Infection. Many studies (Mattos-Graner, de Morales, Rontani, & Birman, 2003; Ollila, Niemelá, Uhari, & Larmas, 1997; Sio, Minwalla, George, & Booth, 1987; as cited in Sexton & Natale, 2009) have looked at the colonization of *Candida* and other bacterial organisms on pacifiers. One study by Brook and Gober (1997) found that slightly more than 50 percent of the pacifiers examined had a positive culture containing common pathogens (as cited in Sexton & Natale, 2009). Other studies (Comina, et al., 2006; Ollila, Niemelá, Uhari, & Larmas, 1997) have cited that *Candida* and *Staphylococcus*

were more likely to be present on latex pacifiers than silicone pacifiers. A study by North Stone, Fleming, and Golding (2000) from the United Kingdom of 10,000 15-to-18 month old children examined whether or not there was a correlation between infection and pacifier use or finger sucking (as cited in Sexton & Natale, 2009). While the researchers discovered there was an association between pacifier use and infection, the results could not show if the infection was a result of pacifier use or if pacifiers were used to soothe sick children. Sexton and Natale (2009) identified that although there have been other epidemiologic studies showing a connection between pacifier use and otitis media (ear infection), dental infection, and respiratory and gastrointestinal symptoms, these studies have been “too limited to draw conclusions” (p. 683). More research on infections and pacifier use needs to be done before recommendations can be made.

Otitis media. Pacifier use may be causing “reflux of nasopharyngeal secretions into the middle ear from sucking and Eustachian tube dysfunction from altered dental structure” (Sexton & Natale, 2009, p. 684) resulting in middle ear infections or otitis media. There is a link between pacifier use and a higher risk of developing otitis media as shown in a meta-analysis by Uhari, Mäntysaari, and Niemelä (1996) that reviewed 22 studies from multiple countries (as cited in Sexton & Natale, 2009). Another study by Niemelä, Pihakari, Pokka, and Uhari (2000) found that there were fewer instances of otitis media when parents were counseled to restrict pacifier use to when the infant was falling asleep (as cited in Sexton & Natale, 2009).

Because research has shown that pacifier use results in higher rates of otitis media, the AAP and AAFP suggest that physicians advise parents or guardians to limit or stop pacifier use after the infant is six months old. The Institute for Clinical Systems

Improvement, a non-profit organization to improve health care quality and make it more affordable, recommends that pacifier use be avoided after 10-months of age (Sexton & Natale, 2009).

Overall Recommendations for Pacifier Use

According to Sexton and Natale (2009), physicians should educate parents about the risks and benefits of pacifier use and counsel them based on findings of research. In the past, physicians actively discouraged pacifier use, however the AAP and AAFP both recognize the benefits of use especially in the first six months of life in reducing SIDS. After children reach six months of age, the risks start to outweigh the benefits and after two-years-old the risks increase even more. Because this review of studies did not discuss the risks for social and emotional development, the next study will look at how pacifiers may impact toddlers' ability to develop emotional understanding skills and prosocial behaviors.

Pacifiers and Their Effects on Facial Mimicry and Emotional Competence

Hypothesis

Niedenthal et al. (2012) evaluated how pacifier use affects children's ability to develop their facial mimicry skills, thereby inhibiting their emotional intelligence development. Children with pacifiers are less likely to show facial expression, which limits the amount in which the caretaker mirrors the children's expressed emotions. Thumb sucking was identified as a behavior that could be compared to pacifier use, but Niedenthal et al. (2012) predicted that thumb sucking would not have the same effects as pacifier use on emotional competencies because it is a more private habit that is controlled by the child. Three studies were used to evaluate the relationship between

pacifier use and emotional competence. The first study hypothesized that pacifier use would reduce “spontaneous mimicry of perceived facial expression” (Niedenthal et al., 2012, p. 388) especially for boys who used pacifiers frequently during the day. The second study evaluated the proposition that young adults who had used pacifiers as children would “show deficits in emotional responses” (Niedenthal et al., 2012, p. 390) that are related to empathy. The third study predicted that young adults who used pacifiers as children would exhibit lower levels of emotional intelligence. Niedenthal et al. (2012) identified that sex of the child could be a moderator variable with boys possibly being “more vulnerable to the consequences of inhibition of channels for processing emotional information” (p. 388).

Study One

Subjects. First- and second-grade teachers in the Auvergne region of France recruited pupils and gathered parent authorization for their children’s participation and filming (Niedenthal et al., 2012). Sixty-one boys and forty-five girls ($N = 106$) with an average age of 7 years 3 months ($SD=14$ months) received parental consent to participate in the study.

Methodology. Niedenthal et al.’s (2012) study employed a correlational design to determine a relationship between pacifier use (independent, categorical variable) and facial mimicry (dependent, quantitative variable). A retrospective questionnaire was sent home to the participants’ parents to assess their child’s pacifier use and thumb sucking covering areas such as onset, offset, and frequency (during the day at home, at night, during the day outside of home). Frequency was measured on a 4-point scale from 0 (never) to 3 (usually). Demographic questions were also included in the questionnaire to

determine common cause variables such as mother and father's education, family size, birth order, and age at entrance into daycare or school (Niedenthal et al., 2012).

The children were individually removed from their classroom by an experimenter to complete a "morphing" task where faces shown on a laptop computer expressed an emotion (happy or sad) and slowly changed to another expression (Niedenthal et al., 2012). The children completed two practice and twenty-eight trials where they were instructed to press a button to stop the film when they thought the initial expression was no longer present. Two coders who were unaware of the children's pacifier use, viewed the videotapes of the children and independently noted when the children exhibited a smile or sad expression directed towards the faces on the morph film. The children received two scores for the trial, one for total number of smiles mimicked and the other for total number of sad expressions mimicked.

Niedenthal et al. (2012) used a multivariate regression model with mimicry as the dependent variable and type of expression (smile vs. sad) as a within-subjects independent variable. Sex (coded -1 and +1), length of pacifier use (in mean deviation form where non pacifier users received a score of 0), the product of sex and length of pacifier use, mother's education, and length of thumb sucking were between-subjects independent variables (Niedenthal et al., 2012, p. 389). In addition, Niedenthal et al. (2012) ran three multivariate regression models using the same variables as before, but included only pacifier users. The first analysis included pacifier use or thumb sucking during the day at home, the second included pacifier use or thumb sucking at night, and the third included pacifier use or thumb sucking during the day outside of home. Analyses allowed the researchers to draw conclusions on children's facial mimicry in

relation to pacifier use before looking at the long-term effects of pacifier use on facial mimicry in young adults.

Study Two

Subjects. The second study included 130 female and 37 male ($N = 167$) American university students with an average age of 19 years 4 months ($SD = 15$ months) from universities located in the Midwest and South by using course extra credit or \$10 as incentives for participation (Niedenthal et al., 2012).

Methodology. Niedenthal et al. (2012) utilized a causal-comparative design to determine whether young adults who used pacifiers reported a lack of ability to empathize in situations that required them to relate to others' emotions. Packets of questionnaires were distributed to the participants on the university campus to be completed in private. The first questionnaire was retrospective where participants used a four-point scale (0 = never, 3 = usually) to respond to questions regarding frequency and length of time they used a pacifier or sucked their thumbs (Niedenthal et al., 2012).

The second questionnaire in the packet utilized the Davis Interpersonal Reactivity Index (IRI) to evaluate multiple aspects of empathy. The perspective taking (PT) subscale of the IRI assessed the participants' "ability to experience events from the viewpoint of others" (Niedenthal et al., 2012, p. 390) through participants' responses on a scale of 0-to-5 (0 = does not describe me well, 5 = describes me very well) to statements such as "I try to look at everybody's side of the a disagreement before I make a decision" (p. 390). Niedenthal et al. (2012) believed that perspective taking would be most impacted by loss of facial mimicry from pacifier use.

The data collected from the packets were analyzed using a 2x2 analysis of covariance (ANCOVA) with PT as the dependent variable and sex and pacifier use (yes/no) as the between-subjects independent variable (Niedenthal et al., 2012). Mother's education and child's thumb sucking were included as covariates and additional analyses were performed with length of pacifier use (in months) as a continuous independent variable.

Study Three

Subjects. Niedenthal et al. (2012) used a convenience sample size for Study Three that included 428 students, 124 (95 female, 29 male) from American universities in the South and Midwest and 304 (240 female, 64 male) from a French university. The Americans had an average age of 20 years, 6 months (SD = 21 months), while the French on average were 3 months younger ($p = .10$) than the American students. Incentives of extra credit (if enrolled in a psychology class) or \$10 were offered for the American students, while the French students were recruited through an announcement in a variety of large introductory courses (Niedenthal et al., 2012).

Methodology. Niedenthal et al. (2012) investigated the impact of pacifier use (independent, categorical variable) on emotional intelligence (dependent, quantitative variable) using a causal-comparative design. Like the previous two studies, a packet of questionnaires was given to the participants to complete in private and contained the same retrospective questionnaire on pacifier use and thumb sucking. Participants were encouraged to have their parents confirm the length of pacifier use and about 75 percent of the sample reported that they did contact their parents. In addition, the packet included the Adolescent Short Form of Trait Emotional Intelligence Questionnaire (TEIQue-ASF)

to measure emotional intelligence based on responses to 30 items such as “I’m able to cope well in new environments” (Niedenthal et al., 2012, p. 391) that were answered on a 7-point Likert-type scale (1 = I strongly disagree, 7 = I strongly agree). Participants’ dispositional anxiety was assessed by the Trait Anxiety subscale of State-Trait Anxiety Inventory (STAI-Y) which included 20 items such as “I feel nervous and restless” (Niedenthal et al., 2012, p. 392) that were completed on a 4-point Likert-type scale (0 = almost never, 3 = very often).

Niedenthal et al. (2012) averaged the items from the emotional intelligence and trait anxiety scales using a 2x2 analysis of covariance with emotional intelligence as the dependent variable and sex and pacifier use as between-subject independent variables. Further analyses were run with duration of pacifier use as an independent variable. Lastly, analyses on nationality were run to determine if the results would vary across nationalities (Niedenthal et al., 2012). The results allowed the researchers to deduce the effects of pacifier use on emotional competence and determine which areas (frequency or duration) of pacifier use had the greatest effects.

Findings

The results of the three studies enabled Niedenthal et al. (2012) to draw conclusions about the impact of pacifiers on the development of emotional competence. In the first study, the findings confirmed that facial mimicry was a function of gender and length of pacifier use. The analysis of the data from the children’s mimicry during the morphing task showed a significant ($p = .02$) interaction between sex and length of pacifier use. Post hoc analysis exposed that the length of pacifier use had an effect on facial mimicry for boys ($p = .009$), but not for girls ($p = .51$). Frequency and length of

pacifier use was found to be connected to less facial mimicry when children (especially boys) used their pacifier during the day at home when they were engaging in crucial emotional interactions with their caregiver (Niedenthal et al., 2012).

For the second study, the analysis of the questionnaires completed by young adults found that perspective taking was a function of the interaction between participant gender and pacifier use ($p = .03$) (Niedenthal et al., 2012). Post hoc analysis displayed that lower levels of perspective taking was related to pacifier use in boys ($p = .05$), but not in girls ($p = .51$). Niedenthal et al. (2012) attributed the lack of significant support ($p = .16$) for the hypothesis that perspective taking would be a function of interaction of sex and length of pacifier use to low power and measurement error. The results showed that young adult males who used pacifiers exhibited deficits in their ability to display components of empathy.

The third study found emotional intelligence to be a function of participant sex and length of pacifier use (Niedenthal et al., 2012). The hypothesis that pacifier use would lead to lower levels of emotional intelligence was confirmed for boys ($p = .04$), but not for girls ($p = .35$). There was significant Sex x Pacifier Use interaction ($p = .007$). When including length of pacifier use as the independent variable, the results were consistent with the first analysis showing that longer pacifier use was associated with lower emotional intelligence for boys ($p < .04$), but not for girls ($p = .88$). Because nationality had a non-significant ($p = .85$) effect in study three, Niedenthal et al. (2012) concluded that the negative effect of pacifier use on boys was not country specific.

In each of the studies, thumb sucking was evaluated as a variable, but did not show the same effects of pacifier use. Study One revealed a positive correlation between

thumb sucking and facial mimicry ($p = .04$) with higher levels of thumb sucking leading to higher levels of mimicry (Niedenthal et al., 2012). Results from Study Two and Three confirmed the hypothesis that thumb sucking would not have long-term effects on perspective taking and emotional intelligence.

Discussion

The data collected from the three studies revealed a negative association between pacifier use and emotional competencies in boys as well as the detrimental effects from the frequency of pacifier use during the day. Boys appeared to be more susceptible to “disruptions of emotional information processing early in development” (Niedenthal et al., 2012, p. 393) possibly due to lack of maturity in emotional development paired with less compensation by caregivers to make up for the “consequences of disrupted facial mimicry” (p. 393). The study worked to show that pacifier use in boys might be compromising the development of their facial mimicry abilities and thereby impacting perspective taking and emotional intelligence later in life. However, the study cannot be used to draw causal conclusions about pacifier use, because the children were not randomly assigned to pacifier use and the three studies were retrospective. Niedenthal et al. (2012) provided some important insights into the effects of pacifier use on emotional competence and potential risks boys might face when they use pacifiers continually during the day. The next study will evaluate the connection between object attachment (soft versus pacifier) and the security of mother-child attachment.

Effects of Pacifier Attachments on Mother-Child Attachment

Hypothesis

Lehman, Denham, Moser, and Reeves (1992) evaluated the correlation between inanimate object attachment and security of attachment to the mother. The study included three questions: (1) What percentage of soft object attached children have secure (opposed to anxious) attachments? (2) How does security of attachment differ between children with non-soft object attachments such as pacifiers and children with soft object attachments? (3) Are “changes in security of attachment classifications between 12 and 30 month related to object attachment status?” (Lehman et al., 1992, p. 1208).

Subjects

Mother/infant pairs were selected from a larger longitudinal study based on the mothers' completion of an Object Attachment questionnaire when their children were between 16 and 20 months of age. The 19 boys and 14 girls ($N = 33$) came from predominantly Caucasian families (93.9 %) in the middle to upper middle class range (as determined by parental education level). Additionally, 73 % were first-born children (Lehman et al., 1991).

Methodology

The longitudinal study examined infants' attachment to inanimate object in relation to the security of attachment to their mothers. The changes in children's attachments to soft objects and pacifiers between 19-and-30-months of age was measured using the Object Attachment Questionnaire and later an object attachment follow-up questionnaire (Lehman et al., 1991). The Object Attachment Questionnaire was mailed home to mothers in a larger packet of questionnaires for the original temperament study.

Mothers completed the questionnaire when their child was between the ages of 16 and 20 months. Object attachment was defined as a long-standing preference for an object that the child used as a comforter or soother. The questionnaire aimed to understand the history of the infants' attachment to the soft object and/or pacifier. After follow-up phone calls were made to clarify answers, infants were classified as (1) soft object attached, (2) soft object and pacifier attached, (3) pacifier attached, and (4) no inanimate object attachment (Lehman et al., 1991).

Next, the object attachment follow-up was a brief questionnaire mailed home to mothers when their children were 24 months old to measure changes in object attachment. Three months later, as a part of a larger package, another brief questionnaire on object attachments was mailed home to mothers and completed when the children were around 30 months old (Lehman et al., 1991). The questionnaires were followed-up by phone calls to the mothers to get a rich description of the child's object attachment and its change between 16 and 31 months of age.

Security of attachment to the mother was evaluated through a Strange Situation Test (Ainsworth & Wittig, 1969 as cited in Lehman et al., 1991) and an Attachment Q-Sort (Walters & Deane, 1985 as cited in Lehman et al., 1991). Twenty-eight mother-infant pairs ($n = 28$) went to a developmental psychology lab when the infants were approximately 12 months for the Strange Situation Test. Each dyad completed seven episodes each of which lasted three minutes. Episodes included infant playing with mother in a strange room with toys, stranger introduced to infant, mother leaves the room, and mother returns to the room. Each test was videotaped and scored by three trained raters using Ainsworth's scoring system. The children were then classified as (1)

securely attached, (2) anxiously attached/avoidant, and (3) anxiously attached/resistant (Lehman et al., 1991).

When the children were approximately 30 months old, mothers completed the Attachment Q-sort, which was part of the larger packet sent around 27 months. The Q-sort contained 90 statements such as “child will accept and enjoy loud sounds or being bounced in play, if mother smiles and shows that it is supposed to be fun” (Lehman et al., 1991, p. 1209). Mothers sorted the statements into nine piles each with ten cards ranging from statements that were most characteristic of the child to least characteristic of the child. Cards were scored and correlated using the “Q-sort definition of the security construct at 36 months provided by the developmental psychologists in the Waters and Deane (1985) study” (Lehman et al., 1991, p. 1209

Findings

The findings were divided into two sections based on the children’s age at the time of the test. First, findings were given for infants object attachments and security of attachment to the mother by 19 months of age. Children with soft object attachments ($n = 11$) and no object attachments ($n = 6$) showed the highest rates of secure attachments to mothers (91.7 % and 83.3 % respectively). However, children with pacifier only object attachments ($n = 5$) had higher rates of insecure attachments (80 %) than secure attachments. There was a statistically significant difference in security of attachment between only pacifier object attachments and only soft object attachment ($p = .016$).

At 30 months, the soft object attached group ($n = 11$) still had the highest levels of secure attachments (81.8 %). However, children with no object attachments ($n = 5$) showed lower levels of secure attachment (60 %) at 30 months than at 19 months. The

lowest level of secure attachments was no longer the pacifier only attached group ($n = 4$) with half of the children having secure attachments (50 %) and half having insecure attachments (50 %). Instead, the both pacifier and soft object attached group ($n = 5$) had the lowest levels of secure attachment (40 %) and thereby the highest levels of insecure attachments (60 %). While the percentage of children with secure attachments was lower for children attached to pacifiers (group 2 and 3) than children attached to soft objects only (group 1), the difference was not statistically reliable as it was at 19 months.

Conclusion

Despite the difficulty to generalize the results of this study due to the sample size, the results present a potential linkage between pacifier attachments and lower levels of secure attachment to mothers. Although soft objects may require secure attachment to a mother before a child attaches to the object, it does not appear that pacifiers have the same connection. As Lehman et al. (1991) identified, “The nature of the relationship between a child’s attachment to his mother and his attachment to a nonsocial object depends on the kind of object to which he is attached” (p. 1212). If pacifier only attachments are not the best object of choice for developing secure attachments to the mother, are they the best object for soothing?

Pacifiers as Soothers

Research Question

While Kramer et al. (2001) were primarily interested in understanding if there was an association between pacifier use and early weaning, a sub-question of their study evaluated if pacifiers were beneficial tools to reduce cry/fuss behavior. Furthermore, they examined if other soothing methods were just as effective as pacifiers.

Subjects

In a randomized control trial, 281 breastfeeding mothers were recruited during their postpartum stay at the Royal Victoria Hospital in Montreal, Quebec to participate in the study (Kramer et al., 2001). To qualify for the study, mothers had to indicate that they intended to breastfeed for at least three months and had to have had delivered (vaginally or cesarean) a healthy baby (minimum of 5.5 pounds) who was carried to term (at least 37 weeks). Only one mother per hospital room was eligible for inclusion in the study to prevent treatment contamination. Mothers were assigned to control and experiment groups using random numbers generated by computers (Kramer et al., 2001).

Methodology

A nurse with specialized training in lactation counseling provided all participating mothers with a basic breastfeeding promotion package that included a 45-minute interview promoting breastfeeding and an information sheet (Kramer et al., 2001). The package intended to inform mothers in the areas of positioning the child on the breast, “the importance of frequent feeding and feeding on demand, the avoidance of formula and other liquids, the management of sore nipples and breast engorgement” (Kramer et al., 2001, p. 323). The mothers were also given a list of telephone numbers for people or agencies to contact for questions, general support, and assistance with difficulties related to breastfeeding.

The control group received a general discussion of options for calming their baby including breastfeeding, carrying, rocking, and using a pacifier. In the experimental intervention, mothers were asked to avoid pacifiers when their child cried or appeared fussy. Instead, they were counseled to first offer the breast and then try carrying and

rocking the infant. The research nurse contacted the mothers at 10 days and 3 weeks postpartum to reinforce the interventions (Kramer et al., 2001).

Mothers were requested to complete a validated behavior diary to record infant behaviors allowing the researchers to measure frequency and duration of crying and fussing episodes (Kramer et al., 2001). Unsoothable crying occurrences were recorded separately. The diary was completed over three consecutive days (2 weekdays and 1 weekend day) when the child was 4, 6, and 9 weeks of age. Mothers were also asked to indicate when pacifiers were inserted and removed. When the child was 3 months old, the mother completed an interview with a research assistant who was blinded to the intervention status on the current breastfeeding status and how frequently the child used a pacifier.

Frequency (number of episodes) of cry/fuss behavior and duration (minutes per day) of cry/fuss behaviors in the two intervention groups were compared using 2-tailed *t* tests.

Findings

Maternal characteristics (age, education, birth weight, language, married, employment) between the two intervention groups were very similar. In the control group, mothers had an average age of 31.5 years old (SD = 4.9), spoke English (66.2 %), were married (84%), employed outside the home (74.8%), and had 16.0 years of education (SD = 3.2). For the experimental group, mothers mean age was 31.6 year (SD = 4.5), spoke English (66.1 %), were married (78.7%), employed outside the home (77.2%), and had about 16.1 years of education (SD = 3.0; Kramer et al., 2001). The intervention successfully altered pacifier use as 38.6 % of mothers in the experimental

group totally avoided pacifier use as compared to only 16 % in the control group. There was a statistically significant reduction in mean pacifier uses per day at 4 ($p < .001$), 6 ($p < .001$), and 9 ($P = .004$) weeks (Kramer et al., 2001).

The frequency of cry/fuss behavior was slightly lower in the experimental group than the control group at 4 ($p = .03$) and 6 weeks ($p = .19$), but nearly the same at 9 weeks ($p = .88$) weeks (Kramer et al., 2001). The duration of minute per day of cry/fuss behavior was fairly equivalent in both groups. At 4 weeks, there was an average of 143 minutes per day of cry/fuss behavior in the experimental group and 151 minutes per day in the control group ($p = .49$). The gap narrowed at 6 weeks with 128 minutes per day in the experimental intervention and 131 minutes in the control intervention (Kramer et al., 2001). The control group saw fewer minutes per day of cry/fuss behavior at 9 weeks (104 minutes) than the experimental group (110 minutes; $p = .58$).

Conclusion

Pacifier interventions appeared to be beneficial as there was a decrease in pacifier use when mothers were counseled not to use them. Furthermore, pacifiers did not significantly reduce cry/fuss behaviors in children at 4, 6, or 9 weeks. Other soothing methods (breastfeeding, carrying, and rocking) proved to be adequate ways to reduce cry/fuss behaviors. While the literature has shown that there are many reasons to use a pacifier (analgesia, preterm infants, SIDS, soothing) and risks to pacifier use (dental health, otitis media, infection, breast feeding, emotional development, attachment), what are the reasons that are affecting mothers' choices whether or not to offer pacifiers?

Austrian Mothers' Opinions on Pacifier Use

Research Question

In researching why mothers choose to use or not to use pacifiers, Pansy, Zotler, Saudeng, Schneuber, Lang, and Kerbl (2008) found little information on parenting behaviors and infant factors that influence parents' decisions. They examined the reasons mothers choose to use or not to use pacifiers and the factors that change their mind. Additionally, they explored the prevalence of pacifier use, onset of pacifier use, and the association between breastfeeding and pacifier use (Pansy et al., 2008).

Subjects

Pansy et al. (2008) recruited 174 mother-infant pairs (93 male infants and 81 female infants) from the Department of Obstetrics and Gynecology at the Medical University of Graz (Austria). They selected all mothers across a two-and-a-half month period that had carried their infants to term without perinatal problems. The average gestational age was 39.8 weeks (SD = 1.4 weeks) with an average weight of 7 pounds 7 ounces (SD = 16.8 ounces). The mothers' average age was 29.6 years (SD = 5.3 years) and 15 % of the mothers were smokers ($n = 26$), while 85 % were nonsmokers ($n = 148$). In addition, 19.5 % of mothers attended a university ($n = 34$), 23.5 % attended grammar school (high school, $n = 41$), and 57 % completed only junior high school ($n = 99$) (Pansy et al., 2008).

Methodology

After the birth of the baby, Pansy et al. (2008) interviewed the subjects using semi-structured questionnaires to inquire about the mothers' intentions for pacifier use, reasons for choosing not to use a pacifier, the feeding habits of the infants, and

demographic questions about parental smoking and education level. These interviews were followed up with two other interviews when the infant was 7-weeks-old and 5-months-old. The questions in the second and third interviews asked about actual pacifier use, actual feeding habits, when the pacifier was introduced, if there was a change, and the reason why the change occurred (Pansy et al. 2008).

For statistical analysis of the data, “all parameters were normally distributed” (Pansy et al., 2008, p. 969). Groups of interest were compared through repeated measures of analysis of variance (ANOVA). If there were significant differences, *post hoc* Bonferroni corrections were utilized (Pansy et al., 2008). For each group, the incidence of variables was calculated and compared using Fisher’s exact tests.

Findings

Pansy et al.’s (2008) data analysis revealed information on the scope of pacifier use in Austria and why mothers’ chose to or chose not to use pacifiers. The first set of data from after birth revealed that the majority of mothers ($n = 135$) intended to offer their infants pacifiers. Of those who refused to offer a pacifier ($n = 39$), the greatest concern was “malposition of the teeth or the jaw” ($n = 21$) (Pansy et al., 2008, p. 969). Other reasons mothers did not want to introduce a pacifier included concern about synthetic material ($n = 3$), concern about breastfeeding problems ($n = 9$), and other reasons such as concern about stopping use, speech issues, and lack of need ($n = 17$).

When the infants were seven-weeks old, 126 out of 154 infants were using pacifiers. Twenty-four of the mothers who had originally stated they would not give their children pacifiers changed their mind, with most of them ($n = 20$) citing settling the infant (soothing) as the reason for use (Pansy et al., 2008). The other two reasons the

mothers changed their minds to use pacifiers were Sudden Infant Death Syndrome (SIDS, $n = 1$) and no reason ($n = 3$). Eighteen mothers who had originally said they would offer their babies pacifiers did not end up using pacifiers due to rejection by the baby (Pansy et al., 2008).

At 5-months-old, the use of pacifiers was still very high with 111 out of the 143 infants using pacifiers (Pansy et al., 2008). Of the 91 mothers who were initially willing to use one, only 24 had changed their minds due to rejection by the infant. Twenty of the twenty-eight remaining mothers who had originally refused pacifier use were now offering pacifiers. The main reason behind the opinion change remained that the pacifier helped settle the infant. Other reasons included “to relieve the breast, inability to breast feed, apparent demand by the infant, replacement for thumb sucking, and knowledge about the protective effect against SIDS” (Pansy et al., 2008, p. 969). It was notable that 77 out of the 111 pacifier users were introduced to pacifiers in the first week of life.

Pansy et al. (2008) found no correlation between pacifier use and gender, smoking, or mother’s education. However, young mothers (under 30-years-old) were less likely ($p = .029$) than older mother (over 30-years-old) to intend to use pacifiers (Pansy et al., 2008). A significant amount of these young mothers changed their minds by the time the baby was five-months-old (Pansy et al., 2008).

Conclusions

The study by Pansy et al. (2008) is one of the few studies that provide statistical information on prevalence of pacifier use and reasons pacifiers are used. However, this data may not be generalizable to mothers in the United States. Because there is a lack of data in this area for the United States, another study from Australia will be used.

Australian Mothers' Opinions on Pacifier Use

Research Questions

Mauch, Scott, Magarey and Daniels (2012) investigated the reasons behind pacifier use to help determine if pacifier use had become a cultural norm in Australia. Research questions included “who (if anyone) advises first-time mothers to give a pacifier and the reasons why they first give (or try to give) a pacifier to their healthy term infant” (Mauch et al., 2012, p. 2).

Sample

Mothers who were enrolled in NOURISH, a randomized control trial examining the effects on a community-based intervention encouraging positive feeding practices, were contacted after delivery of their babies who were born either between February and June 2008 or September 2008 and March 2009. To participate, mothers living near the Australian cities of Brisbane or Adelaide had to be more than 18-years-old with full-term babies and strong verbal and written English skills. The sample consisted of 670 mothers 63 percent of which lived in the Brisbane area. The mean age of mothers was 30.8 years with 293 mothers in the 30-to-34-age range. Mothers had education levels ranging from university education ($n = 395$) to trade or technical school ($n = 154$) to high school ($n = 121$). The majority of mothers (95.5 %) were in relationships when they had their babies as opposed to those not in relationships (4.5 %).

Methods

Mothers were first approached just after their babies were born and asked basic demographic questions including age and relationship status at babies' birth, highest education level, country of birth, and infant gender. Information was also collected on

how to contact the mothers at a later date. The mothers were contacted again when their babies were between four and seven-months of age. Mothers were first asked an open-ended question on what age they first offered their baby a pacifier. Next, mothers answered three pre-coded questions on topics including: (1) the frequency of pacifier use, (2) who had advised the mother to offer a pacifier, and (3) the reasons the mother offered a pacifier (Mauch et al., 2012).

Bivariate and multivariate logistic regression analysis was used to evaluate the relationship between pacifier use and mothers' age and relationship status at babies' birth, highest education level, country of birth, and infant's gender. More specifically, "infants were defined as pacifier 'users' or 'nonusers' (dependent variable) based on whether or not the infant had ever use a pacifier, regardless of current use" (Mauch et al., 2012, p. 3).

Results

Data revealed that pacifier use was a common practice among mothers in Australia and provided background information on who and what influenced pacifier use. Seventy-nine percent ($n = 532$) of mothers offered their babies pacifiers and 69 % ($n = 464$) of the children were still using pacifiers at the second contact (Mauch et al., 2012). The median age for pacifier introduction was when the baby was two-weeks-old with 353 mothers offering pacifiers before the baby reached four-weeks. Of the children who used pacifiers, 85.1 percent used pacifiers most days with 14.9 percent using pacifiers less often (Mauch et al., 2012). Mothers with a high school education were more likely to offer a pacifier than mothers with a university education.

Mothers were allowed to identify multiple people who advised them to offer a pacifier. However, about a third of the mothers' interviewed (30.6%) noted that no one had advised them. The most common influences on mothers to offer pacifiers included their mothers/mothers-in-law (28.7 %), midwives (22.7 %), friends (20.2 %), other family (16.6 %), and husbands/partners (14.7%). Advice to offer a pacifier rarely came from doctors (3.2 %) or other health professionals (2.6 %) (Mauch et al., 2012).

There were a wide variety of reasons that infants were given pacifiers for the first time. The most common reason was to soothe the infant (78.3 %). Other notable reasons included: to help put the baby to sleep (57.4 %), to keep baby comforted and quiet (40.4 %), because it is natural for babies to suck (21.9 %), and to keep baby from sucking thumb (20.9 %) (Mauch et al., 2012).

Conclusions

Mauch et al. (2012) identified the lack of research examining the influences on mothers' decisions to use pacifiers. However, despite a relatively large sample size, the study has limited generalizability because it only evaluated first-time mothers, the sample was not representative of the population, and the mothers were from Australia. Because Australia is a westernized country like the United States, are the people who influence American mothers to offer pacifiers and the reasons behind why American mothers offer pacifiers similar to what was found by Mauch et al. (2012).

Synthesis of the Review of the Research

While there is an abundance of research behind medical reasons to offer or not to offer pacifiers, there is a lack of information on the current status of pacifier use in the United States. Pacifiers' original purpose was to soothe babies when crying (Marter &

Agruss, 2007), but there has been an ongoing debate on pacifiers because of the potential harms (breastfeeding, dental occlusion, infection, and otitis media). More recently, there has been discussion on the possibility that pacifiers may help prevent Sudden Infant Death Syndrome (SIDS). However, there has not been conclusive evidence on this topic.

Niedenthal et al.'s (2012) retrospective study showed a potential effect of pacifier use on social emotional development in boys and Lehman et al. (1992) revealed a possible connection between pacifier attachment and insecure attachments to a primary caregiver. Without a clear understanding of the prevalence of pacifier use, the frequency with which children use pacifiers, and the reasons impacting mothers' choice to offer pacifiers, it is difficult to conclude if there is a problem to be further investigated.

Although the studies by Pansy et al. (2008) and Mauch et al. (2012) were used to show parental choices about pacifier use, the opinion and beliefs of parents in the United States might be very different from those in Austria and Australia. Therefore, this study will be an initial investigation into the prevalence of pacifier use in the United States exploring both frequency of use (when pacifiers are used during the day) and duration of use (how many months or years the child uses a pacifier). In addition, this study will look at information regarding what is influencing parents' or guardians' choices to use or avoid pacifiers may help understand why pacifiers are such a phenomenon. The following chapter will discuss the methodology of the research including subjects, instrument, procedures, and design.

CHAPTER THREE

METHODS

Introduction

When researching pacifier use in the United States, questions emerged on topics such as the prevalence of pacifier use, when children use pacifiers (all the time, for sleep, to soothe), and influences on mothers' choices to offer or not to offer a pacifier. The current exploratory study sought to answer these questions through open-ended interview questions to gain an understanding of the reasons mothers may or may not offer pacifiers to their children. Additionally, early results indicated that the etiology of pacifier use was from the hospital staff specifically the nurses. Therefore, a secondary study of hospital policies related to pacifier use was conducted. In this chapter, the sample, instruments, research designs, and procedures used for the two studies will be introduced.

Study One: Mothers' Choices to Offer Pacifiers

Sample

The study targeted mothers over the age of 18-years with at least one child (male or female) between the ages of 18-and-36-months. Using convenience sampling, 10 mothers consented to participate in this study and were interviewed. Questions about mothers' and fathers' age, race/ethnicity, and education background were asked in the interview to collect demographic data (see Appendix A). Additionally, demographic information was gathered on the child's age, weight, and length at birth. The next sections will review respectively the demographic data of the mothers, fathers, and children.

Characteristics of mothers. The mothers ranged from 27-to-44-years of age ($\bar{x} = 32.5$). Six mothers identified as Caucasian ($n = 6$), two African American ($n = 2$), and two Hispanic/Latina ($n = 2$). Five mothers earned Bachelor's degrees (B.A. or B.F.A.; $n = 5$), three earned Associates degrees (A.A. or A.S; $n = 3$), one mother had graduated from high school with some college ($n = 1$), and one had earned a Masters degree (M.A.; $n = 1$).

Characteristics of fathers. Although the mothers were the primary sample, in order to better understand their family dynamics, and ultimately their decision making, information was gathered on their child's father. Accordingly, mothers identified the characteristics of their child's father. Fathers' ages ranged from 30-to-43-years-old ($\bar{x} = 33.5$). Six fathers were identified as Caucasian ($n = 6$), two African American ($n = 2$), one Hispanic ($n = 1$), and one Israeli ($n = 1$). Of the 10 fathers, four had high school diplomas with some college ($n = 4$), three earned Bachelor of Science degrees (B.S.; $n = 3$), one earned a Masters (M.A.; $n = 1$), one earned a Juris Doctorate (J.D.; $n = 1$), and one was unspecified ($n = 1$).

Characteristics of children. Mothers also noted the characteristics of their children. The children ranged from 22-to-36-months old ($\bar{x} = 29.3$). At birth, the children weighed between 6 pounds 1 ounce and 8 pounds 1 ounce ($\bar{x} = 7$ pounds 6.85 ounces) and were between 19-and-23 inches long ($\bar{x} = 20.6$). The weight and length were used to determine if babies were all carried to term. All of them were full term. Nine mothers had male children ($n = 9$) and 1 mother had a female child ($n = 1$).

Recruitment. The pacifier inquiry study utilized a convenience sample with a snowballing effect. In other words, persons familiar with the graduate student were asked to participate and referred friends or family who might also meet the criteria and be willing to be interviewed by the researcher. Email addresses and/or phone numbers were collected to establish initial contact with potential participants. Potential participants were contacted via email ($n = 9$) or by phone ($n = 1$) (see Appendix B). No deception was used in recruitment of subjects as subjects were informed that the study was an interview about mothers' choices to offer or not to offer a pacifier. No screening device was used to select from a contacted subject pool. Additionally, there was no deception in the recruitment of subjects.

Subjects were provided with a consent form (see Appendix C) to inform them of study procedures, possible risks or benefits, confidentiality, and right to withdraw. Next, the adult consent form was emailed to the subjects prior to the interview. For face-to-face interviews, subjects physically signed the forms. For phone interviews, subjects verbally consented and also submitted consent with an electronic signature. Additionally, subjects who participated over the phone were mailed hard copies of the consent form to keep. The subjects were assured that these documents were kept separate from the data collected to safeguard the identity of the subjects and protect anonymity.

Instrument

The instrument for this study was an open-ended interview (see Appendix A) developed based on interviews used in the studies by Pansy et al. (2008) and Mauch et al. (2012) as well as through questions of interest for the researcher and thesis chair. The interview employed semi-structured questions to examine mothers' choices on pacifier

use. Interviews took place in person ($n = 3$), on the phone ($n = 5$), and over the Internet in written form ($n = 2$). Each interview began with general questions about the children's interests and strengths to build the mothers' comfort level with the interviewer. Next, mothers were asked, "Does your child use a pacifier?" No answers were followed-up with the question, "Did he/she ever use a pacifier?" There were two different tracts of questions for (1) mothers of children who use or have used a pacifier and (2) mothers children who never used a pacifier.

Pacifier user questions. Mothers of children who currently use or have used pacifiers were first asked, "What influenced your choice to offer a pacifier?" Follow-up questions inquired about the age of the child when the pacifier was first offered, when the pacifier is/was used (in what situations), who controls/controlled the pacifier (caregiver or child), and how many pacifiers the child has/had.

Past pacifier users. For children who no longer use pacifiers, mothers were asked when the child stopped using the pacifier and whose choice it was to give up the pacifier. If the parents decided it was time to stop use, they also answered a question about how they weaned their child off of a pacifier.

Current pacifier users. If the mother identified that their child still used a pacifier, they were also asked three questions: (1) "How frequently does your child use a pacifier?" (2) "How do you feel about this?" (3) "If your child attends a program, such as day care, are there any policies regarding pacifier use and how do you feel about these policies?"

Non-pacifier user questions. For children who never used a pacifier, mothers were asked if it was their choice not to offer a pacifier or if their child rejected it.

Follow-up questions included the influences or reasons to offer or not offer the pacifier as well as how a child who rejected a pacifier responded to the object when originally offered.

Demographic questions. Lastly, demographic information was gathered on the child's age, child's weight and length at birth, parents' ages (to determine if child was carried full term), parents' education level (to deduce socioeconomic status of the family), parents' race/ethnicity – as described above in the sample section – and where the mother receives parenting advice. The next section will detail the design of the study. Participants were reminded that all data would be kept confidential and they could skip any question or discontinue involvement at any time.

Research Design

The study used an ethnographic design with an open-ended question interview. The results of this study are simply descriptive and not intended to be generalizable.

Procedures

Human subjects. The protocol for this study was submitted to the California State University, Northridge (CSUN) Standing Committee for the Protection of Human Subjects (SACPHS) on October 1, 2013. Committee approval was received on December 6, 2013 (see Appendix D).

Interview. Potential subjects were referred by personal acquaintances – as a convenience sample. Initial contact was made through emails and phone calls (see Appendix B). Once potential participants express interest to participate, they received a Consent Form via mail or email (based on their preference).

Before beginning the interview, the rationale behind the project was explained to the subject. Of the eight mothers who participated over the phone or in person, six agreed to be audio recorded. The two mothers who did not consent to be recorded both were interviewed over the phone. To make sure the data was not compromised, the interviewee was asked to speak slowly or repeat ideas, so that the researcher could write down their words. While writing notes did not seem to compromise the data, direct quotes were not used in the data analysis because they could not be verified by recordings and were therefore not 100% reliable. Researcher and subject mutually agreed upon a time and location for the interview.

Next, the interview commenced beginning with broad questions about the child and then moving to questions regarding the mother's choice to offer a pacifier (see Appendix A). The interview concluded with demographic questions. The interview lasted between 10-and-30-minutes. Finally, subjects were thanked for their willingness to share information and their time verbally and compensated with a \$5 Target Gift Card.

Study Two: Hospital Pacifier Practices

Sample

Hospitals in the greater Los Angeles area, including Ventura County, were identified and researched online. The researcher obtained contact information for the hospital on the hospital's website. Cold calls were made to nine hospitals ($N = 9$) and the researcher requested to speak with a nurse regarding pacifier policies and procedures (Appendix E). Of the nine hospitals, six provided information on policy and three did not return the phone call. Four of the hospitals were non-profit ($n = 4$), one was public ($n = 1$), and one was for profit ($n = 1$). The researcher spoke with four registered postpartum

nurses ($n = 4$) one interim supervisor of special deliveries ($n = 1$), and one manager who oversaw the birthing unit and maternity education ($n = 1$).

Instrument

An open-ended question interview (Appendix F) was used to learn about hospital policies and procedures regarding offering pacifiers. The first question asked if there is a pacifier policy and what is the policy. Next, the nurse was asked about general procedures used with pacifiers. Third, the researcher inquired about what determines if the baby is offered or not offered a pacifier. The final question was “Does the hospital offer any written information about pacifiers?”

Research Design

Because the study used an ethnographic design with an open-ended question interview, the results of this study are simply descriptive and are not intended to be generalizable.

Procedures

Interview. As noted above, potential hospitals ($N = 9$) were researched online based on proximity to the researcher’s hometown and school and contacted. Initial contact was made through phone calls (Appendix F). Once the researcher was guided to the proper nurse ($n = 4$) or supervisor ($n = 2$), an open-ended interview was conducted on the hospitals policies and procedures. The interview lasted approximately 5-to-10 minutes and the nurse or supervisor was thanked for her time at the end of the phone call.

In Chapter Four, the data from the interview will be analyzed using common themes to organize the answers to interview question. Chapter Five will then offer a

discussion of these themes, additional implications of the research, and areas for future research.

CHAPTER FOUR

RESULTS

Introduction

The main goal of this study was to uncover reasons behind mothers' choices to offer or not to offer pacifiers to their children. Specific questions asked about the age at which babies were offered pacifiers, when pacifiers were used, and the frequency of pacifier use. Because early results illuminated a possibility of hospital influence, a secondary study was added to discover hospital policies on pacifiers with newborn babies. This chapter will analyze the findings from the Mothers' Interviews and the Hospital Interviews.

Study One: Mothers' Choices to Offer Pacifiers

Sample

To review, 10 mothers (aged 27-to-44) with children between the ages of 22-and-36-months were interviewed about their choices to offer pacifiers.

Results

Pacifier use. For this study, the offering a pacifier differs from using a pacifier. Offering will refer to the point parents gave children a pacifier or parents attempting to place the pacifier in their children's mouths. Using a pacifier will indicate children who took to sucking a pacifier beyond the initial offering and used the pacifier for more than three days. All 10 mothers in the study offered their child a pacifier (as shown in Appendix G). However, three of the mothers ($n = 3$) noted that prior to birth they had not intended to use pacifiers. While all 10 children were offered a pacifier, only 8 children ultimately used a pacifier because two of the children did not take to using a pacifier and

therefore did not use them ($n = 2$). Only one child in the study was still using a pacifier at the time of the interview when he was 24 months of age.

The majority of pacifiers were offered for the first time within three days of birth ($n = 6$). Additionally, two mothers offered pacifiers between two weeks and one month ($n = 2$), one in the second month ($n = 1$), and one around five-to-six months ($n = 1$). See Figure 4.1 below.

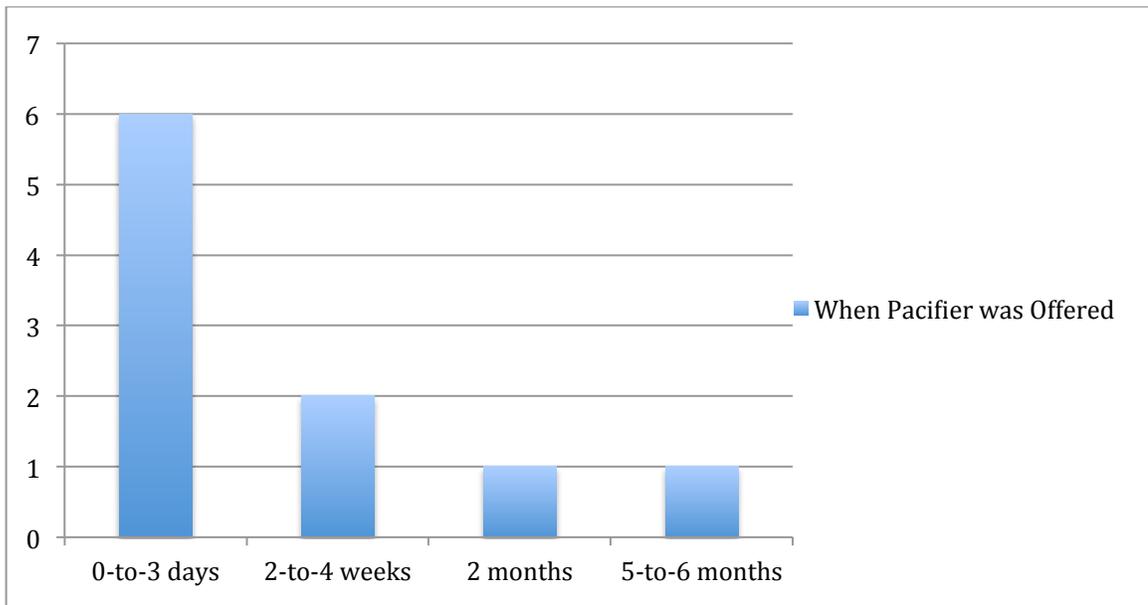


Figure 4.1. When Pacifier Was First Offered

Of the children who used, but do not currently use a pacifier ($n = 7$), one ended use within 3-months of birth ($n = 1$), two between 6-and-9 months ($n = 2$), three between 15-and-18 months ($n = 3$), one around 28 months ($n = 1$). See Figure 4.2.

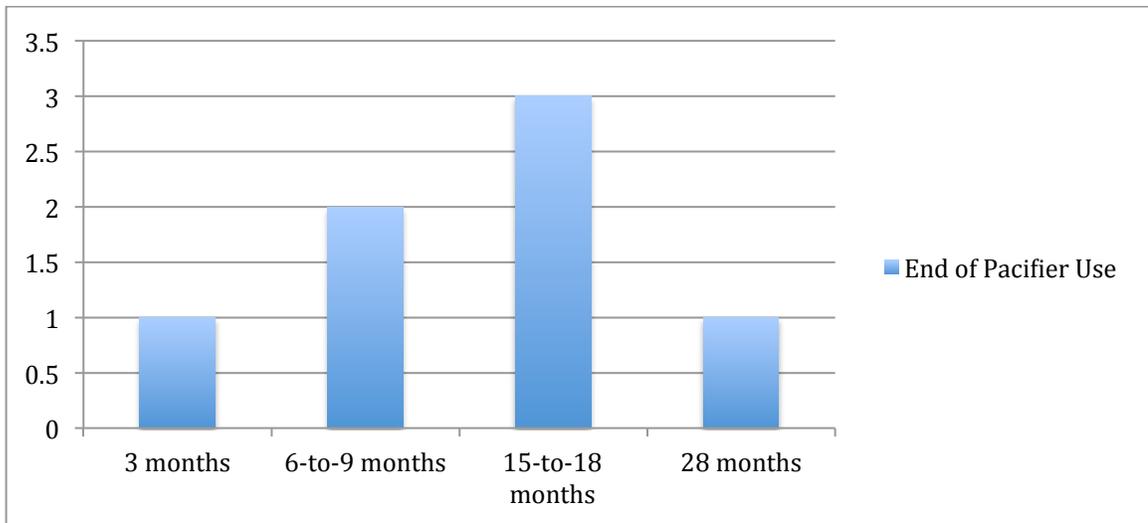


Figure 4.2. End of Pacifier Use

Influences on offering a pacifier. The ten mothers who offered a pacifier provided 20 reasons for offering a pacifier. Medical professionals and medical issues ($n = 8$) appeared to be the greatest influence on mothers' choices to offer pacifiers. In particular, five mothers were encouraged to use pacifiers by the hospital ($n = 5$) and three offered pacifiers based on pediatrician recommendation ($n = 3$). Other influences included to soothe the baby ($n = 5$), to help with sleep ($n = 2$), to aid in oral stimulation ($n = 2$), previous use with another child ($n = 2$), and because pacifier use is a commonplace practice ($n = 1$). Figure 4.3 illustrates these influences.

Heather identified that she originally offered a pacifier to her son in the hospital because “he had jaundice and was in the hospital longer than I was, so I gave him a pacifier as a comfort thing, when he was in the lights.” Bianca did not get an explanation from the hospital as to why they offered her child a pacifier because she was not planning on using one and was not happy when her son came into her room with a pacifier in his mouth. She continued use because her child became quickly attached to the pacifier and it was more difficult to take it away than to let her him have it.

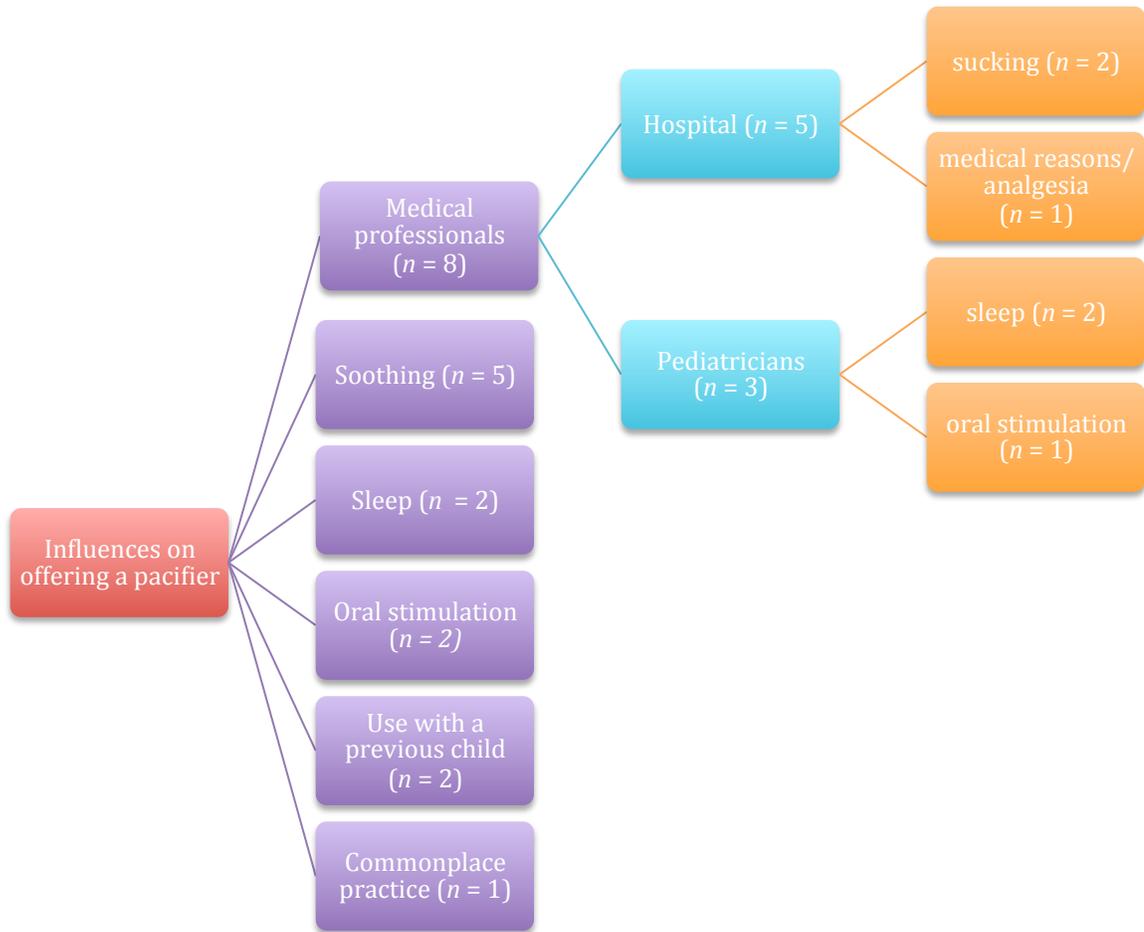


Figure 4.3. Influences on Mothers Choices to Offer a Pacifier

The pediatrician recommendations were based on sleep ($n = 2$) and oral stimulation ($n = 1$). For Isabelle, her pediatrician’s recommendation was for her first child, but influenced her use for the second child as well. With her first son, she originally intended “to wait 6-to-8 weeks to avoid nipple confusion.” However, her son was having difficulty sleeping, she contacted her pediatrician who she recalled telling her, “just give him the pacifier...you will be so happy.” Her pediatrician’s recommendation stayed with her when deciding use for the second son and therefore, she offered it earlier around 2 weeks. Similarly, Jessica contacted her pediatrician when her son constantly had his fingers in his mouth when he was not being fed. She explained,

My hospital was adamant against not giving it to him for the first month, so he could establish good breastfeeding skills and I went to the pediatrician and the pediatrician gave me a firm talking to, like there's a reason they were invented, you're not a bad mom...He needs the oral stimulation, give him a pacifier. So that's when I gave in.

Her doctor also advised her not to offer the pacifier at night because of its potential effect on sleep patterns.

Soothing ($n = 4$) was also a major influence on mothers' choices to offer pacifiers. Heather mentioned, "Infants and babies have a lot of things they are learning or overcoming at an early stage" and believed that pacifiers can serve as a constant comfort during this rapid stage of development. Gabrielle, a mother of a child with special needs, reported that she had always planned on using a pacifier for soothing and rationalized, "I would rather, in my mind, having him be dependent on pacifier for a certain part of his life wasn't going to be a huge obstacle to overcome eventually and I figured it was better than him needing to be rocked or held to fall asleep at night."

Only one mother was influenced by widespread use of pacifiers. Ellen noted that as a first time mother she assumed that "babies like pacifiers" because she had seen so many babies with pacifiers. For more information on reasons mothers offered pacifiers see Appendix H.

Reasons for continued pacifier use. For the purpose of this study, the continued use of pacifiers will be defined as children who used pacifiers beyond 6 months of age ($n = 6$). The six mothers reported a total of 13 reasons for continued use of a pacifier such as to aid with sleep ($n = 5$), soothing/self-regulation ($n = 4$), and oral stimulation ($n = 2$),

difficulty to wean ($n = 1$), and special needs ($n = 1$). For example, one mother reported her son needed a pacifier for sleep and was difficult to wean. For a visual of these results, see Figure 4.4. Bianca, whose son (age 24 months at the time of the interview) still uses his pacifier at night, commented, “He became obsessed as a baby and it was a lot on us if we took it away. We just let him keep it.” The mothers who continued to use a pacifier for soothing found it helped to calm their children when they became fussy or were hurt. Faye explained, “...we continued using the pacifier to soothe him if he cried, knowing that the sucking sensation made him relax.” Jessica who originally used a pacifier for oral stimulation, sustained use because her son, “just kind of seemed like, he just needed it in his mouth like he just wanted it in his mouth.” Likewise, Gabrielle’s son, who is diagnosed with autism spectrum disorder and a motor planning disorder called apraxia, found that the pacifier was helpful for his oral sensory issues. Around 26 months of age, her son began chewing instead of sucking on his pacifiers. She explained,

He would seek sensory input because he had bad motor planning. He can’t get [sensory input] by moving his body in a certain way, so his jaw and biting and getting that sensory input in his face and biting down hard...gave him a lot of input with little output. The oral tendency was a way to help him soothe and self-regulate.

Additionally, Gabrielle noted that her son’s special needs influenced continued pacifier use because between 18-and-28 months of age he faced greater amounts of dysregulation. The pacifier was given to him to help self-soothe and regulate. Appendix I contains more information on continued pacifier use.

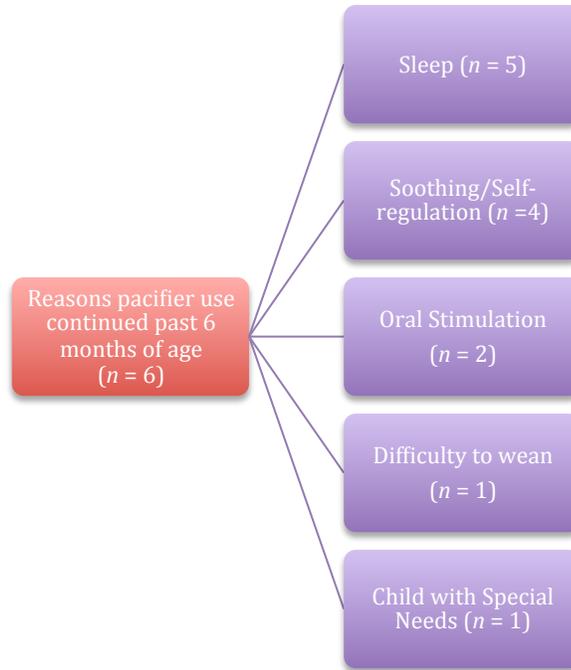


Figure 4.4. Reasons for Continued Pacifier Use (use past 6 months of age)

Reasons to not use a pacifier. While all mothers ended up offering a pacifier for various reasons, there were three mothers who originally did not intend to use pacifiers and one child who rejected the pacifier. These four mothers offered a total of ten reasons not to use pacifiers as displayed in Figure 4.5. For the mothers who did not intend to use pacifiers ($n = 3$), they cited dependency on the pacifier as a reason they did not want to offer a pacifier. Additionally, two of them believed that they could meet the needs of their child without relying on a pacifier to soothe the child ($n = 2$). Furthermore, three mothers were influenced by the hospital to postpone use of pacifiers until breastfeeding was well established to prevent nipple confusion ($n = 3$). In two cases ($n = 2$), the children rejected the pacifier when the mother offered it. Two mothers waited to offer pacifiers because of lactation nurses guiding them to wait until breastfeeding was well established ($n = 2$). Only one mother ($n = 1$) did not offer a pacifier because she was afraid of her child getting sick from germs on the pacifier.

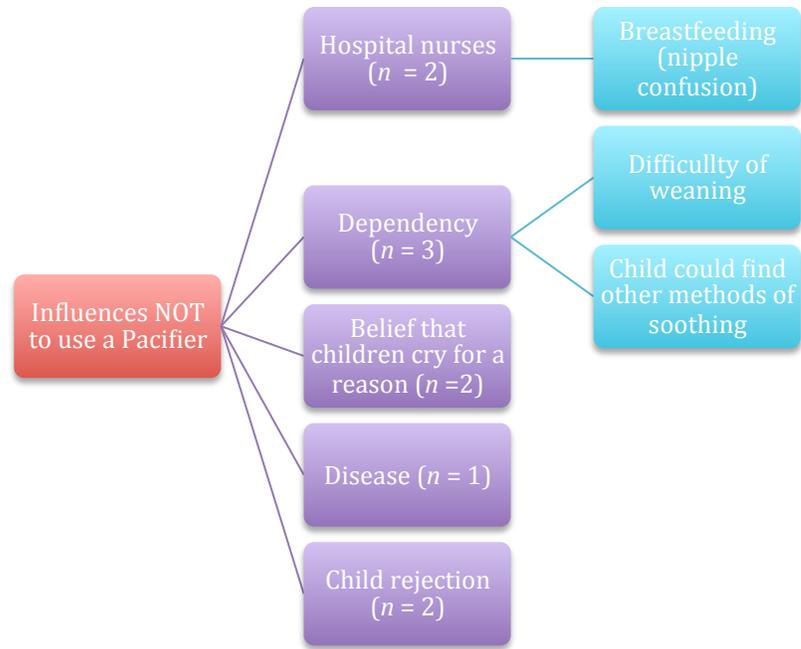


Figure 4.5. Influences on Mothers Choices Not to Offer a Pacifier

Ellen reported that per her lactation nurse, she waited until the breastfeeding routine, “latch and everything,” was well established, which was around five or six months. Multiple people attempted to offer her child the pacifier, but her child spit it out. She added, “I breastfed her for almost the first year of her life. So anything other than the breast she rejected.” After multiple attempts of offering the pacifier, Ellen decided, “She doesn’t like it. We are not going to force it on her.” When asked what the child does for soothing, the mother added, “I would say she uses me. I was her life size soother even now. She does have a problem with self-soothing, she is getting better as she gets older, but I am her go to.”

Regarding dependency issues, another mother, Dee, explained,

I feel like it is hard if you use it; they become dependent on it and then when you don’t have one then they might not be able to stop crying and soothe themselves or if they drop it on the floor or somewhere disgusting and then your like do I

want to let them have it so that they stop freaking out or do I want to have them not get a disease.

Additionally, Bianca reasoned, “Originally, I didn't want to give him a pacifier for dependency reason. I didn't want him to become so reliant on one mode of soothing.”

Dee also explained that pacifiers “felt like the easy way out. I didn’t like when moms would shove a pacifier in the mouth. [The babies] are usually crying for another reason.” Jessica added, “I remember sitting in the car on the way home from the hospital saying I’m not going to be that person who pacifies my kid. I will know how to soothe them.” For further details on influences to not offer a pacifier see Appendix J.

Times pacifiers were used and frequency of pacifier use. Most frequently, pacifiers were used were when children were fussy or needed comfort ($n = 6$) or at bedtime ($n = 6$). Only one mother ($n = 1$) offered the pacifier between for sucking practice. Another mother ($n = 1$) gave her child a pacifier whenever the he wanted it up until 1 year of age and one parent allowed the child to choose when he wanted it after 1 year of age ($n = 1$). Additionally, three parents ($n = 3$) noted that they regulated the frequency of pacifier use because of effects on speech ($n = 2$) and dependency ($n = 1$).

Heather identified that she offered her son a pacifier at naptime and bedtime and when he was hurt or needed comfort, but was not “strict about when he let go of it.” However, she was weary of the impact frequent use of the pacifier would have on her son’s speech development. She elucidated,

When we cut him back was when he started talking. I didn’t want him talking with it in his mouth, so I started cutting it back because I found that with my first

child the words she learned while communicating with a pacifier were pronounced incorrectly even once the pacifier was gone.

Gabrielle added that when her son was less than 12 months of age she used the pacifier for bedtime and when he was really upset, but “made a point not to [offer it] anywhere anytime” because of its potential to affect speech development. Therefore, she noted, “When he calmed down, I would take it away.”

With regard to soothing, Faye identified that she used the pacifier “assist with pacifying during crying spurts.” However, she was cautious to only offer the pacifier unable to soothe her son in other ways and made a conscious effort to “limit the use of the pacifier ‘as needed’ in an effort to avoid the creation of a very stubborn habit.” See Appendix I for more information.

Pacifier control. For the most part, the mothers noted that the parent or primary caregiver controlled the pacifier ($n = 6$). In a few cases, the mother noted that both the parent and child had control ($n = 2$) or that when old enough, the child had complete control over time of use ($n = 1$).

Multiple mothers noted ($n = 3$) that while they tried to maintain control of when the pacifier used, if there was a pacifier laying around, their children would pick it up and put it in their mouth (see Appendix K). While Faye initially attached a pacifier to her son’s bib for convenience, she stopped doing it when he started to learn to take the pacifier on his own. She identified that they tried to discourage him from using pacifiers that he found lying around and explained that her son “even put someone else’s paci into his mouth.”

Number of pacifiers. Of the children who used pacifiers ($n = 8$), all parents kept at least 2 pacifiers on hand with six mothers identifying that they had between 2-to-4 pacifiers at all times ($n = 6$) with two noting that they kept more than five on hand at a time ($n = 2$). See bar graph in Figure 4.6. All eight mothers ($n = 8$) whose children used a pacifier identified that they had two or more pacifiers so they could find a pacifier as needed. Isabelle, who kept 3-to-4 pacifiers on hand at all times, mentioned that 1-to-2 of these pacifiers were kept in the crib for bedtime.

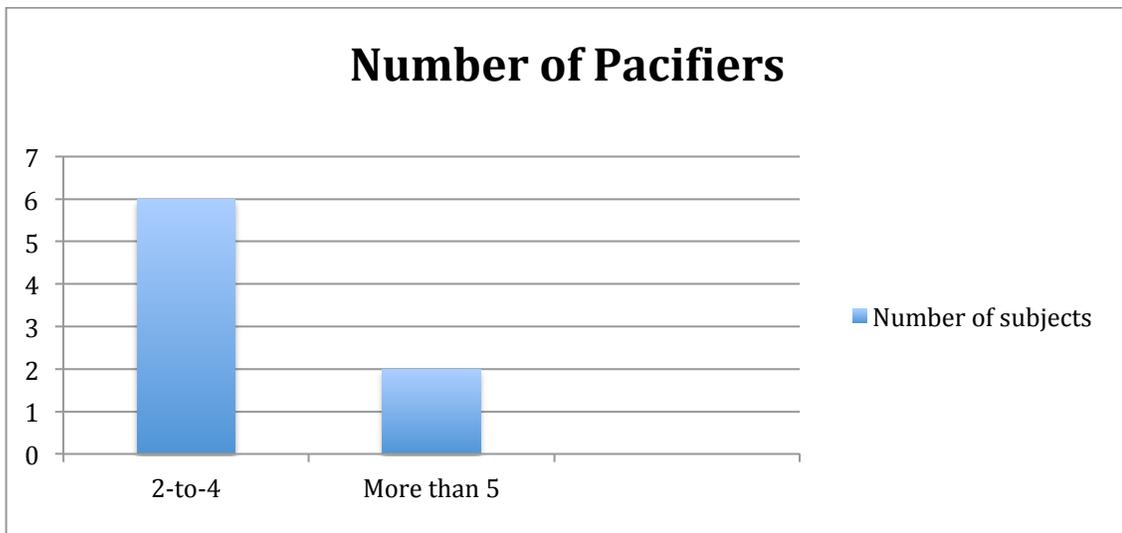


Figure 4.6. Number of Pacifiers

In addition to the ease of finding a pacifier, two mothers ($n = 2$) specified that the number of pacifiers on hand and pacifier rotation was to avert dependency to a particular pacifier. More specifically, Heather said, “He didn’t have a connection to the pacifiers...I would switch them out every couple months. I would keep four on hand because of losing them,” but he did not have one pacifier that he preferred over others. Furthermore, Faye specified that her child had 15-to-20 pacifiers. She explained, “it was easier to just have more stashed away in random places than to look for a particular one. We also didn’t want to form dependency on a particular binky.”

Pacifier weaning. Of the children who used a pacifier ($n = 7$), pacifier weaning was split evenly between the choice of the parent ($n = 3$) and the child no longer showing interest ($n = 3$). In one case, pacifier weaning was accidental ($n = 1$) because the parent ran out of usable pacifiers. When the parents weaned the child, two mothers stopped offering with no weaning process ($n = 2$) and one went through a planned process ($n = 1$).

To review, the majority of children discontinued pacifier use between 15-to-18 months ($n = 3$) with fewer between 6-to-9 months ($n = 2$), 3 months ($n = 1$), and 28 months ($n = 1$; see Figure 4.2). For the parents who chose to wean their child, two chose to wean between 15-and-18 months ($n = 2$) and one at 6-to-9 months ($n = 1$). The accidental weaning occurred at 28 months ($n = 1$).

Faye, a mother who weaned her child without a process, explained her choice, “My son stopped nursing at 9 months by his own choice and my husband and I figured it was a good time to have him stop using the pacifier (we are opportunists!). We’ve found that ‘out of sight, out of mind’ is really the best policy with our son.” On the other hand, Heather described her weaning process: “We mailed it to the [pacifier] fairy...He went around the house and collected them. We put them in a plastic bag and put them in the mailbox. And that was it. Then there was no more pacifier.”

For Gabrielle, the weaning process was an accident. While she had intended to wean her son when he was on winter break from school in case of sleepless nights, her son had been chewing through pacifiers each day and if “if it even had a nick on it, a scratch, or a tiny bite in it, he wouldn’t use it.” Her husband had one more pacifier in his pocket, but did not realize it was already bitten through. Therefore, instead of running to Target, she decided to try to go without it. The first night was the most difficult, but after

that he did not ask for it. She commented, “It was actually a lot smoother than we had anticipated.” For more results on pacifier weaning see Appendix L.

School policies. Only one mother was directly impacted by school policy. All other children had been weaned or given up their pacifiers when they entered a school or day care setting. When Gabrielle’s son entered school two days a week, he was not allowed to bring a pacifier. She explained, “He was extremely deregulated when he started and literally screamed for three hours straight everyday that he was there for the first two-to-three weeks. That was kind of like boot camp for self-soothing.” Although it was a difficult process, she was ultimately okay with the policy because it helped with the weaning process.

Study Two: Hospital Pacifier Practices

Sample

Nine hospitals ($N = 9$) in the Los Angeles and Ventura counties were contacted about their hospitals’ policies and procedures for pacifiers. Ultimately, six hospitals ($n = 4$ non-profit, $n = 1$ public, $n = 1$ for profit) provided information and three hospitals did not return the phone call. The researcher called the phone number listed on the hospitals websites and for each hospital was transferred multiple times before being connected to. The researcher spoke with four registered postpartum nurses ($n = 4$) one interim supervisor of special deliveries ($n = 1$), and one manager who oversaw the birthing unit and maternity education ($n = 1$). The following sections will detail the information collected from the interviews.

Results

Hospital pacifier policies. When asked whether or not the hospital had a pacifier policy, three hospital policy informants said they did not have pacifier policies ($n = 3$), two offered their policies in terms of their breastfeeding policy ($n = 2$), and one stated they did have a policy ($n = 1$). Figure 4.7 displays these results.

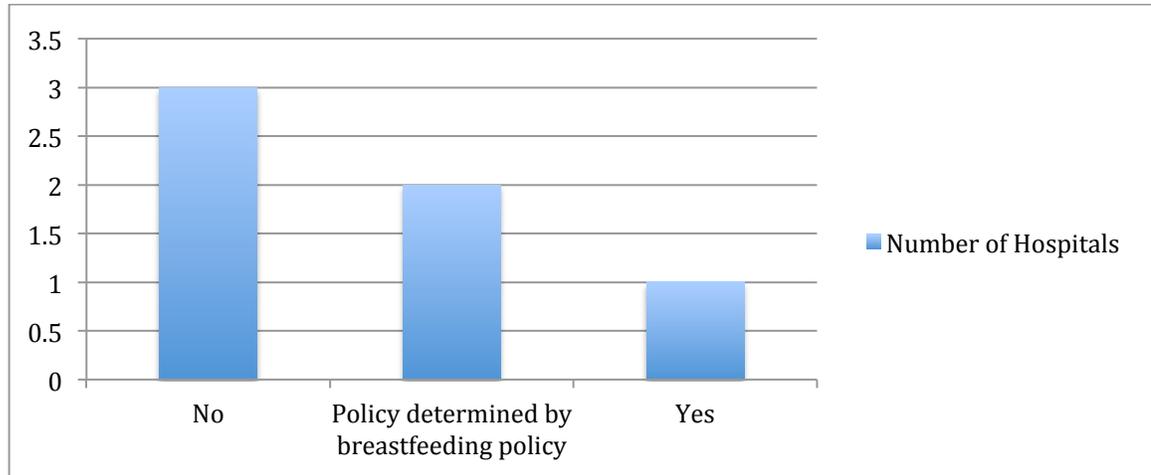


Figure 4.7. Do Hospitals Have Pacifier Policies?

For the hospitals that did not have policies ($n = 3$), two supervisors/nurses mentioned being breastfeeding friendly and therefore did not offer pacifiers. In particular, the interim supervisor for special deliveries at Hospital F, a hospital that had just received their Baby-Friendly designation, was adamant in asserting that they do not have a pacifier policy and pacifiers are not recommended or discommended, but they encourage breastfeeding only. The designation is a comprehensive process developed as part of the Baby-Friendly Hospital Initiative to “encourage and recognize hospitals and birthing centers that offer an optimal level of care for infant feeding and mother/baby bonding” (Baby-Friendly USA, 2012). To achieve a Baby-Friendly designation, a hospital must implement the Ten Steps to Successful Breastfeeding (World Health

Organization, 1989 as cited in Baby-Friendly USA, 2012), which includes not offering pacifiers or artificial nipples to babies who are breastfeeding. The R.N. at the third hospital noted that pacifier use was at patient discretion.

Two R.N.s, who gave their pacifier practices in terms of their breastfeeding policies, offered that pacifiers were discouraged in favor of breastfeeding. Because pacifier use can lead to nipple confusion, hospitals that encourage mothers to breastfeed, may also counsel mothers to avoid pacifier use until breastfeeding is well established. These two R.N.s explained that the reason they do not have a specific pacifier policy was to promote breastfeeding and healthy breastfeeding practices. They did not offer pacifiers to avoid nipple confusion, which could prevent the baby from developing a strong latch on the nipple. At the hospital that did have a policy, the manager stated that they do not recommend or encourage pacifiers for soothing or before initial breastfeeding. For more information see Appendix M.

Two R.N.s, who gave their pacifier practices in terms of their breastfeeding policies, offered that pacifiers were discouraged in favor of breastfeeding. Because pacifier use can lead to nipple confusion, hospitals that encourage mothers to breastfeed, may also counsel mothers to avoid pacifier use until breastfeeding is well established. These two R.N.s explained that the reason they do not have a specific pacifier policy was to promote breastfeeding and healthy breastfeeding practices. They did not offer pacifiers to avoid nipple confusion, which could prevent the baby from developing a strong latch on the nipple. At the hospital that did have a policy, the manager stated that they do not recommend or encourage pacifiers for soothing or before initial breastfeeding. For more information see Appendix M.

Protocol for offering pacifiers to newborns. Based on the results from the pacifier policy question, it was determined that for the majority of hospitals ($n = 5$), the protocols for offering a pacifier were influenced by breastfeeding policy. Within these five hospitals, protocols for offering pacifiers were classified as restricted ($n = 2$), the hospital does not provide a pacifier under any circumstances, and moderate ($n = 3$), the hospital has pacifiers, but discourages use. The other hospital that offered pacifiers based on patient request was identified as lenient ($n = 1$). The hospital protocol classifications are defined in *Figure 4.8* and *Figure 4.9* illustrates the number of hospitals in each classification.

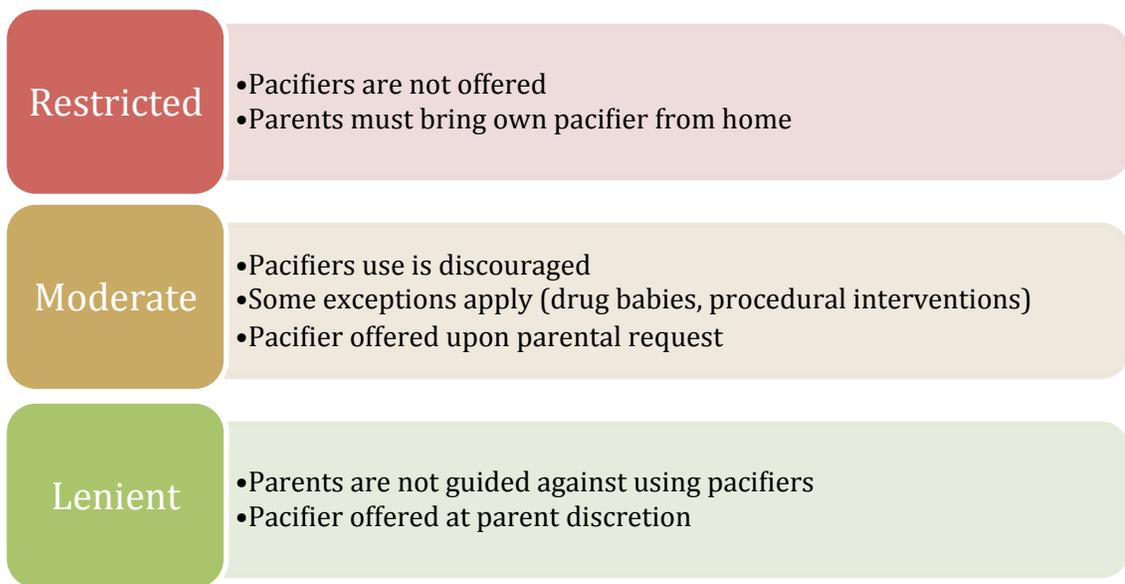


Figure 4.8. Hospital Protocol Classifications

Three of the hospitals ($n = 3$) nurses and supervisors cited Baby Friendly policies as influences on pacifier protocol in their hospitals. Two of these hospitals ($n = 2$) had already received a Baby Friendly designation and one ($n = 1$) was working towards their designation. Of the Baby Friendly hospitals, two had moderate protocols and one had a strict no pacifier protocol.

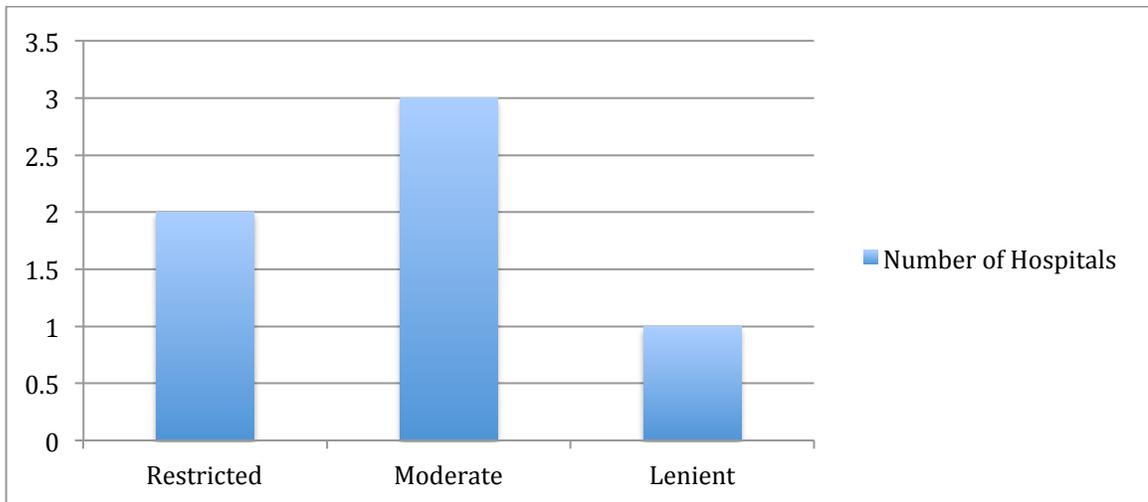


Figure 4.9. Number of Hospital in Each Protocol Classification

According to the nurses and supervisors at the hospitals with moderate pacifier protocols ($n = 3$), all encouraged mothers to wait until breastfeeding was well established to offer a pacifier. While one nurse did not mention a time frame for this, she classified this as waiting at least one month after birth and another 6-to-8 weeks after birth.

While nurses and supervisors at hospitals with moderate protocols identified that they discourage pacifier use, there were sometimes exceptions including substance abusing mothers ($n = 1$) and procedural interventions (circumcision, lab draw, and any other medical necessity; $n = 1$). Additionally, a nurse and a manager at two different hospitals said that they encourage bedside care also known as couplet care, where the babies stay in the room with their mother. At these hospitals, babies only go to the nursery at parent request. Because the other four hospitals were not directly asked about couplet care, what is offered at these hospitals is unknown.

A registered nurse (R.N.) at Hospital B, a hospital with moderate protocols and a Baby Friendly designation, stated that breastfeeding babies are not given pacifiers and that parents of these babies are counseled to not use pacifiers in the hospital and to wait

until breastfeeding is completely established (after the first month of life) to offer a pacifier. Furthermore, for soothing mothers are advised to put the baby on the breast. When asked about babies who do not breastfeed, the R.N. noted that most babies who do not breastfeed are from substance abusing mothers. An exception for using pacifiers is made for “drug babies.” Because these babies tend to be more irritable and harder to console, pacifiers are offered to these babies as needed to help the baby self-soothe. Additionally, the R.N. indicated that sometimes breastfed babies who are overly irritable after sufficiently eaten and have a continued need to suck are offered a pacifier.

The postpartum nurse at Hospital D, a moderate pacifier protocol hospital, explained that they do not offer or promote pacifiers, but will offer a pacifier upon parent request. The manager of the birthing unit at Hospital C, a moderate pacifier protocol hospital working towards the Baby Friendly designation, described that they advise parents not to offer a pacifier before the initial breastfeeding. For soothing the baby, they recommended swaddling, skin-to-skin contact, or feeding. Pacifiers are also discouraged for babies who were born premature or through C-section. For more information see Appendix N.

How policies are determined. A committee ($n = 2$), a lactation consultant or nurse ($n = 2$), hospital management ($n = 1$), and Baby Friendly Coordinator ($n = 1$) determine the hospitals’ breastfeeding policies and pacifier protocols (see Appendix O). For the hospitals that use a committee to decide policy, one classified the committee as the “Baby Friendly Committee” and the other listed the members of the committee including six lactation consultants, one postpartum R.N., one NICU R.N., one pediatric R.N., and a manager. For the hospital whose nurse identified that the hospital had no

policy, she mentioned that there is a Lactation Nurse to advise patients upon request and therefore that hospital was classified in the lactation consultant or nurse category. The Baby Friendly Coordinator was hired for the purpose of helping a hospital receive and maintain a Baby Friendly designation.

Written information provided by the hospital. The majority of hospitals ($n = 5$) did not provide written information or guidelines on offering pacifiers. Two nurses checked the hospitals' discharge packet and found nothing on pacifiers. One hospital supervisor specifically mentioned that pacifiers are not cited in their discharge packet or breastfeeding packet. The breastfeeding packet advised against bottle use, but did not discourage pacifier use. Additionally, two hospital officials identified that their prenatal courses and lactation nurses provide verbal advise to avoid pacifier use until breastfeeding is well established. For more information see Appendix P. In the next chapter, themes from the findings will be identified and discussed as well as implications for future research.

CHAPTER FIVE

DISCUSSION

In the United States, the use of pacifiers appears to be a common practice. Researchers in other countries such as Austria (Pansy et al., 2008) and Australia (Mauch et al., 2012) have conducted studies to uncover the reasons why pacifier use has become ubiquitous in their cultures. Influenced by these studies, this thesis sought to begin to uncover the reasons behind what appears to be a cultural phenomenon of pacifier use in the United States.

Currently, the American Academy of Pediatricians (AAP, 2014), American Academy of Family Physicians (AAFP; Sexton & Natale, 2009), and American Academy of Pediatric Dentistry (AAPD, 2013) pacifier recommendations are primarily guided by medical research in the areas of Sudden Infant Death Syndrome (SIDS), breastfeeding, acute otitis media (ear infections), analgesia (pain relief), infection, and dental malocclusion (“misalignment of teeth”; Sexton & Natale, 2009, p. 683). There is a lack of research on the use of pacifiers in relation to soothing, sucking, and social and emotional development.

Ten mothers of children between 18-and-36 months were interviewed to uncover whether or not their children were offered or used a pacifier, what influenced their choice to offer or not to offer a pacifier, when was the pacifier initially offered, and how frequently the child used a pacifier. Early results revealed that hospitals greatly affected mothers’ choices to offer or not to offer a pacifier leading to a secondary study that explored current hospital pacifier policies according to postpartum nurses and managers or supervisors in the postpartum unit.

This exploratory study revealed common themes that answered the original research question of why mothers offer and use pacifiers. Hospital policies helped explain some of the influences on mothers' choices. After the results from the two studies in this thesis are reviewed, this chapter will explore the benefits and risks of pacifier use and preferences on use of pacifiers for certain kinds of children. Following this discussion, policy implications and suggestions for future research will be made.

Summary of Study One: Mothers' Choices to Offer a Pacifier

To review, all mothers ($N = 10$) interviewed in this study offered a pacifier to their child. Therefore, pacifier offering appears to be independent of parents' age, race/ethnicity, and socioeconomic status. Only two mothers who offered a pacifier did not end up using a pacifier because their children were not particularly attached to the pacifier. Sixty percent (60 %) of the children continued pacifier use beyond six months of age when there is no longer any benefit of pacifier use for SIDS prevention and eighty percent of the children were offered a pacifier prior to one month of age when there is a potential risk for breastfeeding.

The primary influence on mothers' choices to use a pacifier was medical community (hospital nurses and pediatricians) and the key reasons for use and continued use (beyond 6 months of age) included soothing, sleep, and oral stimulation. Hospital nurses, dependency, and the belief that children cry for a reason were the main reasons three mothers initially intended not to offer pacifiers. It appears the majority of mothers (60 %) view themselves in control of their children's pacifiers, but for weaning half of the time the children gave up their pacifiers and for the other half, parents determined when it was time to wean. There was not a specific time when weaning occurred, but 30

% of the children were weaned between 15-and-18 months and 20 % between 6-and-9 months of age. It seems that the majority of children do not use pacifiers beyond the age of 24-months. In the next section, findings from Study Two's interviews on hospital pacifier policies will be discussed.

Summary of Study Two: Hospital Pacifier Policies

Interviews with postpartum nurses ($n = 4$) and postpartum unit supervisors ($n = 2$) revealed that most hospitals do not have direct hospital pacifier policies (83.3 %). Instead, pacifier practices appeared to be greatly influenced by hospitals' breastfeeding policies with Baby Friendly Committees (promoting breastfeeding first) and lactation nurses/consultants determining hospital pacifier practices. Hospital nurses and supervisors noted that over the past two years, postpartum policies have been in flux as they change to meet the standards to receive the prestigious Baby Friendly designation. The majority of hospital nurses and supervisors noted that they do not regularly offer pacifiers anymore for soothing, but no hospital included any written information on pacifiers in their discharge packets. The next section will discuss the findings based on common themes. These will include both the benefits and drawbacks to using pacifiers.

Discussion

First, the discussion will address the largest influence on pacifier use, medical professionals, by reviewing the current state of hospital policies including governmental impact on policy through the Baby Friendly campaign before evaluating pediatricians' recommendations. Next, the chapter will look at the relationship between pacifiers and (a) social and emotional development, (b) language development, (c) oral stimulation, (d) dentition, (e) sleep habits, (f) children with special needs, (g) weaning, and (h) culture.

Influence of Medical Professionals

As previously discussed, the vast majority of research discusses the medical risks and benefits of pacifiers, therefore it was relatively not surprising to discover that medical professionals had the greatest impact on mothers choices to offer or not to offer a pacifier (90 %). However, this finding was contrary to the results of Mauch et al.'s (2012) study that found that influence on pacifier use rarely came from doctors (3.2 %) or other health professionals (2.6 %). The current study found that other health professionals such as postpartum nurses or lactation nurses had the greatest influence on mothers' choices.

Hospitals and the Baby-Friendly Hospital Initiative. It was unforeseen that hospitals would have such a large affect on mothers' choices to offer a pacifier. However, the context (in timing) is important because the mothers in the study gave birth (1.5-to-3 years ago) before the Baby Friendly hospital policies were being implemented. While the Baby-Friendly Hospital Initiative (BFHI) has been around for many years, it is only recently that it has moved to the forefront of governmental policy. In October 2013, the California Senate passed Bill 402 (2013), which requires that,

all general acute care hospitals and special hospitals that have a perinatal unit to adopt, by January 1, 2025, the 'Ten Steps to Successful Breastfeeding,' as adopted by Baby-Friendly USA, per the Baby-Friendly Hospital Initiative, or an alternate process adopted by a health care service plan that includes evidenced-based policies and practices and targeted outcomes, or the Model Hospital Policy Recommendations as defined.

In this study, one hospital manager cited that there was a major change to their postpartum policies in April 2013, exactly one year prior to the interview. In the past, at

this particular hospital, the manager identified that pacifiers were routinely offered in the nursery, but currently pacifiers are discouraged in favor of breastfeeding and babies stay with their mothers unless the mother requests that the baby go to the nursery. Because the youngest child in this study was born prior to April 2013, the mothers interviewed would not have been impacted by this policy changes. Instead, there would have been pacifiers in the babies' cribs for easy use by parents and hospital staff. How would a parent who does not know much about pacifier use interpret this message about pacifiers from the hospital? Would having a pacifier in the crib tell the parent that using a pacifier is what they are supposed to be offering to help their infant?

The current changes in the hospital are being promoted by Baby-Friendly USA (BFUSA), which is the organization that promotes the BFHI, a global program launched by the World Health Organization (WHO) and United Nations Children's Fund (UNICEF). BFHI "recognizes and awards birthing facilities who successfully implement the 'Ten Steps to Successful Breastfeeding' and the 'International Code of Marketing of Breast-Milk Substitutes'" (BFUSA, 2012). According to BFUSA (2012), research has shown evidence that breastfeeding can lower children's risk for certain diseases and improves the health of both mother and baby. Furthermore, there is evidence that exclusive breastfeeding for the first six months of life and continued breastfeeding alongside appropriate foods up to one year will promote positive growth and development of the child, especially reducing the obesity risk (SB 402, 2013).

The "Ten Steps to Successful Breastfeeding" are affecting hospitals pacifier offering procedures because step nine instructs hospitals not to offer pacifiers or artificial nipples to breastfeeding infants. In one interview, a hospital interim supervisor, where

the hospital had just received their Baby-Friendly certification, was adamant in asserting that they do not offer pacifiers. The majority of hospitals that were not Baby-Friendly also noted that they do not give pacifiers because they promote breastfeeding only. Is this a direct result of the BFHI?

Additionally, the “Ten Steps to Successfully Breastfeeding” advise hospitals to keep infants in the same room as their mothers 24 hours a day reducing the need for a nursery. Will this decrease instances like with Bianca where her son was offered a pacifier without her permission? Were pacifiers previously offered more frequently in nurseries to reduce the amount of crying and as an aid to the postpartum R.N.s?

Breastfeeding education encouraged Ellen to wait to offer her daughter a pacifier until breastfeeding was well established to avoid nipple confusion. She did not end up offering a pacifier until her daughter was 6 months old and her daughter rejected the pacifier. Will the current evolving climate of hospital breastfeeding policies and pacifier procedures lead to a change in the frequency with which mothers offer pacifiers? Will offering pacifiers to babies when they are older than 4-weeks old result in fewer babies using pacifiers?

In two other cases, breastfeeding mothers were following the advice of their hospital or lactation consultant to wait 4-to-8 weeks to establish breastfeeding before offering a pacifier. However, they identified that their pediatricians changed this course of action of waiting to offer a pacifier. With new hospital policies, will pediatricians have a greater influence on mothers’ choices to offer pacifiers? How will the pediatricians know or implement the hospital policies? What is the communication between the doctors and the hospitals?

Pediatricians. Based on the vast amounts of research found on using pacifiers to reduce risk of SIDS (Sexton & Natale, 2009), it was believed that if pediatricians were influencing mothers' choices to use pacifiers, it would be for SIDS prevention. However, the mothers' who made reference to pediatrician recommendations did not mention that their pediatricians had discussed any information about SIDS or other medical benefits. It seemed that pediatricians' suggestions to offer a pacifier dealt with more behavioral elements such as sleep or soothing. What is a pediatricians' knowledge base when it comes to pacifiers, sleep, and soothing?

Jessica reported that when she spoke with her pediatrician when her son was one month old and had his hands in his mouth all of the time, her pediatrician advised her not to offer the pacifier at bed time. According to Jessica her pediatrician reasoned, "Because then you become a prisoner to it. If it pops out in the middle of the night and he starts crying then you are going to have to run and keep putting it in." Bianca confirmed this sleep time issue saying, "If it rolls out of his crib, he starts to cry and wants to get up." This recommendation seems to be contradictory to the APA recommendation (Sexton & Natale, 2009), which advises to use pacifiers at bed and nap time between the ages of one and six months to prevent SIDS. If the APA and medical research are not the primary influence, what is influencing pediatricians' recommendations and how up to date are pediatricians on medical research regarding pacifiers?

It appears that mothers tend to contact their pediatricians for other issues aside from medical needs. Is there a need for developmentalists who can support parents in the

first years of their children's lives? How would this affect the recommendations parents are receiving?

According to Cornelius, D'Auria, and Wise (2008), the Canadian Paediatric Society has developed a parental handout with guidelines for pacifiers for nurses to use when counseling families. There are currently no such guidelines in the United States. A quick web search revealed many different articles from unknown sources on Healthychildren.org and the Sexton and Natale (2009) article. There is not a common source with easy to read recommendations as approved by the American Academy of Pediatrics, American Dental Association, and American Association of Family Practitioners. Would having a common guide help bring less variability to medical professionals recommendations?

Mothers also identified that pediatrician recommendations to use pacifiers included the benefit of using a pacifier for the parent. For example, Isabelle noted that when her older son was having difficulty sleeping in his first month after birth, her doctor advised her to use a pacifier to help. She questioned her doctor as she was waiting to offer the pacifier to avoid nipple confusion, but she quoted her doctor as responding to her question with, "You will be so happy, just give him the pacifier." Although it is important for children to get adequate amounts of sleep at night, is a portion of the recommendation for pacifier use to benefit the parent? The next section will discuss the relationship between pacifiers and social and emotional development.

Social and Emotional Development and Pacifiers

There is little known about the impact of pacifiers on social and emotional development. Through research and interviews conducted, it was determined that

pacifiers may be related to three areas of social and emotional development: (1) attachment, (2) soothing, and (3) facial mimicry.

Attachment. While it appeared that the mothers who were interviewed had strong bonds with their children, it was hard to evaluate the specific mother-child attachment in this study. Thomas (2005) identifies that secure attachment is formed when the infant “trusts the caregiver and feels safe and supported by the caregiver’s comforting response” (p. 368). If parents are utilizing pacifiers, their child may benefit if they do not use the pacifier as a replacement for themselves, but instead as an added soothing tool.

According to Lehman, Denham, Moser, and Reeves (1992), Bowlby (1969) takes an “ethological position that inanimate objects become a substitute for the mother when she is not available” (p. 1206). Pacifiers replace the soothing mechanism of feeding and breastfeeding, while soft objects may replace the nurturing and comfort of a mother. The child may need to have already established a secure relationship with the mother in order for soft object attachment to occur as evidenced by research (Lehman et al., 1992). Why is this different for pacifiers?

The answer to this question may lie in Harry Harlow’s research on rhesus monkeys. When infant rhesus monkeys were raised with surrogate mother dolls (one made of cloth and one of wire), the monkeys showed preference for the cloth mother over the wire mother even when the wire mother was the one providing sustenance for the monkeys (Vicado, 2010). The infant monkeys chose the softness of cloth surrogate mother versus the wire surrogate mother as it provided them with contact comfort. Do

pacifiers provide children with the same comfort and security as soft objects or are they more of a calming mechanism rather than a comfort object?

Pacifiers may be offered to help the infant stop crying or fussing, but what if the infant's cry or fuss is symptomatic of another need? If the pacifier is not meeting the etiology of the infant's needs, how is the child able to trust that their caregivers will meet their needs? Parents who offer pacifiers might benefit from making sure that all of the infant's basic needs have been met before offering the pacifier or only use the pacifier while prepping to meet the need such as heating a bottle or lengthening the time between feedings.

As demonstrated by Lehman et al. (1992), children who have pacifier attachments may be less likely to develop secure relationships with their mother. The pacifier itself most likely does not cause this issue, but may result from the way in which pacifiers are used. For children with secure attachments, is the pacifier being offered in conjunction with other types of nurture such as rocking or holding? Are mothers' behaviors when using a pacifier more to blame than the pacifier? Are children developing insecure attachments because mothers plopped the pacifier into their child's mouth without offering their own soothing response?

Soothing. The number one reason for offering a pacifier appeared to be related to soothing as half of the mothers interviewed in this study ($n = 5$) cited it as a reason for using a pacifier. Pacifiers can be helpful tools in between feedings for babies who need higher amounts of oral stimulation or comfort (Hernandez-Reif, Field, & Diego, 2004). However, babies need to suck not only for eating and comfort, but also for what Hernandez-Reif et al. (2004) identify as mouthing, using their mouths and sucking ability

to learn about new objects in their world. If parents perceive that their children need to be comforted and offer them a pacifier, are there instances when children are missing out on other mouthing opportunities? Are babies losing an aspect of sensory development by mouthing primarily on one type of material such as the rubbery nipple of the pacifier? For children who are particularly fussy, pacifiers can be helpful as soothers. If pacifiers are used as a soothing tool, it may be important for parents to recognize when their children are soothed and remove the pacifier during periods of socialization and play.

Pacifiers are often mentioned as a self-soothing mechanism for infants. However, Dr. Sparrow from the Brazelton Institute advises “parents to watch for the natural ways their newborn soothes herself and to support it” (Brazelton & Sparrow, 2003, p. 72). These methods often include digit or hand sucking, as these are ways babies soothe themselves in utero. Children are able to control these mechanisms on their own and choose when they need to suck. Many parents prefer pacifiers to hand or finger sucking because they can control the weaning and cleanliness of it. Sparrow identified that weaning of digit sucking is not as difficult when parents take away the issue of control, autonomy, and independence. He believes that if parents remove the struggle, then the sucking will transfer to other self-soothing mechanisms (Brazelton & Sparrow, 2003). Do parents choose pacifiers because they can control it and thereby their child’s fussiness and crying behaviors?

Parents may feel inclined to offer the pacifier at first sign of fussiness to prevent a full-blown cry. However, if babies are just “complaining,” is it possible that by giving a pacifier they are not allowed the opportunity to work through the problem and build self-soothing skills on their own? Pacifiers are often identified as a self-soother, but because

children are frequently not in control of their pacifiers, who really is in control of soothing? If someone pops a pacifier into the child's mouth as soon as she starts crying, will she develop her own soothing mechanisms or is someone else dictating this?

With soft objects, the children appear to have more control of the object picking it up when they want it and leaving it behind when they are done. Through informal conversations and personal experience, self-soothing habits such as breathing techniques developed with soft attachment objects including a blanket, doll, or stuffed animal are used later in life to soothe. Is this the same with pacifiers? What type of self-soothing habits do pacifiers help children develop?

Using pacifiers appears to be a good way to soothe a baby. Parents are rewarded when they offer a pacifier as their child calms down, relaxes, and sleeps soundly. As Heather said, "Infants and babies have a ton of things that they are learning or overcoming at an early stage. If they have something that can comfort them that's constant for them, I think that that's an okay thing to do." Pacifiers do not necessarily calm a child better than methods such as carrying and rocking as shown in the study by Kramer et al. (2001). However, parents do not always have the time to be a constant soother and the pacifier becomes helpful when parents are at work or completing other routine tasks such as eating, washing the dishes, doing laundry.

What happens when it is time to wean a child with strong pacifier attachments? Does the child need to relearn ways of self-soothing? For Jessica, her son gave up his pacifier on his own, but in dealing with emotion he began to bite other children or adults. It appeared that he has some self-regulation issues to overcome. Was this a lack of

ability to self-soothe or had he not properly learned how to handle emotion due to lack of facial mimicry while using a pacifier?

Facial mimicry. One way people interpret the emotions of others is by automatically mimicking the facial expressions of those with whom they are conversing. According to Oberman, Winkielman and Ramachandran (2007), “facial mimicry reflects an internal simulation of the perceived facial expression in order to facilitate understanding of others’ emotion” (p. 168). By activating somatosensory and motor resources (such as face representation) during facial mimicry people are able to engage in “interpersonal sensitivity” by “entering others’ worlds” (Oberman et al., 2007, p. 168). The somatosensory system is responsible for providing people with information “about objects in [their] external environment through touch (i.e., physical contact with skin) and about the position and movement of...body parts (proprioception) through the stimulation of muscle and joints” (Dougherty, 1997). When the muscles in the face were blocked by muscular noise such as biting a pen or chewing gum it impaired emotion perception and understanding, according to Oberman et al. (2007). Do pacifiers in babies’ or toddlers’ mouths impair children’s ability to utilize muscles necessary to mimic certain emotion? If facial mimicry is being blocked, what emotions are harder for children to mimic while sucking their pacifier?

Imitation of facial expression is also made possible by the mirror neuron system (MNS), “visuomotor neurons that fire both when an action is performed, and when a similar or identical action is passively observed” (Molenberghs, Cunningham, & Mattingly, 2009, p. 976). The MNS allows people to quickly recognize emotions through empathic emotions that engage proprioceptive cues. This route is faster than visually

identifying the emotion and then recalling stored information about the emotion. How is the MNS affected by pacifier use? If pacifier use hinders the development of MNS, could it lead to slower recognition of emotion and thereby lower emotional competence and less emotional intelligence later in life as found in the study by Niedenthal et al. (2009)?

Until more is known about facial mimicry, children may benefit when their parents are cognizant about pacifier use. The majority of mothers in this study noted that they were conscientious to remove the pacifier once the child had calmed down. However, because this was a retrospective interview, it is possible the mothers' are recalling what happened based on what they think is the right way to handle a pacifier versus what really occurred.

Language Development

While research (Shotts, McDaniel, & Neeley, 2008; Fox, Dodd, & Howard, 2002) has not confirmed a link between poor speech development and prolonged pacifier use, it still remained a concern for two mothers in this study. Heather provided anecdotal evidence from her previous child's speech development, "I found that with my first child the word learned while communicating with a pacifier were pronounced incorrectly even once the pacifier was gone." She noted in particular the "L"s and "S"s were difficult for her first child. Are certain sounds more prone to be affected by pacifier use?

Additionally, at what point in the cry or fuss behavior are pacifiers being offered? How does the child learn to communicate their needs through variable crying if they are being immediately muted? Oller et al. (2013) found evidence that suggested that the sounds infants make that are not specific verbal sounds are known as protophones and

may “have a special role in language development...because they are the first sounds to be free of specific fixed function and thus reveal the opening of a door to the flexibility required for language” (p. 6322). These sounds are non-stereotyped species to species sounds that have the functional flexibility of expressing positive, negative, and neutral emotion states (Oller et al., 2013). The sounds infants make while crying or fussing are often the first step to language development. If children are pacified at the first sign of a fuss before they have the opportunity to vocalize their emotions, how does this impact their later development of language to describe varying emotions? By first trying to respond to the need of the cry including offering the breast or rocking to sleep or repositioning the baby due to discomfort, the infant is given a chance to “verbalize” their needs through cry or fuss behaviors. Pacifiers can be helpful when the infant is not soothed through other mechanisms such as babies who show an increased need for oral stimulation (nonnutritive sucking). Additionally, the path of language development may differ for children with special needs and pacifiers may be beneficial for these children.

Oral Stimulation

Oral stimulation influenced one mother to offer a pacifier and one mother to continue use of the pacifier. As previously mentioned, Jessica’s son had his fingers constantly in his mouth and the pediatrician recommended offering a pacifier. After the child began rejecting the pacifier, the child begun to bite. Is the biting symptomatic of an issue of self-regulation or a need for oral stimulation? Are children who have a heightened need for oral stimulation from birth more prone to biting as toddlers?

Gabrielle continued offering a pacifier at 26 months to meet her son’s need for oral input. She noted, “He would seek oral sensory input because he had bad motor

planning and he can't get it by moving his body in a certain way. Biting down hard gave him a lot of input with little output.” In this situation, the oral stimulation was part of a greater need for motor planning. Should certain behaviors with pacifiers serve as a red flag for other issues? When parents notice that their child is using the pacifier to get oral sensory input, they may contact their primary care physician or dentist to discuss whether this behavior may be symptomatic of greater needs. The doctor might be able to make a recommendation to a specialist or provide other ideas for oral sensory input.

Dentition

Surprisingly, no parent mentioned concerns about dental malocclusion or teeth misalignment. A study by Viggiano, Fasano, Moncao, and Strohmenger (2004) found that children aged 3-to-5 years with nonnutritive sucking habits were more likely to have altered occlusion (any modification to normal teeth alignment). The American Association for Pediatric Dentistry (AAPD, 2012) prefers pacifiers to thumbs or digit sucking because the pacifier habit is easier to break at an earlier age reducing the chance of orthodontic problems. This may be because parents are not readily given strategies to help move the child away from sucking – in other words – if parents offered soothing cuddly objects in addition to their children's fingers, would this challenge be mitigated?

Sleep Habits

For the first six months of a child's life, pacifiers may be helpful at night for SIDS prevention (Sexton & Natale, 2009). However, no mothers interviewed for this study made any reference to this medical use for pacifiers. Is this because they did not know about this use for pacifiers or that this use was not relevant to their needs? Are other SIDS prevention techniques such as the Back-to-Sleep Campaign helping parents feel

safer from this phenomenon? Are pediatricians less likely to recommend pacifiers for SIDS because of other precautions that are now taken to reduce SIDS?

The majority of mothers (60 %) noted sleep as a time when pacifiers were used, but there were mixed opinions on the helpfulness of pacifiers at bedtime. Gabrielle noted that issues related to sleep and pacifiers were nullified around 18 months,

He would fall asleep with it in, but if it fell out in the middle of the night I think by probably about 18 months it was not an issue, he would still sleep. By the time he was 2, if he'd wake up in the middle of the night and it wasn't in his mouth, he would find it and put it back in.

Bianca has had a different experience. At 24 months, her child was still using a pacifier for sleeping she felt,

I wish he wasn't so reliant on it to go to sleep because I do think it does cause some sleep problems. If it rolls out of his crib, he starts to cry and wants to get up and it is hard to get him back to bed. It's hard to find it at night when it is dark and then I have to clean it. I wish he didn't have to have it, but as of now he is set on it for nighttime.

Once children are past 6 months of age, are there other effective techniques to help with sleep aside from pacifiers, so that children like Bianca's son can sleep through the night without interruption?

Field and Hernandez-Reif (2001) found that bedtime rituals such as reading stories and massage therapy might be effective in reducing "the length of bedtime preparation and the children's activity level" (p. 102). Furthermore, massage therapy may lead to less problems falling asleep at night and fewer awakenings in the night. The

children who received massage therapy for 15 minutes before bed also were more active and alert with fewer disruptive behaviors during the afternoon hours and therefore were able to get better nights sleep (Field & Hernandez-Reif, 2001). Does massage therapy lead to better sleep than pacifiers? When the doctor told Isabelle she would be so happy when she gave her son a pacifier to sleep, would she actually have been happier if he had recommended massage therapy? One challenge of this method is that it takes time and effort for the parent to complete, but a good night's sleep for the child and the parent might be well worth it.

Weaning

While weaning can be a daunting process, it appears that about half of the time children wean themselves and stop taking the pacifier. The other half of the time, the parent has to determine when it is time to rid of the pacifier. After six months of age when the need for nonnutritive sucking diminishes, children may become attached to the pacifier and use it as a security object making removal of use a cause for parental and child anxiety. There are many ways that parents can wean their children and it may benefit the parent to understand their children to determine the style of weaning.

According to Sexton and Natale (2009), physicians should offer advice on weaning and alternative soothing mechanisms such as “swaddling, rocking, soft music, singing, and infant massage” (p. 684) for younger infants and distraction from pacifiers with “activities, toys, or other objects of affection” (p. 684) for older infants and toddlers. Additional methods suggested by Sexton and Natale (2009) included encouragement from doctors or parents and abrupt stoppage of pacifier use. Faye (son weaned at 9-months) and Isabelle (son weaned at 15-months) both found that it worked to not go

through a weaning process, but instead just discontinue offering the pacifier. Another option for weaning involves creating a story like Heather did with her son. By collecting all the pacifiers in the house to send to a fairy who would deliver the pacifiers to babies who need them, she included her child in the process of ending his pacifier use. Even when children are very attached to pacifiers, does the weaning process cause more anxiety for the parent or the child?

To summarize, the effects of pacifiers have been discussed with regard to social and emotional development, language development, oral stimulation, and dentition. The next section will look at the role of culture and pacifier use.

Culture

Cultural heritage did not appear to influence pacifier use in this study, however all parents interviewed in the current study were from a westernized nation as were the mothers in the studies by Pansy et al. (2008) and Mauch et al. (2012). While reasons to offer a pacifier and influences on offering a pacifier differed between the nations studies (United States, Austria, and Australia), there was a commonality in that pacifiers were offered more frequently than not offered. Is this because westernized cultures tend to value independence over interdependence?

In a study that evaluated the different soothing mechanisms used by mothers in the UAE of six different nationalities (UAE, Other Arab Muslims, Non-Arab Muslims, Indians, Phillipinos and others), Abdulrazzaq, Kendi, and Nagelkerke (2008) found that cultural differences do play a role in soothing methods mothers use to calm their infants. However, the majority (92 %) of mothers from all nationalities in Abdulrazzaq et al's (2008) preferred not to use pacifiers, a stark contrast to the 100 % of mothers who offered

a pacifier in this study. The main reason was the development of the infants' teeth and gums, a reason not mentioned by any mother in the current study. Could teeth be less of a concern in westernized cultures where there is more access to orthodontic procedures?

The most common soothing techniques in Abdulrazzaq et al.'s (2008) study were breastfeeding (99.1 %), holding and carrying the infant (96.9 %), herbal tea (64.7 %), night bottle (42.5 %), and swaddling the infant (20.5 %). The herbal tea was a common method among Arab mothers possibly because their parents had used the method before them. This parallel's Mauch et al.'s (2012) finding that grandparents were influential on pacifier use (28.7 %). While that finding was less prevalent in this study, Isabelle did mention she remembered her little sister using a pacifier. It appears that soothing mechanisms may be derived based on previous generations of a culture.

Implications for Policy

Pacifier use is ultimately up to parental preference, but research findings can help parents make educated decisions about if, when, and how to offer a pacifier. Parents should take careful consideration when offering a pacifier, not automatically offering the pacifier, but using it on an 'as need' basis in conjunction with a cuddly blanket, stuffed animal, or other soft attachment object. Hospitals and pediatricians can help parents by providing them with guidelines for pacifier practice. It would be beneficial for the American Academy of Pediatricians (AAP), American Academy of Family Physicians (AAFP), and American Academy of Pediatric Dentistry (AAPD) to collaborate and develop general recommendations for pacifiers based on research and commonly accepted practice. Table 5.1 includes recommendations on pacifier use for medical and developmental areas with each area described in detail below.

Table 5.1. *Suggestions for Pacifier Use*

Risk or Benefit	Suggestions for Pacifier Use
<i>Medical</i>	
Breastfeeding	Wait at least 4-to-6 weeks for pacifier use to avoid nipple confusion.
SIDS	Use at sleep time for prevention after breastfeeding is well established. Children are no longer at risk for SIDS after 6 months of age.
Analgesia	Can be used in conjunction with sucrose solution; breastmilk is also a viable solution.
Ear Infections (Otitis Media)	Stop or reduce pacifier use after 6 months of age to lower risk of ear infections.
Oral Health/Dentition	Stop use by age of 3 to prevent misalignment of teeth and jaw. Visit dentist regularly for check-ups because teeth may begin to shift at a younger age and the dentist may recommend to discontinue use earlier.
Infection	Limited evidence; use silicone over latex pacifiers to lower risk of infection
Preterm Infants	Breastfeeding and skin-to-skin contact are recommended; Pacifiers not proven to have positive or negative effects.
Overall Development	Though inconclusive, it appears that children who are offered cuddle objects, are allowed to vocalize at will, who are afforded the opportunity to suck fingers as a way to be in complete control of self-regulation, and are optimally allowed to use facial mimicry may be well-served by avoiding pacifier use.
Facial Mimicry	Limit use of pacifier during awake times to allow for ample time to mimic facial expressions.
Nonnutritive Sucking	
Soothing	Can be used as an effective soothing tool in conjunction with nurture from caregiver; Other methods for soothing may include, but are not limited to carrying and rocking
Attachment	Do not use as a substitution for caregiver
Speech	Negative effects of pacifiers are not proven; Allow child time to cry/fuss to vocalize needs. Identify that different cries have various meanings and try to meet those needs before pacifying the infant or toddler. May have an effect on the development of certain sounds.
Sleep	Offer at sleep for the first 6 months to prevent SIDS; After 6 months, pacifiers may help at sleep time, but may also lead to sleep disruption. Bedtime rituals and message therapy are proven substitutes.

Breastfeeding

At birth, breastfeeding mothers should avoid pacifier use. While research has had mixed findings on pacifiers connection to early weaning and nipple confusion, breastfeeding has many benefits for the child and the mother including securer attachment bonds and immunities. It may be best for breastfeeding mothers to wait 4-to-6 weeks until breastfeeding is well established to offer a pacifier to prevent nipple confusion and early weaning.

Preterm Infants and “Drug Babies”

Pacifiers for newborns can be considered in special cases such as extremely preterm infants, infants who need surgeries, and “drug babies.” For these special cases, parents alongside health professionals should make informed decisions with regard to use of a pacifier. For preterm infants, research has not proven that there are any benefits, but has not found any harm (Sexton & Natale, 2009). However, one postpartum nurse mentioned that pacifiers are not necessary for preterm babies. Mothers can use skin-to-skin contact and breastfeeding to help the preterm infant develop healthily.

Pacifiers can be beneficial for “drug babies” because the mother often does not breastfeed and the baby is often fussier or more colicky than healthy born babies. Additionally, drug addicted mothers may be less emotionally available to their children and unable to soothe their babies using other non-pacifier methods.

Analgesia (Pain Relief)

For pain relief in infants undergoing painful procedures (circumcision, venipuncture, cathertization, immunizations, insertion of an intravenous line, heel sticks,

and lumbar puncture) pacifiers dipped in a sucrose solution can be an effective way to reduce pain and anxiety (Nelson, 2012; Sexton & Natale, 2009).

SIDS

After breastfeeding is well established (around 4-to-6 weeks), pacifiers may be valuable during sleep to prevent SIDS (Sexton & Natale, 2009). Smoking, drinking, and drug use during pregnancy, poor prenatal care, prematurity or low birth weight, and tobacco smoke exposure after birth can raise the risk for SIDS (American Academy of Pediatrics, 2005). Pacifiers at naptime or bedtime should be offered to children with increased SIDS risk. However, the pacifier should not be forced on the children if they reject it and not reinserted when it falls out of the children's mouths while sleeping. After 6 months, the pacifier does not need to be used at night and infants and toddlers who are having a hard time sleeping may sleep better using infant instead of pacifiers (Sexton & Natale, 2009).

Infection

There is limited research proving pacifier use leads to infection. Infections such as *Candida* and *Staphylococcus* were more prevalent on latex pacifiers than silicone (Sexton & Natale, 2009). Therefore, it is recommended that parents use silicone pacifiers.

Otitis Media

To reduce chance of ear infections (otitis media), the AAP and AAFP (as cited in Sexton & Natale, 2009) recommend that pacifier use be reduced after the first 6 months of life.

Social, Emotional, and Language Development

It is best that the infants use pacifiers for a minimal amount of time while awake because it is important for development that they are given the opportunity to investigate the world through sensorial explorations such as mouthing (Hernandez-Reif et al., 2004). Additionally, reducing the time pacifiers are used while the child is awake allows for more instances of facial mimicry. Also, when a child is fussy, parents can first try to understand what is causing the child to vocalize their frustration or dissatisfaction. This will allow the child to feel “heard” and encourage language development. The parent can also use carrying and rocking methods for soothing, as suggested to parents in the experimental intervention in Kramer et al.’s study (2001) as these methods proved to be just as effective as a pacifier. When the child does successfully self-regulate, the parent should observe what helped the child in that situation and try to help the child mimic it the next time. For older children (6 months and above), the parent can identify with words what the child did to help their bodies relax in order to make the child aware of their own soothing tools.

If no other method is working to help calm the child, the parent can try to use the pacifier as a method for soothing. The parent should be cognizant of when their child relaxes and remove the pacifier when the child is calm. At around 9-to-12 months when infants have stronger receptive language and can follow simple one-step directions (California Department of Education, 2009), the parent can ask the child to remove the pacifiers themselves allowing the child to control their use and understand that the pacifier is no longer necessary for soothing.

Pacifiers should not be used during social interactions. Children need the opportunity to fully engage with other human beings. Play is when children can imitate actions of their peers and adults especially facial expressions. If they have a pacifier in their mouth, they may be less likely or less able to participate in facial mimicry thereby not offering the child ample time to develop emotional competence skills (Niedenthal et al., 2012).

Attachment

If a pacifier is used for soothing, a parent must remember to use other methods of nurturing such as rocking and carrying as well because a pacifier does not act as a substitute. This will help the child develop secure attachment to their primary caregiver giving them a secure base from which they can explore the world.

Children with Special Needs

For children with special needs, using a pacifier can be beneficial during periods of dysregulation. Gabrielle found the pacifier to be a particularly useful tool in helping her child with special needs. These children often have more struggles than typically developing children and any tool that is helpful for them in the short term may also benefit them in the long term. However, it is still important to remove or ask the child to remove the pacifier once the child has regulated their body. Additionally, it is even more crucial that caregivers for these children offer increased amounts of nurture beyond the pacifier. If the child begins using the pacifier for other oral needs such as chewing, contact a developmental pediatrician or dentist to make sure this is not symptomatic of another issue.

Dentition

The AAPD (2012) suggests that if the behavior does not stop on its own, use of fingers or pacifiers should be discouraged by 3 years of age to prevent major alignment (jaw or teeth) issues. However, some research (Góis et al., 2008 as cited in Sexton & Natale, 2009) show that negative dental effects may occur starting at 2-years-old. Therefore, regular visits to the dentist are highly recommended as the dentist may recommend discontinuing use of a pacifier earlier (AAPD, 2012).

Recommendations for Pacifier Types and Safety

When using pacifiers, parents can review the different options and find a pacifier with a nipple shape that the infant prefers. Currently, there is no evidence in favor of using orthodontic pacifiers over conventional pacifiers; therefore pacifier type is the choice of the parent (Nelson, 2012). Silicone is recommended over latex as sensitivity to latex can develop from repeated use and silicone appears to be “slightly more resistant to fungal colonization” (Nelson, 2012, p. 695).

If parents choose to use a pacifier, the pacifier should be inspected for wear and tear to reduce choking hazards or injury from fall while using a pacifier. Parents should also test the nipple security by gradually pulling on the nipple (U.S. CPSC, 2001) and discard the pacifier if it shows any signs of cracking, tearing, swelling, graininess or sticky texture (Nelson, 2012). Another concern for parents is to avoid using clips, ribbons, strings, or cords to attach pacifier to the infant as these may cause strangulation. See Figure 5.1 for recommendations on pacifier types and safety.

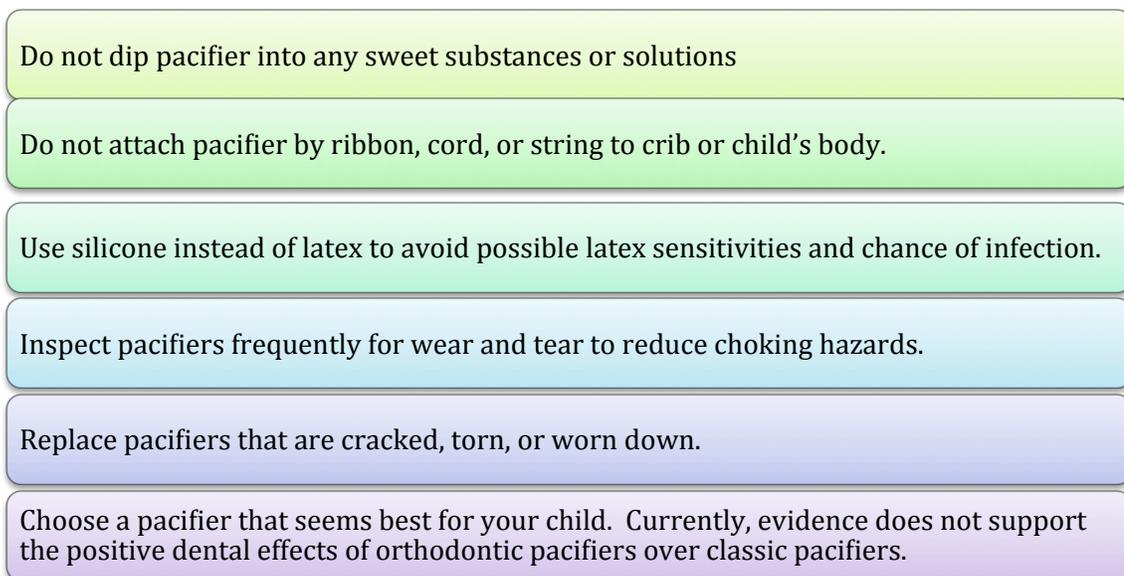


Figure 5.1. *Recommendations on Pacifier Types and Tips for Pacifier Safety*

Suggestions for Future Research

More research needs to be completed to understand the pacifier phenomenon. Due to the small sample size of this current study, these results only illuminate possible reasons influencing mothers' choices to offer pacifiers. Although it would be wonderful to scale up the current study to include a more significant subject size, this may be very expensive due to the time and effort included. Perhaps pediatric clinics could be used as a site to collect data on a Likert scale type of instrument to tap at the same questions that are offered in this thesis. It would be interesting to see if these reasons held true in a larger sample size across a more diverse population (geographically and culturally). Questions may include general pacifier knowledge (what do parents know about pacifiers), how much thought parents gave to offering a pacifier, who had the most influence on pacifier use, what reasons were most influential in deciding to use a pacifier, and other soothing techniques parents tried before offering a pacifier. Interviews can be used as follow-up to the questionnaires to clarify results and get richer responses.

Furthermore, the retrospective nature of this study made it difficult to record the frequency of pacifier use. A longitudinal study on pacifier use could be completed starting at birth with a questionnaire on the mothers' intentions for pacifier use. After birth, actual pacifier habits can be documented over a five-year period. Mothers could be asked to complete a behavioral diary like the one in the study by Kramer et al. (2001) to record cry/fuss behaviors and pacifier insertions. Additionally, infants' temperament (easy, slow-to-warm, difficult) could be evaluated and recorded to see if there is a correlation between temperament and pacifier use and frequency of use as well as later social and emotional development. As the child continues to develop, their facial mimicry, emotion understanding, and social behaviors can be observed and assessed to see if pacifiers have immediate and or delayed effects on social and emotional development. Facial mimicry can be measured through morphing tasks used in the study by Niedenthal et al. (2009). Qualitative (behavior diaries and running records) and quantitative measures (emotion understanding games, rating parent-child interactions, and social behavior questionnaires) could be used to examine emotion understanding and social behaviors. While this would be a complex study, it would be necessary to use all these measures to evaluate if there is a connection between frequent pacifier use and other developmental phenomenon.

The survey could even be expanded to include questions regarding how parents might like to receive information about healthy development. In this way, information that might be coming from the pediatrician, the media, and the day care centers could be accessed for optimal effect. For example, the hospital emphasis on not offering pacifiers to encourage breastfeeding could be explained in the easiest to access manner.

Security of Attachment and Pacifier Attachment

Additionally, there is more research needed on security of attachment and pacifier attachment to confirm Lehman, Dehham, Moser, and Reeves (1992) findings that there may be a link between pacifier use and anxious attachments. If there is a correlation, further research may investigate the behaviors of mothers that might act as a protective factor for children who use pacifiers.

Soothing and Pacifiers

Considering that soothing is a very common reason that pacifiers have been used, there is very little research done regarding how parents soothe their children. While this may be because pacifiers are widely accepted tools for soothing, are pacifiers the best and only mechanism for soothing? Research could help reveal how beneficial pacifiers are to soothing when compared to other soothing mechanisms. Do pacifiers reduce cry/fuss behaviors as much as westernized cultures believe they do? A longitudinal study might also reveal the types of self-soothing behaviors used by children who have previously used pacifiers. Do these children have more difficulty self-soothing later in life? What might be the soothing effects of swaddling, attachment object use, or breastfeeding?

Conclusion

Despite their popularity, little is really known about pacifier use. How does an object become so ubiquitous in a culture without much thought as to why it became the most commonly accepted method for soothing? While there has been debate in the past over whether or not to use pacifiers and there are still some naysayers out there, the debate seems to have been settled in the United States and pacifiers are now widely accepted. What influenced this rise to power?

One possible influence may have been Freud's identification of the oral stage that takes place between birth and age 1 year. According to Thomas (2005), Freud identified that if children are oral needs

are not adequately met or if great conflict is associated with those needs, a residue of unfulfillment and conflict is repressed into the unconscious to reveal itself in subsequent years, often as neurotic overdependency or a compulsive habit of trying to 'take in' other people and objects (p. 63).

However, while sucking is a "ubiquitous instinctual activity in human beings" (Birns, Blank, & Bridger, 1966, p. 321), the quality of it as a soothing mechanism may be more dependent on individual predisposition and learned behavior to use sucking for soothing.

While no research has been done on the frequency of pacifiers displayed in television shows and movies, the media's representations of pacifiers may have an impact on pacifier use. One well-known representation is Maggie on *The Simpsons* who is almost always shown sucking on her pacifier. What messages does the media give to parents? How do these messages influence the ubiquitous nature of pacifiers in American culture?

Children have varying needs based on their temperament and personality. Therefore, parents are tasked with the understanding their particular child's needs, behaviors, and risk factors. Like most areas of parenting, pacifier use is ultimately the choice of the parents. . But parental choice implies that parents have weighed the evidence about their choices. It will be important for parents to make informed decisions throughout their children's life. Overall, children benefit when there parents are mindful and thoughtful about the decision they make.

CHAPTER SIX

AFTERWORD

Prior to working as an educator in an early childhood classroom, I never thought twice about pacifier use. However, interactions with children in a two-year-old classroom began to make me wonder, does prolonged use of pacifiers with high frequency impact children's social and emotional development?

My first year as a teacher, I worked closely with Ben*, a two-year-old boy who has difficulties with impulse control. Ben was cognitively bright, had excellent language abilities, and enjoyed being around other children. Nevertheless, if another child he was playing with altered his idea, had a toy he wanted, or took a toy from him, he would bite them. Ben's mother had informed me that at home he had a pacifier. While, I am not sure the frequency of his pacifier use outside of school, we have a strict "no pacifier" rule at the school where I worked. Therefore, Ben's mother had him leave his pacifier at home when he went to school. Before leaving his house, Ben would suck profusely on his pacifier before taking it out and getting in his car. Was Ben one of those children who had heightened need for oral stimulation and therefore his apparent reaction to frustrating situations led him to seek oral stimuli or was had he grown so used to soothing himself through oral measures that he reacted by biting when he needed to calm his frustrations?

The next year, I worked with David*, a two-year-old boy who was bright, but chose to interact with adults through verbal interactions over his peers who used more nonverbal cues. David did not have special needs, but did not have well-developed peer relationships yet. At pick-up from school, David's mother entered the class and barely

greeted him before popping one pacifier in his mouth as well as giving him two other pacifiers, one for each hand. David did not request his pacifier and was in a cheerful mood. Despite his good quality of mood, it appeared that his mother had offered him the pacifiers more out of her need than his need. I started to wonder more about the impact of pacifiers.

Two years later, I worked with one more two-year-old boy named Drew^{*}. Despite our no pacifier policy at school, his mother sent his pacifier attached to his lunchbox daily in case we needed it to help him calm down. We never used the pacifier in class and always worked with Drew to calm down on his own. Initially, Drew showed interest in his peers, but had difficulty entering play and often pulled his peers hair instead of engaging them verbally. While Drew grew out of this and successfully interacts with his peers, he continues to struggle vocalizing his emotions and calming his body when upset. Although pacifiers are viewed as a way for children to self-soothe at a young age, do they teach children long-term soothing techniques?

All these questions stirred in my brain and therefore, I researched the impact of pacifiers on social and emotional development of children. The research was limited to one study by Niedenthal et al. (2009), which was included in the literature review of this study. Niedenthal et al.'s study revealed a linkage between social and emotional development and use of pacifier for boys. Is it just a coincidence that the three case studies above are all boys? Even more difficult to find was the scope of pacifier use in the United States and why mothers choose to offer or not to offer pacifiers. My thesis, which revealed that pacifier use is fairly ubiquitous in the United States, was the first step

into understanding the pacifier practices and observation I have made while working with Ben*, David*, and Drew*.

Given the research in retrospect, I am likely to carry this work forward.

Informally, pediatricians and dentists have expressed high interest in this study and have requested the development of a brochure for parents. I hope that my future might also bring continued growth to present at national conferences as well as provide published resources in journals for carrying on the discussion about pacifiers.

*Names have been changed to protect the privacy of the children and families.

REFERENCES

- American Academy of Pediatric Dentistry (2013). Fast facts. Retrieved April 1, 2013 from <http://www.aapd.org/>
- American Academy of Pediatricians (2014). Pacifiers: Satisfying your baby's needs. *HealthyChildren.org*. Retrieved May 1, 2014, from <http://www.healthychildren.org/>
- American Academy of Pediatrics (2005). The changing concept of Sudden Infant Death Syndrome: Diagnostic coding shifts, controversies regarding the sleeping environment, and new variables to consider in reducing risk. *Pediatrics*, *116*, 1245-1255. doi: 1542/peds.2005-1499
- Abdulrazzaq, Y. M., Kendi, A. A., & Nagelkerke, N. (2008). Soothing methods used to calm a baby in an Arab country. *Acta Paediatrica*, *98*, 392-396. doi: 10.1111/j.1651-2227.2008.01029.x
- Baby-Friendly USA (2012). *Baby-Friendly Hospital Initiative*. Retrieved June 25, 2014 from <https://www.babyfriendlyusa.org/about-us/baby-friendly-hospital-initiative>
- Birns, B., Blank, M., & Bridger, W. H. (1966). The effectiveness of various soothing techniques on human neonates. *Psychomatic Medicine*, *28*(4), 316-322. Retrieved from PubMed.
- Brazelton, T. & Sparrow, J. (2003). Calming your fussy baby: The Brazelton way. *Scholastic Parent & Child*, *10*(4), 72. Retrieved from EBSCOhost.
- California Department of Education (2009). *The California infant/toddler learning and development foundations*. Sacramento, CA: California Department of Education.

- California Senate (2013). *SB 402, Breastfeeding*. Retrieved from <http://leginfo.legislature.ca.gov/>
- Centers for Disease Control and Prevention (2013, September). Ear infections. *Get smart: Know when antibiotics work*. Retrieved May 1, 2014, from <http://www.cdc.gov/>
- Dougherty, P. (1997). Somatosensory Systems. In J. H. Byrne (Ed.), *Neuroscience Online*. Houston, TX: University of Texas Health Science Center at Houston. Retrieved July 19, 2014, from <http://neuroscience.uth.tmc.edu/s2/chapter02.html>
- Ensor, R. & Hughes, C. (2005). More than talk: Relations between emotion understanding and positive behaviour in toddlers. *British Journal of Developmental Psychology*, 23, 343-363. doi: 10.1348/026151005X26291.
- Field, T. & Hernandez-Reif, M. (2001). Sleep problems in infants decrease following massage therapy. *Early Child Development and Care*, 168, 95-104. doi: 10.1080/0300443011680106.
- Fox, A. V., Dodd, B., & Howard D. (2002). Risk factors for speech disorders in children. *International Journal of Language and Communication Disorders*, 32(2), 117-131. doi: 10.1080/1368282011011677 6
- Gill, D. (2002). And another thing! A diatribe on dummies. *Archives of Disease in Childhood*, 86, 222. Retrieved from ERIC database.
- Hauck, F. R., Omojokun, O. O., & Siadaty, M. S. (2005). Do pacifiers reduce the risk of Sudden Infant Death Syndrome? A meta-analysis. *Pediatrics*, 116, 716-723. doi: 10.1542/peds.2004-2631

- Hernandez-Reif, M., Field, T. & Diego, M. (2004). Chapter 2: Touch perception in neonates. In T. Field (Ed.), *Touch and Massage in Early Child Development* (pp. 15-37). Miami, FL: Johnson & Johnson Pediatric Institute, LLC.
- Howard, C. R., Howard, F. M., Lanphear, B., deBlieck, E. A., Eberly, S., Lawrence, R. A. (1999). The effects of early pacifier use on breastfeeding duration. *Pediatrics*, *103*, 1-6. doi: 10.1542/peds.103.3.e33.
- Kelmanson, I. A. (1999). Use of a pacifier and behavioural features in 2-4-month-old infants. *Acta Paediatrica*, *88*, 1258-1261. doi: 10.1080/080352599750030392.
- Kramer, M. S., Barr, R. G., Dagenais, S., Yang, H., Jones, P., Ciofani, L., & Jané, F. (2001). *The Journal of the American Medical Association*, *286*, 322-326. doi: 10.1001/jama.286.3.322.
- Lehman, E. B., Denham, S. A., Moser, M. H., & Reeves, S. L. (1992). Soft object and pacifier attachments in young children: The role of security of attachment to the mother. *Journal of Child Psychology and Psychiatry*, *33*, 1205-1215. doi: 0021-9630/92.
- Marter, A. & Agruss, J. C. (2007). Pacifiers: An update on use and misuse. *Journal for Specialists in Pediatric Nursing*, *12*, 278-285. Retrieved from CINAHL Plus.
- Mauch, C. E., Scott, J. A., Margarey, A. M., & Daniels, L. A. (2012). Predictors and reasons for pacifier use in first-time mothers: An observational study. *BMC Pediatrics*, *12* (7), 1-10. doi: 1471-2431/12/7.
- Molenberghs, P., Cunningham, R., & Mattingly, J. B. (2009). Is the mirror neuron system involved in imitation? A short-review and meta-analysis. *Neuroscience & Biobehavioral Reviews*, *33*, 975-980. doi: 10.1016/j.neubiorev.2009.03.010

- Nelson, E. A. S., Yu, L., Williams, S., & the International Child Care practices Study Group Members (2005). International child care practices study: Breastfeeding and pacifier use. *Journal of Human Lactation*, *21*, 289-295. doi: 10.1177/0890334405278489.
- Niedenthal, P. M., Augutina, M., Rychlowska, M., Droit-Volet, S., Zinner, L., Knafo, A., & Brauer, M. (2012). Negative relations between pacifier use and emotional competence. *Basic and Applied Social Psychology*, *34*, 387-394. doi: 10.1080/01973533.2012.712019.4.
- Niemela, M., Pihakari, M. B., Pokka, T., Uhari, M., & Uhari, M. (2000). Pacifier as a risk factor for acute otitis media: A randomized, controlled, trial of parental counseling. *Pediatrics*, *106*, 483-488. Retrieved from Academic Search Elite.
- Oberman, L. M., Winkelman, P., & Ramachandran, V. S. (2007). Face to face: Blocking facial mimicry can selectively impair recognition of emotional expressions. *Social Neuroscience*, *2*, 167-178. doi: 10.1080/17470910701391943.
- Oller, K. D., Buder, E. H., Ramsdell, H. L., Warlaumont, A. S., Chorna, L., Bakeman, R. (2013). Functional flexibility of infant vocalization and the emergence of language. *Proceedings of the National Academy of Sciences*, *110*, 6318-6323. doi: 10.1073/pnas.1300337110
- Pansy, J., Zotler, H., Saudeng, W., Schneuber, S., Lang, U., & Kerbl, R. (2008). Pacifier use: What makes mothers change their mind? *Acta Paediatrica*, *97*, 968-971. doi: 10.1111/j.1651-2227.2008.00821.x.
- Schwartz, R. H. & Guthrie, K. L. (2008). Infant pacifiers: An overview. *Clinical Pediatrics*, *47*, 327-331. doi: 10.1177/0009922807309069.

- Sexton, S. & Natale, R. (2009). Risks and benefits of pacifiers. *American Family Physician* 29, 681-684.
- Shotts, L. L., McDaniel, M., & Neeley, R. A. (2008). The impact of prolonged pacifier use on speech articulation: A preliminary investigation. *Communication Science and Disorders*, 35, 72-75. doi: 1092-5171/08/3501-0072
- Sonnby-Borgström, M. (2002). Automatic mimicry reactions as related to differences in emotional empathy. *Scandinavian Journal of Psychology*, 43, 433-443.
doi: 10.1111/1467-9450.00312.
- Thomas, R. M. (2005). *Comparing theories of child development* (6th ed.). Belmont, CA: Thomson-Wadsworth.
- U.S. Consumer Product Safety Commission, Office of Compliance. (2001, January). Requirements for Pacifiers, 16 C.F.R. Part 1511. *Electronic Code of Federal Regulations*. Retrieved March 15, 2013 from <http://www.ecfr.gov/>
- Vicedo, M. (2010). The evolution of Harry Harlow: From the nature to the nurture of love. *History of Psychiatry*, 21(2), 190-205. doi: 10.1177/0957154X10370909
- Viggiano, D., Fasano, D., Monaco, G., and Strohmenger L. (2004). Breast feeding, bottle feeding, and non-nutritive sucking: effects on occlusion in deciduous dentition. *Archives of Disease in Childhood*, 89, 1121-1123. doi: 10.1136/adc.2003.029728.
- Whitmarsh, J. (2008). The good, the bad and the pacifier: Unsettling accounts of early years practice. *Journal of Early Childhood Research*, 6, 145-162.
doi:10.1177/1476718x08088675.

APPENDICES

APPENDIX A: Study One Interview

Interview for Babies with Pacifiers: Mothers' Views

1. Tell me about [child's name]
 - a. What are some of [child's name]'s favorite activities/toys/books?
 - b. What do you enjoy doing with [child's name]?
 - c. What are [child's name]'s strengths?
 - d. What areas would you like to see further growth?
2. Does [child's name] use a pacifier? Did he/she ever use a pacifier? If no, skip to question three, if yes, skip to question 4

Non-Pacifier Use Questions

If child does not and has not ever used a pacifier:

3. Was this your choice or your child's?
If it was the parent's choice:
 - a. What influenced your decision not to offer a pacifier?
If it was the child's choice:
 - b. What influenced your decision to offer a pacifier?
 - c. How did your child react to it?

Pacifier Use Questions

4. What influenced your choice to offer a pacifier? Or why did you choose to use a pacifier?
5. At what age did you offer a pacifier to [child's name]?
6. When was the pacifier used?
7. Who controlled the pacifier?
 - a. Would you hand it to your child?
 - b. Would you offer it at specific times?
 - c. Did [child's name] have access to take it and pick when he/she wanted to use?
8. How many pacifiers did/does [child's name] have?

If child used a pacifier, but no longer uses it (continue here after questions 4-to-7):

9. When did [child's name] stop using his/her pacifier?
10. Was it your choice or his/hers?
 - d. How was he/she weaned off the pacifier?

If child still uses a pacifier (continue here after question 4-to-7):

1. How frequently does [child's name] use his/her pacifier?
2. How do you feel about this? Why?
 - a. If your child attends a program, such as day care, are there any policies regarding pacifier use? If so,...
 - b. How do you feel about these policies?

Thank you for taking your time to discuss these questions with me. Now, I would like to ask a few background questions.

1. How much did [child's name] weigh at birth? What was his/her length?
2. (For those not already asked) Where is your child during the day?

And regarding yourself:

3. What is your age? And [child's name] father?
4. What is your education background?
5. What is the [child name]'s father education background?
6. What race/ethnicity do you identify with? The child's father?
7. In general, where do you get advice about parenting? For example, from family members, friends, Internet, books, etc.?

APPENDIX B: Study One Initial Contact

Email

Name of Contact -

My name is Lindsey Moss and I am a graduate student in Early Childhood Education at California State University, Northridge.

_____ suggested I contact you as a potential participant for my graduate thesis research. My research is focused on mothers' decisions about their use of pacifiers.

If you choose to participate, you will be interviewed over the phone or in-person, based on your personal preference. The interview will last approximately 30-minutes to 1-hour. As a thank you for your time, you will receive a \$5 Target Gift Card following your participation.

If you are interested in participating, please email me with your preferred method of contact (phone or email). I will then forward you a copy of the consent form for you to review and sign and arrange the logistics of the interview.

Thank you for your time.

Lindsey Moss

Master of Arts, Educational Psychology (candidate)

California State University Northridge

Lindsey.moss.187@my.csun.edu

(818) 620-0490

Phone

My name is Lindsey Moss and I am a Master's student in Early Childhood Education at California State University, Northridge.

_____ suggested I contact you as a potential participant for my graduate thesis research. My research is focused on mothers' decisions about their use of pacifiers.

Is this a good time to discuss this with you or would you prefer I call back later?
Would you prefer I email you the information instead?

If you choose to participate, you will be interviewed over the phone or in-person, based on your personal preference. The interview will last approximately 30-minutes to 1-hour. As a thank you for your time, you will receive a \$5 Target Gift Card following your participation.

Would you be willing to participate in this study?

(If yes) In order to participate, I am going to need you to fill out a consent form.
Should I email or mail this to you?

When I receive your signed copy, I will contact you to arrange the logistics of the interview.

Thank you for your time.

(If no) Thank you for your time.

APPENDIX C: Adult Consent Form

California State University, Northridge CONSENT TO ACT AS A HUMAN RESEARCH PARTICIPANT

Babies with Pacifiers: Mothers' Views

You are being asked to participate in a research study. Babies with Pacifiers: Mothers' Views, a study conducted by Lindsey Moss as part of the requirements for the M.A. degree in Educational Psychology. Participation in this study is completely voluntary. Please read the information below and ask questions about anything that you do not understand before deciding if you want to allow your child to participate. A researcher listed below will be available to answer your questions.

RESEARCH TEAM

Researcher:

Lindsey Moss
Department of Educational Psychology
18111 Nordhoff St.
Northridge, CA 91330-8265
818-620-0490
Lindsey.moss.187@my.csun.edu

Faculty Advisor:

Carrie Rothstein-Fisch, Ph.D
Department of Educational Psychology
18111 Nordhoff St.
Northridge, CA 91330-8265
818/677-2599
Carrie.rothstein-fisch@csun.edu

PURPOSE OF STUDY

The purpose of this research study is to explore mothers' decisions about whether to offer their children pacifiers or not.

SUBJECTS

Inclusion Requirements

You are eligible to participate in this study if you are at least 18 years of age or older and have a child that is 2-years-old.

Time Commitment

This study will involve approximately 30-minutes to 1-hour of your time for a one-time-only interview. The interview will be scheduled at a time and location that is most convenient for you, either in person or over the phone.

PROCEDURES

The following procedures will occur: You will be contacted by the researcher to confirm participation and set-up an in-person or on the phone interview and to preview the consent forms. Then, the researcher will email you consent forms and interview questions. If you have chosen an in-person interview, a time and place for the interview will be planned at your convenience. If you have selected to participate via a phone interview, the researcher will call you at a mutually agreed upon time.

RISKS AND DISCOMFORTS

The possible risks and/or discomforts associated with the procedures described in this study include: mild emotional discomfort and embarrassment. To minimize risk, you will be provided with the questions that will be asked ahead of time to increase your familiarity with the questions and to allow you time to consider your answers. In addition, you can elect to skip questions or stop the interview at any time. If you have questions on parenting practices and pacifying your child, please contact your pediatrician or dentist at your own expense. This study involves no more than minimal risk. There are no known harms or discomforts associated with this study beyond those encountered in normal daily life. No judgments will be made

BENEFITS

Subject Benefits

The possible benefits you may experience from the procedures described in this study include increased awareness of your parenting choices. You may not directly benefit from participation in this study, but you may have strong feelings about your choices and this would be a safe place to express them confidentially.

Benefits to Others or Society

There is scant research on mothers' choices to use pacifiers. Yet, it appears to be a very popular parenting practice. How did it evolve? Through understanding mothers' use or non-use of these devices, the 'real story' of selection, use, and other ethnographic information about pacifier use will be uncovered.

ALTERNATIVES TO PARTICIPATION

The only alternative to participation in this study is not to participate.

COMPENSATION, COSTS AND REIMBURSEMENT

Compensation for Participation

A \$5 Target gift card will serve as a thank you for your participation in the study.

Costs

There is no cost to you for participation in this study.

WITHDRAWAL OR TERMINATION FROM THE STUDY AND CONSEQUENCES

You are free to withdraw from this study at any time. **If you decide to withdraw from this study you should notify the research team immediately.** The research team may also end your participation in this study if you do not follow instructions, miss scheduled visits, or if your safety and welfare are at risk.

CONFIDENTIALITY***Subject Identifiable Data***

All identifiable information that will be collected about you will be removed and replaced with a code. A list linking the code and your identifiable information will be kept separate from the research data.

Data Storage

All research data will be stored on a laptop computer that is password protected. The audio interviews will also be stored on laptop computer that is password protected; then transcribed and erased at the end of the study.

Data Access

The researcher and faculty advisor named on the first page of this form will have access to your study records. Any information derived from this research project that personally identifies you will not be voluntarily released or disclosed without your separate consent, except as specifically required by law. Publications and/or presentations that result from this study will not include identifiable information about you.

Data Retention

The researchers intend to keep the research data for approximately 1 year and then it will be destroyed.

Mandated Reporting

Under California law, the researcher is required to report known or reasonably suspected incidents of abuse or neglect of a child, dependent adult or elder, including, but not limited to, physical, sexual, emotional, and financial abuse or neglect. If any researcher has or is given such information, she may be required to report it to the authorities.

IF YOU HAVE QUESTIONS

If you have any comments, concerns, or questions regarding the conduct of this research please contact the research team listed on the first page of this form.

If you have concerns or complaints about the research study, research team, or questions about your rights as a research participant, please contact Research and Sponsored Projects, 18111 Nordhoff Street, California State University, Northridge, Northridge, CA 91330-8232, or phone 818-677-2901.

VOLUNTARY PARTICIPATION STATEMENT

You should not sign this form unless you have read it and been given a copy of it to keep. **Participation in this study is voluntary.** You may refuse to answer any question or discontinue your involvement at any time without penalty or loss of benefits to which you might otherwise be entitled. Your decision will not affect your relationship with California State University, Northridge. Your signature below indicates that you have read the information in this consent form and have had a chance to ask any questions that you have about the study.

I agree to participate in the study.

I agree to be audio recorded

I do not wish to be audio recorded

Participant Signature

Date

Printed Name of Participant

Researcher Signature

Date

Printed Name of Researcher

APPENDIX D: Human Subjects Protocol Approval

1314-093

OFFICE OF AVP-GRAD STUDIES
OCT 01 2013
RESEARCH & INT. PROGRAMS

Student Researcher

HUMAN SUBJECTS PROTOCOL APPROVAL FORM
CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

- 1. Title of Research: Why are pacifiers being used? Exploring the reasons behind mothers' choices to offer or not to offer pacifiers
2. Principal Investigator: Lindsey Moss
Home Address: 4090 Yankee Drive Agoura Hills, CA 91301
Email: moss.lindsey@gmail.com Mobile: (818)620-0490
Major or Department: EPC Course Name/Number: 696
3. Co-Investigators: Name and University (if applicable):
1. Student Faculty
2. Student Faculty
4. Faculty Advisor: Carrie Rothstein-Fisch Email: carrie.rothstein-fisch@gmail.com Ext: 2599
5. Recruitment/Data Collection Start Date: 12/01/13 End Date: 01/31/13
6. Check one: Unfunded Funded
Name of Funding Source: Submission Date:
7. History of Protocol: New Continuing (Previous Approval Date)
8. Existing Data: Will this study involve the use of existing data or specimens? YES NO
9. Subjects to be recruited (check all that apply): specify in Section 2.
a. Adults (18+ years) d. CSUN students
b. Minors, specify age: e. Other, specify:
c. Cognitively or emotionally impaired f. Existing data
10. Data will include (check all that apply): specify all checked items in the Project Information Form.
a. Names of people f. Gender k. Job title
b. Email address g. Ethnicity l. Names/types of employers
c. Street address h. Marital status m. Physical health report
d. Phone numbers i. Income n. Other, specify: education
e. Age j. Social security
11. Will subjects be identified by a coding system (i.e., other than by name)? YES NO
12. Is compensation offered? YES NO If yes, describe: \$5 Target Gift Card
13. Projected number of subjects: 10
14. Method of recruiting subjects (elaborate in Section 2): Convenience sample with snowball effect
15. Will there be any deception (not telling subjects exactly what is being tested)? YES NO
16. Potential Risk Exposure: Physical Psychological Economic Legal Social
Other, specify: Risk must be specified and elaborated in Section 4.

APPENDIX E: Study Two Interview

Hospital Pacifier Policy Questions

1. Does the hospital have a policy about pacifiers? If so, what is it?
2. What's the general protocol for offering pacifiers to newborns?
3. Who makes the policy and how is it determined?
4. Does the hospital offer any written information about pacifiers?

APPENDIX F: Study Two Initial Contact

Phone

Hello. My name is Lindsey Flam and I am a graduate student at California State University, Northridge. I am conducting research on mothers' use of pacifiers with their children. I would be very grateful to speak to a nurse regarding your hospital's pacifier policy for newborns. Is there a nurse I could chat with for about 5 minute to find out the hospital policies and procedures? If this is not a good time, whom shall I contact and what would be an optimal time? I really appreciate your help.

APPENDIX G: Pacifier Use

	Offered a pacifier	Current use	Age offered	Age use stopped
Ann	Yes	No	At birth	6 months
Bianca	Yes	Yes	At birth	Still Using
Cathy	Yes	No	At birth	3 months
Dee	Yes	No	3 weeks	Never Used ⁺
Ellen	Yes	No	5 or 6 months	Never Used ⁺⁺
Faye	Yes	No	2 days	9 months
Gabriella	Yes	No	3 days	28 months
Heather	Yes	No	At birth	18 months
Isabelle	Yes	No	2 weeks	15 months
Jessica	Yes	No	1 or 1.5 months	16 or 17 months

+ Child never attached to a pacifier and the parent decided to not continue use if the child was not particularly connected to the pacifier.

++ Mother offered the pacifier, but the child rejected it by spitting the pacifier out.

APPENDIX H: Reasons to Offer a Pacifier

	Reasons to offer a pacifier
Ann	The hospital; the child is used to sucking inside.
Bianca	Did not want to offer the pacifier, but was given it at birth and was not happy about it. Child became very attached to pacifier quickly and it was more difficult to take it away than to just let it happen.
Cathy	It was given to him in the hospital and I continued usage until he would not take it any longer.
Dee	Husband based on doctor recommendation for help at bedtime
Ellen	Believed that's what you do for soothing
Faye	C-section planning on breastfeeding, but it was taking time to produce milk. Nursing specialist gave pacifier to encourage baby to suck for longer periods of time. Comfortable with the decision because commonplace practice that was approved by doctors and nurses.
Gabriella	Always planning to use as a way for soothing; for example as a way to self-soothe rather than being rocked to bed at night or held.
Heather	Initial use began because baby had jaundice at birth. Would have given one anyway if it was something he was attached to because infants have a lot of things they are learning and overcoming. Used it with first child because the child was beginning to use mom as a pacifier.
Isabelle	Used it with first son and it seemed like a good soothing technique; youngest sister had used it. Waited 6-8 weeks to avoid nipple confusion with the first, but they were having rough nights and called the doctor who recommended the pacifier for self-soothing.
Jessica	Because the babies had his hands in his mouth all the time, doctor recommended pacifier to help with oral stimulation.

APPENDIX I: Reasons for Continued Pacifier Use

	Reasons for Continued Use
Bianca	He became obsessed as a baby and it was a lot on us if we took it away. We just let him keep it. Still uses a pacifier at bedtime.
Faye	As his sucking tendencies progressed and became self-sustaining, we continued using the pacifier to soothe him if he cried, knowing that the sucking sensation made him relax.
Gabriella	Child has special needs and especially helpful when he was dysregulated. Would help him self-regulate. Also, used for oral stimulation, would chew the pacifier instead of suck at 26 months.
Heather	Continued use to help child soothe/self-regulate when he was upset or hurt. Also, used at bedtime to help fall asleep.
Isabelle	For sleep and self-soothing.
Jessica	Used for oral stimulation, just liked having the pacifier in his mouth to suck; After 1 years old, used just to fall asleep.

APPENDIX J: Reasons Not to Use a Pacifier

	Influences on Not Using a Pacifier
Bianca	Originally I didn't want to give him a pacifier for dependency reason. I didn't want him to become so reliant on one mode of soothing.
Dee	Didn't want dependency; disease; self-soothe; not having to wean. It felt like the easy way, but I didn't like when moms would shove a pacifier in the mouth. They are usually crying for another reason It would calm him down for five minutes and then he would spit it out. It was the same at bedtime.
Ellen	Lactation Nurse advised to wait until breastfeeding was well established. Tried offering the pacifier around 5-6 months, but the child spit it out. Preferred to use mom to soothe.
Jessica	Anti-pacifiers in the beginning, thought would be able to soothe her child herself. Hospital advised waiting a month to establish good breastfeeding habits

APPENDIX K: Times of Pacifier Use, Frequency of Use, and Pacifier Control

	Times of Use	Frequency of Use	Who Controlled Pacifier
Ann	Soothing, irritated, ready to go to sleep, cranky	Took away once soothed	Parent/Caregiver
Bianca	Before 6 months old, when fussy. After 6 months, only at sleep.	Limited use to bedtime	Parent handed child pacifier at bedtime
Cathy	Fussy	Limited, stopped using a pacifier around 3 months old	Parent/Caregiver
Faye	When unable to soothe with other methods	Conscious effort to limit use to prevent dependency	Attached to bib for convenience until he began taking it on his own. Found lying around sometimes at put in mouth
Gabrielle	Deregulation and bed	Parent limited frequency of use to prevent issues with speech development. However, frequency increased between 18-to-24 months when he was often dysregulated.	Parent; would do our best to hide it, but sometimes left it. Fall asleep with it in but fall out in the night by 18 months not an issue. At 24 months, he would put it back in himself
Heather	Nap, Bed, when hurt or needed comfort if he was upset.	Not offered for no reason but wasn't strict of when he let go of it.	Mostly parent; Sometimes was lying around
Isabelle	When sleeping, or to help comfort him when he did not want to nurse.	In crib; at 4 months, would not have it at social times; as he got older, only at bed	Mostly parent; child controlled at bedtime in crib
Jessica	Fussy, tired (but not at bed), anytime	High frequency of use	Child; Wubanub

APPENDIX L: Pacifier Weaning

	Who chose to discontinue use?	Age pacifier use ended	How
Ann	Child	Around 6 months	Child started spitting it out
Cathy	Child	Around 3 months	Disinterested
Faye	Parent	9 months	Stopped nursing and found it an opportune time to take the pacifier away; Out of sight out of mind worked best for her child
Gabriella	Accident	28 months	Parents were planning to do it over winter break from school, but ran out of pacifiers after the child chewed through the last one. Child would not take a pacifier that had been chewed and parents just followed through after.
Heather	Parent	18 months	Felt child was starting to look too old for a pacifier; Collected all the pacifiers and mailed them to the pacifier fairy. Took three days for the child to adjust; bedtime and naptime was especially tough
Isabelle	Parent	15 months	Parents stopped offering a pacifier
Jessica	Child	16-17 months	Child became uninterested in the pacifier and started not taking it anymore.

APPENDIX M: Hospital Pacifier Policies

	Policy
Hospital A	No; based on patient request
Hospital B	Policy in terms of breastfeeding they are not given pacifiers.
Hospital C	Yes; Do not recommend or encourage pacifier use before initial breastfeeding; do not encourage/recommend for soothing
Hospital D	Policy in terms of breastfeeding; Greatly discourage pacifiers and encourage breastfeeding only.
Hospital E	No; breastfeeding friendly
Hospital F	No; Do not recommend or disrecommend and do not really mention. Breastfeeding and feeding on demand

APPENDIX N: Hospital Pacifier Protocols

	Protocol Classification	Baby Friendly Designation	Pacifier Protocol
Hospital A	Lenient	No	<ul style="list-style-type: none"> • Pacifier offered on patient request
Hospital B	Moderate	Yes – 4/12	<ul style="list-style-type: none"> • Breastfeeding babies are not given pacifiers and advised to wait until breastfeeding is completely established. • To calm down baby put them on the breast it's the best pacifier • Exception: Drug babies; most babies not breastfeeding are drug babies; sucking is self-soothing and helps them calm themselves; do not routinely give, only as needed to drug babies who are especially irritable and have already been fed and has the need to suck
Hospital C	Moderate	In progress	<ul style="list-style-type: none"> • Do not recommend or encourage pacifier before initial breastfeeding • Do not encourage or recommend pacifiers for soothing • Recommend swaddling, skin-to-skin contact, or feeding • Discourage pacifiers for bottle feeding babies • Not recommended for premature or C-section babies; recommend breastfeeding and skin-to skin • Pacifier use ultimately up to parental discretion • Pacifiers in babies' cribs • Recommend baby is bedside with mother • Policy changed one year prior to interview; Pacifiers used to be automatically given in the nursery and crib with parental consent
Hospital D	Moderate	No	<ul style="list-style-type: none"> • Pacifiers discouraged • Breastfeeding encouraged • Couplet care • Advise parents to wait 6-to-8 weeks (until breastfeeding is well established) to offer a pacifier • Pacifiers are not promoted, but if parent

			asks, it is given
Hospital E	Strict	No	<ul style="list-style-type: none"> • Not allowed to give pacifier because breastfeeding friendly • If parents want to use a pacifier, they need to bring one from home.
Hospital F	Strict	Yes – 4/14	<ul style="list-style-type: none"> • Do not recommend or discourage pacifiers; do not really mention them. • Breastfeeding and feeding on demand. • Breastfeeding only unless other circumstances. • Do not regularly provide pacifiers

APPENDIX O: Who Determines the Breastfeeding Policies and Pacifier Protocols?

	Who determines policy
Hospital A	No policy – Lactation nurse speaks with patients
Hospital B	Baby Friendly Committee
Hospital C	Lactation consultants (6), 1 R.N postpartum, 1 NICU R.N from peds, and manager
Hospital D	Board Certified Lactation Consultant
Hospital E	Management
Hospital F	Baby Friendly Coordinator

APPENDIX P: Written Documentation on Pacifiers

	Written Information
Hospital A	No
Hospital B	No; discharge packet – nothing specific on pacifiers in the packet Prenatal class with the mothers – go over pacifier use. Part of the education, but do not give anything written. Breast feeding packet – avoid bottles, but not pacifiers
Hospital C	Discharge packet makes no specific mention
Hospital D	No
Hospital E	No; patients are advised to avoid pacifiers until breastfeeding is well established in prenatal courses and by lactation nurses.
Hospital F	No