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LOYOLA UNIVERSITY CHICAGO

CONTRIBUTORS TO INFANT SLEEP:
FACTORS INFLUENCING SLEEP CONSOLIDATION IN FIVE- TO SEVEN-
MONTH OLDS

A DISSERTATION SUBMITTED TO
THE FACULTY OF THE GRADUATE SCHOOL
IN CANDIDACY FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
PROGRAM IN CHILD DEVELOPMENT

BY
AMBER L. EVENSON
CHICAGO, IL
DECEMBER 2015

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For Drew

There was never a child so lovely but his mother was glad to get him to sleep.
– Ralph Waldo Emerson

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ABSTRACT

Sleep is a universal construct that receives much attention in media and science, at least partially due to its importance as an essential component in development, health, and wellbeing. While undeniably vital, infant sleep is often variable and relatedly perplexing to parents. Around five-to-seven months of age, infants enter a time of quantifiable developmental change, impacting relational, cognitive, motoric, communicative and sleep behaviors. Because adequate sleep is considered one of the most indispensable precursors for developmental gains, factors that impact the progression of sleep are of interest. The current study utilized Ecological Theory to examine what variables impact sleep consolidation, including infant temperament, maternal mental health and well-being and sociocultural contributors.

This study implemented an explanatory sequential mixed-methods research design that included both an online survey and case study approach. A socioculturally homogenous sample of eighty-eight caregivers of infants around the ages of five-to-seven-months completed an online survey that asked caregivers questions related to their broader beliefs about infant sleep, how their baby was currently sleeping, and their level of satisfaction with sleep arrangements. Five mother-infant dyads were recruited for the case study cohort and mothers completed a series of questionnaires related to mental health, parenting self-efficacy and social support, a five-day sleep log, and an in-person semi-structured interview and naturalistic observation.

The results of this study provided evidence that five- to seven-month-olds are generally sleeping for consolidated chunks of time overnight, and that caregivers within the demographic sampled were similar in their sleep related beliefs and practices and the amount of infant night waking they were experiencing. Results also suggested that out of the three factors explicitly examined with case study methodology, maternal-driven variables appeared to be the most influential component in sleep consolidation, followed by sociocultural contributors and infant characteristics. Of the three contributors investigated with case study, sound maternal mental health and adequate partner and social support were associated with better sleep. Postpartum depression, anxiety and worry were tied to co-sleeping, which appeared to further perpetuate night waking behavior, and this interaction may have also been moderated by poor partner and social support for two of the five mothers in the case study sample.

Considering infant sleep in the context of Ecological Theory is pertinent, given the numerous, interconnected factors that contribute to sleep consolidation. This study's findings point to the importance of pediatricians, obstetricians and other health professionals in supporting families who may be struggling in the postpartum period. Home visiting programs and other resources that provide support for exhausted families can lessen confusion around infant sleep.

CHAPTER I

INTRODUCTION

This paper includes five chapters. Chapter I, the current chapter, provides pertinent background information and illustrate the significance of the problem, as well as outline the proposed research questions. Chapter II delivers a review of significant literature related to the proposed study, including Ecological Theory, the construct of infant sleep, and infant, maternal and cultural factors that impact sleep consolidation in infancy. Chapter III outlines the research methods for the current study, including the methodological approach, tools implemented and approach to data analysis. Chapter IV details the results of the study. Chapter V imparts the study findings, limitations and implications.

Background and Significance

Sleep is both an elusive and universal construct. It receives much attention in media and science, and is a behavior in which all living creatures engage. Sleep is also an important and essential component in healthy child development and overall wellbeing (Ferber, 2006; Shonkoff & Phillips, 2001; St James-Roberts, 2012; Weissbluth, 2003). While undeniably vital, infant sleep is baffling and variable. It is not uncommon for caregivers to express concern regarding the adjustment to sleep deprivation and constant sleep fluctuations. In Western, industrialized settings that tend to encourage autonomy and

independence, night-waking behaviors may be extremely troublesome, as “most parents find [night waking] a very disruptive and depressing pattern of behavior... [that] frequently leads them to seek professional advice or to turn to a self-help book or friends for help” (Messer & Richards, 1993, p. 151). One of the biggest sleep related concepts and milestones associated with Western industrialized settings is sleeping through the night (STTN), an achievement bringing many caregivers rest and rejuvenation after enduring several weeks or months of sleep deprivation. STTN receives a great deal of attention in caregiving resources, especially those targeting mainstream populations. Interestingly, scientific literature indicates that STTN is a misconception, as humans of all ages wake up during nighttime sleep (Anders, Halpern, & Hua, 1992; St James-Roberts, 2012), but are generally unaware of their waking and capable of going back to sleep. The ability to re-enter sleep without the support of caregivers is a major sleep-related advancement for infants (El-Sheikh & Sadeh, 2015).

Getting infants to develop sleep habits that reflect the cultural context in which they live is an important achievement for caregivers in any setting, and methods for attaining sleep vary considerably depending on cultural ideals and beliefs. While there are clear benefits of experiencing proper sleep in infancy, sleep deprivation is conversely difficult to manage. For example, in a study by Sinai and Tikotzky (2012), the sleep patterns for new parents of four- to five-month olds were significantly impacted by the sleep of their infants, a finding that was compounded when mothers remained on maternity leave, provided constant care for their baby and had little time for recovery sleep. Moreover, when parents perceived their infants’ sleep as problematic they demonstrated higher levels of overall parenting stress, suggesting that times of sleep

deprivation, real or perceived, altered mental well-being and impacted responses to stressful caregiving situations. Another investigation found that, in addition to challenging infant sleep behaviors (e.g., overnight waking, sleep onset latency problems, etc.), mothers with temperamentally fussy infants and those who experienced difficulties with their own daytime functioning or overnight sleep quality, perceived their infants' sleep behavior as problematic (Loutzenhiser, Ahlquist, & Hoffman, 2011). In his recent manual for practitioners working directly with caregivers and their infants, St James-Roberts (2012) noted

In rare cases, infant night waking and signaling can become a problem for infants if parents cannot cope. It can disturb their relationships and interactions and may lead to parental depression. Parental fatigue due to interruptions to their own sleeping may reduce their physical energy and impair their judgements or ability to provide adequate care. (p. 185)

The importance of sleep is obvious, as it assists in proper growth and development for infants, impacts the overall functioning and mental well-being of caregivers, and influences how new parents view, relate to and interact with their babies. Accordingly, the factors that influence the development of sleep in infancy and early childhood necessitate further investigation.

Theoretical Framework

Infants, caregivers, and the sociocultural context in which they live collectively influence child development, including the progression of sleep. Bronfenbrenner's (1994) Ecological Theory (Figure 1) conceptualizes development by illustrating the interconnectedness of individual, caregiver and contextual factors. The "General Ecological Model ... is conceived as a set of nested structures, each inside the other like a set of Russian dolls," and moving outward from the individual, they include the "Micro-,

Meso-, Macro- Exo-, and Chronosystems” (Bronfenbrenner, 1994, pp. 38-40). The Microsystem “is a pattern of activities, social roles, and interpersonal relations experienced by the developing person,” and involves face-to-face interactions with those in an individual’s immediate setting, such as parents, school, or peers (Bronfenbrenner, 1994, p. 39). The Mesosystem involves the overlapping “linkages and processes” between multiple settings, like home and school, while the Exosystem “comprises the linkages and processes taking place between two or more settings, at least one of which does not contain the developing person,” and the resulting interactions directly impact the processes within an individual’s immediate context, such as the collaboration between a child’s home and their caregiver’s place of employment (Bronfenbrenner, 1994, p. 40). The Macrosystem relates to the overarching cultural beliefs, ideals, and norms for the individual, and those embedded in the Micro-, Meso-, and Exosystems (Bronfenbrenner, 1994). Finally, the outermost level, the Chronosystem, “encompasses change or consistency over time not only in the characteristics of the person but also of the environment in which that person lives” including individual maturation, change in family structure, socioeconomic status (SES), or even the general ebbing and flowing of household/interpersonal/intrapersonal stress (Bronfenbrenner, 1994, p. 40). At each level, systems are interacting with one another, and each one plays a specific role in development over the lifetime.

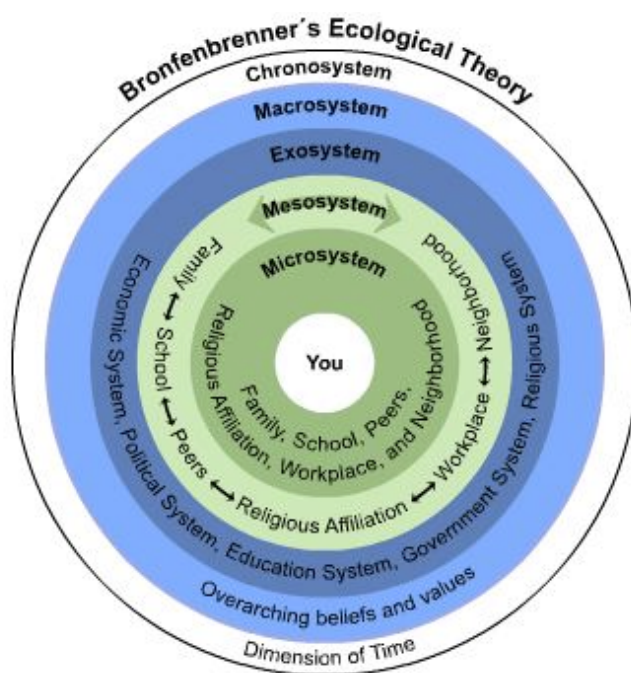


Figure 1. Bronfenbrenner's Ecological Theory

Bronfenbrenner's (1994) Ecological Theory can be applied specifically to infant sleep.

The current study explores variables at each level that influence the development of sleep behaviors in otherwise healthy infants. A body of research exists that suggests the development of sleep is impacted by a variety of factors and the interaction among these variables (Anders et al., 1992; Armitage et al., 2008; Bernal, 1973; El-Sheikh & Sadeh, 2015; Evenson & Moran, 2013; Kirjavainen, Lehtonen, Kirjavainen, & Kero, 2004; Mindell, Telofski, Wiegand, & Kurtz, 2009b; Novosad, Freudigman, & Thoman, 1999; Scher, 2008; Spruyt, Aitken, So, Charlton, Adamson, & Horne, 2008; St James-Roberts, 2012; Teti & Crosby, 2012; Super, Harkness, van Tijen, van der Vlught, Fintelman, & Dijkstra, 1996; Tie, Yu, & Huang, 2010; Tikotzky & Sadeh, 2009; Zentall, Braungart-Rieker, Ekas, & Lickenbrock, 2012). In order to fully understand what impacts sleep in infancy, Bronfenbrenner's (1994) model may be applied to the development of sleep.

Starting in the center and moving out, greater understanding comes from a clear grasp of (a) sleep as a construct and the progression of sleep behaviors throughout infancy and early childhood, (b) inherent infant factors, such as general temperament and regulatory capacity, (c) the Microsystem, or caregiver-related factors, such as quality of mental health and efficacy related to parenting, and (d) a combination of the Meso-, Exo-, and Macrosystem contributors, namely environmental factors like socio-cultural contexts and beliefs. Ecological Theory allows us to understand how different systems are nested within one another, each demonstrating change within the broader Chronosystem, or movement of time. Comprehending these variables makes it possible to configure a general timeline of sleep in infancy, understand how different factors influence the development of sleep behaviors, and uncover interactions among variables that influence the course of sleep for infants and young children. Together, this information may increase understanding of maternal, infant and socio-cultural factors that impact sleep consolidation in order to establish effective means of support for families who may struggle with infant night-waking behavior. Additionally, it may uncover what leads caregivers to label their baby a “problem” sleeper, and understand to what extent this classification can be traced to the mother, the baby and/or the context.

Research Questions

As the following literature review will demonstrate, five- to seven-months of age is a particularly salient time to examine sleep behaviors. First, major developmental changes occur for the infant at this time, impacting their relationships, communication skills and physical mobility. Second, there is a somewhat arbitrary belief in Western, industrialized settings that this is the age at which babies require less support and begin to

sleep unassisted for longer stretches of time. Finally, a body of literature exists showing extensive developmental and relational changes that occur and the impact of numerous variables on the development of sleep before, during, and after this time point.

In keeping with the theoretical basis of Bronfenbrenner's (1994) Ecological Theory, it is necessary to unpack influences at the individual, caregiver and contextual levels. In so doing, the proposed study will answer the following questions:

1. In considering Western, industrialized settings while uncovering the occurrence of a phenomenon, what are the broader beliefs in this setting about infant sleep surrounding five-to-seven months of age?
2. What are the infant, maternal, and socio-cultural factors that impact sleep consolidation in five-to-seven months of age? Specifically, how does infant temperament and regulatory capacity influence the development of sleep? What are the impacts of maternal mental health on sleep consolidation and behavior? How do cultural norms and beliefs contribute to household approaches to sleep and sleep patterns? What are the interactions among these variables, and are any of them more significantly tied to sleep consolidation in infancy?

CHAPTER II

REVIEW OF RELATED LITERATURE

Infant Sleep in the First 12 Months

Sleep varies tremendously in infancy and early childhood. Like other individual characteristics, children demonstrate different sleeping patterns from one another (inter-personal sleep differences). Their personal, unique style of sleep (intra-personal sleep behavior) will also change frequently within the first year of life and beyond. Moreover, “sleeplessness in children and worrying about sleeplessness have been around for a long time” (Weissbluth, 2003, p. 5), and challenges with sleep in infancy and early childhood are one for the most frequently reported issues by caregivers to pediatricians (Anders et al., 1992; Ferber, 2006). Mainstream media and popular parenting resources often market materials that will improve sleep. Falling under the dominant discourse in Western, industrialized cultures is the notion that babies, around the age of six months, should no longer signal their parents during nighttime hours. For example, in an attempt to highlight the dangers and desolate outcomes for babies who do not sleep through the night, one of the most commonly referenced researchers in the field of infant sleep, Marc Weissbluth (2003), provided the stance: “WARNING: If your child does not learn to sleep well, he may become an incurable adult insomniac, chronically disabled from sleepiness and dependent on sleeping pills,” (p. xix). While Weissbluth (2003) is often

considered an advocate of extreme sleep training methods (i.e., cry-it-out), those on the other side of the sleep training debate find any amount of crying to attain sleep harmful to children (Pantley, 2002; Sears, 2003). A commonly cited book for improving infant sleep is Elizabeth Pantley's (2002) The No-Cry Sleep Solution, her alternative approach to crying-based sleep training methods. Pantley (2002) noted, "No one truly knows how crying it out affects a baby in the long run. After all, one cannot raise a baby twice and note the differences;" moreover, her book strongly indicated, "I don't believe a baby should be left alone to cry himself to sleep. Or even left to cry as you pop in every ten minutes to murmur comforting words without reaching out to touch him" (pp. 10 and 23, respectively). While sleep is an undeniably important regulatory capacity, viewpoints among popular parenting sources like Weissbluth (2003) or Pantley (2002) are polarizing, confusing and instill a sense of ineptitude in caregivers. St James-Roberts (2012) reported that common terminology around infant sleep is problematic:

... [The] phrase 'infant sleep problems' suggests that there is something wrong with the infants involved and that the problem involves defective sleeping. ... In fact, ... almost all babies wake up during the night. What distinguishes problem cases is not deficient sleeping, but that such babies cry out or otherwise 'signal' their parents when they wake. (p. 12)

Responses to infant signaling by caregivers are equally pertinent. For instance, one caregiver may respond within the first few seconds of hearing her baby cry or signal, while another may give the infant a longer stretch of time to re-enter sleep. Examining infant sleep through an Ecological Theory lens reveals a level of give-and-take that occurs and "although sleep traditionally has been viewed as a characteristic of individual infants, it seems likely that the regulation of sleep and waking states has both *individual* (infant) and *relationship* (parent-infant) components" (Anders et al., 1992, p. 554; El-

Sheikh & Sadeh, 2015). Ecological Theory exemplifies the importance of all contributors, including innate biological processes at the center, or those systems that interact directly with infants' primary caregivers. Understanding the role that both infants and caregivers play in sleep is important, because it highlights the idea that "problematic" sleeping may be a matter of interpretation on the part of the caregiver rather than an actual behavioral issue inherent to the infant. It also suggests that intrinsic caregiver, infant, and/or relationship factors are worthy of consideration when exploring infant sleep behaviors.

Sleep and Development in the First Three Months

Biological and physiological processes, such as sleep-wake maturation, majorly influence infant sleep (Anders et al., 1992; Cornwell & Feigenbaum, 2006; Stern, Parmelee, Akiyama, Schultz, & Wenner, 1969). The innately mammalian mechanism that regulates sleep rhythms and cycles, or "biological clock," located in the suprachiasmatic nucleus [i.e., deep within the hippocampus] plays an important role both in the timing and organization of the sleep-wake cycle and the coordination of sleep with other biological rhythms" like body temperature, breathing, and making of melatonin to support sleep (Cornwell & Feigenbaum, 2006, pp. 935-936). In a recent monograph related to sleep and child development, the editors El-Sheikh and Sadeh (2015) indicated that

There are many sleep parameters of potential importance for children's development. While sleep duration is a key parameter and most frequently studied, other significant sleep/wake domains include sleep quality (e.g., efficiency, continuity), schedule (e.g., consistency across the week or weeknight/weekend differences, chronotype (e.g., time of optimal arousal), daytime sleepiness, bedtime routines, and daytime naps. (p. 2)

The authors suggest that one of the most central parameters is “the distribution of sleep and wake episodes around the 24-hr day-night continuum or the light-dark cycle”, a cycle also referred to as “circadian rhythms”; sleep can either be consolidated (i.e., STTN) or disjointed (El-Sheikh & Sadeh, 2015, p. 2). As was highlighted in the previous chapter, “sleep consolidation or sleep continuity [i.e., STTN] is a major characteristic of the sleep-wake system,” and a result of innate maturation processes that bring infant caregivers rest after months of fragmented nighttime sleep. (El-Sheikh & Sadeh, 2015, p. 2).

Literature frequently emphasizes the differences between infant and adult sleep characteristics, the most significant being amount of sleep needed at certain ages and length of sleep cycles (St James-Roberts, 2012; Stern et al., 1969). During the night, cycling through Rapid Eye Movement (REM) and Non-REM sleep typically lasts 90-110 minutes for school age children through adulthood. In contrast, infant sleep cycles generally last 50- to 60-minutes (St James-Roberts, 2012). Throughout the first year of life, infants engage in the equivalent of REM and NREM sleep, categorized as “Active Sleep (AS)” and “Quiet Sleep (QS)” (Middlemiss, 2004, p. 100). AS is “characterized by low-voltage, rapid electroencephalographic (EEG) waves, phasic motor activity, and autonomic irregularity,” a time when caregivers may witness muscle, eye, or whole body movement, while “QS is characterized by EEG slow waves and spindles with stable somatic and visceral activity,” identified by infrequent body movements and difficulty waking (Middlemiss, 2004, p. 100). Stern et al. (1969) discerned even more minute differences among term, three-, and eight-month old babies, with newborns cycling between REM and Non-REM sleep every 47 minutes up to 50 minutes by the age of

eight-months. Unlike other developmental time periods, the organization of sleep characteristics progress at an intense and fast-paced rate in infancy.

Sleep and biobehavioral shifts. Throughout the first year of life developmental advancements yield a significant amount of change in social-emotional and self-regulatory capacities (i.e., physiological and behavioral). Early on in the first two months, infants encounter a variety of changes as they interact with their caregivers and begin to navigate their world. Biological predispositions for survival are apparent in an infant's agenda during this stage of development, with one of the most important goals being the progression towards self-regulation. Specifically, self-regulation "refers to the mastery of tasks that were accomplished by the mother's body or in concert with the mother's body when the child was in the womb, but now must be accomplished by the child's body and through signaling needs to responsive adults" (Shonkoff & Phillips, 2000, p. 93). Biology dictates that an infant is born with some regulatory abilities (e.g., inherent behaviors such as consistent sleep and awake intervals, thumb sucking, crying, a preference for human faces, etc.) and a "preadapted organized basis for guiding behavior" between the infant and caregiver (Emde, 1989, p. 39). As an important facet of self-regulation, "achieving sustained sleeping and waking periods and a 24-hour periodicity are major developmental tasks" (Stern et al., 1969, p. 65). The responsibility of regulatory control steadily transitions to the infant within the first eight weeks, as babies start to order sleep-wake states and implement self-soothing behaviors (Shonkoff & Phillips, 2000). Emde (1989) also ascertained that infants come pre-wired for social interactions that will ensure adaptability and survival, while caregivers have a biological predisposition for interacting with and caring for infants. More recently, Ruth Feldman

(2012) discussed the contributions of biological and physiological traits in humans that support the formation of relationships meant to sustain life. Specifically she reported that,

Affiliative bonds, defined as selective and enduring attachments, are formed on the basis of multiple genetic, hormonal, brain, autonomic, epigenetic, behavioral, and – in humans – mental processes that coordinate to establish the parent–infant bond, which serves as the central vehicle for evolutionary adaptation and has been the focus of inquiry in fields ranging from neuroscience to epistemology. (Feldman, 2012, p. 154)

Specific behaviors are activated following the birth of a child, set off by “complex hormonal priming and brain activations. In humans, the maternal behavioral repertoire includes gaze at infant face and body, ‘motherese’ vocalizations, the expression of positive affect, and affectionate touch, the human parallel to ‘licking-and-grooming’ in other mammals,” illustrating the intense predisposition within the mother that is only triggered when she interacts with her newborn (Feldman, 2012, 156). The role of the parent is thus vital: caregivers must attune to babies’ signals and provide reliable, consistent care that assists infants in meeting their regulatory needs (Emde, 1989; Feldman, 2012; Sander, 1976).

Child development research and literature specifies that observable changes take place when infants reach the age of two months. Similar to the importance associated with the first eight weeks of life, extensive growth and the expansion of new skills fill the age range of two-to-seven months. An important concept associated with the advent of this age range refers to observable changes in an infant’s behavior, known as “biobehavioral shifts,” at which time caregivers may view new and different behaviors in their infant’s repertoire (Emde, 1989, p. 40). Emde (1989) defined these instances as

“normative times of qualitative change or transformation,” as evidenced by a shift in the child’s relation to their environment and caregivers and the development of new cognitive capacities (p. 40). Like self-regulation, an important series of behaviors emerge, those meant to further cultivate the relationship between an infant and caregiver (Emde, 1969; Zeanah & Smyke, 2009). Demonstrations such as smiling and laughing, as well as developing preferences for particular caregivers, are rooted in a baby’s biological make-up and meant to improve engagements between the two. Uniquely, the development of reciprocity between infants and caregivers signifies the initiation of the first biobehavioral shift.

Biobehavioral shifts are thought to take place at other times throughout early childhood. Interestingly, research related to infant sleep reveals that the first quantifiable change in sleep consistently occurs around 12 weeks of age, or at around three months (Cornwell & Feigenbaum, 2006; Middlemiss, 2004; St James-Roberts, 2012; St James-Roberts, Sleep, Morris, Owen, & Gillham, 2001; Weinraub et al., 2012). While it does not coincide with the first biobehavioral shift, the 12-week sleep advancement yields more consistent sleeping patterns. In a UK study examining the impact of a behavioral intervention on crying and sleeping in the first 12 weeks (St James-Roberts et al., 2001), the authors randomly assigned mothers and their new babies to one of three conditions: behavioral (i.e., taught explicit approaches to handling nighttime behaviors; $n = 205$), educational (i.e., mothers provided reading materials about how to manage night waking; $n = 202$), or control ($n = 203$). Infants in the behavioral program were slightly more likely than their control and educational program counterparts to sleep better (i.e., five or more hours at a stretch) beginning as early as three-weeks; however, St James-Roberts

and colleagues (2001) also discovered that by 12-weeks, babies in all three conditions had increased the amount of overnight sleep from 10-20% to 65-80%. This finding highlighted that despite the moderate effectiveness of the behavioral intervention, all babies in the study trended towards similar amounts of sleep during nighttime hours at around 12 weeks of age.

“Sleeping through the night”. Findings from St James-Roberts and colleagues (2001) demonstrated a change in sleep that is often discussed in Western culture and that many caregivers come to expect around three-months of age. Often referred to as STTN, this label implies a lack of waking overnight. Some literature defines STTN as a consolidated amount of five or more hours of sleep during the night (e.g., Anders et al., 1992; Pinella & Birch, 1993; St James-Roberts, 2012; St James-Roberts et al., 2001). Goodlin-Jones and colleagues (2001) indicated that in order for a baby to sleep for longer stretches at night, “two biopsychosocial processes ... interact to facilitate the establishment of organized sleep-wake patterns. Consolidation [i.e., STTN] reflects the gradual development of a diurnal sleep pattern” of more hours at night and longer periods of awake time during the day (p. 226). The second process, “self-regulation” relates to an infant’s increased ability to “control internal states of arousal and, at night, to fall asleep without help both at the beginning of a sleep period and upon awakening in the middle of the night” (Goodlin-Jones, Burnham, Gaylor, & Anders, 2001, p. 226). Studies examining sleeping behaviors and patterns indicate that “almost all babies wake up during the night” (St. James-Roberts, 2012, p. 12; Anders et al., 1992), and all humans experience periods of lighter sleep, or even fully awaken, but are able to put themselves back to sleep (St James-Roberts, 2012). A typical adult sleep cycle involves “variations

of sleep and brain and body activity... [and] brief arousals, awakenings, and re-settlings, so that continuous periods of settled sleep do not usually last more than a few hours” (St James-Roberts, 2012, p. 119). It follows that the hardest time for humans of all ages to re-enter sleep is during the early morning hours, and babies who have a propensity to wake and signal their caregivers during these hours are more likely to remain awake (Cornwell & Feigenbaum, 2006).

It is difficult to research infant sleep without coming across a seminal study by Anders and colleagues (1992). The authors uncovered important information about the idea of sleeping through the night through their longitudinal investigation of sleep behaviors in three-week, three- and eight-month old babies ($n = 21$). In addition to a battery of questionnaires and a comprehensive interview, one aspect of data collection involved a video-recording system, which allowed them to collapse 12 hours of time into a single, one-hour segment. Videos were coded for time awake and time spent in Active or Quiet Sleep, and any time babies spent out of cribs. Video data revealed a shift in Active Sleep corresponding to a period of newborn development. Specifically, as babies increased in age from three-weeks to three-months, they demonstrated a decrease in Active Sleep from 61.2% to 47%, respectively, meaning they entered into deeper sleep while asleep, and for longer stretches of sustained sleep from 3.6 to 6 hours (Anders et al., 1992). Additionally, at the three-month data collection point, video results indicated babies were either “self-soothers [or] signalers. By definition, both groups awakened spontaneously during the night. The signalers cried and received waking interventions or were removed from the crib. The self-soothers did not cry and received no maternal intervention” (Anders et al., 1992, p. 557). Three-month-old infants may develop the

ability to re-enter sleep after waking up without “signaling” their caregiver, a behavior referred to as “self-soothing,” and provides more support for the idea that a sleep-related developmental shift occurs around three months of age (St James-Roberts, 2012, p. 88; St James-Roberts et al., 2001).

Much like the babies of caregivers who encouraged self-soothing behaviors in the three condition St James-Roberts et al. (2001) intervention study, Anders et al. (1996) discerned that babies placed into their cribs awake at three-months were less likely to signal their caregivers, while those who were placed into their beds fully asleep at the start of their night were significantly more prone to maternal intervention and soothing. Interview data indicated that seven of the 21 babies were persistently signaling their caregivers and considered “problem sleepers” by their mothers (Anders et al., 1992, p. 557). When comparing those considered “problem sleepers” with “nonproblem sleepers” (p. 557), two main findings emerged: all seven babies were male and all were placed into their cribs completely asleep at the beginning of their nights. None of the infants slept throughout the night; rather, babies demonstrated a propensity to either signal or self-soothe. These tendencies were either supported or hindered, depending on the maternal actions prior to sleep or following a night waking.

Knowing that all babies awaken, a more salient way to categorize sleep behaviors is either those who signal or do not signal the support of their caregivers overnight, and to consider caregivers’ responses when a signal is made. In addition to understanding this distinction, St James-Roberts (2012) noted that “although Western infants in general wake and signal in the night until about the third postnatal month, we do not know with any great certainty the age at which parental concern about infants sleeping problems

peaks” (p. 91). While more is known about specific times at which cognitive/physical/biological developmental shifts occur in infancy and early childhood, the timing of the consolidation of sleep is not as straightforward. St James-Roberts (2012) revealed that caregivers in Western cultures demonstrate a level of leniency as it relates to sleep prior to six-months (i.e., believing that variation in nighttime sleep is normal), with infant sleep research heavily focusing on older babies and displaying “researcher preconceptions more than empirical evidence” that consistently waking and signaling at an age older than six months is more problematic for caregivers (p. 91). It appears that less signaling occurs around three-months of age and babies begin to consolidate their overnight sleep into longer stretches; around five-months of age, caregivers in Western industrialized cultures believe that signaling should decrease and STTN begins.

For example, an early study examined sleep cycles in infancy implemented objective measures (e.g., polygraphic recordings of bodily motion, changes in respiration, and electroencephalogram) to identify how sleeping behaviors changed from the time babies were newborns, three-, and eight-months of age (Stern, et al., 1969). A slight, insignificant increase in sleep cycle length was uncovered between newborn babies and eight month olds, while significance emerged related to the differences in types of sleep. Specifically, infants at eight months were engaged more consistently in Quiet Sleep (i.e., non-REM) as “the length of sleep cycle increased ... from 47.0 minutes at term to 50.3 minutes at 8 months” and like the findings from Anders et al. (1992), overall Active Sleep decreased with age (Stern et al., 1969, pp. 66-67). Likewise, a cross-sectional study using an objective/video method to observe sleep behavior found a decrease in

Active Sleep when comparing infants at three-months to another group of infants who were 12-months of age (Goodlin-Jones et al., 2001). Although the researchers did not utilize a longitudinal design, the findings were similar to those uncovered in other investigations. While Stern et al. (1969) is an early study of sleep cycles, the research corroborated findings from even earlier studies that examined characteristics of sleep behaviors in infancy (e.g., Denisova & Figurin, 1926; Roffwarg, Muzio, & Dement, 1966; Wagner, 1939, etc.). The authors determined that sleep cycles generally trend toward the same length in minutes and noted “regardless of whether the infant is observed without any disturbing attachments or fully harnessed with polygraphic sensors, or whether data is based on interfeeding or all night recording periods, the mean duration [remained] similar” (Stern et al., 1969, p. 68).

Sleep and Development in Five- to Seven-Month Olds

Based on the findings from the literature presented here, it is clear that sleep behavior, including the type of sleep in which babies engage, shifts between the ages of newborn to three months (Anders et al., 1992; Goodlin-Jones et al., 2001; St James-Roberts, 2012; St James-Roberts et al., 2001; Stern et al., 1969). In accordance with St James-Roberts’ (2012) assertion that the study of sleep is not based fully on empirical information but more on preconceptions about when infants *should* begin sleeping through the night, the next age typically explored in sleep research is between four and eight months (Anders et al., 1992; Byars, Yolton, Rausch, Lanphear, & Beebe, 2012; Coons & Guilleminaut, 1982; Cornwell & Feigenbaum, 2012; Spruyt et al., 2008; Stern et al., 1969; Weinraub et al., 2012). Similarly, at approximately five- to nine-months of age, infants experience another major developmental biobehavioral shift, which brings

increased mobility, immense cognitive changes, the emergence of communicative capabilities and the solidification of attachment relationships (Emde, 1989). Zeanah and Smyke (2009) noted that a “lack of obvious preference” for specific caregivers shifts at this age and “infants begin to exhibit stranger wariness and separation protest, two behaviors that herald the onset of ‘focused’ or ‘selective’ attachment” (p. 422).

Attachment relationships are defined as “bi-directional affectional [relationships] that an infant or child has with a caregiver ...[and are] reciprocated by the caregiver,” and positive and secure attachment relationships support growth throughout all phases of development (Landy, 2002, p. 150). In infancy, the emergence of attachments may take up to nine months, at which point a baby’s cognitive faculties have matured and they begin to access particular people in times of emotional extremes (Landy, 2002; Zeanah & Smyke, 2009). According to Bowlby (1969), attachment patterns are strongly rooted in biology and are necessary for survival; infants have an intense biological predisposition to form special relationships with caregivers. These relationships result from increased trust through having expectations consistently met by caregivers, especially in times of increased stress to ensure security and protection, while allowing infants to hone their emotional and behavioral self-regulation (Bowlby, 1969; Erikson, 1993; Landy, 2002; Zeanah & Smyke, 2009). It is suggested by attachment theorists that infants demonstrate a “tendency to seek comfort, support, nurturance, and protection from a small number of caregivers” (Zeanah & Smyke, 2009, p. 421; Erikson, 1993). In infancy, formulated relational expectations or “Internal Working Models” (IWM, as defined by Bowlby (1969)), provide a blueprint for infants

About how they and others with whom they interact will feel and behave. The IWM is more than a set of expectations, however, because it includes selective attention to incoming social information and salient social cues, feelings elicited during intimate interactions with others, memories of similar feelings in previous interactions and relationships, and the infant's behavioral responses to others. (Zeanah & Smyke, 2009, p. 421)

With the arrival of many new and remarkable developmental capacities, including the formation of attachment relationships, it is less surprising or arbitrary that infant sleep research then turns its attention to the five- to nine-month age-range as the next place to examine shifts in sleeping behaviors. For example, Scher and Cohen (2015) found that sleep quality improved from the ages of five- to 11-months; however, overnight waking increased with the advent of crawling at approximately seven months of age and was not found attributable to fussy/difficult temperament scores. Overnight became less disrupted and returned to pre-crawling totals approximately three months after crawling onset.

With the major existing classification system for attachment behaviors coming from Euro-American norms and theorists, other non-Western cultures may appear to display less desirable types of attachments (Harwood, Miller, & Irizarry, 1995; Jackson, 1993; LeVine & Miller, 1990; Rogoff, 2003). Attachment strength is hypothesized to be especially apparent during times of increased stress, when infants turn to their primary caregivers for relief from uncomfortable interactions (Harwood et al, 1995); however, the universality of anxiety provoking stimuli does not necessarily translate to other cultures (Harwood et al, 1995; Jackson, 1993; LeVine & Miller, 1990). Many cultures will collectively support their offspring, whereby infants and children are raised within a multiple caregiver context. Beyond mothers, caregivers may include other non-relative

adults, siblings, and other family members (van Ijzendoorn & Sagi, 1999). In some settings, the development of attachment relationships may impact sleep behaviors, as a baby becomes more aware of their solitude when left by their caregiver or preferred attachment figure. Particularly in Western, industrialized societies, there is an assumption that insecurely attached infants will engage in more signaling when left alone overnight. Coinciding with the advent of the second biobehavioral shift and attachment relationship solidification, infants may begin to experience distress while alone overnight; however, St. James-Roberts (2012) indicated that there is

...No clear link between night-time settling or waking problems and secure or insecure infant attachments. Many securely attached infants are upset at separations and signal when they wake in the night, so that these behaviours do not indicate anything wrong with infant-parent relationships. (p. 147)

Findings from existing research has revealed that infants who fall asleep on their own are less likely to signal their caregivers upon waking up during the night (Anders et al., 1992; Cornwell & Feigenbaum, 2012; Ramamurthy, Sekartini, Ruangdaraganon, Huynh, Sadeh, & Mindell, 2012; St James-Roberts, 2012; St James-Roberts et al., 2001), and “there is no evidence that careful use of limit-setting parenting methods” that try to support self-soothing behaviors (e.g., sleep training that involves crying) have a long lasting negative impact on attachment relationships or infant development (St. James-Roberts, 2012, p. 147; Sadeh, Tikotzky, & Scher, 2010).

The second biobehavioral shift coincides with infant sleep behavior in that around the age of six months, researchers begin to consider infants capable of or typically demonstrating changes in night waking patterns (Anders et al., 1992; Byars et al. 2012). Consistent styles of sleep may emerge, possibly shifting at other times in

early childhood but less frequently remaining the same across multiple time points (Jenkins, Owens, Bax, & Hart, 1984; Wake, Morton-Allen, Poulakis, Hiscock, Gallagher, & Oberklaid, 2006). Byars et al. (2012) determined that for a sample of babies and young children ($n = 359$) in the first three years of life, “although the majority of infants and toddlers identified as having a sleep problems at any given time [were] not identified as having such a problem later, a significant minority [continued] to have problems over spans of months to years” (p. 6). Further, through a thorough review of sleep research, St. James-Roberts (2012) discerned that the majority of babies studied in Western, industrialized countries begin signaling caregivers less frequently at around the age of three-months, and other patterns of sleep behavior emerge at later ages. While the age of six-months has been considered arbitrary, it appears that other developmental processes appear at this time, ultimately impacting sleep behavior. He stated,

... Only about 5-10% of children have stable night-waking problems during the pre-school period, whereas a pattern of intermittent problems occurs in at least two or three times as many [infants and young children]. ... Infants who become settled in the night by 5 months of age are likely to retain this habit, while many (but not all) infant sleeping problems have their onset in the first 5 months of infancy. It follows that the processes taking place in this early period of development provide the prelude to sleeping problems in many cases. (St. James-Roberts, 2012, p. 97)

By five-months, babies who learn how to self-soothe and exhibit a steady profile of sleep are more likely to retain those behaviors in infancy and toddlerhood. While few infants demonstrate consistent sleep difficulties in early childhood, certain challenging sleeping patterns may transpire intermittently, ebbing and flowing with the advent of developmental changes. Anders et al. (1992) determined that signaling or soothing

behaviors of the babies at eight-months were not related to newborn or three-month sleep-wake behaviors captured via video. Infants may consolidate their sleep at one time point (e.g., three months, a time when many babies begin to signal their caregivers less over night), but demonstrate more night waking at a different age (e.g., 12-18 months, possibly with the advent of walking or attaining another developmental milestone). Overall, earlier sleeping behaviors do not necessarily predict how a baby will sleep throughout infancy and early childhood, and only a small percentage of babies who sleep poorly at one age will still be considered a problem sleeper at subsequent age points (Byars et al., 2012; Jenkins, et al., 1984; St James-Roberts, 2012; Wake et al., 2006; Wolke, Meyer, Ohrt, & Riegel, 1995).

Around five- to six-months of age sleep becomes more consolidated, babies exhibit less night waking, and behaviors become more predictable (St James-Roberts, 2012). In a study by Adams, Jones, Esmail, and Mitchell (2004), the authors examined a sample of 700 babies from the UK to uncover the age at which they slept for a consolidated period of six or more hours overnight, and considered the impact of numerous variables (e.g., environment, mothers' mental health, infant characteristics, etc.). While items including "babies' birthweight, gender, and co-sleeping; mother's education, divorce and separation from partner for more than a month in the last 12 months; central heating, and the baby room sharing" with other people in the home were somewhat negatively correlated with sleep consolidation amounts, "50% of babies [slept] through by 8 weeks and 75% by 12 weeks" (Adams et al., 2004, p. 100). Additionally, by six months, more than 90% of their sample slept for six or more hours overnight (Adams et al., 2004, p. 97). These findings are consistent with the information put forth

by St James-Roberts (2012) regarding the most frequently reported sleep behavior in infancy – a stable profile without much nighttime signaling – and further corroborated literature that the majority of infants begin to signal less around the age of the second biobehavioral shift (Byars et al., 2012; Jenkins et al., 1984; Wake et al., 2006; Wolke et al., 1995).

Infant sleep is a dynamic construct. Early in life, sleep behaviors change at a rapid pace. Bringing to mind Ecological Theory, the information provided in this section pointed in large part to the center of the model, while also considering the change in sleep patterns due to influences of the Chronosystem, or the passing of time. Based on the evidence in this section about families in Western industrialized settings, there is scientific evidence and caregiver anecdotal data that sleep consolidates around the age of five months. The research reviewed also indicated that infants and caregivers dually influence how sleep changes and evolves, specifically related to attachment relationships and parenting approaches at bedtime (e.g., putting a baby to bed while awake). To follow is a review of work highlighting infant characteristics known to impact the development of sleep behaviors.

Infant Contributions to Sleep

Recalling the application of Ecological Theory to sleep, infants are at the center of the model. Their innate qualities and contributions (e.g., temperament, regulatory capacities, and ability to form sustaining relationships with caregivers) interact with those responsible for their care. In addition to the physiological advancements that infants and young children experience in the first year of life, other individual variables and innate characteristics also affect sleep. Temperament influences many aspects of child

development, including sleep/awake patterns, physicality and mobility, communication, reciprocal interactions, and the formation of important relationships. Defined as “early-appearing patterns of observable behavior that are presumed to be biologically based and that distinguish one child from another” (Sturm, 2004, p. 5), Wachs (2004) asserted that temperament is biologically based and a direct expression of the infant’s central nervous system (e.g. amount of emotional reactivity and level of emotional self-regulation).

Thomas and Chess’ (1977) early temperament research revealed three different categories of infants: easy, slow-to-warm up and difficult. Their longitudinal research indicated that only around 10% of infants were identified as “difficult,” and these babies tended to demonstrate “high levels of negative mood, irregularity in body functions, and slow adaptation to the environment” (Rosenblum, Dayton, & Muzik, 2009, p. 85). As these individuals matured, difficult babies exhibited more challenging behaviors in childhood and adolescence.

Other researchers have investigated the stability of temperament over time, typically related to characteristics of anxiety and “behaviorally inhibited infants,” and found moderate to significant presence of negative/inhibitory affect in middle childhood and beyond (Rosenblum et al., 2009, p. 85). Historically, some temperament studies have relied solely on observational methods to help place infants into one of the three categories (e.g., Thomas & Chess, 1977); however, as noted by Rosenblum et al. (2009) “individual differences in temperament are currently thought to originate in genetic variations underpinning behavioral, neuroendocrine, and physiological regulatory processes” shifting the focus in research from purely qualitative assessments and ratings to exploring aspects of biology (p. 85-86). Considering the dual role that biology and

infant-caregiver observations play in studies related to defining temperament, expression of temperamental qualities and the impact of temperament on relationships gives credence to the nature or nurture debate in child development. Shonkoff and Phillips (2000) noted

At the moment of birth, each baby is neither a preformed individual whose destiny is set nor a blank slate whose individuality can be shaped entirely by external forces. ...Biology ... is modified by life experience. ...Each child's individual capacities are both limited and broadened by his or her genetic makeup and life circumstances. Both operate together in influencing the probability of any given outcome. (p. 389)

In infant-caregiver relationships, individual capacities (e.g., temperament) are strengthened or weakened, and all caregivers play a part in how temperament is expressed.

The Role of Biology and Context in Temperament

Parents relate to children according to the “Goodness of Fit” among numerous variables (GOF; i.e., how well caregiver expectations fit with babies’ innate qualities), including their personality, cultural scripts, Internal Working Models about acceptable behavior and infant temperament (Bowlby, 1969; Carlson, Feng, & Harwood, 2004). Recalling the work of Anders et al. (1992) in which the authors examined self-soothing and signaling behaviors during nighttime hours, attention was directed at both independent factors and the interrelatedness among infant and parent variables (i.e., GOF), rather than thinking about infants as solely responsible for sleeping repertoire, or that certain sleeping behaviors were optimal or problematic. Child development research and literature has revealed “rich documentation of the mutual influences that caregivers and young children have on each other ... [and] beyond the significance of any particular attribute ... the quality ... is influenced most often by the [GOF] between the styles of

both contributors” (Shonkoff & Phillips, 2000, p. 353). Thus, it is conceivable that infant-caregiver GOF and innate biological qualities impact the development of sleep.

In addition to relationships, St James-Roberts (2012) considered genetics and temperament in the progression of sleep: “...Biological predispositions are likely to affect ... sleep-waking behaviour ...[as] genetic dispositions are thought to make some children ‘resilient’ or ‘vulnerable’ to environmental adversities or resources;” moreover, considering interactions between infants and context is “akin to the notion of ‘temperament’, except that the notion of temperament is more static and permanent, whereas vulnerabilities and resiliencies need not be stable” (p. 116). Ellis and Boyce (2008) explained how biological characteristics are sensitive to context through the Orchid Hypothesis (Dobbs, 2009). Their theory included both vulnerability and resiliency, whereby some children, “‘dandelion [children]’ ...survive and even thrive in whatever circumstances they encounter, in much the same way that dandelions seem to prosper irrespective of soil,” in contrast to “‘orchid [children]’... the context-sensitive individual[s] whose survival and flourishing is intimately tied, like that of the orchid, to the nurturant or neglectful character of the environment” (Ellis & Boyce, 2008, p.184). Dobbs (2009) noted that “‘dandelion’ children ... do pretty well almost anywhere” while “‘orchid’ children” or those individuals with the alternative genetic composition may “create dysfunction in unfavorable contexts – but ... can also enhance function in favorable contexts. ...[They] may wilt if ignored or maltreated but bloom spectacularly with greenhouse care,” or in an environment that brings out the best expression of their genetic make up (p. 3). Similarly, in a current review of temperament theory, Shiner and colleagues (2012) revealed advancements in defining temperament since the late 1980’s,

a time when four competing theories prevailed (e.g., Rothbart, Thomas & Chess, Buss & Plumin, and Goldsmith). Earlier conceptualizations posited that temperament is set from infancy onward, while contemporary literature has highlighted how numerous factors influence the trajectory of temperament. The authors discerned that

Not all temperament traits are stable early in life, perhaps because new temperamental systems that control or inhibit the more reactive aspects of temperament emerge only later in infancy. ...Some aspects of temperament - such as attention and executive control – involve individual differences in domains traditionally considered more cognitive in nature. ...[Finally] temperament should no longer be viewed as biologically derived at birth and later shaped by experience; rather, it should be viewed as the result of biological and environmental factors working together throughout development. (Shiner, Buss, McClowery, Putnam, Saudino, & Zenter, p. 437)

The GOF among biological and contextual influences is pertinent to temperament and infant sleep. Recent evidence suggested that the prenatal environment (e.g., maternal stress or malnourishment, etc.) might lead to changes in the compositional make up of newborns (e.g., temperamental, physical, cognitive, etc.). Specifically, Davis and Thompson (2014) reported that “fetal exposure to maternal stress signals is associated with increased stress and emotional reactivity in offspring” and experiencing their mothers’ stress “may affect the development of fetal stress systems (e.g., the [hypothalamic-pituitary-adrenocortical] HPA axis),” impacting how infants respond when placed in stressful situations and increasing their risk for long-term mental, physical, or cognitive problems (p. 8). Once babies are born, how a caregiver responds to an infant’s needs allows the baby to understand how their signals will be met while also demonstrating how aptly parents relate to and understand their babies’ cues. Ever an ongoing exchange among variables, pre- and postnatal contexts and innate biological

influences are responsible for how temperament is expressed and how sleep develops over time.

Temperament style, caregiver beliefs and quality of sleep. A common assumption in sleep literature is that babies who struggle with night waking also demonstrate other temperamental and regulatory issues, like excessive crying (St James-Roberts, 2012). While research has historically exemplified a correlation between the two behaviors, much of the data to support such claims is based off of caregivers' subjective and retrospective reports (Bernal, 1973; Weissbluth, 1984; Weissbluth, Davis, & Poncher, 1984). Although crying in early infancy peaks between the ages of four to six weeks, "longitudinal studies have found that amounts of crying [at around this age] are poor predictors of which infants will wake and signal their parents at night at later ages" (St James-Roberts, 2012, p. 15).

In a Finnish study by Kirjavainen and colleagues (2004), sleep and crying behaviors were investigated over a 24-hour period in a sample of six-week old excessively crying ($n = 24$) and control infants ($n = 23$). Excessive criers were those fitting the criteria for colic (i.e., "crying or fussing for 3 hours or more a day on 3 or more days in a week in an otherwise healthy and thriving infant") while controls exhibited an "amount of crying ... in a normal range" (Kirjavainen et al., 2004, p. 593). The general profile of sleep that emerged was considered common for babies in this age group, and they determined that infants tended to sleep for a long period of time in the evening (i.e., starting around 10:00 p.m.), a stretch of sleep that was preceded by a long evening waking period (Kirjavainen et al., 2004). Results from caregiver diary entries about their infants' sleeping, crying and feeding behaviors, when compared to the objective

polygraphic sleep measure, indicated that parents of both fussy and control infants *overestimated* the amount of sleep in which their infant engaged. Interestingly, while both cohorts reported more overall sleep, a major “group difference ... [that emerged indicated] parents in the control group overestimated the sleep time significantly more compared with the group of excessively crying infants” an issue the authors attributed to parenting bias (Kirjavainen et al., 2004, p. 596).

When parents reported higher levels of fussing and crying prior to sleep, polygraphy results revealed the fussier infants (i.e., 54 minutes of fuss for those labeled excessive criers vs. 25 minutes of fuss for control babies, before a long sleep) tended to sleep less. Conversely, when comparing caregiver reports and polygraphy data from an entire 24-hour cycle, “no such correlation was found” and the “sleep in the excessively crying and control infants was similar in the amount and structure in sleep polygraphy” (Kirjavainen et al., 2004, p. 596 and p. 597, respectively). While excessively crying infants tended to engage in more REM than non-REM sleep during long sleep stretches (i.e., Active rather than deep/Quiet Sleep when quieter sleep is most common) than the control group, “no difference between the study groups was found in total duration of sleep in the 24-hour recording” (Kirjavainen et al., 2004, p. 595). It appeared that fussiness prior to long sleep stretches led caregivers to rate their babies’ sleep as problematic, when according to polygraphic data these infants slept the same amount in a 24-hour period. The difference experienced and reported by parents related to how much crying and fussing occurred before sleep and how the infants slept once asleep rather than amount of sleep attained. Moreover, excessively crying infants demonstrated a different profile of sleep such that even when they were sleeping, their sleep was more restless

during long sleep stretches due to “REM sleep rebound,” a profile that emerged for fussier babies who actually engaged in deep, NREM at the front end of the evening and more Active/REM Sleep later in the night (Kirjavainen et al., 2004, p. 597). As discussed in other literature related to infant sleep characteristics, the authors’ findings pointed to infant, caregiver and relationship factors that were responsible for how babies’ sleep was perceived (e.g., Anders et al., 1992; St James-Roberts, 2012, etc.). While an infant’s temperament (in the case of Kirjavainen et al., 2004, characterized as fussy or difficult) may appear to impact quality of sleep, it is possible that caregivers of fussy babies are already taxed and exhausted, and feel their babies’ behaviors are negative and challenging (Wake et al. 2006).

In a Finnish study, De Marcas, Soffer-Dudek, Dollberg, Bar-Haim, and Sadeh (2015) examined a specific component of temperament, sensory reactivity, and its relation to sleep efficiency at three, six and 12-months of age ($n = 95$). Reactivity was assessed during sleep and while infants were awake at three- and six-months of age. Assessments of reactivity during sleep occurred in the infants’ homes, and in a laboratory setting to measure reactivity while awake. During sleep, babies received strokes from a hairbrush on the sides of their heads (tactile), listened to recorded voices from a playground (auditory) and were exposed to halogen lights at three different intensities (light). Sensory reactivity was assessed using the same three stimuli in a laboratory setting while awake. At each age point, sleep was monitored with a combination of actigraph and sleep diary records for four nights.

In addition to “expected maturational trends in sleep-wake patterns” (i.e., more consolidated, efficient sleep and higher percentages of motionless sleep), a relationship

emerged between “hypersensitive and hyposensitive infants ... [and] poorer sleep, compared to infants with sensory reactivity in the average range” (De Marcas et al., 2015, p. 63). An interesting aspect of their findings included those infants, the majority of them female, with low sensory reactivity. The authors concluded that those infants may experience poorer sleep because they “are less attuned to their surroundings ... [and] may have a dysregulated sleep schedule and difficulty consolidating sleep at night according to environmental cues” (De Marcas et al., 2015, pp. 63-64). Their findings highlighted the possible impact of one temperamental quality has on sleep.

Further highlighting the interrelated nature among variables that impact sleep, Spruyt, and colleagues (2008) investigated the relationship between intrinsic sleep/wake behaviors, temperament, and developmental changes in the first 12 months of life. The authors collected forms of subjective (e.g., diaries, temperament and cognitive questionnaires, etc.) and objective (e.g., sleep actigraphy sleeve bandage) data for a group of healthy, full-term Australian infants ($n = 20$) at ages three-, six-, 11- and 12-months of age, and actigraphy data was collected for three consecutive days every month of the first year. The authors found that with the exception of data at six-months, caregivers recorded higher percentages of nocturnal sleep amounts than was revealed by the actigraphy band at three-, 11-, and 12-months of age. Additionally, temperament data indicated that all participating babies fell “within the normal range” and were categorized as “easy temperament” by the researchers (Spruyt et al., 2008, p. 293). This finding was commensurate with caregivers in Kirjavainen et al.’s (2004) study, as parents significantly overestimated their babies’ sleep quantities in a sample of non-fussy infants. A positive correlation between increased infant sleep and easier “temperament type, with

increased approachability, rhythmicity, adaptability and low distractibility” was uncovered, along with 12-month cognitive and behavioral data that revealed a correlation between less diurnal sleep (i.e., daytime sleep) and improved emotional regulatory ability (Spruyt et al., 2008, p. 593). As babies reached one-year of age, they consistently engaged in sleep at night, a common shift at this age when infants begin to drop from two or three naps per day, down to a single nap (Ferber, 2006, Weissbluth, 2003). Temperamental shifts from three-months to a year of age translated to higher levels of alertness, energy and activity over time, and decreased amounts of diurnal sleep. Highlighting the complex and interrelated nature of variables in this study, the authors noted

The infant’s behavioural repertoire may shape his/her sleeping patterns, or alternatively, the influence of the infant’s sleep/wake pattern may shape the infant’s behaviour. Infant sleep/wake patterns may in turn influence the parent’s perception of the infant’s temperament and ... the management style of the parent. Therefore, our results may simply be the reflection of the cyclic interactive pattern between daytime and night time behaviours and hence, knowledge of parenting practices might be crucial. (Spruyt et al., 2008, p. 295)

Observational methods to examine temperament, sleep or interactive behaviors between caregiver and infant would have provided a clearer picture of fit and synchronization in the Spruyt et al. (2008) study. This data could have demonstrated the relational nuances exhibited by dyads, when these nuances were apparent in caregiving interactions (i.e., meal/feeding times, overnight parenting, soothing, etc.), and how these nuanced interactions impacted a construct like sleep. The Finnish study by De Marcas and colleagues (2015) indicated that a lack of objective temperament data in Spruyt et al.’s (2008) investigation was actually a limitation and pointed to the usefulness of their researcher-driven approach for measuring temperament. In early work by Bernal (1973),

the author conducted a secondary analysis of a mother-infant study that longitudinally followed a group of healthy infants in the UK from zero- to 14-months ($n = 77$), and again at three-years of age (i.e., Richards & Bernal, 1972). The authors in the original study observed dyadic interaction patterns and collected interview and diary data. In his secondary analysis of the data, whereby Bernal (1973) explicitly examined sleeping behaviors and the mothers' feelings about their baby's sleep, it was determined that 14-month old infants demonstrated the most problematic sleep patterns than at any other time point in the study. Bernal (1973) reviewed diary and interview data to determine the frequency with which babies woke during nighttime sleep and how well babies napped, which covered a 24-hour period. The group of infants that were labeled "problem" sleepers ($n = 24$) were uncovered from a combination of interview (i.e., "described as waking regularly") and diary information (i.e., "slept significantly less during a 24-hour period" than the non-problem sleeper cohort), and were known to cause their mothers concern over their behavior (Bernal 1973, p. 761). The 14-month diary and interview data revealed "the difficulty causing most concern to the mothers was that of the infants waking regularly at night. In some cases there was the additional problem of difficulty with settling to sleep" during bed- or naptimes (Bernal, 1973, p. 761).

Again thinking about the role of biology and environment on temperament development, it is interesting to consider the range of differences infants in the problem group experienced in the first 10 days of life as compared to the non-problem group. Mothers and infants in the problem cohort were faced with biologically-based risk factors including longer labor, a greater interval between birth and time of first cry, and lower ratings of the babies' states at birth, variables that potentially impacted their early

relationships and infant development. At 14-months of age, the problem sleepers were handled differently upon waking up, as mothers reported holding their babies less during wake-ups than non-problem caregivers, and were more apt to play with their baby or bring their baby to their bed than other mothers. It is possible that these mothers demonstrated different interaction patterns with their babies after experiencing more challenges with sleep throughout the first 14-months when compared to mothers in the non-problem group. Additionally, besides the conceivable influence of infant temperament and regulatory capabilities, and/or the maternal response to these factors, the problem-group could have simply exhibited sleeping difficulties typical of this age group, a time at which major developmental shifts (e.g., increased mobility, changes in communication styles, struggles with separations, etc.) take place and are known to cause disturbances to sleep behaviors, even in babies previously capable of self-soothing upon waking (Anders & Eiben, 1997; Middlemiss, 2004; St James-Roberts, 2012).

Observational data was collected in the home in the first 10 days and throughout the first year at various ages; however, the author did not indicate how observations took place, what the researchers watched, or how often they were in the home observing the dyads. In conjunction with the diary and interview information, Bernal (1973) revealed that the “speed and manner of maternal response in the first 10 days of life [suggested an] ... association between short cry bouts and sleep problems ... [whereby] mothers of the problem group were more responsive” to their infants crying and subsequently gave their babies less time to self-soothe; while there were differences within the highly responsive group of mothers in how rigidly they implemented swift response behaviors, this group experienced more challenges with their babies’ sleeping patterns (p. 767). The author

concluded that no correlation emerged between “sleep problems and sex, birth order or social class, ...[rather] sleep problems might be related to length of labour and the state of the baby at delivery” in addition to how mothers handled their babies’ waking behaviors (Bernal, 1973, p. 768).

Bernal (1973) illustrated how early maternal and infant experiences, temperamental characteristics, and caregiving environment all impact sleeping behaviors. In accordance with Ecological Theory (Bronfenbrenner, 1994), Sadeh and colleagues (2010) hypothesized that numerous contributors are responsible for the development of sleep in infancy, and that the variables interact in a bidirectional manner. Referred to as the “transactional model,” caregiving approaches and babies’ sleep are continuously and inextricably influenced by cultural context, parental beliefs/perceptions/cognitions/histories, caregiver well-being, and infant behaviors (e.g., relational tendencies, activity level, etc.) and constitutional characteristics (e.g., temperament, personality, biological predispositions, etc.) (Sadeh et al., 2010, p. 89). The bidirectional nature of these factors is similar to the interactions that occur among the individual and Micro-, Meso-, and Exosystems within Ecological Theory – both the caregiver and infant are responsible for how a baby sleeps – and all contributors are impacted by natural changes due to the passing of time (El-Sheikh & Sadeh, 2015). Other recent studies suggested that even earlier experiences, such as prenatal exposure to maternal stress, might impact how infants and children later respond to stress, their cognitive abilities and temperament style and overall brain development (Glover, O’Connor, O’Donnell, & Capron, 2014; Guardino & Schetter, 2014; Davis & Thompson, 2014). Taking Bernal’s (1973) findings into account, it is possible that both pre- and

postnatal infant-mother experiences can potentially influence sleep, as these experiences have the potential to shape babies' inherent characteristics and impact how babies respond to their caregivers.

In a study examining the correlations between early infant sleep behaviors and temperament, the sleep patterns of full-term healthy infants ($n = 41$) was monitored in the first two postnatal days with a mattress sensor (i.e., the "Motility Monitoring System (MMS)") (Novosad et al., 1999, p. 100). Temperament was assessed with the Revised Infant Temperament Questionnaire at eight-months postpartum, and cognitive/motor skills were measured at six- and 12-months postpartum with the Bayley Mental and Motor Scales. Findings indicated moderate correlations between postnatal sleep on Days 1 and 2 with later temperament profiles. Due to the stress associated with birth and the recovery period after delivery, sleep profiles differed from Day 1 to Day 2 (Novosad et al., 1999). Overall, four significant correlations emerged between Day 1 sleep and later temperament, while eight correlations emerged between Day 2 sleep and later temperament. The authors noted, "Analyses of the sleep profiles present a coherent pattern of predictive relations. Different sleep profiles of the newborns were associated with the 8-month temperament categories. ...[The] first postnatal day is uniquely appropriate for assessing infants'" future cognitive functioning, while Day 2 MMS sleep-wake data demonstrated more correlations with later temperament outcomes (Novosad et al., 1999, p. 103). Eight-month babies rated as "Most Difficult" by their mothers provided the clearest correlation between postnatal sleep and temperament, with higher levels of arousal during Active Sleep, the highest Active Sleep/Quiet Sleep ratio (i.e., frequently moving in and out of Active and Quiet Sleep states), and overall variability in

their sleep profiles, an indication of increased stress (Novosad et al., 1999). The researchers noted that in the early postnatal days, “there is no reason to expect [the Most Difficult babies’] sleep to be either more or less mature, because they are neither more or less mature developmentally. However, erratic behavioral organization is a well-documented concomitant with stress,” and the eight-month babies categorized as Most Difficult by their caregivers on Day 2 demonstrated more temperamental variability when compared to the other cohorts of infants (Novosad et al., 1999, pp. 103-104). Thus, all of the babies experienced some level of stress following labor and delivery, but those who continued to exhibit behavioral erraticism on the second postnatal day were more temperamentally difficult at a later age, a time in development when sleep behaviors are often thought to become more consistent. Novosad and colleagues (1999) ultimately suggested that newborn sleep-wake states are somewhat predictive of temperamental style measured at eight-months of age, with Day 2 sleep-wake characteristics being more foretelling.

Attachment style, overnight caregiving and quality of sleep. Zentall and colleagues (2012) examined shifts in night-waking behavior throughout infancy, and whether babies with specific attachment relationships (i.e., insecure-resistant) had greater difficulties with sleep during nighttime hours. The study utilized both mothers and fathers ($n = 46$ families), and received reports of sleeping behaviors at seven-, 12, and 14-months of age. Attachment relationships were assessed using the Strange Situation Paradigm (Ainsworth, Blehar, Waters, & Wall, 1978), a laboratory-based test meant to activate the attachment system. Using the classification system outlined by Ainsworth et al. (1978), babies were labeled as *insecure-avoidant* (A), *secure* (B), *insecure-resistant*

(C), or a fourth category *disorganized* (Main & Soloman, 1986; D) (Zentall et al., 2012).

The Strange Situation was implemented with *both* mothers (when their babies were 12-months) and fathers (at 14-months) to see how (1) night-waking behaviors shift over time in relation to attachment relationships with both parents and (2) if infants classified as secure-dependent (i.e., category B4, a subcategory of secure attachment classification B) demonstrate night waking behaviors similar to babies categorized as insecure-resistant (i.e. category C). Mothers and fathers jointly completed sleeping and eating checklists at the same ages attachment was measured, and at seven-, 12- and 14-months, parents were asked to record the number of times their baby woke at night.

The results of this study revealed that mother-infant attachment patterns at 12-months were more likely to predict differences in night waking throughout infancy than attachment patterns with fathers at 14-months, and overall, “night waking at 7 months was not related to attachment classification. ... 7-month-old infants tended to wake and signal parents, irrespective of their later attachment classification” with either parent (Zentall et al., 2012, p. 451). Additionally, infants classified as B4/secure-dependent with their mothers at 12-months (i.e., those with similar attachment patterns to infants in category C/insecure-resistant), did not significantly differ in their sleeping patterns from other securely attached infants at any time throughout the study. Further, the authors determined that “infants with a B4 pattern of attachment woke significantly less at 12 and 14 months than infants with a C pattern of attachment,” strengthening their claim that secure attachments played a bigger role in sleep consolidation and regulation than dependency (Zentall et al., 2012, p. 452). Attachment style was also related to how parents directly handled overnight waking, as those with secure relationships were less

likely to initiate contact (and therefore encourage self-soothing), while those with less secure relationships had caregivers who were more involved. Moreover, Zentall et al. (2012) demonstrated that secure attachment relationships might be a protective factor in the consolidation of sleep around one year of age. Recalling the earlier study by Bernal (1973), another contributing factor to increased sleep disruption for 14-month-old “problem sleepers” may have been those babies’ attachment style with their primary caregiver(s). Similarly, in a recent study by Bélanger and colleagues (2015), the authors discerned that secure attachment classifications at 15-months (i.e., via the Attachment Q-Sort) predicted longer stretches of sleep and more efficient sleep behavior when assessed with sleep actigraphy at two-years of age, and suggested that toddlers who have developed secure attachments are better able to soothe themselves during stressful separations at bedtime and upon waking overnight.

One assumption put forth by Zentall and colleagues (2011) was that securely attached infants would be less likely to signal their caregivers upon waking during nighttime hours, as “differences in sleep-wake regulation would depend on the development of the attachment relationship. ...Specifically, early in infancy – prior to the development of the attachment relationship – infants should wake similarly at night, irrespective of future attachment status;” however, as babies mature, those “with a B pattern of attachment should become less anxious about nighttime separations, developing more confidence in the availability of their parents ... [while those in a] C pattern of attachment ... should continue to be anxious about nighttime separations and continue to wake and signal” (Zentall et al., 2012, p. 447). The authors stated that early fussiness (i.e., a temperamental quality) may lead to more problems with attachment

relationships and overnight sleep, as fussy infants do not sleep as well and this pattern may lead to later sleeping problems (Zentall et al., 2012). One limitation to this study is their lack of consideration for temperamental characteristics and how these traits impact both the manner in which an infant behaves during sleep and the formation of the attachment relationship.

Data examining constitutional infant characteristics, such as temperament style and level of alertness may shed light on how attachment relationships develop and sleep is impacted by a baby's temperament and regulatory capacities. Literature in this section illustrated the interplay between Microsystem influences and individual characteristics. As was the case in other studies, (e.g., Kirjavainen et al., 2004; Spruyt et al., 2008, etc.), parents of temperamentally "easy" infants tended to overestimate their sleep habits and sleep duration. As uncovered by Zentall et al. (2012), mothers of more temperamentally challenging babies were prone to lower levels of physical and emotional sensitivity, potentially altering the attachment relationship and possibly influencing sleep behaviors.

Maternal Contributions to Infant Sleep

In addition to individual child contributors, Micro- and Mesosystem factors such as caregiving style and relational variables (Microsystem), the caregiver's workplace or surrounding community (Mesosystem), play an important part in the development of sleep in infancy and early childhood (Bronfenbrenner 1994; El-Sheikh & Sadeh, 2015). Much like biobehavioral shifts, babies demonstrate a change in sleeping behavior around 12-weeks and again at around five-months of age. With the advent of new abilities at the end of the first year of life, such as increased mobility or improved communicative skills, sleep shifts again but becomes more consistently consolidated during nighttime hours.

Recalling the literature about the construct of sleep, overnight behavior and patterns become less elusive and mysterious: babies do not actually sleep throughout the night at any age; rather, certain observable behaviors occur following sleep cycles, such as stirring/crying out (i.e., signaling), completely waking up, or demonstrating movement prior to falling back into a deeper sleep (i.e., self-soothing) – behaviors in which all humans engage (Anders et al., 1992; St James-Roberts, 2012). Depending on the child, a secure attachment relationship may encourage self-soothing upon waking overnight because these infants understand their caregivers are available if necessary (Bélanger et al., 2015; Zentall et al., 2011). Conversely, some babies who form secure attachments may feel upset or worried during separations for sleep, and continually seek out the support of their caregiver(s) over night (St James-Roberts, 2012). Another example of sleep changing during developmental shifts may coincide with increased mobility (e.g., rolling over, pulling-up, crawling, walking, etc.) or communicative skills (e.g., vocalizations, first words, full sentences, etc.) throughout the first two years and beyond (e.g., Bernal, 1973; Scher & Cohen, 2015).

Maternal Mental Health

In considering the construct of sleep, specific Microsystem influences like caregiving style, relational GOF between baby and caregiver, and the status of caregiver mental health are pertinent. While all new caregivers enter a period of adjustment following the birth of a baby, mother-infant relationships and maternal mental health are particularly salient. For example, in a study of mothers who reported depressive symptoms at six-weeks postpartum, four-month observational data of face-to-face interactions indicated significantly adjusted interactions in mother-infant dyads (Beebe et

al., 2012). The presence of depression caused maternal caregivers to demonstrate excessive or deficient amounts of interaction, rather than “optimum midrange ... interactive regulation” that is more likely to yield synchronicity between mothers and babies (Beebe et al., 2012, p. 403). To follow is a review of literature highlighting the specific importance of maternal caregivers and their mental well being in infancy, and their role in the development of infant sleep.

The quality of caregiver mental health is exceptionally important in infancy.

According to St James-Roberts (2012), more research

...Is needed to unravel these causal relationships. ... [The] implication is that cases that combine parental vulnerabilities [(e.g., low-frustration tolerance, difficulty handling stress, poor attachment relationships, etc.)] with infant crying or unsettled night waking are more serious than cases involving infant crying or night waking alone. (St James-Roberts, 2012, p. 18)

Following the birth of a baby, extensive research has documented a shift in maternal mental health (O'Hara & Swain, 1996; Wenzel, 2011), and mental health “is of particular interest to clinicians because it is predictive of childhood social and cognitive difficulties” (Beebe et al., 2012, p. 384). According to Beardslee, Gladstone, and Diehl (2014), maternal depression is a result of “genes and biology, past experience, and current circumstances. The mother’s mood and behaviors influences the infant, and the infant correspondingly influences the mother” (p. 5). Much like the conceptualization of temperament outlined in the previous section, maternal mental health and specifically depression impacts certain “outcomes – the mother’s health, the infant’s health, or the nature of their interactions, [and] at any particular stage can be viewed as the balance of risk and protective factors over time” (Beardslee et al., 2014, p. 5). Much of the existing literature related to maladaptive mental health puts all symptomology under the umbrella

of postpartum depression, including the occurrence of postpartum anxiety; while the term “postnatal mood disorder” may be useful and all-encompassing, “evidence is accumulating that many aspects of the phenomenology of anxiety experienced during this time period are distinct from depression” (Wenzel, 2011, p. 3). Explicitly speaking, “perinatal anxiety ... [includes] anxiety symptoms and disorders that occur during pregnancy and the postpartum period” (Wenzel, 2011, p. 4), while “postpartum depression refers to a non-psychotic depressive episode that begins in or extends into the postpartum period [and may also be] based on the number and severity of symptoms that are endorsed on a questionnaire” including the Edinburgh Postnatal Depression Scale (EPDS) or Beck Depression Inventory (BDI) (O’Hara & Swain, 1996, pp. 38-39). In some cases, maternal mental health is conceptualized in terms of adaptation to parenthood, “[i.e.,] parent-role satisfaction, role expectation, role self-efficacy, parental stress, parental distress (depression, anxiety), and coping skills” (Counterline & Teti, 2010, p. 650). Parenting self-efficacy, or a caregiver’s beliefs about her ability to adequately parent (e.g., general parenting skills or explicit capabilities like properly feeding, diapering, etc.), is impacted by the existence of maternal depression and anxiety, and both can lower how self-efficacious a parent feels while caregiving.

Maternal mental health and infant sleep. Teti and Crosby (2012) examined maternal influences on sleep through three models ($n = 45$ predominantly Euro-American maternal caregivers). The first model (“mother-driven path of influence”) posited that, “both maternal depressive symptoms and dysfunctional cognitions about infant sleep jointly and uniquely predicted maternal behavior (at bedtime or during the night [such as remaining in close proximity with their infants overnight]), which in turn predicted infant

night waking” (p. 941). The other two models (i.e., “infant-driven paths”) purported that infant waking predicted maternal nighttime behavior, which led to maternal depression/symptomology or dysfunctional maternal cognitions related to their babies or babies’ sleeping habits (p. 941). The subsequent hypotheses included: (1) Maternal mental health and problematic cognitions about their babies’ sleeping behaviors would impact nighttime waking, (2) quality of mental health and maternal cognitions will influence maternal behavior during bedtime and overnight, which will also impact night waking, and (3) the behaviors in which mothers engage around sleep will influence maternal depression, beliefs about infant sleep, and infant waking. Hypothesis #3 took all three models into account as a way to examine the mediational influence of maternal behavior in both mother-driven and infant-driven models.

Through a cross-sectional approach, data was collected for seven consecutive days, whereby the 45 participants were divided into five groups of infants at one-, three-, six-, 12-, and 24-months ($n = 23$ females). To assess depression, mothers were given the Depression subscale from the Symptom Checklist (SCL-90-R) which included questions typically aimed at diagnosing depression (e.g., hopelessness about the future, etc.), while beliefs about sleep were measured with the Maternal Cognitions about Infant Sleep Questionnaire (MCISQ), a tool aimed to directly measure how caregivers handle nighttime waking. Examples of dysfunctional beliefs included “‘my child will feel abandoned if I don’t respond immediately to his/her cries at night’ and ‘when my child doesn’t sleep at night, I doubt my competence as a parent’” (p. 943). In thinking about the definitions of postpartum depression and perinatal anxiety, it appears that the MCISQ aligns with anxious cognitions and behaviors, rather than depressive symptomology.

Both questionnaires were completed at the onset of data collection (day 1). In order to obtain other information about infant sleep (e.g., location, number of overnight wake-ups, etc.), the mothers were asked to complete a sleep diary every morning for the entire seven days. Finally, video of overnight maternal and infant behavior was collected on the sixth day of data collection. Observational data of the dyads was collected and coded from the recordings, and included maternal presence and close maternal physical proximity at bedtime and overnight.

Results indicated that, as hypothesized, mothers with elevated levels of depression and those who experienced worries about infant overnight needs, had babies who woke more during nighttime hours. Support for hypothesis #2 was also uncovered, as poorer maternal mental health and maladaptive cognitions were correlated with maternal behavior overnight – both increased maternal presence and being within close physical proximity to their infants throughout the night. For hypothesis #3, when examining the mediational role of maternal behavior between maternal depression and night waking, and between maternal beliefs and cognition, the authors determined that each of the three mediational models were supported, although the most significant pathways were those derived from the mother-driven model. Specifically, depressed mothers were significantly more likely to be in close proximity with their infants overnight, which ultimately impacted night waking. Additionally, those who expressed high levels of worry related to infant sleep tended to remain in close proximity and have a baby who exhibited higher levels of nighttime waking (Teti & Crosby, 2012). While the infant-driven models approached significance, it appeared that mothers in this study drove their own depressive symptoms and worries about infant sleep, which in turn influenced how

much babies in the study woke throughout the night. For instance, observational data revealed that while the majority of mothers engaged in calming routines at bedtime (e.g., a feeding with younger babies, books with older infants, etc.), mothers who scored higher on the SCL-90-R:

...Represented a majority (75%) of those who did *not* have a calming bedtime routine for their infant. Prior to the infants' bedtime, these mothers had the television on, allowed older children to play rough/make loud noises near the infant, appeared insensitive to the infant's needs (e.g., hunger), and kept their infants awake after the infant appeared ready for sleep. (Teti & Crosby, 2012, p. 948)

Mothers with higher depression scores also responded with increased speed to nighttime wake-ups when compared to their non-depressed counterparts. One mother of a 12-month old highlighted this propensity and appeared “hyperattentive to her infant during the night [and] responded to nondistressed vocalizations,” at times in under a minute, and nursed her baby back to sleep “three times in a period of <10 hours” (p. 948).

Additionally, some mothers who expressed higher levels of depression were “observed waking their sleeping infants unexpectedly during the night,” and overall mothers in this group demonstrated inconsistency in responding overnight (e.g., unnecessarily intervening, challenges with limit setting in older babies, etc.). While not specific to sleep, Beebe and colleagues (2012) corroborated the pattern of hyper- and hypoattuned maternal caregiving practices (rather than optimal midrange parenting) in their study of depressed mother-infant dyads. Teti and Crosby (2012) found that mother-related factors were significantly responsible for infant night waking, while the infant-driven pathways approached significance for mothers with symptoms.

Longitudinal studies of maternal mood and sleep cognitions. Tikotzky and

Sadeh (2009) conducted a longitudinal study to examine the relationship between prenatal maternal beliefs about babies and how infants' sleep patterns developed throughout the first year of life. Their main goals were to subjectively and objectively assess infant sleep behavior over time, maternal cognitions related to sleep, and how the two factors related to one another. Using a sample of 85 "expectant couples ... in their third trimester" (while focusing specifically on the mothers for "methodological considerations"), their participants were middle- to upper-class Israeli families who had birthed full-term, healthy babies (p. 862). Their methodological approach started "at pregnancy (to represent 'pure' anticipatory cognitions unrelated to the real future characteristics of the infant) ... to assess maternal cognitions and infant sleep during the 1st year of life" (Tikotzky & Sadeh, 2009, p. 862). Similar to the maternal cognition variables examined by Teti and Crosby (2012), the authors noted caregivers' challenges "in limiting their involvement in reaction to what they interpret as infant distress upon awakening" and aimed to uncover beliefs related to parental soothing behaviors (Tikotzky & Sadeh, 2009, p. 862). Data collection involved actigraphy to monitor infant sleep, a caregiver sleep diary (e.g., sleep location, intervention techniques, etc.), completion of the Brief Infant Sleep Questionnaire (BISQ), the Infant Sleep Vignettes Interpretation Scale (ISVIS), and overall assessment of caregiving soothing behaviors based on information provided in the sleep diary.

The longitudinal nature of the study meant that, prior to giving birth, mothers answered questions related to their basic demographic information and completed the ISVIS. Cognitions (i.e., ISVIS) and infant sleep patterns (BSIQ) were assessed

perinatally at one-, six-, and 12-months, while actigraphy and diary data was collected for four days at six- and 12-months of age. Tikotzky and Sadeh (2009) found that, according to the BSIQ, infant sleep decreased significantly from one- to six-months (mainly due to decreased napping), and continued a downward trend while approaching 12-months. While total sleep amounts in a 24-hour period decreased throughout the first year, actigraphy revealed a significant improvement in overnight sleep due to a reduction in night waking (Tikotzky and Sadeh, 2009). Interestingly, cognitions about sleep were similar at the prenatal and 12-month assessment times (i.e., more emphasis on caregiver limit setting) and also at one- and six-months (i.e., more emphasis on the importance of caregiver involvement overnight). The authors attributed these findings to the belief that

During pregnancy parents give more weight to the importance of encouraging infant autonomy because they have not yet experienced the stressful emotional responses to coping with their own infant crying and signaling at night. However, as infants approach the age of 1 year their mothers may develop greater expectation for self-soothing. (Tikotzky & Sadeh, 2009, p 870)

When determining how the variables interacted and in considering how cognitions shifted pre- and postnatally, Tikotzky and Sadeh (2009) discerned “significant predictive and concomitant links between maternal sleep-related cognitions and infant sleep” in that caregiver beliefs related to their babies’ nighttime distress correlated with increased waking overnight on both subjective and objective measures (p. 870). Mothers’ cognitions that emphasized less overnight intervention and more limits had babies who displayed higher levels of consolidated sleep. These caregivers still intervened, but in a less intensive manner than mothers who endorsed distress and the necessity of active soothing techniques. Quality of infant sleep at six- and 12-months was also predicted by prenatal maternal cognitions. Additionally, they found “predictive and concomitant links

... between maternal cognitions and parental soothing techniques and between ... [the] soothing patterns and infant sleep – ...mothers who put more emphasis on the infant’s distress reported later greater parental involvement in soothing their infant to sleep,” which ultimately led to deleterious sleeping patterns at six- and 12-months (Tikotzky and Sadeh, 2009, p. 871). Like results in Teti and Crosby (2012), more evidence was presented to suggest that mothers “bring their own perceptions into the interaction and those cognitions seem to shape their behavior toward the infant around bedtime” (p. 871). They determined a connection between six-month maternal cognitions and 12-month sleep patterns, and six-month sleep behavior and maternal beliefs at 12-months. Of importance, poor sleep at the six-month point led to *less* maternal distress and higher reported beliefs about the importance of limit setting and minimal intervention at 12-months. It may be that mothers experiencing disrupted infant sleep came to understand how their nighttime involvement possibly hindered the development of self-soothing techniques for their baby, or that their feelings related to infant distress changed over time. Either way, “in practice, they still find it hard to implement these changes” and/or may not be ready or motivated to make changes to their nighttime approach to caregiving (Tikotzky and Sadeh, 2009, p. 871).

Armitage et al. (2008) examined the influence of maternal depression on the development of infant sleep in the first six-months of life. Using purely objective measures to monitor sleep behaviors monthly for both mothers and babies, the authors sampled both non-depressed ($n = 7$) and depressed ($n = 11$) women. Sleep was monitored every month for seven days and sleep latency onset (i.e., how long it took to fall asleep), sleep efficiency (i.e., number of night wakings) and amount of daytime sleep

episodes (i.e., napping behavior) were assessed (Armitage et al., 2008). Outcomes at two-months of age revealed that depressed mothers had infants who took longer to fall asleep at night, experienced more wake-ups overnight, and slept significantly more during the day, but for shorter bouts, when compared to infants of non-depressed mothers. Additionally, when comparing the low- and high-risk groups, these findings remained the same at six-months postpartum (Armitage et al., 2008). Their findings placed more emphasis on purely caregiver contributions, rather than the give-and-take between maternal and infant factors as conceptualized by Bronfenbrenner's (1994), El-Sheikh and Sadeh (2015) and Sadeh et al.'s (2010) models.

Recalling the frameworks proposed by Teti and Crosby (2012) (e.g., mother- vs. infant-driven), the interconnectedness of variables impacting sleep quality and consolidation are thought to originate with the mother. For instance, in a sample of 45 mother-father couples (cross-sectional design – with infants at ages one-, three-, six-, 12-, and 24-months) Countermine and Teti (2010) demonstrated support for a mother-driven basis for the development of sleep. Specifically, those who engaged in room- or bed-sharing with their baby (i.e., a common occurrence for families with infants in the first two years) experienced poorer adaptation (i.e., satisfaction with baby's sleep location and bedtime/overnight behaviors) to infant sleep behaviors and location of sleep, even when families indicated a preference for a specific sleeping arrangement. Thus, even when families chose to sleep in close proximity to their babies, they exhibited poor parental adaptation to the arrangement. Quality of maternal sleep (monitored by actigraphy), evidence of maternal depression, and experience of spousal criticism were all related to close-proximity infant sleep arrangements and maternal adaptation in this study, lending

support to mother-driven causes of sleep disturbances (Countertermine & Teti, 2010).

Maternal adaptation to sleep location and behavior was sensitive to the mothers' mental health and perceived partner criticism, even when they were sleeping well (i.e., mothers demonstrated poorer adaptation and satisfaction if they experienced mental health problems or discord with their partner related to infant sleep location). Along these lines, Bayer and colleagues (2007) found that both shared sleep with a baby and caregiver disagreement about infant sleep arrangements led to poorer maternal mental and physical health. Similarly, in a longitudinal study by Tikotzky and fellow researchers (2015) examining sleep quality in infants and mothers, the authors determined that increased day and nighttime paternal caregiving involvement at three-months postpartum predicted increased sleep efficiency for mothers and babies at six-months. This suggests that higher levels of partner support may lead to better sleep outcomes throughout the early postpartum months.

In a study teaching mothers explicit techniques to handle bedtime behaviors with their infants and toddlers, Mindell, Telofski, Wiegand, and Kurtz (2009b) determined that implementing a consistent approach prior to sleep improved sleep consolidation and maternal mental health status, and decreased the occurrence of night waking. Mindell and colleagues (2009b) worked directly with mothers of seven- to 36-month-olds over a three-week period, assigning them to a treatment or control group. Two separate studies took place, one with mothers and seven- to 18-month-old infants ($n = 206$ dyads) and one with mothers and 18- to 36-month-old toddlers ($n = 199$ dyads), and all mothers considered their babies "problem sleepers" (Mindell et al., 2009b, p. 599). The two treatment groups ($n = 134$ infants, $n = 133$ toddlers) were dubbed the "routine groups,"

and after collecting a week's worth of baseline sleep data, mothers were provided explicit instructions for instituting a three-step nightly routine before bed (Mindell et al., 2009b, p. 601). The routine consisted of a bath, infant massage or use of lotion with toddlers, and singing and cuddling quietly with the child, with the goal of turning the lights off 30-minutes after completion of bath time. Implementing a bedtime routine led to the improvement of "multiple aspects of infant and toddler sleep, ... [including] shorter sleep onset latency, decreased wakefulness after sleep onset, and increased sleep consolidation" (Mindell et al., 2009b, pp. 603-604). Further, the authors determined that "maternal mood improved concurrent with positive changes in the children's sleep," pointing to the impact of better sleep quality on maternal mental health, and possibly some improvement in maternal adaptation and self-efficacy as a result of implementing a change and experiencing positive outcomes (Mindell et al., 2009b, p. 605).

Maternal Mental Health and Infant Variables

The studies reviewed so far have not considered implicit infant variables (e.g., temperament style, regulatory capacities, personality, etc.) beyond general sleeping behaviors, habits, or patterns. Scher (2008) examined the transactional nature of sleep-wake behavior in a sample of 52 Israeli mother-infant dyads. In sleep and dyadic research, transactional models relate to innate and biological infant characteristics and environmental/contextual/caregiving influences (Sadeh et al., 2010; Scher, 2008). The sole maternal variable assessed in this study was the mothers' level of separation anxiety (i.e., Maternal Separation Anxiety Questionnaire, MSAS), measured at 10-months post partum to examine feelings and cognitions about the impact of separations on the infant. Interestingly, objective actigraphy sleep data revealed only a small percentage of infants

had sleep difficulties, while maternal responses on a general sleep questionnaire indicated that approximately 37% of babies had “severe sleep problems,” and overall, most of the mothers sampled indicated a mid-range amount of separation anxiety, regardless of whether they reported infant sleep problems (Scher, 2008, p. 621). Associations were uncovered between maternal separation anxiety and increased night waking and with decreased consolidated sleep. Temperament and actigraph data indicated that a “difficult temperament correlated with going to sleep later and sleeping for fewer hours,” and those categorized as temperamentally fussy were more likely to exhibit night waking according to maternal and objective sleep data (Scher, 2008, p. 622). Thus, the transactional nature of influences on infant sleep was highlighted in Scher’s (2008) findings, as both maternal and constitutional infant characteristics impacted the occurrence of night waking.

As was the case in previous studies (e.g., Teti & Crosby, 2012; Tikotzky & Sadeh, 2009, etc.), maternal separation anxiety led to more invasive forms of nighttime parenting; however, unlike Teti and Crosby (2012), cognitions related to the babies’ level of discomfort (i.e., thirsty, hungry, etc.) upon waking did not impact how much mothers provided intervention throughout the night. Instead Scher (2008) found that mothers who specifically worried that their babies were frightened during the night were more likely to intervene and experience higher levels of separation anxiety. Considering that temperament was found to impact sleep consolidation as well as maternal mood, this study provided evidence for the dual influence of infants and their mothers on sleep quality (i.e., mother-driven or infant-driven as defined by Teti and Crosby, 2012).

The majority of studies presented in this section have examined how aspects of the Micro- and Mesosystems, namely family well-being and maternal mental health,

impact the development and maintenance of infant sleep. At the Microsystem level, caregivers come to parenting with intrapersonal characteristics like mental health, while also bringing personal history and cultural beliefs to dyadic relationships. Mothers are of particular interest due to the documented research on maternal well-being and infant outcomes. At the Mesosystem level, community and professional contexts may influence parenting choices. In general, there was a gap in the literature related to how mothers and babies influence the development of sleep together. Many of the studies seemed to suggest that GOF in dyadic relationships may predict infant sleep behavior, while maternal mood, beliefs about infant sleep and responses to babies' overnight behaviors led to specific sleep patterns. These factors seemed to impact the development or continuation of maternal depression or maladaptive cognitions related to sleep and caregiving. Thus, even in cases where objective data demonstrated similar sleep trends across most infants in a study (e.g., "poor" and "good" sleepers), maternal feelings and reactions to their babies tended to influence sleeping behaviors. While not explicitly noted, other contributors to maternal well-being could have included additional Mesosystem factors, such as a perceived lack of social support from partners, peers or the community, and Exosystem factors, specifically increased stress due to financial hardship or governmental regulations (e.g., little-to-no maternity leave, unpaid leave, etc.).

Cultural Contributions to Infant Sleep

Beyond inherent infant and caregiver factors, the environment in which a child is raised impacts the development of sleep. The Meso-, Exo-, and Macrosystems from Bronfenbrenner's (1994) theory take into account developmentally relevant contextual factors, as culture and context each play an important role in how infants express their

innate qualities (El-Sheikh & Sadeh, 2015). Culture includes the values, beliefs and assumptions observed in the outward behaviors of a particular group of people (Day & Parlakian, 2003). Edwards and colleagues (2005) defined the development of cultural norms as “a complex system of common symbolic actions (or scripts) built up through everyday human interaction by means of which individuals create common meanings and in terms of which they organize behavior” (Edwards, Knoche, Aukrust, Kumru, & Kim, 2005, p. 141). Gaskins (2006) highlighted the importance of considering context in development, as “...any culture, the specific ways infants are treated by their caregivers, and expected to respond, cannot be understood without also understanding what deeper cultural factors are organizing their everyday behavior” (p. 281; Gaskins, 1996). The main goal of any culture is to help offspring assimilate to the norms associated with their group of people (Gaskins, 1996, 2006; Shonkoff & Phillips, 2000). While infants may be predisposed for social interaction (Emde, 1989; Gaskins, 2006), their environment teaches them how to acceptably demonstrate behaviors, engage with caregivers and peers, and live successfully within a community. Culture also plays a part in how attachment relationships are formed and how infants access caregiver support in stressful situations. While they look different depending on the setting and context, attachments solidify starting around five-months of age and are universally important and essential for survival. The relationships that form between infants and their caregivers, and the dyadic experiences that unfold, like culture, dictate a child’s developmental trajectory.

Caregiver Beliefs and Sleeping Practices

Familial sleeping practices are dually influenced by personal conceptions regarding sleep and cultural norms and beliefs (Evenson & Moran, 2013). Families,

communities and cultures everywhere exhibit marked heterogeneity of sleeping techniques, and on the whole, babies end up healthy and adjusted in culturally relevant ways. The literature suggests that no longitudinal adult aggregate outcomes exist indicating harm or benefits based on the sleeping practices in which families engage (Cortesi, Gionnatti, Sebastiani, & Vagnoni, 2004; Okami, Weisner, & Olmsted, 2002). Various cultures measure social competence differently (e.g., some communities value social skills while others place extensive value on mastering objects) (Rogoff, 2003; Rogoff, Paradise, Mejía Arauz, Correa-Chávez, & Angelillo, 2003), and while caregiving techniques reflect what is desirable in a given community, all babies are programmed to strive for adaptation and self-regulation. Regardless of cultural context, “babies adapt, and indeed thrive, in a wide variety of culturally normative caregiving niches,” and specifically, learn about sleep behaviors according to cultural codes and ideals (Shonkoff and Phillips, 2000, p. 95). While, culturally speaking, disparities exist in how caregivers tend to their infants’ cues, babies adapt and thrive in their communities worldwide despite environmental differences.

In a study by Super and colleagues (1996), the authors examined how “parental ethnotheories, ... [known as the] mediating mechanism between the cultural past, current possibilities, and the actual environments for children” differed between Dutch ($n = 66$) and American ($n = 36$) families, and how the ethnotheories impacted caregiving around infant arousal patterns and sleep (Super et al., 1996, p. 449). The authors wanted to discern “the possible role of enculturation in the emergence of arousal patterns ... [by describing] in two diverse settings the culturally integrated niches in which infant arousal develops” (Super et al., 1996, p. 449). The Dutch and American samples were matched

in terms of marital, health and income status. Data collection included semi-structured parental interviews, diaries regarding their babies' activities, and four home-based behavioral observations of infant/caregiver functioning and relational patterns among the families.

The authors found that “parents in both samples expressed interest and concern about their child’s patterns of rest and arousal; however, this topic was of much greater salience and specificity” in the Dutch sample, as these families reported the importance of “the Three R’s of childrearing: *Rust*, *Regelmaat*, and *Reinheid*, or rest, regularity, and cleanliness” (Super et al., 1996, pp. 452 and 455, respectively). Such themes were once a part of the Dutch comprehensive healthcare for new mothers (i.e., advice that is no longer a part of the formal parenting curriculum or well-baby checks) and remain a cultural tradition passed on from the 1920’s (Super et al., 1996). In contrast, American families placed importance on innate characteristics (e.g., temperament), developmental achievements (e.g., consolidated sleep or sleeping through the night), problems with irregular sleeping patterns, and strategies for getting babies to sleep. The Dutch and American themes were evident in the infant sleep patterns that emerged across the two cultures. The Dutch babies experienced “more sleep in the opening years of life. The [differences] in total sleep [were] 2 hours per day at 6 months of age, ...[and] Dutch children [went] to bed nearly an hour earlier than their U.S. counterparts” (Super et al. 1996, p. 456). While the Dutch children spent 61% of their time in “quiet arousal,” infants in the American sample spent the majority of their time in “active alertness” (Super et al., 1996, p. 458). Overall, differences in arousal and sleep behaviors across the two cultures were considered a direct reflection of the parental ethnotheories in each

cohort: Dutch families valued independent learning (i.e., less direct interaction for fear of “spoiling” their babies) while Americans valued stimulation for learning (i.e., more direct and affectionate interaction patterns), both yielding different sleeping patterns (Super et al., 1996, p. 462).

Infant sleep location. Depending on the setting and beliefs associated with a particular context, sleep location and resulting sleep quality and caregiver satisfaction will vary. Moreover, despite controversy surrounding the topic of room- and bed-sharing in Western, industrialized contexts, families in these settings are consistently engaging in the practice of co-sleep (Abbott, 1992; Ball, 2002; Blair & Ball, 2004; Brazelton & Sparrow, 2003; Lindgren, Thompson, Häggblom, & Milerad, 1998; Lozoff, Wolf, & Davis, 1984; McKenna & Volpe, 2007). Beyond safety and health-related concerns, some commonly held Western cultural beliefs indicate that sleeping alongside adult caregivers is a maladaptive, inappropriate, and forbidden practice, filled with the potential to over sexualize and psychologically damage children (Brazelton & Sparrow, 2003; Lozoff et al., 1984; McKenna, 2007; Morelli, Rogoff, Oppenheim, & Goldsmith, 1992; Shweder, Jensen, & Goldstein, 1995; Sobralske & Grubber, 2009). In addition to underlying cultural codes stating that parent–child co-sleeping and bed sharing is detrimental and taboo, the literature has raised concerns that these practices will hinder children’s independence and autonomy (Germo, Chang, Keller, & Goldberg, 2007; Morelli et al., 1992; Sadeh, Mindell, Luedtke, & Wiegand 2009). For example, in their investigation of sleeping practices in U.S. and Highland Mayan communities, Morelli et al. (1992) found that U.S. mothers’ choices were rooted in a cultural desire to “train babies to be independent and self-reliant from the first few months of life,” as it would be

challenging to break an established habit of sleeping together (p. 611). A practice such as solitary sleep is thought to support an infant in attaining independence, a Western cultural ideal that instills helpful qualities in a child throughout the lifespan (Keller & Goldberg, 2007). Likewise, an exploration of sleeping patterns and parental strategies used by American and Canadian families revealed that when caregivers engaged in consistent preparatory rituals and routines (e.g., singing, nursing, or reading) that encouraged independent behavior, such as solitary sleeping and self-soothing, babies exhibited longer and more concentrated amounts of sleep (Sadeh et al., 2009). The approach of implementing a stable set of predictable events prior to sleep has been effective in other studies of Western families (e.g., Anders et al., 1992; Goodlin-Jones et al., 2001; Mindell, Meltzer, Carskadon, & Chevrin, 2009a; Mindell et al., 2009b; Staples, Bates, & Petersen, 2015; St James-Roberts et al., 2001, etc.). Recalling the previous literature, correlations were uncovered between implementing consistent bedtime routines and encouraging self-soothing, both of which led to increased sleep duration (e.g., Anders et al., 1992; Mindell et al., 2006; St James-Roberts, 2012; St James-Roberts et al., 2001, etc.).

Interestingly, many bed- or room-sharing studies have determined that caregivers living in non-Western, industrialized settings are more prone to share sleep in some capacity with their infant or young child. Reasons for this behavior often include the ease of breastfeeding, increasing a feeling of closeness within the familial context, and perpetuating existing cultural ideals. For example, in 11 of the 12 communities in their longitudinal study spanning the 1950s to 1980s, Whiting and Edwards (1988) observed that infants consistently shared a bed with their parents until they were done nursing.

Their sample consisted of numerous communities located in 12 different countries (e.g., Liberia, Kenya, India, Mexico, the Philippines, Japan, and the United States), and the authors studied approximately 20–50 households in each location. The findings revealed that no American families across 24 households co-slept or shared a bed. Similarly, Caudill and Plath (1966) uncovered a high rate of bed sharing in urban Japanese families. In their selection of families across three cities in Japan ($n = 323$), this custom began in infancy, and participants indicated that they rarely slept alone, a practice carried well into adulthood. Japanese caregivers reported that sleeping with their children was an important precursor for the development of interpersonal relationships, a culturally salient belief. In addition, Morelli et al. (1992) found that all participating Mayan mothers in their study engaged in bed sharing with their babies throughout the first year of life, and well into the second. More than half of the Mayan toddlers also shared a bed with both parents, a practice that the Morelli and colleagues (1992) attributed to the embedded cultural belief that children should not be left alone.

Perception of problematic sleeping practices. Gaskins (2006) outlined cultural differences in caregiver perceptions and interaction patterns. One specific example related to the first two months of life when infants employ crying as a method for cueing parents. Substantial differences existed in how caregivers took action, and while Euro-American caregivers reacted to nearly all expressions of an infant's "inner experience," (i.e., the infant's subjective emotions and experiences) Yucatec Mayans and Gusii of East Africa were apt to assess the true nature of an infant's crying (i.e., a baby cries when hungry, thirsty, sick, or in pain), with attention paid more to negative expressions of emotion (Gaskins, 2006, pp. 282-283).

Mindell and colleagues (2010) conducted an expansive web-based survey of families in 17 countries ($n = 29,287$), specifically inquiring about infant and toddler sleep problems from parents. Disparities in the amount of problems reported were large, with only 10% of Vietnamese families indicating sleep problems for young children vs. 76% of Chinese caregivers reporting issues. Interestingly, contrary to other research that suggests co-sleeping infants display more problematic sleep behaviors, sleep location (i.e., bed- or room-sharing) was not associated with caregiver opinion about whether children exhibited sleep problems. In a Brazilian study, Santos, Mota, and Matijasevich (2008) found that while approximately 50% of mothers were bed-sharing with their one-year-olds and being consistently awoken throughout the night, only 16% of the sample indicated that night waking was a problematic behavior that impacted their livelihood.

Results from a meta-analysis conducted by Tie et al. (2010) found that multiple cultural influences impact sleep behaviors and quality for Chinese infants and children. Vast differences emerged across cultural contexts and settings. Overarching cultural beliefs about the importance of interdependent relationships between children and their caregivers were reflected in the frequent practice of bed-sharing and assisting young children to fall asleep. Differences in sleeping practices were evident across certain ethnic groups, as “co-sleeping was correlated with sleep problems ... in ethnic minority groups;” however, the ethnic minority groups also indicated higher levels of overall sleep problems, suggesting that, for an extremely common Chinese sleep practice, other confounding variables were the cause of caregiver dissatisfaction (Tie et al., 2010, p. 192). Tie et al. (2010) also determined that socioeconomic status (SES) might impact quality of sleep for Chinese infants and children. With an increase in population density,

space constraints may have led to overcrowding, and potentially disrupted sleep. Other SES factors included level of maternal education, father's social class, and adequate ventilation in children's bedrooms. Taken together, Tie and colleagues (2010) stated, "Cultural differences mainly affect children's sleep patterns. ... Habits or customs could have a positive or negative effect on children's sleep practices. ... [Overall] sleep problems ... are not only influenced by biological factors, but also by cultural, social, and family factors" (p. 196). Related to SES and in contrast to Tie and colleagues (2010), Messer and Richards (1993) wrote that "different types of investigations have consistently failed to find an association between sleeping difficulties or night-waking with [SES];" however, the bulk of their analysis came from ethnically homogenous samples, and disparities were found when samples included families from different countries of origin (p. 160).

Caregiver Adjustment to Sleep Location

Culture influences how parents interpret and respond to babies' behaviors and constitutional characteristics, and also impacts caregiver socialization goals and the meaning they assign to infants' developmental changes (Carlson et al., 2004). Like the role of maternal well-being or infant temperament in how well a baby sleeps, culture also dictates how caregivers feel about crying and choose to handle nighttime waking and signaling, and caregiver beliefs related to sleep location. Related to caregiver ideals, Rothrauff, Middlemiss, and Jacobson (2004) examined familial sleeping practices in a sample of American and Austrian participants, specifically focusing on co-sleep in early childhood and resulting developmental outcomes, marital satisfaction, and parenting attitudes. The Sleep Habits Questionnaire was used to assess sleeping behaviors and

locations, and the Parental Attitudes Towards Child Rearing and Kansas Marital Satisfaction Questionnaire measured caregiver variables. Results of the questionnaires revealed that sleeping locations differed by context, with American infants and toddlers more often sleeping solitarily and Austrian children room-sharing with their parents. Related to this difference, the authors surmised that the

Tendency toward solitary sleeping arrangements in American families may have reflected cultural attitudes toward co-sleeping [as] many well-known practitioners have advised American parents against sleeping with their infants or even placing them in the same room with the parents ... due to the belief that co-sleeping fosters a child's dependence on the parents. (Rothrauff et al., 2004, p. 135)

The authors further determined satisfactory social competence across both samples, suggesting that sleep location does not impact social-developmental outcomes (Rothrauff et al., 2004). American marital satisfaction was higher when their toddlers slept solitarily, while Austrian families expressed “relatively high levels of marital satisfaction in terms of room sharing and gradual transition to solitary sleeping locations during toddlerhood,” highlighting both the cultural beliefs and level of agreement between partners about where children should sleep throughout the night (Rothrauff et al., 2004, p. 137). Likewise, in a purely American sample, Germon and colleagues (2007) discovered that for U.S. mothers and fathers of solitary sleepers, the choice to have their child sleep solitarily was made to increase the development of independence. Caregivers in both samples exhibited similar satisfaction and sleep quality as it related to their conscious decision to sleep separately from their baby. In a recent American study examining the impact of maternal marital and emotional adjustment to parenthood and the impact of infant sleep location during this transition, Teti and colleagues (2015) found that bed-sharing mothers experienced higher levels of partner discord and poorer co-parenting

agreement. The authors found that “there was a strong shift in the number of infants who moved from non-solitary to solitary sleeping arrangements from 1 to 6 months, which is consistent ... with Western cultural norms that value solitary infant sleep” and over 90% of the mothers in the study who engaged in this practice at both one and six months “strongly preferred their current sleep arrangement ... compared with mothers” who co-slept in some capacity (Teti, Crosby, McDaniel, Shimizu, & Whitesell, 2015, p. 171). Co-sleeping mothers also endorsed higher levels of partner disagreement and depressive symptoms, highlighting the importance of agreement between caregivers when it comes to sleeping practices.

Ball (2002) found that caregivers in the United Kingdom ($n = 253$) who had higher education and income levels made a “conscious and pre-planned decision to bedshare ... [and] expressed their opinions that this ‘family bed’ ideology set the tone for a relaxed and intimate family relationship, and reflected a permissive parenting style that some educated and well-off parents in [their] sample wished to promote” (p. 217). These children were welcomed in their parents’ beds, even in the presence of other siblings or pets. McKenna and Volpe (2007) conducted an Internet-based survey study ($n = 200$) of White, middle-class women from the United States, Canada, the United Kingdom, and Australia. Besides indicating that bed sharing increased the ease of breastfeeding, “respondents ... felt strongly that bedsharing enhanced or strengthened the emotional connection with their infant,” using such words as “comforting, peaceful, loving, [and] protective, and a mechanism by which those emotions could be sustained and/or enhanced” (McKenna & Volpe, 2007, pp. 367–368). Similar to parents in other investigations (Abbott, 1992; Ball, 2002; Caudill & Plath, 1966), mothers in this sample

expressed pleasure from bed sharing with their baby, as it “allowed them to compensate for daytime separation by promoting attachment and bonding through nighttime contact and affection” and also improved overall sleep-related satisfaction (McKenna & Volpe, 2007, p. 368).

When sleeping practices are not aligned with cultural or familial ideals, the result is often dissatisfaction with and a reduction in sleep quality for infants, caregivers, or both. Ramos, Youngclarke, and Anderson (2007) explored caregiver attitudes from 139 families related to their child’s propensity to co- or solitarily-sleep. The authors discerned that 67% of the 44 reactive co-sleeping families (i.e., those who chose a sleeping arrangement in reaction to circumstances, not proactively according to their values) expressed some level of dissatisfaction with their arrangement. Similarly, Ball’s (2002) findings revealed that of the 47 non-breastfeeding bed sharers in their sample of 253 families, 26 (55%) did so due to their child’s sleep problems. In addition, 18 (69%) of those 26 families reactively engaged in the practice because of their babies’ protesting. Sadeh and colleagues (2009) revealed that parents who reported poorer quality of child sleep were also bed sharing as a reactive approach to address their child’s sleep problems. Lozoff et al. (1984) compared the sleeping practices of Euro-American and African American families. They suggested that for the Euro-American sample, it might not have been the act of bed sharing that caused dissatisfaction with sleep, rather, inconsistent practices could have led to Euro-American parents’ ambivalence toward co-sleeping. The African American families were more likely to proactively engage in bed sharing practices than were their Euro-American counterparts, and they noted higher levels of satisfaction with their sleeping practices and quality. Counterline and Teti (2010) found

that even when mothers were getting adequate overnight sleep, their feelings about sleep location were impacted by perceived and experienced partner criticism. Similarly, Taylor and colleagues (2008) examined the association between infant sleeping arrangements and the quality of mother–child interactions in a sample of 70 Euro-American infant–mother dyads. The biggest determinant of positive dyadic interactions at nine-months related to consistent (co- or solitary-) sleeping practices when their babies were six-months of age. These studies suggested that caregiver sleep satisfaction and the quality of infant sleep are reduced when families engage in reactive sleep behaviors.

The AAP and Sharing Sleep with Infants

As one of the leading purveyors of infant safety standards, the American Academy of Pediatrics (AAP) is responsible for widely disseminating information to medical professionals, families, childcare facilities, and child practitioners about optimal caregiving techniques. The large amount of research, literature, and publications put forth by the AAP (e.g., articles/tips/handouts for pediatricians, family-service providers, and caregivers, etc.) means that their messages fall under the dominant Western medical discourse, often considered within Westernized society as the standard against which all caregiving should be held. Their recommendations related to infant sleep approaches and practices have been extremely clear, and take into account a known primary cause of infant death during sleep: Sudden Infant Death Syndrome (SIDS). Specifically, SIDS is defined as “the sudden death of an infant under 1 year of age, which remains unexplained after thorough case investigation, including performance of a complete autopsy, examination of the death scene and review of the clinical history” (Willinger, James, & Catz, 1991, p. 681). In 1992, following investigations of unexplained infant deaths in

Europe and Australia, the AAP took on the recommendation that infants be placed only on their backs for sleep (i.e., the supine position; Kattwinkel, Brooks, Myerberg, & the AAP Task Force on Infant Positioning and SIDS, 1992). Since the start of the “Back to Sleep” campaign put forth by the National Institute of Child Health and Human Development in 1994, SIDS rates have decreased but continue to be one of the leading causes of death for infants less than 1 year old (AAP Task Force on SIDS, 2005).

Additionally, the AAP has consistently recommended that parents refrain from the practice of bed sharing with their infants (AAP Task Force on SIDS, 2005, 2011a, 2011b). More recently, the AAP has cited the occurrence of Sudden Unexpected Infant Death (SUID), “a term used to describe any sudden and unexpected death, whether explained or unexplained (including SIDS), that occurs during infancy” (AAP Task Force on SIDS, 2011a, p. 1030). In relation to sleep, they noted,

The distinction between SIDS and other SUIDs, particularly those that occur during an observed or unobserved sleep period (sleep-related infant deaths), such as accidental suffocation, is challenging and cannot usually be determined by autopsy alone. Scene investigation and review of the clinical history are also required. A few deaths that are diagnosed as SIDS are found ... to be attributable to metabolic disorders or arrhythmia-associated cardiac channelopathies. (AAP Task Force on SIDS, 2011b, p. 1342)

In the newest set of recommendations, the AAP maintained that the optimal approach to sleep in the first year of life entails

The arrangement of room-sharing without bed-sharing, or having the infant sleep in the parents’ room but on a separate sleep surface (crib or similar surface) close to the parents’ bed ... [is] most likely to prevent suffocation, strangulation, and entrapment, which may occur when the infant is sleeping in the adult bed. (AAP Task Force on SIDS, 2011b, p. 1350)

Thus, as a leading entity in Western, industrialized settings in the United States and abroad, the AAP maintained a stance that babies should not share sleep in beds with

caregivers; as an organization, they espoused the benefits of room sharing as a method for caregivers to support and streamline breastfeeding, and monitor infant well-being throughout the night (AAP Task Force on SIDS, 2005). Related to the AAP's recommendation that caregivers abstain from bed-sharing with their infants, a recent large scale, cross-sectional study presented new information regarding sleeping location risks based on postmortem analyses of infant sleeping fatalities ($n = 8,207$) (Colvin, Collie-Ackers, Schunn, & Mood, 2014). The researchers utilized data from the National Center for the Review and Prevention of Child Deaths (NCRPCD) Case Reporting System, which included data from 43 states in the U.S. Infant fatalities for babies zero-to three-months (i.e., younger infants) and "four-months to 364 days" (i.e., older infants) were included (Colvin, et al., 2014, p. 407). Overall, 69.2% of the fatalities were caused by bed-sharing; however, "deaths occurring in the younger infants were significantly more likely to be associated with bed-sharing" (i.e., 73.8% of the overall younger sample) while fatalities in older infants were more likely to be caused by objects (e.g., blankets or soft toys) in the sleeping environment (i.e., 39.4% of the overall older sample) and sleeping in a prone position (i.e., 42.2% of the overall older sample) (Colvin et al., 2014, pp. 406 and 407, respectively). The authors noted that, despite existing literature claiming how measures can make sharing sleep a safe practice, "such as eliminating soft bedding from the adult bed, ... our findings [raised] questions about the validity of this assumption" (Colvin et al., 2014, p. 409). Together with the AAP, Colvin and colleagues (2014) presented important information and safety guidelines regarding the practice of bed-sharing.

Clearly, like all other factors offered, socio-cultural variables, or those that attributable to the Meso- Exo-, and Macrosystems, play a significant part in the development of infant sleep and caregivers' satisfaction with their baby's sleeping behaviors. Additionally, the Chronosystem continually influences sleeping practices, as cultural beliefs and norms about sleep adjust and change over time. Where co-sleeping or night waking may be considered challenging in one cultural context (Rothrauff et al., 2004; Teti et al., 2015), another setting (or set of caregivers) may consider it a normal, developmentally appropriate aspect of infancy (Abbott, 1992; Ball, 2002; Caudill & Plath, 1966; Morelli et al., 1992; Santos et al., 2008). Moreover, "parents' cultural background, as well as their individual characteristics and circumstances, influence parents' subjective judgement about which infant behaviours are problematic," illustrating how interactions among these variables contributes to the development of sleep in infancy (St James-Roberts, 2012, p. 166).

Conclusion

The literature presented reviewed the infant, caregiver, and socio-cultural variables that impact the development of sleep in infancy. Ecological Theory demonstrated how a specific construct like sleep evolves and changes as a result of the interaction among these factors, each one contributing and each one receiving influence from the others. The passage of time or the Chronosystem, captures how individuals and their caregivers, as well as their contexts, change and develop, all processes that impact the advancement of sleep. While sleep in infancy and early childhood is elusive, variable, and constantly fluctuating, there is a clear propensity for sleep patterns to stabilize as "humans are diurnal beings who are typically active during the day and quiet

at night. Through eons of evolution, human physiology has come to reflect this day-night rhythm” (Shonkoff & Phillips, 2001, p. 97). As noted in the introduction, this natural progression may take longer for some individuals to experience, and in the meantime, caregivers are left possibly feeling exhausted, frustrated, and unsure of how to handle their baby in sleep.

The first year of life is truly dynamic, with sleep changing at an extreme pace. An infant once labeled a “good sleeper” may begin signaling his parents more frequently as he experiences a developmental shift or learns a new skill. Time is the constant, and babies go in and out of particular sleep behaviors, with the majority of infants sleeping well, as described by parents and researchers, once they reach their second-year of life. Some individuals experience sleep disturbances throughout early childhood, but this is true for only a small percentage of children (Byars et al., 2012; St James-Roberts, 2012). In the first year, observable changes in sleeping behaviors occur around 12-weeks and again at five-months of age, and factors like attachment relationships and how caregivers approach bedtime routines work in tandem with natural developmental tendencies and trajectories. Overall, one of the biggest determinants of consolidation is when infants put themselves to sleep and learn the skill of self-soothing upon waking overnight (Anders et al., 1992; Mindell et al., 2006; St James-Roberts, 2012; St James-Roberts et al., 2001).

Innate infant characteristics, such as temperament and regulatory capacity, play out at the individual and Microsystem levels. Temperament is responsible for the type of sleep infant’s experience (De Marcas et al., 2015; Novosad et al., 1999, Scher et al., 2008), and influences how caregivers view their babies and rate their sleep quality (Kirjavainen et al., 2004). Temperament also impacts how caregivers approach,

understand, and feel about dyadic relationships. As a sleep-related variable, temperament effects how parents view their baby's sleep habits; those who are qualified as temperamentally "fussy" tend to be rated as poorer sleepers who engage in more disrupted, fragmented, and less-optimal sleeping patterns, even when objective data proves an infant is otherwise sleeping similarly to their temperamentally "easy" counterparts (Kirjavainen et al., 2004; Spruyt et al., 2008). In some cases, inherent infant characteristics yield less secure attachments or increased signaling at night (and subsequent sleep deprivation for parents) in babies who are more alert and active in sleep (Zentall et al., 2012).

Additionally, there are links between maternal well-being and infant sleep. Specifically, the GOF in dyadic relationships supports or hinders the quality of sleep for both mothers and babies. According to maternal report and objective indices such as actigraph recording of overnight sleep, infants sleep better when their mothers are psychologically available and comfortable with their caregiving responsibilities (Armitage et al., 2008; Teti & Crosby, 2009; Tikotzky & Sadeh, 2009). Mothers' perceptions and cognitions related to sleep also play a role, as those exhibiting higher levels of maternal anxiety tend to quickly respond to their babies. In some studies, mothers responded with rapid speed to vocalizations, even in cases when infants were not distressed, which was linked to lower levels of self-soothing behavior and frequent overnight waking (Teti & Crosby, 2012; Tikotzky and Sadeh, 2009).

Sociocultural variables play a significant part in the development of infant sleep as well as caregivers' satisfaction with and perceptions of their baby's sleeping behaviors (Rothrauff et al., 2004; Santos et al., 2008; Super et al., 1996; Teti et al., 2015; Tie et al.,

2010). Depending on the setting and culture, night waking varies from normative to maladaptive, ultimately influencing the manner in which caregivers handle sleep and how they come to rate sleep quality in their household (Abbott et al., 1992; Morelli et al., 1992). Culture influences how crying frequency, feeding needs, and sleep is managed in a given setting; families may choose to sleep alongside their baby to perpetuate a set of cultural norms and beliefs, including ease of feeding and instilling closeness. Likewise, these cultural scripts also determine if families sleep separately from their babies (Rothrauff et al., 2004). Notably, in both cases, babies tend to grow and develop into functioning members of their community (Cortesi et al., 2004; Okami et al., 2002).

Sleep is an essential part of healthy development. The literature reviewed indicated how multiple contributors influenced the advancement of sleep, even before a baby is born. By helping families and practitioners understand how sleep develops and sharing information about normative sleep behaviors, interventions and recommendations that support sleep consolidation, it is possible to overcome the compounding effects of sleep deprivation, caregiving confusion, and general uncertainty new families face once they bring an infant home.

CHAPTER III

METHODOLOGY

This chapter will describe the research design, the sample of participants, instruments, and the data analysis plan.

Research Design

This study implemented an explanatory sequential research design (Cresswell & Clark, 2011), whereby a large, Internet sample provided survey data related to Western culture approaches to sleep and helped inform the process of subsequent participant recruitment of five mother-infant dyads who were examined in extensive qualitative detail. Together, the mixed-methods approach yielded generalization (survey) and particularization (case study) of infant sleep information (Stake, 1995).

Justification of Methodology

The research presented in the previous two chapters highlighted the significance of infant sleep and numerous factors known to impact sleep consolidation in infancy. Methodologically, there was an apparent lack of qualitative approaches to studying sleep. Moreover, caregiver reports and objective sleep measures often provided data about the development, issues and perceptions about sleep, without an embedded understanding of the phenomenon of sleep.

A mixed-methods approach utilizing both case study and survey research lent itself to triangulation across data sources (Yin, 2009). Specifically, “multimethod studies can pose complementary questions that are to be addressed by different methods. Most commonly, case studies are used to gain insight into causal processes, whereas surveys provide an indication of the prevalence of a phenomenon” (Yin, 2009, p. 175). Beyond expanding on existing sleep literature or filling gaps in methodology, a case study and survey combined approach helped to illuminate the “complexity of a social phenomenon” and illustrated aspects of infant sleep that were not known in existing research (Mabry, 2008, p. 217). Said another way, case study provided a more intimate and realistic cross-section of maternal-infant interactions and behavioral patterns that otherwise might not have been extrapolated from purely quantitative methods (Merriam, 2009). The inherent biases and inaccuracies that often result during self-report measures were limited. Additionally, survey data added to the understanding of the phenomenon within a population. The mixed-methodological approach in this study provided a profound examination of sleep behaviors through an Ecological Theory lens, allowing the researcher to ascertain how individual, caregiver and environmental factors influenced the development of sleep. This in-depth and time consuming process allowed for a more accurate determination of factors that influence infant sleep consolidation at five- to seven-months of age.

Survey

An Internet survey was implemented in order to obtain broad information about sleeping habits in five- to seven-month-olds, and investigated the universality of consolidation at this age. Survey data included basic demographic information, questions

regarding beliefs about sleep and household arrangements, and caregiver satisfaction with current practices.

Case Study

The case study approach employed a “single ... embedded case-study design,” whereby multiple units of analysis (i.e., mother-infant dyads) made up the case that was studied and were bound by the similar context from which they were sampled (Yin, 2009, p. 46; Thomas, 2011). Further, a “revelatory case” approach was implemented to allow the investigator “an opportunity to observe and analyze a phenomenon previously inaccessible to social science inquiry” (Yin, 2009, p. 47). Given that the five- to seven-month age range is often considered a common time for sleep consolidation, while also knowing that major developmental changes take place at this age, case study helped provide an in-depth examination of all contributors that either supported or inhibited sleeping behaviors. Case study dyads also provided multiple sources of data: observational, questionnaires, sleep logs and interview information.

Sample

Survey

Participants for the survey sample were originally going to be recruited via popular parenting websites or social media sources, including Parents.com, Parenting.com, or Facebook.com. At the time of IRB approval, it was uploaded onto the researcher’s Facebook page and was subsequently “shared” and reposted by others (individuals and groups) on Facebook who had access to the researcher’s page. One parenting Facebook organization for new mothers located in Chicago, Illinois was contacted by the researcher and agreed to post the information after a phone conversation

with the individual who runs an in-person parenting group. She was sent the posting information in an email and posted it on the group's Facebook page. The post on Facebook asked caregivers if they were interested in completing a brief survey related to infant sleep and their five- to seven-month old baby's sleep behaviors. The link took them to a "SurveyMonkey" off-site survey form (i.e., www.surveymonkey.com). The survey link was open for eight days, and a total of 130 people participated. After cleaning the data to determine if individuals were eligible to participate, the remaining sample was 88.

Entry and exclusion criteria. Given that the researcher is located in the United States, it was assumed that participants would be individuals living in a similar Western, industrialized setting. According to what they reported via demographic information, participants needed to be at least 18 years of age, English literacy proficient, and caregivers to infants five- to seven-months age. Due to the potential for variance when the five- to seven-month sleep shift occurs in infancy (St James-Roberts, 2012), those who fell within two weeks of either age were included in the sample. Babies needed to be healthy, born full term, and without any significant birth complications. Participants were not included in the study if babies had a known neurological disorder (e.g., cerebral palsy, hydrocephaly, seizures, blindness) or genetic disorder (e.g., Down syndrome, Fragile-X-syndrome). Two of the 88 survey participants that made up the sample did not respond to the questions "Does your baby have a neurological (e.g., cerebral palsy, hydrocephaly, seizures, blindness) or genetic disorder (e.g., Down syndrome, Fragile-X-syndrome)?" They were included in the final sample because they had otherwise met entry criteria and the rest of their survey information was complete.

Case Study

The participants for the qualitative portion of this study were recruited through Meriter Health Services, which is comprised of multiple healthcare facilities associated with the University of Wisconsin in Madison, Wisconsin. According to the U.S. Census Bureau (2014), Madison is a mid-sized Midwestern city, with a largely Euro-American population (approximately 79%). The researcher set out to recruit 6-10 mother-infant dyads coming to their pediatrician's office for two- or four-month well-baby checks. In collaboration with local pediatricians, the researcher was able to leave materials with clinic staff for recruitment purposes (e.g., fliers provided to mothers in the exam room) but due to clinic policy, was unable to make direct contact with potential mothers in the waiting room. Mothers that expressed interest provided their contact information. The researcher had weekly contact with the clinic staff and picked up contact forms as they were completed. As stated previously, mother-infant relationship variables and maternal mental health are particularly salient in the development of sleep. While useful information could have been gathered from paternal caregivers, time and budgetary constraints made it challenging to include them in the proposed study. Recruitment occurred over four months; during that time, a total of eight mothers completed contact forms. All eight were contacted, two did not return the researcher's attempts at establishing contact, and one declined after learning more about the study. A total of five ($n = 5$) mothers were included in the final sample.

Entry and exclusion criteria. The main dyadic entry criterion was infant age. In the original design of this study, the researcher had proposed to contact potential participants approximately two weeks before their infant reached the age range of five- to

seven-months; however, due to the low recruitment numbers, mothers were contacted immediately after completing an interest form. For those who were still interested, the researcher discerned whether mothers categorized their babies as “Problem Sleepers” or “Non-Problem Sleepers” using a brief infant sleep related screening tool (Appendix B: Prospective Dyad Form). The hope was to recruit at least three dyads that self-categorized as “Problem Sleepers”, with the remaining dyads categorized as “Non-Problem Sleepers”. The final sample included two Problem and three Non-Problem Sleepers. Dyads contained a mother who was fluent in English and at least 18 years of age, and who had infants who were healthy, full term, and born without significant birth complications. Participants were not included in the study if babies a neurological disorder (e.g., cerebral palsy, hydrocephaly, seizures, blindness) or a genetic disorder (e.g., Down syndrome, Fragile-X-syndrome).

Procedures

Survey

Following approval from the Institutional Review Boards (IRB) at Loyola University-Chicago to conduct the study, a survey link was uploaded to the researcher’s social media page and another Chicago-based parenting organization’s page. The researcher received alerts whenever a survey was completed, and kept the link open until a suitable sample was gathered. The survey took participants approximately 10-minutes to complete. Additionally, if they chose to provide an email address, participants could click on a separate SurveyMonkey.com page and enter a drawing to win one of four \$25 gift cards for their participation. In the original design of the study, selected participants were to receive an electronic gift card; however, because they did not include a full name,

the gift cards were sent through the mail. Winners were contacted via email and asked to share a mailing address. Two of the initial four selected did not respond, and two new winners were drawn.

Case Study

Once IRB approval was obtained and the survey was underway, the recruitment process was scheduled to begin. Due to delays from the Meriter IRB committee in receiving approval, the survey sample was gathered and the link was closed before case study recruitment began. Mothers who met entry criteria provided verbal assent over the phone and agreed to a date and time conducive to their schedules that allowed them to complete the paper-and-pencil materials. They were assigned an identification number and received a packet of questionnaires, sleep-log materials and an informed consent document in the mail prior to the initial meeting. Questionnaires took participants between 30 and 45 minutes to complete. During the meeting, a completed sleep log and finished questionnaires were collected. All but one mother had every assessment item completed at the meeting; one mother had waited to complete the sleep log because her baby had been sick. She was provided a self-addressed stamped envelope and sent it to the researcher in the mail. Four of the five mothers agreed to be audio recorded for the face-to-face semi-structured interview. Finally, a naturalistic dyadic observation was conducted at some point during the in-person meeting, and three of the five mothers agreed to be video recorded. As proposed, all data was collected and completed on the same day with the exception of the one mother who sent her sleep log. For any items left incomplete on the paper-and-pencil measures, the researcher followed up and recorded their responses over the phone. Additionally, for mothers who endorsed elevated levels

of depression, anxiety or worry, the researcher reached out and provided a list of resources. Participants all received a thank you gift card of \$40 and a small item for their baby in the mail four weeks after completing the assessments.

Instrumentation

Survey

Internet Sleep Survey (Appendix A). The Internet Sleep Survey was designed for this study for use with the survey sample. It asked caregivers questions related to their broader beliefs about infant sleep, how their baby is currently sleeping, and their current level of satisfaction with sleep arrangements. The BISQ (see description below) was also embedded in the survey. After piloting, feedback indicated that the three available options on the BISQ for caregivers when asked “Do you consider your child’s sleep as a problem?” were insufficient; subsequently, a fourth option (“A problem”) was included with the original three (“A very serious problem”, “A small problem” and “Not a problem at all”). The addition of the fourth option also made it possible to dichotomize responses to this question into two variables. Also embedded was the Prospective Dyad Form (Appendix B) to help discern Problem and Non-Problem Sleeper respondents in the survey sample. Some of the items were also derived from the Infant Sleep Interview (Appendix N). This survey also gathered basic demographic information from those participating. Survey items were presented in a “Yes/No”, drop-down menu, and fill-in-the-blank format for ease of participant use. Examples of questions included: “What is the age which babies should sleep through the night?” “In thinking about your friends or family members, does your baby wake up more than other babies?” and “Are you comfortable using the cry-it-out method with your child?”

Case Study

Mothers in this study completed numerous paper-and-pencil measures related to their infant's sleep, postpartum depression and anxiety, parenting self-efficacy, their infant's temperament and their level of social support. While some of the questionnaires provided one overall score, other assessment tools provided multiple indices. Specific indices were chosen for analysis.

Prospective Dyad Form (Appendix B). As noted above, mothers were contacted to determine if they are still interested in participating and completed this brief screening tool in order to determine whether mothers-infant dyads were categorized as "Problem Sleepers" or "Non-Problem Sleepers". Specifically, mothers who responded "Yes" to 10 of 14 sleep-related concerns, and provided an overall sleep-related stress score of 4 or 5 out of a possible 5 were considered Problem Sleepers respondents. However, in the sample of five, no mother endorsed a number higher than 3.5. This measure was derived from the Fussy Baby Network New Orleans Gulf Region Implementation Study – Family Perspectives: Prospective Family Form. Questions asked if mothers were concerned (prior to having their baby) or have felt concerned (since their baby was born) about various aspects of sleep, such as amount, competency with handling sleep, and the impact of their baby's sleep on them or others in the household.

Participant Demographic Form (Appendix C). Along with the packet of assessment tools participants received in the mail, there was also a general demographic form. Items included: age, race, ethnicity, marital status, education level, income range and employment status.

Sleep Log (Appendix D). Mothers received a sleep log with the packet of assessment tools. They were asked to complete a log of their babies' daily routines and sleep habits for five days prior to the interview/observation day. For working mothers, they used reports from nannies or daycare providers to include information about daily routines such as naps and mealtime information.

Edinburgh Postnatal Depression Scale (Appendix E). Mothers were asked to complete the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) in order to identify depressive symptoms in the postnatal period and to identify any women who needed a referral for additional mental health services. The EPDS is a commonly implemented measure in research and clinical settings, and is appropriate for use with mothers up to one-year postpartum. The instructions ask mothers to answer 10 questions about how they have been feeling in the past 7 days. Some of the items include, "I have been able to laugh and see the funny side of things" and "I have been so unhappy that I have had trouble sleeping" with a likert-type scale of four responses ranging from "Most of the time" to "Hardly ever." In tests of psychometric properties, broad implementation of the EPDS has revealed that it is a reliable self-report measure, with high split-half ($\alpha = .88$) and internal consistency ($\alpha = .87$) reliability scores (Downie et al., 2003). High correlations were discerned in tests of convergent validity ($r = .75$) between the EPDS and another widely used measure of postpartum depression (i.e., Center for Epidemiologic Studies – Depression Scale) (Regmi, Sligl, Carter, Grut, & Seer, 2002).

Postpartum Worry Scale – Revised (Appendix F). The Postpartum Worry Scale – Revised (PWS-R; Moran, Polanin, & Wenzel, 2014) is a measure that assesses

postpartum anxiety. The recently revised version includes items about infant health and development, and asks caregivers to rate their concerns in terms of percentages (e.g., 0-10%, 10-20%, etc.). There are no cut scores on the PWSR; rather the overall score is indicative of the variable being measured. A participant's overall score could also be used to make comparisons among a group of respondents. Some of the items include the frequency with which caregivers worry about parenting abilities, finances, harm occurring to their baby, and spending time apart from their baby. Additionally, in a recent validation study of the revised version, moderate to high internal consistency was established across all factors (e.g., coefficient alphas ranged from Time Allocation: $\alpha = .64$ to Health and Development: $\alpha = .88$). Moderate convergent validity was also established by calculating correlations among newly added factors and other existing measures of postpartum anxiety (Moran et al., 2014).

Maternal Separation Anxiety Scale (Appendix G). The Maternal Separation Anxiety Questionnaire (MSAS; Hock, McBride, & Gnezda, 1989) is another measure of maternal anxiety, but also assesses three domains of maternal feelings and cognitions related to separations: (1) Maternal Separation Anxiety, which taps into mothers' distress and concern when separated from her baby, (2) Perception of Maternal Separation Effects on the Child, which reflects her beliefs about her baby's adjustment to separation, and (3) Employment-Related Separation Concerns, which refers to mothers' perceptions concerning alternative caregivers and professional re-entry. Respondents are asked to complete a series of 35 questions on a 5-point scale, ranging from "Strongly Disagree" to "Strongly Agree, whereby a higher score indicates higher anxiety. Sample questions include "I miss holding or cuddling my child when I am away from him/her," "Children

will be afraid in a new place without their mother,” and “My life wouldn’t be complete without a career” (Hock et al., 1989, p. 801). In this study, the Maternal Separation Anxiety and Perception of Maternal Separation Effects on the Child indices were used in the analysis. These two indices related to the PWSR in that they tap into certain aspects of anxiety new mothers may experience in the postpartum period. However, the two measures are distinct in that the PSWR focuses on worry, whereas the MSAS focuses on separation anxiety. MSAS results are meant to be interpreted anecdotally and in comparison to other participants per the creators of this measure. A higher MSAS Maternal Separation Anxiety score indicates more anxiety and guilt related to maternal-infant separations, while lower scores indicate feeling comfortable with separating. Additionally, the MSAS Perceptions index provides a score related to how separations are thought to impact the infant, with higher scores indicating that mothers perceive their baby to struggle more during times of separations. In reliability studies, the MSAS demonstrated moderate correlational strength with other measures of generalized anxiety (e.g., $r = .34$), indicating the tool’s ability to measure a specific type of anxiety. Additionally, the measure displayed moderate to high internal consistency across the three subscales (e.g., coefficient alphas for Subscales 1, 2, and 3 were $\alpha = .90$, $.71$, and $.79$, respectively), and the internal consistency across all 35 items was $\alpha = .88$ (Hock et al., 1989).

Assessment of Parenting Tool (Appendix H). The Assessment of Parenting Tool (APT; Moran, Franklin, Troutman, & Evenson, 2013; Moran, Polanin, & Evenson, in preparation) is a measure designed to assess parenting self-efficacy, or parents’ belief about their caregiving skills with infants and toddlers up to 24-months of age. The APT is

broken into the two larger Competence and Confidence indices. It asks caregivers about how their level of confidence in completing multiple common caregiving tasks and how competent they feel as a parent. Related to accomplishing tasks, participants respond using a likert-type scale of five responses ranging from “Not at all Confident” to “Very Confident”. The APT asks caregivers how confident they feel about diapering, supporting sleep, bathing and encouraging developmentally appropriate play. Related to caregiving competency, respondents use a five-option likert-type scale ranging from “Disagree” to “Strongly Agree”. Competency questions include “I cope well with becoming a parent or having another child,” “I am sensitive to my child’s needs,” and “I have all the skills needed to be a good parent to my infant” (Moran et al., in preparation). Higher APT Competence scores reveal mothers who feel less able to handle caregiving tasks for their infant and understand their baby’s wants and needs, while lower Confidence scores indicate mothers who may struggle with how they perceive themselves in the role of parent. There are no cut scores on the APT; rather the overall score is indicative of the variable being measured. A participant’s overall score can also be used to make comparisons among respondents. In recent validation studies, moderate construct validity was established between Part 1 (confidence items) and Part 2 (competency items), and they were significantly, positively correlated (i.e., at the $p < .01$ level; $r = .59^{**}$ to $.64^{**}$ respectively, with average $r = .62^{**}$), demonstrating that the APT measures what it is supposed to measure. The APT Part 1 and 2 scales have also demonstrated significant positive correlations with other measures of parenting self-efficacy such as the Maternal Self-Efficacy Questionnaire and the Interpersonal Support Evaluation List (Moran et al., in preparation).

Infant Behavioral Questionnaire – Revised (Appendix I). The Infant

Behavioral Questionnaire – Revised (IBQ-R; Garstein & Rothbart, 2003) is a measure of infant temperament. Questions on the IBQ-R are meant to assess inherent reactivity and self-regulation in infants. Specifically, on the IBQR the Surgency (level of infant positive emotional expressiveness; average = 4.91) and Negative Affect (level infant negative emotional expressiveness; average = 3.01) subscales were selected for this study, as either of these areas could potentially impact the mother-infant relationship and maternal stress level (e.g., lower positive expressions could lead to higher stress in the mother). Some examples include: “When visiting a new place, how often did your baby get excited about exploring new surroundings?” “When being held, in the last week, did your baby seem to enjoy him/herself?” and “When patting or gently rubbing some part of the baby’s body, how often did s/he soothe immediately?” Caregivers are asked to report on a 7-point scale the frequency of occurrence of specific infant reactions in concrete situations during the previous week. This format is thought to minimize problems associated with recall, while also limiting biases associated with more global questions that require respondents to aggregate information across contexts or situations prior to answering. A recent review of the IBQ-R found adequate internal consistency across all 14 subscales in male and female caregivers ($\alpha > .70$) and moderate inter-rater reliability was established across 11 of 14 subscales (e.g., $r = .26$ to $r = .46$) (Parade & Leerkes, 2008).

Brief Infant Sleep Questionnaire (Appendix J). The Brief Infant Sleep

Questionnaire (BISQ; Sadeh, 2004) is a measure designed for use in pediatric settings to assess infant sleep. It asks caregivers about their baby’s sleep location (e.g. “Sleeping

arrangement: Infant crib in a separate room, infant crib in parents' room, in parents' bed, or infant crib in room with sibling") and position (e.g., "In what position does your child sleep most of the time?") and time spent in daytime and overnight sleep (e.g., "How much time does your child spend in sleep during the NIGHT (between 7 in the evening and 7 in the morning)?"). There are also questions related to night waking (e.g., "How much time during the night does your child spend in wakefulness (from 10 in the evening to 6 in the morning)?"). The end of the measure asks parents to rate their infant's sleep (e.g., "Do you consider your child's sleep as a problem?"), according to three options from which to choose ("Not a problem at all", "A small problem", and "A very serious problem"). In a two-pronged validation study of the BISQ, the utility of the tool was examined in comparison to sleep logs and actigraph measures, and with a large Internet-based survey (Sadeh, 2004). In one phase of the study, the Internet-based administration of the BISQ adequately measured typical maturational sleep trends (e.g., daytime sleep decreasing with age, etc.). Those rated by their parents as having a serious sleep problem exhibited significant differences from non-problem sleepers in that they demonstrated shorter overnight and daytime sleep, later bedtimes, took longer to settle and were awake more during nighttime hours. In a different phase of the study, high test-retest reliability was established on repeated administrations for the BISQ (e.g., overnight and daytime sleep $r = .82$ and $.89$, $p < .0001$, respectively), and the BISQ demonstrated significant correlations with actigraphy for sleep-onset latency and night waking ($r = .54$, $p < .001$ and $r = .42$, $p < .0001$, respectively) and with daily sleep logs (onset latency as reported by parent on sleep log $r = .61$, $p < .0001$ and night waking $r = .83$, $p < .0001$).

Dyadic Adjustment Scale (Appendix K). The Dyadic Adjustment Scale

(DAS; Spanier, 1976) was designed to evaluate dyadic quality in married and cohabitating couples. It asks respondents to answer questions regarding their level of dyadic consensus (Consensus subscale) (e.g., agreement on handling family finances, making major decisions, etc.), satisfaction (Satisfaction subscale) (e.g., “How often do you discuss, or have you considered divorce, separation or terminating your relationship?”), cohesion (Cohesion subscale) (e.g., “Do you and your mate engage in outside activities together?”), and outward expression of emotion (Affectional Expression subscale) (e.g., “Indicate if either item caused differences of opinions or were problems in your relationship during the past few weeks: Being too tired for sex; Not showing love”). For the current study, the DAS Dyadic Consensus subscale was used for analysis. This subscale was chosen because it is another measure of social/partner support (see the ISEL, below). Lower consensus scores (i.e., below 49.1) indicate lower levels of consensus between mothers and their partners. In an early validation study of the measure, the DAS demonstrated high internal consistency, with the Dyadic Consensus subscale rated at $\alpha = .90$ across 13 items (Spanier, 1976). It also displayed high correlation with another assessment of marital adjust (i.e., Locke-Wallace Martial Adjustment Scale; $r = .86$ and $.88$ for married and divorced dyads, respectively).

Interpersonal Support Evaluation List (Appendix L). The Interpersonal Support Evaluation List (ISEL; Cohen & Hoberman, 1983) is a measure of perceived social support. Respondents are asked to answer questions about the perceived availability of material aid (Tangible subscale) (e.g., “If I needed help fixing an appliance or repairing my car, there is someone who would help me”), level of positive comparison

they make between themselves and others (Self-Esteem subscale) (e.g., “Most of my friends are more interesting than I am”), perceived availability of having another person with whom to talk (Appraisal subscale) (e.g., “There are several people that I trust to help solve my problems”), and rating of having other people with whom to engage in activities (Belonging subscale) (e.g., “I often meet or talk with family or friends”). The ISEL Tangible domain was selected because it explores how many social supports exist for the mothers in this study, while Self-Esteem was chosen because of how it relates to aspects of parenting self-efficacy and factors assessed on the APT. Like the APT, there are no cut scores on the ISEL. Overall scores for the two selected subscales are indicative of the variable being measured. Participant’s overall scores for Tangible and Self-Esteem can be used to make comparisons among respondents. In early validation studies with college students, the authors determined that individuals with higher social support scores demonstrated lower depressive symptoms (and vice versa), and the measure demonstrated moderate to high internal consistency ($r = .77$) and convergent validity ($r = .49$ and $.44$ for Tangible and Self-Esteem subscales, respectively), indicating items on the ISEL relate well to one another and questions measuring specific constructs (like tangible social support) are moderately correlated (Cohen & Huberman, 1983).

Working Model of the Child Interview (Appendix M). The Working Model of the Child Interview (WMCI, Zeanah & Benoit, 1995) is a semi-structured interview that assesses parents’ internal representations of their children, and is designed to obtain caregivers’ feelings about their relationship with their young children. Caregivers are asked about their perceptions and experiences related to their child, their overall impression about their child’s behavior and personality, and their personal, emotional

responses to their child (Sokolowski, Hans, Bernstein, & Cox, 2007). Representations that emerge from the interview are categorized as “balanced”, “disengaged”, or “distorted”, and it is thought that caregivers’ internal representations about their child are affected by various factors such as maternal, child, and demographic characteristics. Several studies have shown concurrent and predictive validity of the WMCI. One examination uncovered strong concurrent relationships between mothers’ WMCI classifications and infants’ Strange Situation Paradigm classifications (i.e., 69% of dyads were in agreement; Cohen’s kappa, a measure of interrater agreement for qualitative items, $K = .50$) (Zeanah, Benoit, Hirshberg, Barton, & Regan, 1994). In one study, 83% interrater reliability ($K = .75$) was established between two coders (Sokolowski et al., 2007), while another study demonstrated 89% interrater reliability ($K = .80$) (Benoit, Zeanah, Parker, Nicholson, & Coolbear, 1997).

Infant Sleep Interview (Appendix N). The Infant Sleep Interview is a semi-structured interview created by the researcher for the study’s purposes and was derived from another sleep-related questionnaire (e.g., Maternal Cognitions about Infant Sleep Questionnaire, MCISQ; Morrell, 1999). Case study mothers answered these interview questions following the WMCI. Questions tapped into cognitions and beliefs about infant sleep and acceptable or expected amounts of sleep for a baby within the five- to seven-month age range, current sleep habits and routines (i.e., naps and bedtime), caregiver competence specifically related to sleep, and the impact of social supports on how sleep is viewed and handled by participants. For families who consider their babies problem sleepers, questions will address what had been working for them prior to changes in sleep behaviors and how their baby currently sleeps.

Data Analysis Plan

Data from both the survey and case study cohorts was stored and analyzed with Microsoft Excel 2013 and IBM Statistical Package for the Social Sciences GradPack (SPSS) 2014.

Research Question 1

In considering Western, industrialized settings while uncovering the occurrence of a phenomenon, what are the broader beliefs in this setting about infant sleep surrounding five-to-seven months of age?

It was hypothesized that the Internet Survey sample would endorse typical Western ideals about when babies should sleep without signaling and that they should sleep separately from their caregivers during the nighttime hours. Descriptive statistics were calculated to attain frequencies, ranges, means and standard deviations for the survey participants. As suggested by Yin (2009), the larger dataset will be used to elucidate the prevalence of parent identified “Non-Problem Sleepers” and “Problem Sleepers” and associated constructs in five- to seven-month-old infants. The sample was larger in comparison to the case study sample, but not heterogeneous. Preliminary analysis of survey data helped to inform the selection of case study dyads, as certain occurrences in sleep practices, beliefs or behaviors became apparent from survey respondents. Additionally, survey data influenced interview questions that the researcher was able to further examine with case study dyads (e.g., follow-up questions related to social support/consensus with friends/family about sleep practices and beliefs about co-sleeping). Survey data was also used to triangulate the case study data, and provided a broader set of findings related to the phenomenon of sleep consolidation in infancy.

Missing data. One hundred and thirty caregivers ($n = 130$) participated in the Internet survey portion of this study; however, after cleaning the data, the remaining usable sample consisted of eighty eight ($n = 88$) caregivers of five- to seven-month-old infants. Potential participants ($n = 15$) were automatically excluded if they incorrectly endorsed any of the entry criteria items (e.g., “Is your baby between five and seven months of age?” “Was your baby born healthy, full term, and without any significant birth complications?” etc.). Some respondents ($n = 8$) indicated that their child was within the five- to seven-month age range, but when the researcher calculated the infant’s actual age based on date-of-birth and date the survey was completed, it was determined that the age fell outside of the acceptable age range (i.e., below 4.5 months of age or above 7.5 months of age). Other omitted respondents either stopped the survey after completing the online waiver ($n = 11$), or stopped partway through the survey rendering their information unusable (i.e., completed the waiver and demographic questions in the first two pages, but did not complete any of the other questions on the survey) ($n = 8$). SPSS corrected scores for missing survey responses, and any corrections are noted in the following chapter outlining results.

Research Question 2

What are the infant, maternal, and socio-cultural factors that impact sleep consolidation in five-to-seven months of age? Specifically, how does infant temperament and regulatory capacity influence the development of sleep? What are the impacts of maternal mental health on sleep consolidation and behavior? How do cultural norms and beliefs contribute to household approaches to sleep

and sleep patterns? What are the interactions among these variables, and are any of them more significantly tied to sleep consolidation in infancy?

It was assumed that mothers who were more depressed, anxious or stressed would perceive their infant's sleep more problematically rather than there being an inherent problem with their baby or their baby's sleeping behaviors (Scher, 2008). Due to the interconnected nature of maternal, infant and sociocultural variables in sleep (Sadeh et al., 2010; Scher, 2008), it was also hypothesized that the sociocultural factors would play a role in how infants were sleeping across both the survey and case study samples.

Descriptive statistics were calculated to ascertain frequencies, means, and standard deviations for case study participants. Due to the small sample size, descriptive statistics provided additional pertinent information about the mothers and babies participated in the study. Other data gathered from the case studies helped to illuminate patterns, themes, and consistencies among the mother-infant dyads. By triangulating data from questionnaires, interviews, observations and sleep logs, all data sources were considered in interpretation and the factors that impact sleep consolidation in five- to seven-month old infants will become clear. Pearson correlation analyses (r) were conducted to determine the strength of relationships among the paper-and-pencil measures (Howell, 2007).

Coding. With a sample size of five dyads, there was enough information to corroborate and triangulate data. There were multiple steps involved in coding the case study data. First, audio files were uploaded to a transcription service (www.Hightail.com) and returned transcripts were cross-checked with the audio file. Second, in order to derive codes, each file was reviewed and lists of themes were written down. Codes

emerged from the transcript themes and from participant responses and scores on questionnaires, naturalistic observations, sleep log information and in the context of the literature. Codes also came from the application of Bronfenbrenner's (1994) Ecological Theory to infant sleep. Ecological Theory considers proximal and distal factors that impact sleep consolidation in infancy, and with the various data sources from the case study participants, near and far factors were available for consideration. Third, five final codes were created and are outlined in Table 1. Fourth, transcripts were color-coded to highlight the five identified codes, and code frequencies for each dyad were calculated, as well as a total count of all codes across all five dyads.

Table 1. Codes and Code Sources for Case Study Data Analysis

Code	Description	Data Sources	Literature Sources	Application of Ecological Theory
<i>Family Life</i>	Discussion of stress level in relation to daily life, the baby in general, or the baby's sleep, or how she handled sleep as a result of worrying/panicking about her baby. Overall maternal mental health.	Interview transcripts EPDS PWSR MSAS APT	Armitage et al., 2008 Scher, 2008 Teti & Crosby, 2012	Microsystem – direct contact between caregiver and infant Mesosystem – role of other influences on stress level and approaches to sleep, including workplace, extended family or pediatrician Exosystem – impact of overarching policies, like family leave Macrosystem – overarching cultural values and beliefs
<i>Maternal Relation to the Infant</i>	Mother's positive or negative perceptions of her baby and how these relational characteristics impacted her approach to caregiving and specifically sleep.	Interview transcripts Observations IBQR	Teti & Crosby, 2012 Tikotzky & Sadeh, 2009	Individual – the infant Microsystem – direct contact between caregiver and infant Chronosystem – passing of time
<i>Infant Characteristics</i>	Discussion of infant temperament/personality by the mother or when an infant was described as and/or appeared fussy or difficult to settle. How temperamental quality was described as impacting a baby's daily functioning, settling or sleep behaviors.	Interview transcripts Observations IBQR BISQ Sleep Logs	De Marcas et al., 2015 Kirjavainen et al., 2004 Novosad et al., 1999 Scher, 2008	Individual – the infant Microsystem – direct contact between caregiver and infant Chronosystem – passing of time
<i>Partner and Social Support</i>	Information about how much a partner was involved or present in the home, agreement between a mother and her partner related to household duties and handling sleep, and accessibility and comfort with seeking advice about sleep from family, friends or the pediatrician.	Interview transcripts ISEL DAS	Teti et al., 2015 Tikotzky et al., 2015	Microsystem – direct contact between caregiver and infant and caregiver and partner, Mesosystem – role of other influences on stress level and approaches to sleep, including workplace, extended family or pediatrician Exosystem – impact of overarching policies, like family leave Macrosystem – overall cultural values and beliefs
<i>Infant Sleep</i>	Discussion of day- and nighttime sleep habits, change in sleep patterns over time, and overall sleep amounts or concerns.	Interview transcripts BISQ Sleep logs	Anders et al., 1992 Byars et al., 2012 Ferber, 2006 Scher & Cohen, 2015 St James-Roberts, 2012	Individual – the infant Microsystem – direct contact between caregiver and infant Chronosystem – passing of time

Additionally, Ecological Theory was in mind when comparing the survey and case study samples. As noted above in the second hypothesis for Research Question 2, it was expected that identified Problem Sleeper dyads would exhibit disparate infant characteristics, caregiver behaviors and beliefs, and contextual qualities that set them apart from the Non-Problem Sleeper dyads, based on prior literature suggesting that maternal perceptions of infant sleep and inconsistent approaches to sleep are significant predictors of sleep behaviors and problems (e.g., Counterline & Teti, 2012; Sadeh et al., 2010; Scher, 2008; Taylor et al, 2008; Teti & Crosby, 2012; Tikotzky & Sadeh, 2009, etc.). Innate infant characteristics ebb and flow throughout development, and work in tandem with maternal influences. Mothers and their caregiving choices are further influenced by their surroundings. Finally, similarities and differences between Problem and Non-Problem Sleepers respondents were examined in both samples and helped to highlight sociocultural contributors that were more consistently related to consolidation in the sample of five- to seven-month-old infants.

CHAPTER IV

RESULTS

This chapter presents the results from the survey and case study examination of infant, maternal and socio-cultural factors that impact sleep consolidation in five- to seven-month old infants. Included is a brief discussion of the mixed-method design, followed by descriptive data related to the survey sample. Survey data will then be used in relation to Research Question 1. A fourth section will provide descriptive data related to the case study sample. Research Question 2 will be answered in section five as it examines the findings from the case study data. Finally, Research Question 2 is further answered with information in a sixth section, providing comparisons between the survey and case study samples and concluding the chapter.

Explanatory Sequential Design

This study utilized an explanatory sequential design. First, survey data was collected and analyzed in order to understand broader cultural practices and ideals related to sleep in five- to seven-month olds. The preliminary information was helpful in planning for the collection of case study data, described further below. The findings uncovered in the survey data allowed the researcher to greater anticipate how case study mothers would respond to certain aspects of the research protocol. Since the survey data was an anonymous one-time snapshot of infant sleep in Western cultures, the case study

dyads provided an opportunity for a dialogue between the researcher and participants, and afforded the ability to probe, clarify and follow-up on statements.

Survey Descriptive Data Characteristics

The descriptive data in this following section are included to help provide an overview of the survey sample in terms of sociodemographics and also sleep habits and approaches.

Demographic

The majority of survey participants were between 25 and 34 years of age ($n = 68$, 77.3%) and female ($n = 81$, 92%), while the respondents' infants ranged in age from four months and 20 days to seven months and 15 days ($M = 5.99$, $SD = .77$ months). A little over half of the infants were first born ($n = 51$, 58%) and approximately half were female ($n = 45$, 51.1%). Although the survey was open to any caregivers of infants within the target age range, all except one respondent identified themselves as the mother ($n = 86$, 97.7%, missing = 1). Additionally, considering that 81 of the participants identified as female but 86 reported being the mother, it is possible that some ($n = 5$) were identifying the gender of their infant rather than their own gender. The participant who identified as "other" specified that she was not the biological mother, but a primary caregiver (e.g., "Adopted mother (lesbian couple, other mom is bio mom)"). The sample was racially and ethnically homogenous, highly educated with almost half attaining a graduate degree, and typically receiving annual incomes of \$50,000 or more. A majority of the sample identified as married ($n = 84$, 95.5%). Sociodemographic data are presented in Table 2.

Table 2. Survey Sample Sociodemographic Data

	<i>N</i>	%
Respondent Education Level		
11 th grade	1	1.1
Graduated from high school	2	2.3
1 year of college	1	1.1
2 years of college	2	2.3
3 years of college	1	1.1
Graduated from college	33	37.5
Some graduate school	2	2.3
Completed graduate school	42	47.7
Missing	4	4.5
Respondent Race/Ethnicity		
Asian	1	1.1
Black or African American	2	2.3
Hispanic or Latino	4	4.5
White	78	88.6
Other	1	1.1
Missing	2	2.3
Employment Status		
Employed full time	36	40.9
Employed part time	8	9.1
Student working full time	1	1.1
Full time stay at home caregiver (SAHC)	28	31.8
Part time SAHC working part time out of the home	9	10.2
Part time SAHC working part time in the home	6	6.8
Annual Household Income		
\$49,000 or below	9	10.2
\$50,000 – \$99,999	31	35.2
\$100,000 – \$149,000	32	36.4
\$150,000 or above	16	18.2

Survey Sleep Characteristics

Based on responses provided on the Prospective Dyad Form that was incorporated into the survey, the majority of respondents were categorized as Non-Problem Sleepers ($n = 71$, 80.7%; Problem $n = 16$, 18.2%; Missing $n = 1$). On a 5-point likert scale distress

rating of their infant's sleep, ratings ranged from 1.0 (no stress) to 5.0 (high stress) ($M = 2.38$, $SD = 1.10$). In addition to endorsing at least 10 items on the first 14 items of the Prospective Dyad Form, a Problem Sleeper respondent also rated their baby's sleep as a 4 or 5 on the final distress question. Additionally, as indicated by BISQ responses, half of respondents rated their infant's sleep as non-problematic ($n = 44$, 50%). Based on responses to the Prospective Dyad Form questions and the BISQ sleep ratings, it appeared that the majority of the survey sample did not perceive their infants' sleep as stressful, nor do they rate their infants' sleep as a problem. Table 3 provides frequencies of the four BISQ sleep ratings.

Table 3. BISQ Survey Sleep Rating

	<i>N</i>	%
Not a problem at all	44	50
A small problem	33	37.5
A problem	10	11.4
A very serious problem	1	1.1

Frequencies were also calculated to determine the level of agreement between those respondents identified as Problem and Non-Problem Sleepers on both the Prospective Dyad Form and BISQ. Table 4 specifically shows where there was overlap and disagreement across the two measures. Calculations were made by dichotomizing the BISQ responses into two groups to comprise the lowest BISQ ratings (a very serious problem, a problem) and the highest BISQ ratings (a slight problem, not a problem at all). Table 4 also highlights the amount of Non-Problem and Problem Sleepers as rated by the mothers on the Prospective Dyad Form who also endorsed the lowest BISQ ratings.

Table 4. Agreement Between Prospective Dyad Form Sleep Classification and BISQ Sleep Rating

	Prospective Dyad Form (PDF): Non-Problem Sleeper (n = 71)		Prospective Dyad Form (PDF): Problem Sleeper (n = 16)		Total (n = 88)
	Agree	Disagree	Agree	Disagree	
BISQ: Non-Problem Sleeper	69	2	7	9	87 (missing PDF = 1)
BISQ: Infant sleep considered “A very serious problem”	0		1		
BISQ Infant sleep considered “A problem”	2		8		

Analyses indicated overlap between respondents categorized as Non-Problem sleepers with their subjective BISQ rating of their infant’s sleep as either a non-existent/small problem or a present/serious problem. Specifically, sixty-nine Non-Problem respondents who provided a stress level of 3 or less and endorsed 9 or fewer infant sleep-related worries during pregnancy and postpartum were also rated as having a Non-Problem Sleeper on the BISQ. Only 2 Non-Problem Sleepers were rated as Problem Sleepers on the BISQ. Conversely, there was a lesser degree of overlap between subjective scores and BISQ ratings for Problem Sleepers. Specifically, 9 Problem Sleepers according to the Prospective Dyad Form were also categorized as Problem Sleepers on the BISQ, while 7 Problem Sleepers were rated as Non-Problem Sleepers on the BISQ. Across all survey respondents, when asked how comfortable they were with the amount of sleep their baby attained overnight, 43.2% reported “very comfortable” and 34.1% endorsed “somewhat comfortable”. Only 19.3% indicated that they were “not comfortable – [baby] could sleep more,” further corroborating the finding that this sample is primarily comprised of Non-

Problem sleepers.

According to responses on the BISQ, a vast majority of the sample revealed that it takes “under 1 hour” to get their infant to bed at night ($n = 80, 90.9\%$). Babies varied in their sleep positioning, with 36 falling asleep on their backs (40.9%), 34 on their stomachs (38.6%), and 18 on their sides (20.5%). The number of infants in this sample reported falling asleep on their stomachs is particularly interesting given the widely publicized advice to put babies “back to sleep” in the supine position rather than the prone position in an effort to decrease the chance of SUID’s (AAP Task Force on SIDS, 2005). The most popular method endorsed for getting a baby to sleep was “in bed alone” ($n = 48, 54.5\%$), followed by “feeding to sleep” ($n = 42, 47.7\%$). Participants could select all methods that they implemented in their household, and some utilized up to five different approaches ($M = 1.86, SD = 1.20$) at bedtime. Other options included holding (37.5%), rocking (27.3%) or being in a bed near a caregiver (18.2%).

The BISQ responses also revealed that over half of the babies in this sample slept between 9 and 11 hours per night (i.e., defined as hours slept during 7:00 p.m. – 7:00 a.m.; $n = 53, 60.2\%$), and another 23 reported that their infant was sleeping 11 or more hours overnight (26.1%), which is a total of 86.3% of the overall sample who were rated as sleeping at least 9 hours during the night. Only 12 respondents revealed a range of 7-9 hours of overnight sleep for their baby (13.6%). In general, this sample reported an average of 2 overnight wake ups occurring in their households ($M = 1.99, SD = 1.46$ waking occurrences). The amount of infant awake time reported between the hours of 10:00 p.m. and 6:00 a.m. for over half of the infants was under an hour ($n = 60, 68.2\%$). In further examining overnight waking behavior, 17 Non-Problem Sleeper respondents

(23.9% of those classified Non-Problem) indicated that their baby woke 2-2.5 times overnight and another 17 Non-Problem Sleepers (23.9%) reported 3 or more awakenings overnight. In comparing the waking amounts across Non-Problem and Problem Sleeper respondents, it was striking to see that a much larger percentage of the Problem Sleeper group reported 3 or more night wakings ($n = 9$, 56.3%), with an additional 12.5% of the sample ($n = 2$) indicating 2 wakings per night.

When asked about techniques for returning to sleep, the two most common for the entire sample were breastfeeding and rocking ($n = 48$, 54.5% and $n = 40$, 45.5%, respectively). Other endorsed options included patting or bottle-feeding back to sleep ($n = 33$, 37.5% and $n = 23$, 26.1%, respectively). A few of their self-reported approaches across the entire sample included: “[It] depends on if she’s ‘really’ hungry. Otherwise I give her paci and she falls back asleep,” “Paci”, “Placing baby in vibrating chair or swing”, and “If the baby is crying for 5 minutes I come into the room to let her know I am around, shush her softly and leave the room”. Twelve participants (13.6%) reported that they do not implement any of the methods provided. Further related to overnight waking behavior, over half of the participants indicated that both partners were responsible for handling wake-ups ($n = 51$, 58.1%), while 35 (39.8%) reported that it was their own job to get their baby back to sleep.

Research Question 1: Uncovering the Occurrence of a Phenomenon

The following section outlines results pertaining to the broader sleep-related beliefs and practices provided by the survey sample. It was also designed to gain an understanding of how sleep unfolds in households of which this sample was comprised (i.e., where the baby sleeps, who is responsible for supporting the baby in sleep, and

whether participants in this demographic are reaching out for help).

Survey Beliefs about Sleep

Research Question 1 posed the following question:

In considering Western, industrialized settings while uncovering the occurrence of a phenomenon, what are the broader beliefs in their setting about infant sleep surrounding five-to-seven months of age?

It was hypothesized that the survey sample would endorse typical Western ideals about when babies should sleep without signaling and that they should sleep separately from their caregivers during the nighttime hours.

Sleeping through the night. The majority of respondents indicated that five-to-seven month old infants should sleep “11 or more hours” overnight ($n = 52, 59.1\%$), while 27 participants endorsed “9-11” hours (30.7%). In response to the question “What is the age at which babies should sleep through the night?” the majority of participants corroborated the commonly reported age of six-months ($n = 26, 29.5\%$; St James-Roberts, 2012), followed by other times of great developmental shifts: 12-, 9- and 3-months of age. Figure 2 shows the distribution of ages selected by participants.

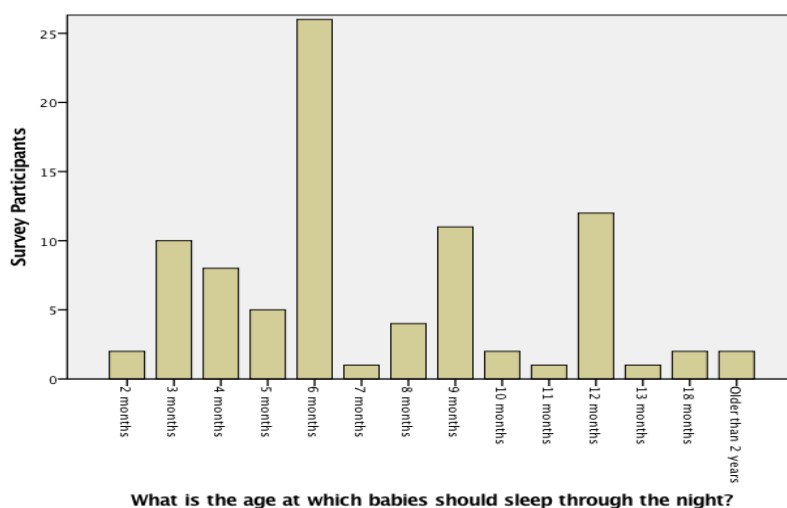


Figure 2. Age at which Babies Should Sleep through the Night

Co-sleep. In further considering the cultural beliefs presented by the survey sample, multiple questions were asked regarding co-sleeping practices (i.e., bed- and room sharing), both specific to participants' household approaches and in regards to acceptability of co-sleeping as a practice for the broader population. In general, the majority of the sample indicated that bed sharing was an acceptable practice, be it with their *own* baby ($n = 54$, 61.4%) or for babies and caregivers *in general* ($n = 57$, 64.8%). Similarly, respondents overwhelmingly indicated that room sharing was acceptable with their *own* infant ($n = 76$, 86.4%) and for infants *in general* ($n = 79$, 89.8%). However, when asked directly “Does your baby ever sleep in your bed?” the response pattern was more evenly split between “Yes” ($n = 44$, 50%) and “No” ($n = 41$, 46.6%; $n = 3$ missing, 3.4% of total sample). Similarly, the sample provided a generally even split when asked “Does your baby ever sleep in your room in a separate sleeping location (e.g., co-sleeper, bassinet, pack-n-play, etc.)?” with 40 individuals reporting “Yes” (45.5%) and 44 reporting “No” (50%; $n = 4$ missing, 4.5% of total sample). In contrast on the BISQ, the numbers related to co-sleeping as a regular practice were lower than when participants

were asked if they had *ever* co-slept with their infant. Twenty-seven (30.7%) respondents indicated that they co-slept and 61 (69.3%) reported that their infants slept apart from them overnight. This difference is noteworthy, as the BISQ asks caregivers to recall typical sleep habits and patterns and is considered in the literature to measure what generally occurs in regards to sleep practice. The researcher-created survey questions required the respondent to think about whether they had, at any time, shared sleep with their baby. Collectively, the two sets of questions illustrated that beliefs related to infant sleep location have shifted to be more inclusive of bed- or room-sharing, but what was actually happening in the homes of these respondents was more reflective of traditional Western ideals that babies should sleep separately from their caregivers.

Sleep training. As five- to seven-months is often the age at which families are told to start sleep training, especially in Western, industrialized countries (Ferber, 2006; St James-Roberts, 2012), a set of questions on the survey asked participants' about their comfort with implementing a method such as "Cry-it-Out". Half of the participants indicated that "Cry-it-Out" is an effective method of sleep training ($n = 44$, 50%). On a different sleep-training question (i.e., "Is it ever ok for babies to be left alone to cry overnight?"), slightly more than half chose "No" ($n = 46$, 54.8%). Finally, the sample was in general evenly split when asked if "Cry-it-Out" is a method they plan to use with their own baby, with 40 responding "Yes" (45.5%) and 46 responding "No" (52.3%; $n = 2$ missing, 2.3% of total sample).

Social support. Almost the entire survey sample indicated being married, and over half reported that overnight sleep behaviors are the responsibility of both partners in the household. When further examining trends in overnight care, over half of the Problem

Sleepers respondents reported handling night waking as their responsibility ($n = 9$, 56.3%), while a smaller percentage of Non-Problem Sleeper respondents indicated it was their job ($n = 26$, 36.6%). In an effort to further examine the role of partner or social support, respondents were asked three questions meant to illicit information about the level of assistance or encouragement they receive from their family and friends. Recalling that one participant did not complete the Prospective Dyad Form, that respondent's data is not included when reviewing questions related to social support. For the remaining participants ($n = 87$) who were categorized as having Non-Problem or Problem Sleepers, their responses to the question, "Have you ever sought help for your baby's sleep behavior?" revealed 4 Problem Sleeper respondents endorsing "Yes" (25% of the Problem sample) and 4 Non-Problem Sleeper respondents also choosing "Yes" (5.6% of Non-Problem sample). Additionally, when answering the question "In thinking about your friends or family members, does your baby wake up more than other babies?" 11 (68.8%) of Problem Sleeper respondents said "Yes" and 10 (14.1%) of Non-Problem Sleeper respondents also replied "Yes." Finally, when asked "Have friends or family ever criticized your approach to handling sleep?" 5 (31.3%) of Problem Sleepers chose "Yes" while 12 (16.9%) of Non-Problem Sleepers also replied "Yes." While the groups were difficult to compare due to the disparity in sample size, it was interesting to see a trend that Problem Sleepers respondents were more frequently handling overnight waking on their own. They also endorsed asking for help at a higher rate and lower levels of social support from those in their context related to how they handle their babies' sleep.

Case Study Descriptive Data Characteristics

Information in the following section provides an overview of the case study

sample in terms of sociodemographics and findings from the paper-and-pencil measures that each mother completed. This overview orients the reader to overall trends in questionnaire responses, aspects of each mother's mental health status, mothers' perceptions of their infants' temperaments and personalities, and levels of social support experienced in their respective lives.

Demographic

Throughout recruitment, a total of 8 individuals completed contact forms at their pediatrician's office. This was surprising given the time allotted to recruitment (four months) and the number of projected mothers and babies coming to the clinic for well-baby checks (i.e., according to clinic staff approximately 1-2 per week). Depending on their preferred mode of being contacted (e.g., email, text, call, etc.), the researcher made several attempts to establish contact and to review the screening materials. In many cases, there were no responses to the researcher's efforts in establishing contact; in others, some communication was made but then not followed up by the participant. The final sample was comprised of five ($n = 5$) mother-infant dyads.

Mothers ranged in age from 24 to 35 ($M = 31.4$, $SD = 4.62$ years) and their babies ranged in age from four-months, 26 days to seven-months, 10 days. Two infants were first born into their families, another two were the second child, and a fifth baby was the third child in the family. Again, due to the aforementioned challenges with recruitment, all babies were female. The sample was ethnically and racially homogenous ($n = 5$ identified as Caucasian, 100%), well educated, and attaining income of \$50,000 a year or more. Four of the five mothers were married, while the fifth mother was living with her baby's father and had been for a number of years before the infant was born. The

mothers' partners ranged in age from 26 to 35 ($M = 31.6$, $SD = 3.65$ years), and were well educated. One father had completed high school, two had vocational degrees, and two had post-graduate degrees or higher. Four of the fathers worked full time out of the home, and the fifth alternated full-time status in and out of the home. Table 5 provides a breakdown of case study maternal sociodemographic data

Table 5. Case Study Maternal Sociodemographic Data

	<i>N</i>	%
Respondent Education Level		
Graduated from high school	1	20
Graduated from vocational school	3	60
Graduated from graduate school	1	20
Employment Status		
Employed more than 15 hours/week out of the home	1	20
Employed more than 15 hours/week in the home	2	40
Employed less than 15 hours/week out of the home	1	20
Full time stay at home caregiver	1	20
Annual Household Income		
\$60,000 – \$69,000	1	20
\$70,000 or above	3	60
Did not disclose	1	20

Case Study Sleep Characteristics

Potential mothers completed the Prospective Dyad Form during the initial screening call. Based on their responses, 3 were identified as Non-Problem Sleeper dyads and 2 as Problem dyads. Like the survey sample, case study mothers classified as Problem Sleepers respondents were required to endorse at least 10 items out of 14 and also rate their baby's sleep a 4 or 5 out of 5. Stress ratings ranged from 1.0 (no stress) to 3.5 (high stress) ($M = 2.3$, $SD = .97$). No mother endorsed higher than a 3.5, but based on

their information from other sources of data collected, it seemed that a Problem Sleeper classification was appropriate for the two who provided a stress level of at least 3. Other data sources that corroborated the Problem Sleeper classification for two mothers included scores on the questionnaires, settling and night waking behaviors indicated on the sleep log, and information that emerged from the interviews related to experiences with and feelings about how their baby was sleeping. BISQ sleep ratings were less consistent with the Non-Problem/Problem classifications on the Prospective Dyad Form, as only 1 of the 2 Problem Sleeper dyads rated her baby's sleep "A problem". Another dyad classified as a Non-Problem Sleeper also endorsed a BISQ sleep rating as "A problem", while the remaining 3 mothers (1 Problem dyad and 2 Non-Problem Sleeper dyads) reported "Not a problem at all".

Maternal Mental Health, Social Support and Infant Information

Seven paper-and-pencil measures were used with the case study sample. As noted in the instrumentation section, certain subscales on the IBQR, MSAS and ISEL were chosen for analysis based on the current study's research questions. Scores ranged in severity and intensity across all of the subjects. For example, one mother rated herself as having a non-significant score of 6.0 on the EPDS, while also rating herself within the clinically elevated range for the PWSR (59). Below 6 highlights the scores on these instruments for each case study participant.

Table 6. Maternal Questionnaire Scores¹²

	EPDS	PWSR	IBQR		MSAS		ISEL		DAS	APT	
Participant ³			Surgency	Neg. Affect	Maternal Separation Anxiety	Perception Of Separation Effects	Tangible	Self-Esteem	Dyadic Consensus	Competence	Confidence
Jane	6	59	5.67	4.60	22.67	20	24	18	34	51	56
Sarah	8	21	3.54	3.50	20.33	20	12	15	52	59	40
Kimberly	16	40	3.36	3.17	18.67	30	30	22	56	116	30
Tammy	6	28	5.33	4.78	26.67	20	23	18	36	76	54
Laura	3	5	5.92	2.42	21.33	10	30	27	65	51	53

¹ In some cases, bolded scores indicate clinical elevations when comparing a mother's score to the overall norming sample (e.g., EPDS, IBQR Surgency and Negative Affect subscales, and DAS Dyadic Consensus subscale). For the remaining assessment measures (PWSR, MSAS Maternal Separation Anxiety and Perception of Maternal Separation Effects on the Child subscales, ISEL Tangible and Self-Esteem subscales, and APT Competence and Confidence domains), there are no cut scores and bolded results indicate extremely high or low scores relative to the rest of the sample.

² EPDS score is clinically significant at 13 or higher, IBQR Surgency average = 4.91, Negative Affect average = 3.01, and DAS Dyadic Consensus is considered low if below 49.1; PWSR, MSAS, ISEL and APT scores are meant to be interpreted anecdotally and in comparison to other participants.

³ All case study participants, including the mothers, infants, and other family members have been assigned pseudonyms to protect confidentiality. Names that are bolded indicate "Problem Sleeper".

Compared to the other four mothers, Jane demonstrated the highest level of postpartum worry (PWSR = 59), lowest dyadic consensus with her partner (DAS = 34), and endorsed items indicating significantly negative affect in her baby (IBQR Negative Affect = 4.60). Tammy also indicated higher levels of negative affect in her infant (IBQR Negative Affect = 4.78), lower dyadic consensus (DAS = 36), and increased parenting self-efficacy concerns compared to the other mothers (APT Competence = 76). Sarah indicated lower infant positive affect (IBQR Surgency = 3.54), lower social support (ISEL Tangible = 15 and ISEL Self-Esteem = 15), and lower confidence in her parenting abilities (APT Confidence = 40). Finally, Kimberly had increased scores for most of the assessment items including postpartum depression (EPDS = 16), anxiety (PWSR = 40), lower infant positive affect (IBQR Surgency = 3.36), anxiety related to how her baby perceives separations from her (MSAS Perception = 30), and extremely elevated concerns about her parenting abilities and overall parenting self-efficacy (APT Competence = 116 and APT Confidence = 30).

Correlations among measures. Pearson's correlations were conducted in order to examine the relationships between the continuous variables resulting from the paper-and-pencil measures⁴. Due to the small sample size, it was assumed significance would not be established; however, a few significant relationships emerged. The EPDS demonstrated a significant positive correlation with the APT Competence index ($r = .91^*$, $p = .032$), and achieved a significant negative correlation with the APT Confidence index ($r = -.89^*$, $p = .038$). This suggests that those who endorse less feelings of postpartum

⁴ $*p < .05$, $**p < .01$

depression also experience higher parenting competency, and as postpartum depressive symptoms increase, the level of parenting confidence decreases. The EPDS was also significantly positively correlated with the MSAS Perception index ($r = .93^*, p = .020$), indicating that mothers with non-clinical postpartum depression scores may feel that their infant will favorably adapt to separations. A relationship between APT Confidence scale and the IBQR Surgency index existed ($r = .94^*, p = .017$), suggesting that positive infant affect may influence a parent's level of parenting self-efficacy or vice versa (i.e., parents who perceive themselves as confident in their parenting skills may also perceive their infants as being high in positive affect). Finally, a significant negative correlation was demonstrated between the DAS Dyadic Consensus measure and the IBQR Negative Affect index ($r = -.99^{**}, p = .001$), suggesting that more negative infant emotional demonstrations may lead to less harmonious partner interactions and agreement or vice versa.

Other non-significant trends that emerged included moderate- to high-correlations between the IBQR Surgency index score and the EPDS ($r = -.83, p = .081$), MSAS Perception ($r = -.74, p = .151$) and MSAS Maternal Separation Anxiety ($r = .62, p = .261$). These findings suggest that mothers who are experiencing negative affect in the forms of depressive or anxious symptoms also perceive their infant's affect as less positive and separations as more of a struggle. Alternatively, as positive infant affect increases on the IBQR Surgency scale, maternal separation anxiety may decrease as demonstrated by the MSAS Maternal Separation Anxiety scale. IBQR Negative Affect domain scores were also moderately to highly correlated with other assessment measures for this sample of mothers and babies. For example, higher levels of IBQR Negative

Affect demonstrated positive correlations with the PWSR ($r = .65, p = .234$) and MSAS Maternal Separation Anxiety index ($r = .72, p = .173$). IBQR Negative Affect was also negatively correlated with the ISEL Self-Esteem domain ($r = -.71, p = .183$). These findings indicate that as a mother experiences higher levels of anxiety (i.e., postpartum worry and/or separation anxiety), or lower levels of self-esteem, she may be more likely to perceive her infant as displaying negative affect (or vice versa, i.e., as infant negative emotional expressions increase, so do maternal postpartum worry and anxiety, while self-esteem decreases.)

Research Question 2: Uncovering the Factors that Impact Sleep Consolidation

This section was structured in a way to highlight similarities and differences in the case study sample in regards to sleep classification (i.e., Problem or Non-Problem Sleeper dyads) and maternal, infant and sociocultural findings. Cross-case analyses, in which interview, observation, sleep log and questionnaire data were considered, were conducted to further examine the factors that set apart Problem Sleeper from Non-Problem Sleeper dyads. Finally, findings are presented that take both the survey and case study samples into consideration. The cross-sample comparisons were conducted to help further elucidate sociocultural factors more significantly tied to infant sleep consolidation in five- to seven-month-olds and overlap of cultural beliefs that emerged from the survey and case study samples.

Research Question 2 posed the following question:

What are the infant, maternal, and socio-cultural factors that impact sleep consolidation in five- to seven-months of age? Specifically, how does infant temperament and regulatory capacity influence the development of sleep? What

are the impacts of maternal mental health on sleep consolidation and behavior?

How do cultural norms and beliefs contribute to household approaches to sleep and sleep patterns? What are the interactions among these variables, and are any of them more significantly tied to sleep consolidation in infancy?

It was assumed that mothers who were more depressed, anxious or stressed would perceive their infant's sleep more problematically rather than there being an inherent problem with their baby or their baby's sleeping behaviors (Scher, 2008). Due to the interconnected nature of maternal, infant and sociocultural variables in sleep (Sadeh et al., 2010; Scher, 2008), it was also hypothesized that the sociocultural factors would play a role in how infants were sleeping across both the survey and case study samples.

Case Study Dyads: Similarities and Differences between Problem and Non-Problem Sleepers

For the five mother-infant dyads, 2 were classified as Problem Sleepers and 3 were classified as Non-Problem Sleepers. In addition to the Prospective Dyad Form, dyads were assigned to their respective categories based on data from the paper-and-pencil measures, in-home observations with their infants and thematic analysis from the participant interviews. The case of which this sample was comprised (i.e., multiple smaller units of analysis that made up the entire sample) was bounded on many levels. Three of the mothers lived within the same mid-sized Midwestern city, with the exception of 1 mother who lived approximately 40 minutes away in a more rural setting (i.e., farm) and another who lived in a close-proximity suburb that is virtually an extension of the larger city. The city in which they were sampled from is traditionally known as progressive and politically liberal. As mentioned previously, the sample was

derived of middle- to upper-middle class participants. In addition to their partners who all worked at full-time status, four of the five mothers were also employed. All mothers had health insurance for themselves and their baby, owned at least one car, and four of them owned their homes (one was renting). Together, the sample was not extremely varied in terms of their demographics or access to resources.

Cross-case analyses to highlight the factors that impact sleep. A series of themes emerged from the interview transcripts. In conjunction with other data sources including observations, questionnaires and sleep log information, five codes emerged that were used in the analysis of the case study data. They included:

- Family Life (FL)
- Maternal Relation to the Infant (MRI)
- Infant Characteristics (IC)
- Partner and Social Support (PSS)
- Infant Sleep (IS)

As outlined in the Data Analysis Plan section in the previous chapter (see Table 1), *Family Life* included discussion of typical daily functioning/routines, stress related to daily living, and providing information about the pace and style of their life before and after their baby was born. This code also included instances of distraction from the first sibling, which applied to mothers with other children. This distraction aspect of Family Life involved instances when the mother discussed or compared her first child(ren) to the target infant for this study. *Maternal Relation to the Infant* related to times when the mother spoke about the positive and negative aspects of her relationship with her baby. The *Infant Characteristics* code that emerged involved instances when a mother talked

about her infant in regards to the baby's temperament and personality. *Partner and Social Support* related to moments when mothers talked about friends, help, or assistance they receive in their lives including play groups, relationships with their partner, and support from extended family. This code also included cultural ideals and beliefs mentioned or implied by mothers during the interviews. Finally, the *Infant Sleep* code related to discussion of the babies' day and nighttime sleep and sleep routines/habits. Table 7 provides a frequency table of codes by participant and the overall sample, and demonstrates the number of times they occurred for each mother and a total number of occurrences across the five participants.

Table 7. Case Study Code Frequencies

	Jane	Sarah	Kimberly	Tammy	Laura ⁵	Total
FL	50	55	40	27	10	182
MRI	6	25	19	25	8	83
IC	58	17	34	11	10	130
PSS	23	10	18	33	14	98
IS	49	20	12	18	12	111

As part of the cross-case analyses, it was important to know which dyads were designated Problem and Non-Problem Sleepers. The cases are presented starting with the 2 Problem Sleeper dyads and followed by the 3 Non-Problem Sleeper dyads. Table 8 illustrates the mothers who were placed into each classification. For each dyad, the order in which the themes are discussed followed a consistent pattern. Each unit, or dyad, begins with a discussion of the *Family Life* theme followed by *Partner and Social Support*, as these two themes provided substantial background on each woman. They also

⁵ Laura declined audio recording, so her coded information was less rich in comparison to the other mothers.

encompassed aspects of their daily lives, including day-to-day events and stressors, and access to supports. Next, *Infant Characteristics* are examined, a theme that took into account ratings and descriptions of each baby's temperament, dyadic interactions during the observation, and information about how the infants' temperamental qualities appeared to impact daily functioning in each household. *Maternal Relation to the Infant* is presented next, and was comprised a great deal from interview, observation and temperament data. This theme related to both the mothers' perceptions of their babies' temperament and how they approached caregiving and sleep as a result of their perceptions. Finally, results for each dyad conclude with findings from the *Infant Sleep* theme. This was a natural point to wrap up the dyads, as the information gets at each mother's feelings related to baby's sleep habits and actual sleep amounts and patterns in this sample of five- to seven-month olds.

Table 8. Problem and Non-Problem Sleeper Classification by Dyad

	Jane and baby Bridget	Sarah and baby Kate	Kimberly and baby Jennifer	Tammy and baby Beth	Laura and baby Gabrielle
Problem Sleeper	X	X			
Non-Problem Sleeper			X	X	X

Jane and Sarah were classified as Problem Sleeper Dyads with their infants.

While Kimberly was not classified as a Problem Sleeper Dyad with her infant, she was elevated across numerous paper-and-pencil measures and indicated a great deal of anxiety throughout her interview. Tammy, Laura and their infants were the final Non-Problem Sleeper Dyads, with Laura having no elevations across questionnaires and the sleep log or major concerns voiced in her interview.

Jane and baby Bridget – problem sleeper dyad. Jane resided in a large farmhouse outside of the city in which recruitment took place. During the screening call, this mother informed the researcher that they were bed-sharing due to space constraints during a renovation. The *Family Life* theme circulated around the renovation process, which was in progress during data collection and provided a chaotic backdrop to the visit (i.e., drills running, hammers banging, saws cutting, etc.). The front room in which the interview took place was filled with extra furniture from other areas of the house and laundry baskets filled with clean and unfolded clothing. Jane indicated this was not the norm for her, and that she had “to give up some control” due to the circumstances of her household. She mentioned that her baby, Bridget, would receive her own room once the dust had settled, and she and her husband, Bill, were planning to transition her to a crib in her new room.

Jane lived in close proximity to her parents and ex-husband (also farmers). Her mother provided babysitting on a consistent basis to watch Bridget and Molly (Bridget’s two-year old sister), as well as Jane’s son from the first marriage, Shane (10-years-old). Jane had an amiable relationship with her ex-husband and his new wife, and saw them regularly during pick-ups and drop-offs of the 10-year-old. She also saw her parents frequently for meals and spending time together. In fact, during data collection, Jane’s mother was there, and took Bridget for time outside. Jane’s mother also called during the interview before she arrived and Jane informed me she was checking in because both Jane and Bridget had been sick (“She’s like, ‘what’s wrong? Are you okay?’”). Jane’s postpartum worry score was extremely elevated when compared to the other mothers on the PWSR. It is possible that her score was high due to the amount she was juggling with

a home renovation, caregiving duties for three children and not sleeping consistently (described in more detail below). Alternatively, she may struggle with generalized worries of a more enduring, trait-like nature. Her *Partner and Social Support* thematic instances were the second highest across the sample, and were corroborated by an ISEL Tangible score within the normal range. She worked full-time in the home, and had a trusted nanny who came to watch the two younger children and an understanding job that provided suitable flexibility for her and her family. While her husband was reportedly “very patient” with her and sharing a bed with their infant daughter, she indicated that it had been difficult in their relationship because they rarely had alone time together, he was not a part of handling overnight waking, and they did not agree on how to handle overnight sleep once Bridget transitioned to her own room (i.e., he feels ok with letting her cry-it-out, and Jane does not). Her DAS Dyadic Consensus fell below the typical range, and it appeared the sleeping arrangement of their baby was negatively impacting their relationship.

Bridget was not planned. Further highlighting some disparity between her and her husband, Jane noted that “my husband wanted a third and I said ‘we have a healthy boy and a healthy girl, I do not need another child’”. Jane felt guilty about her uncertainty with her pregnancy and “cried through my first whole trimester, ‘cause like, I didn’t want this baby.” While talking about Bridget, she was often distracted in her responses and made comparisons to her other children. Further, she described Bridget as their “delicate flower” who was much more reserved and sensitive to changes in routines, such as receiving her two-month immunizations (e.g., “She’s just very clingy... ‘just let me nurse all day’” following her shots). In general, she indicated that Bridget’s *Infant*

Characteristics were less hardy, resilient or outgoing than her siblings, especially Molly, and Bridget's IBQR Negative Affect score was also elevated. A thread of guilt was a common presence in the interview, although while speaking about instances categorized as *Maternal Relation to the Infant*, Jane was clear that they shared a special bond. Despite feeling unsure and upset about the pregnancy, there were aspects of their relationship that had been helpful in building a strong bond. When asked, "What pleases you most about your relationship with Bridget?" she responded:

Probably just the fact that ... you're a mom, and you know that ... when they wake up in the morning and they see you, or when you walk in the room, they light up. ...No one can ever replace mom.

Jane also endorsed a high level of parenting self-efficacy across both domains on the APT. She appeared sure in her role as caregiver. The dyad's attachment to one another was evident shortly after Jane woke up from a nap:

Jane sits back down on the couch and the two of them settle in comfortably for a few moments. Both of their bodies appear relaxed and content. Jane then moves on to changing Bridget's diaper. While speaking with me, she looks at Bridget and provides a lot of smiles; Bridget's contentment and comfort are sustained for the entire task. Once sitting up, Bridget checks me out again, smiles and sits in her mother's lap, cuddling. Jane provides lots of kisses and speaks in a gentle, soft voice. About 10 minutes later, Bridget turns to her mother and starts pulling at her shirt, to which she replies, "Ok, you're hungry". They sit comfortably together while nursing, Bridget reaching up to touch her mother's chest and chin while she talks to me. When she emerges after her feeding, Bridget continues to smile at me and also at her grandmother, who arrived while she was eating.

Jane rated her stress a 3.5 out of 5 regarding Bridget's sleep, the most highly stressed rating of any of the mothers. In contrast, she rated Bridget's sleep as "Not a Problem at All" on the BISQ. Other findings from the BISQ and sleep log were commensurate with information provided during the interview. Bridget naps consistently three times a day, and is in bed to sleep between 10 and 11.5 hours each night; however,

the major area of concern for Jane was the number of consistent night wakings to nurse. With the exception of one night, Bridget woke three times overnight, and on two of those occasions was up for over an hour. Jane also indicated that Bridget wakes and roots around for the breast, and may go in and out of sleep for an hour during the course of each waking. While bed-sharing is stressful and contrasts with her ideals related to sleep (i.e., “If I had to say, ‘What’s your biggest struggle’ ... I’d ... just say that it’s probably our sleeping arrangement”), it is also inline with Jane’s cultural caregiving style (i.e., when Bridget transitions to her own room, “It’s going to be hard for me” and “I think part of it is we’re also busy in our daily lives ... whatever you need to do to get some sleep. And is it the worst thing in the world?”). Bridget’s sleep habits were not abnormal in terms of bed-sharing and nursing on demand throughout the night, or in how often she wakes for her age; however they appear to cause Jane (and Bill) a notable level of fatigue and stress leading her to a higher stress level overall and in relation to Bridget’s sleep. Additionally, due to the anxiety and worry she voiced regarding pregnancy and how she viewed Bridget’s temperament as more fragile than her other children, it is possible she saw Bridget as needing or benefitting more from close time together. Jane’s perception of a need for closeness may have been related to compensation for Jane’s emotions while pregnant and/or feeling as though she was properly meeting Bridget’s caregiving needs.

Sarah and baby Kate – problem sleeper dyad. Sarah lived in a modest home that she and her family were renting. The living room in which the interview and observation were conducted was neat and comfortable, with a small play area off to one side that contained toys for Kate’s older sister, Elsa (two-years old). Sarah and her husband, Steve, also owned a condo closer to downtown, but were renting it out because it was too small

to accommodate their family after having Kate. In terms of the *Family Life* theme, Sarah indicated a lot of stress related to her current daily life. She spent her days caring for Kate and Elsa, and often felt “overwhelmed – really, really overwhelmed, pretty quickly too.” She briefly mentioned her time at work, which is less than 15 hours per week but took place during evenings and weekends. In contrast to the previous mother, Jane, Sarah reportedly had a small, almost non-existent social support system. Related to *Partner and Social Support*, Sarah had the lowest number of occurrences for this theme in her transcript when compared to the other mothers and provided only a few instances in which she described her support network. For example, she recalled the time her mother-in-law stayed with them after Kate was born (i.e., “[It] was so helpful. ...She helped out with [Elsa]. And when she left, the whole freezer was full of food. It was amazing to have her”) and that she belongs to a playgroup with other mothers and babies. Beyond that, she relied a great deal on her husband, Steve, although indicated that they did not always see eye-to-eye, especially related to Kate’s sleep. In contrast to interview information, her DAS Dyadic Consensus was within the normal range, but anecdotally she indicated tension, specifically in regards to sleep. Since Kate was room sharing, Sarah revealed,

It’s affected our relationship in the sense that I just ask him to sleep in the guest bedroom. ...I just want to kind of be alone and be asleep when I get the chance to do that. ...She hasn’t slept with me, not for a long time, but prior to that I would have her come in bed with me. So then that was another reason why I asked my husband to sleep in the extra bedroom.

At the time of the interview, Kate had moved to a portable crib and Steve was back in their bedroom, although Sarah noted that Steve was more comfortable than she was allowing Kate to cry upon waking overnight, and she was typically responsible for handling the overnight wake-ups.

Some distraction from Kate's older sister, Elsa, was coded under *Family Life*.

Sarah made numerous comparisons between her daughters ranging from their early infancy experiences, temperaments, personalities, eating habits, and sleeping habits, but was generally more positive about Kate and her experiences caregiving Kate in contrast to Elsa. While discussing information coded under *Infant Characteristics* during the interview, Sarah indicated that Kate was more positively attuned, attached and bonded to her than Elsa had been at her age, and Kate was temperamentally more easy-going and happy. Sarah reported that she was astounded by Kate's laid-back personality. In one instance she recalled "She would actually ...fall asleep right in the kitchen ... right in the bouncy chair. ...I'd be like 'Where did this kid come from ... they do exist!' It was like we had a little unicorn." In contrast to her reports of *Infant Characteristics*, Kate was rated low on the IBQR Surgency index, a discrepancy from Sarah's interview information. Sarah had dealt with postpartum depression and anxiety with Elsa and revealed that they did not bond until a year postpartum (when she found out she was pregnant with Kate). She reported a great deal of information that was coded under *Maternal Relation with the Infant*, namely the ease with which she and Kate bonded (i.e., "Immediately after she was born ... it was a really, really wonderful experience"). The most anxiety-provoking situations stemmed from managing her toddler and infant on a day-to-day basis, especially when Elsa became upset, a finding that was reflected in her ISEL Self-Esteem and APT Confidence scores (both low in comparison to the other mothers in the sample). The following observation highlights how tension in the home moved between relaxed and anxious:

The baby, Kate, begins to show signs of fatigue. She roots over her mother's chest and rubs her eyes. Elsa begins asking her mother for help with some toys, and Sarah appears a little distressed with both girls requesting her attention: Her tone is less gentle than it was when Elsa first woke up from her nap. She also sets Kate down in a bouncy chair to try and find one of the items Elsa is asking for. As Kate starts fussing in the seat, Sarah tells her "I know, I know. I'm sorry. I have to help your sister." I offer some of my toys to Elsa again, and this time she's more interested. Sarah picks up Kate and hurriedly moves between two different chairs in the living room, trying to find a comfortable spot. Sarah settles in to nurse Kate, and Kate falls asleep almost instantly. Sarah's face and body become more relaxed, and she leans back into the chair with Kate cradled in her arms, sleeping. Elsa, now also content, moves back and forth between me, a chair in the living room and a small table in the play area, investigating the toys I have and handing me bits of play-doh. After another 30 minutes of the interview with Sarah, Kate reemerges, red cheeked and sleepy. "See?" Sarah says, "she's so happy...works every time," and smiles at Kate.

Sarah exhibited anxiety related to *Infant Sleep*. She voiced worries about how long to let her cry during overnight wakings (having a comfort level with infant crying during the night that contrasted with Steve), frustration with disrupted sleep, and poor/inadequate napping patterns (i.e., three or four 20-45 minute naps in a day). Kate was sleeping anywhere from 10.5 hours to 12 hours overnight, and waking between one and three times. Her sleep had become more fragmented in the past two months, something that caused Sarah a great deal of frustration. According to the sleep log, wake ups were generally short, with the exception of two nights that totaled an hour or more. Overnight and napping behavior was corroborated by sleep amounts provided on the BISQ. Due to Sarah's pre-existing diagnoses of depression and anxiety, it was not surprising that Kate's sleep habits were a source of concern and worry, especially because Sarah noted that she was sensitive to any sleep disruption and felt an overwhelming sense of anxiety about whether her time with fragmented sleep would end. She indicated that she knows "it's normal for her to wake up ... one to two times a night"

but night waking behavior made Sarah feel “dull”. She enjoyed nursing her to sleep for day time naps, but also felt a level of resentment and frustration during the nighttime hours, often going back and forth in her mind about how long she should let her cry (e.g., “I’ll lay there and can’t make a decision. ... It’s almost like she can sense my anxiety”).

Related to her initial experience with sleep deprivation after having her first daughter, Elsa, and in reflecting on Kate’s night waking behavior, she said

...I never thought that your parenting ... extends 24 hours a day, seven days a week. ...I thought you actually got a break when the kids went to sleep. ...I had no understanding. I had no idea that you could just be stretched so, so, so far. ...You don’t get a break. ...That’s the hardest part about the whole sleep thing because you so desperately want to sleep.

Inline with her description of her struggles with Kate’s night waking, Sarah perceived Kate’s sleep as stressful. She rated Kate’s sleep a 3 out of 5 in terms of stress, but only selected “A Small Problem” for the BISQ rating of sleep behavior. Similar to Jane’s baby Bridget, Sarah’s baby Kate woke at a normal rate for an infant in the five-to-seven month range. Due to a number of factors including the sleeping arrangement, discord with her husband related to sleep, a lack of social support, a low rating for positive affect, and Sarah’s underlying levels of depression and anxiety (often further exacerbated by sleep disruption and the stress of daily life with two young children), her experience with her daughter’s sleep was isolating and negative.

Kimberly and baby Jennifer – non-problem sleeper dyad. Kimberly was an interesting case in that, like Sarah, she had a pre-existing diagnosis of anxiety for which she took medication and received therapy; however, in contrast to both of the aforementioned Problem Sleeper dyads, sleep seemed to be an infant behavior about which she did not experience extreme stress or worry. She endorsed a clinically

significant EPDS depression score, as well as elevated PWSR and MSAS scores when compared to the other mothers. She resided in a large house on a lake and reported the highest income bracket of all of the mothers. The home was neat and airy, with sizeable windows and calming wall colors throughout the interior.

Family Life coding indicated that Jennifer was planned, but the couple experienced some difficulty conceiving. After nine months of trying they stopped, only to become pregnant six months later. She noted that they were “surprised” and that she was “pretty nauseated the whole time” throughout her pregnancy. After a first trimester screening, they discovered the fetus was at risk for Down Syndrome, a finding ruled out after further testing. She revealed she was “always so worried” about Jennifer because she did not feel movement until mid-way through her second trimester. Her labor and delivery were unexpectedly easy, but she described an extremely traumatic first three days with Jennifer. After they settled in at the hospital, Jennifer started to scream and would cry for hours during their time in the hospital and once home. Kimberly stated “It was horrible. It was so bad. And I thought ‘this is what life with an infant is going to be like’. We didn’t know. We had no idea what was wrong.” After taking Jennifer to the pediatrician on the fourth day home, they discovered that Kimberly’s breast milk had not yet come in and were told that Jennifer was “starving”. Kimberly and her husband, Kevin, started formula while continuing to try and get her to nurse with each bottle-feeding. Issues for this dyad around feeding came up numerous times with this mother, as “[Jennifer] has never been the world’s best eater” and their days revolved around a rigid feeding schedule.

Partner and Social Support themes were a prominent aspect of Kimberly's interview. Kimberly's husband had been a major source support for her since having Jennifer, and Kevin was reportedly committed to sharing the parenting responsibilities with Kimberly. He also supported her emotionally and helped to lessen the burden that Kimberly experienced as it related to her transition to parenthood (e.g., sleep deprivation, keeping the house clean, extreme highs and lows in her mood in the immediate postpartum, etc.). For example, when they took Jennifer into the pediatrician for her inconsolable crying, he went with Kimberly's mother and Kimberly remained home because she "just couldn't do it [and] was so exhausted", and remaining home allowed her an opportunity to sleep. While Kimberly worked part-time from home at the time of the interview, her husband was also home part-time. Beyond her husband, she reported that they also received daily help from her mother, and that she was always in close contact with her friends regarding advice and support. Kimberly's MSAS Perception of Separation Effects score was elevated compared to the other mothers, suggesting that, despite working from home, Kimberly perceived Jennifer as experiencing stress during separations from her mother. In total, Kimberly spent approximately three hours of the day alone with Jennifer during the workweek, including times that Jennifer was napping, and was never alone with Jennifer on the weekends. She also reported that Jennifer's sleep

Has had a great impact on my relationship with my husband because he did all the night feeds. That was something I couldn't do. ...I spent the first eight weeks of Jennifer's life just feeling so grateful to and indebted to my husband for doing all those night feeds. And even now, I know that if she ever wakes up in the middle of the night, he's on.

Along with the early extreme crying episodes, Kimberly talked about Jennifer's

enduring *Infant Characteristics* in relation to perceived excessive fussiness. Specifically, Kimberly noted that there was “usually a 20 minute scream during the day and there’s ... an hour long scream at night.” She also noted that it was “hard to solve” when Jennifer cried, a finding echoed by her extremely elevated APT Competence and exceptionally low Confidence scores, when compared to the other mothers. Specifically, for APT Competence items, she generally chose “Lots of support needed at this time” on items related to holding and soothing, feeding, and supporting Jennifer’s health, and rated herself low on APT Confidence items, specifically related to coping with parenthood, “being a good parent” or “being a good person for another parent to learn from”. She noted that Jennifer appeared to be meeting her developmental milestones, but rated her the lowest on the IBQR Surgency index across the five babies. Her challenges with reading Jennifer’s cues were apparent during the observation:

Kimberly and Jennifer sit together on the floor, Jennifer on her back and Kimberly sitting by her feet. Kimberly goes between talking with me and talking to Jennifer, vigorously rubbing her belly and leaning in close to Jennifer’s face. “Yes! Mamma loves you so much! I can’t stand how much I love you!” I watch as every time Jennifer stops moving or looking at her mother, Kimberly begins rubbing her belly and grabbing her toes to shake her legs, while also talking to her in loud, somewhat jarring motherese. The tone appears jarring to Jennifer as she startles slightly when Kimberly speaks this way, and her stork bites come and go, darkening and lightening across her eyelids. As the interview progresses, Kimberly continues to talk to Jennifer, stopping mid-sentence with me the moment Jennifer stops directly engaging with her. I notice that with more and more vigorous back rubs, Jennifer’s eyelids begin to get heavy, and she looks like she may fall asleep. Additionally, at any point Jennifer starts to squawk or rub her eyes, or drool or chew on her hands, Kimberly verbalizes the change (“Oh! Why so much drool, love?!), hands her more toys (“What’s wrong? Here, hold onto to Edmond” a stuffed elephant/love), or moves her to a new location on the floor. Within 10 minutes she had been on a blanket on her belly, placed in a stationary “jump-a-roo” with lights and music, and then onto her back underneath a baby gym with rotating stuffed animals and music. Kimberly continues to rub her belly or hand her a lovey any time she vocalizes or starts to fuss. Eventually, Jennifer drifts off while laying on her back, and is quiet for 45 minutes.

Kimberly noted that Jennifer was “always moving” and would rotate a full 360 degrees in her crib overnight. Due to the early and current experiences with excessive or unmanageable crying episodes, it seemed that Kimberly implemented every method she could think of to help soothe her baby, even at the slightest amount of fussiness, possibly to the point of over stimulation.

Regarding the *Maternal Relation to the Infant* information, Kimberly was not particularly reinforced by Jennifer, and instead noted, “I wish I could understand her a little better. I wish I knew why she was sad when she was sad.” She felt Jennifer was “emotional like mama” and said she worried about “everything. Literally everything. I worry about everything today and everything down the road” after listing 22 different immediate and long-term concerns during the interview. At one point, she indicated that she regretted “being as anxious as I was at the beginning because ... I would have enjoyed her first six weeks more if I had spent more time” with her. This was interesting to hear given the amount of alone time she was currently spending with Jennifer, even while on maternity leave. When asked about a story she would share with friends or family, she fondly provided information about Jennifer’s personality while getting her from her bed in the morning:

Her face breaks out into this huge smile, and she kicks enthusiastically and waves her hands, and she’s so excited. ...I think she’s excited about the day ahead of her. I hope that kind of excitement stays with her forever. I hope she always gets up in the morning, even when she’s 65 – “Yay! I get to be Jennifer again today!”

Further related to *Infant Sleep*, Kimberly reported that Jennifer’s sleep (rated a 2 out of 5) had also been good for her social relationships because she was never tired. Jennifer had the most noteworthy sleep pattern, mainly due to the strict feeding schedule

Kimberly and Kevin had implemented early on when she was not eating. Her bedtime was between 9:30 and 10:00 p.m. every night, and she slept in her crib until 10:15-10:30 a.m. most mornings, with no overnight wake ups. Naps were shorter and erratic, sometimes two to four in a day and at times only 15-minutes long. BISQ information indicated a slightly larger amount of nap duration than was reflected on the sleep log, but was commensurate with Kimberly's report that sleep was "Not a Problem at All". Due to her late waking in the morning and the feeding schedule that required five feedings throughout the day, she went to bed later than the other infants in this study. Kimberly noted that her evening bout of fussiness (between 7:30 p.m. and 9:00 p.m.) usually occurred prior to the last feeding and that she was "probably tired [but] needed" to eat one more time.

Kimberly had read many parenting books, and would often re-read those that stuck out to her. Her own mother had given her a book about the way the French handle sleep (Bringing Up Bebe: One American Mother Discovers the Wisdom of French Parenting), and from that, she learned about letting Jennifer fuss for at least five minutes before going to her (i.e., "the pause"), even when she was a newborn. Like the scheduled feeding information, she seemed to internalize this popular parenting advice that aligned with the dominant discourse related to handling infant behavior (i.e., babies need to learn to self-soothe), and experienced positive results related to infant sleep. Although she experienced a great deal of postpartum depression and anxiety, Kimberly was fortunate to have a job that afforded her flexible maternity leave and access to a huge support system that helped her during the transition to parenthood.

Tammy and baby Beth – non-problem sleeper dyad. Tammy was the youngest of

the five participants, and was also the only unmarried woman in the sample. She and her partner, Michael, lived in a one-bedroom apartment in a lower income neighborhood in the target community. The apartment was filled with homemade photo collages and baby toys, and comfortable oversized furniture, some of which had handmade blankets draped over the backs. The television was on in the background for most of the interview session, and the lights for the open concept kitchen-living-dining room were kept dim with the exception the light fixture that hung over the dining room table. There were children who occasionally ran by her door in the hallway, but in general it was a quiet setting.

In terms of *Family Life* codes that emerged for Tammy, she noted that Beth was unplanned and Tammy did not find out until she was 10-weeks along. She reported, “It was unplanned. I was very emotional. ... [My boyfriend] had just moved up here... but ... I loved [previous city of residence]. I had a good job there, I had, you know, I had great friends. I wasn’t like, stoked to move.” Once she moved to be with Michael, she started a job as a restaurant server and found it to be very unsupportive of her and her pregnancy. She revealed that she was “just done” after a shift, and would become irritated and angry when her manager asked her to complete additional tasks (e.g., take the garbage out to the dumpsters) after she had clocked out. Tammy indicated that she enjoyed being a full-time stay at home caregiver to Beth, and one of her biggest concerns was when she does return to work and finding a daycare for Beth, and the difficult adjustment she anticipates will ensue.

With regards to *Partner and Social Support*, both Tammy and her Michael’s extended family lived four hours away. Her mother and other extended family members

came to town for her labor and delivery, and Tammy indicated that her mother was a great source of help and support. During labor, Tammy recalled asking for the doctor due to the pain and intensity of the situation, and noted

I'm like, 'you need to get him in here right now because I feel like I'm to die. I'm going to die right now you guys; like, this is the end.' ...And ... my eyes are just closed and I'm like 'No, I'm about to die. I don't know what's going on.' And they're like, 'Look, look your baby's right here.' And I looked down and I'm like, 'Oh my God. There is a baby.'

She indicated that it was reassuring to have her mother and boyfriend help her during a time that she found particularly traumatic and confusing, and unlike Kimberly, this event did not appear to cause long-term implications for how she viewed or interacted with Beth. While she noted that she speaks to her mother on a daily basis, her main source of support came from her boyfriend, with whom she has been together since high school. Interestingly, her DAS Dyadic Consensus score was low, possibly due to his challenging work schedule (i.e., given no family leave after Beth's birth; worked 2:00 p.m. to midnight most days of the work week) and not being able to spend a lot of time together like they did prior to Beth's arrival. As noted above, she indicated that her job while pregnant as a server was unaccommodating and she had no intention of returning to it once she was ready to go back to work.

Infant Characteristics coding revealed that Beth is considered an easy baby who had a tendency to become fussy when tired or hungry. Tammy reported that her cues were easy to read, and her level of crying or fussing had never been excessive. In contrast, Beth was rated highly by Tammy on the IBQR Negative Affect scale. It may be that while her behavior becomes more challenging at times, Tammy was comfortable handling negative emotional demonstrations and does not feel overwhelmed in those

instances. The following vignette highlights how Tammy aptly worked through a situation when Beth became fussy.

Beth is placed in a doorframe jumping contraption. She immediately jumps and bounces, chewing on a set of ring toys and gurgling while she moves. After 10 minutes in the jumper, Beth's affect shifts. She becomes listless and quiet, and makes little squawking noises. Tammy waits a while to get her out (approximately 5 minutes), only after Beth stops moving completely. When she lifts her up, Beth's face lights up with a smile and she begins to kick her legs. She nuzzles into her mom's chest and grabs at her shirt. Tammy prepares a bottle in the kitchen, all while continuing to talk with me for the interview. I notice that Beth starts to arch her back while in Tammy's arms. She tells me, "She's been doing that and it totally freaks me out!" Tammy says "Honey, you scare me when you do that, it's ok" and lets her know that the bottle will be ready soon. Beth arches a few more times while waiting, to the point that Tammy almost loses her grip at one point. Once they sit down and Beth takes the bottle, her motoric responses calm and she appears content sitting with her mom.

Tammy's enjoyment of parenting and her ability to work through challenges with Beth were items coded under *Maternal Relation to the Infant*. She noted that their relationship was "Good, she loves me," and that their bond is "strong". She had noticed a growing and improving relationship between Michael and Beth, a shift since her birth that at times made Tammy "a little jealous" because she had been the person with whom Beth was the most comfortable until recently (i.e., "...don't forget about mom over here ...the one that's always here for you"). Overall, Tammy indicated confidence in her parenting skills, both during the interview and as reported on the APT Confidence scale. She was comfortable speaking with her mother or the pediatrician about concerns or advice related to Beth's development and ways to support her growth. In contrast, her APT Competence score was elevated, a score made higher only by her consistent response pattern of needing "moderate support at this time" across numerous caregiving tasks (rather than "Lots of support needed"). Recalling the above vignette when Beth

became fussy and Tammy's ability to read Beth's cues in that moment, her APT Competence rating seemed inline with other interview and observation data and Tammy's ability and comfort with following her parenting instincts, while also asking for help when she felt unsure.

A similar pattern of following Beth's cues was revealed for *Infant Sleep*. Tammy did not indicate high levels of stress or worry related to Beth's sleep habits. Unlike the two Problem Sleeper dyads, Jane and Sarah, Tammy's sleep-related concerns were not elevated even though according to the sleep log, Beth was waking two-three times per night. Additionally, Beth typically slept 11 and a half hours overnight, and averaged two-three naps per day, information further corroborated on the BISQ. Tammy rated stress about Beth's sleep a 2 out of 5, and selected "Not a Problem at All" on the BISQ. This was an interesting contrast to the Problem Sleeper dyads who experienced similar waking amounts but found the patterns disruptive. Again, due to Tammy's confidence in herself and comfort with asking for help and receiving support from others it is notable, and it appears that what is viewed as challenging in one setting by one mother may be considered normative in another. When the topic of sleep training came up in the interview, Tammy noted that her own mother did not implement any methods with Tammy and her five siblings but Tammy knew the pediatrician was going to bring it up at her six-month well-child visit. Tammy also indicated that she and Michael agreed on how to handle sleep, and would deal with the potential for sleep training if the need should arise. Finally, she noted a commonly held negative belief about bed-sharing in Western industrialized cultures (i.e., "I was really bad before because I would let her sleep with me ... I'd just fall asleep as she was eating"), but, like other aspects of her caregiving, did

not assign excessive guilt, stress or worry to her actions.

Laura and baby Gabrielle – non-problem sleeper. The interview and observation with Laura and Gabrielle took place along with Laura’s husband, Jack and their three-year-old daughter, Tricia. Laura also indicated to me that she and her husband had completed the assessment materials together. They resided in a single story ranch home in a working class neighborhood located in a small suburb of the target city. Walking up to the house, there were two colorful ceramic flowers in the front flowerbeds, objects Tricia proudly announced she had created with her mother. Upon entering the home, it was clear by the toys and organizational units there was a playroom in what may have been a formal living room at one time. The back of the house was comprised of an open concept eat-in kitchen and family room, with a fireplace in the family room that connected the playroom to the family room. The family had just finished dinner and Tricia settled in with a movie while the interview with Laura and Jack commenced. While questions were posed to both parents, Jack remained quiet and would typically nod in agreement or provide assistance with Gabrielle or Tricia for the duration of the interview. The interview and observation session had an incredibly relaxed and laid-back vibe.

Gabrielle was a planned pregnancy and Laura indicated they wanted to have the girls close together in age. *Family Life* codes revealed a level of distraction about Tricia, and that Gabrielle “was a little more fussy [than Tricia] after she was born”. Much like the comparisons made by Jane, mother of Bridget, between her baby and other children she noted that Gabrielle was “a lot more vocal than [Tricia, but Tricia] was more advanced at this point – she had four teeth and [Gabrielle] has two.” She also reported

that “[Gabrielle] is not sleeping as well as [Tricia did at this age].” Due to extreme challenges Laura experienced breastfeeding Tricia, Gabrielle was formula fed from the time she was born as Laura “did not want to go through that again.”

While getting some background information from Laura, she informed me that she and Jack worked long hours, five days a week. *Family Life* items were coded regarding their consistently busy schedule that involved leaving the house each day by 6:15 a.m., one parent with each child. She noted that they often had to wake Gabrielle up in the morning prior to leaving. A recent change had taken place from an in-home daycare to a preschool for Tricia, while Gabrielle continued to reside at the same location. This had been a difficult transition for Tricia and Laura, something she anticipated would also be difficult for Gabrielle when she approached the age of three.

Related to the their obvious tandem parenting approach, high levels of *Partner and Social Support* were apparent in the ISEL Tangible and DAS Dyadic Consensus scores. Along with Jack, Laura relied on extended family (i.e., in-laws, brothers, sisters, etc.) for childcare and caregiving advice and support. They received assistance from grandparents on a consistent basis, and their daughters had many cousins with whom they were close in age. The following observation illustrated how Laura and Jack handled parenting in their home, as well as the calm vibe that that was present throughout the entire data collection session:

A little later in the interview, Jack finishes giving Gabrielle a bottle. He and Laura appear to have a seamless way of communicating: “Spit rag?” he asks. “Sure” and Laura tosses him the rag from her spot on the adjacent couch. When Jack gets up to help Tricia in the bathroom, Laura holds Gabrielle in her arms. Gabrielle looks at me shyly and snuggles in closely to her mother, tugging at her chest. When Jack returns from the bathroom (Tricia is still in playing with the water), he sits down and Laura asks, “Boogie wipe?” “Here you go!” and he

tosses it her from his spot on the other couch. Tricia reenters the room and gives Gabrielle a big hug. Laura says quietly, “Gentle, be gentle” and Gabrielle beams and smiles at her big sister despite the massive squeeze. Laura turns to me and says, “She makes her smile so much. They have a very special connection”. All four of them seem to aptly read one another’s cues, and the result is a relaxed, happy home.

Many pieces of interview and questionnaire information about Gabrielle’s temperament and personality were coded under *Infant Characteristics*. Laura revealed that she had been more difficult to figure out in terms of sleep, and she also struggled with extremely bad diaper rash (i.e., “We couldn’t use wipes. It was bleeding and that was hard”) and colic throughout the first five-weeks postpartum, and had recently experienced a bronchial “issue” that required the use of an inhaler. When asked about a challenging time that may have been a setback for Gabrielle, Laura and Jack indicated a night while traveling when Gabrielle was five-weeks old and would not go to sleep. Extended family were staying in the same location “and everyone had opinions” on how to handle the situation, which led to increased stress for both parents. In spite of the early temperamental challenges and differences between Gabrielle and her sister, Tricia, she was currently described as “pretty relaxed and easy going”, and crying or vocalizing more when she was tired or hungry; however, Laura and Jack noted that the behaviors had become easier to understand and handle. Laura noted, “Recently while at Target she started crying and I picked her up and she stopped. She will also take a pacifier at night or in the car,” techniques that were unsuccessful in the past. The scores for the IBQR Surgency and Negative Affect indices, as well as Laura’s non-significant PWSR, APT Competence/Confidence, and ISEL Self-Esteem scores further corroborated these findings.

In terms of *Maternal Relation to the Infant codes*, Laura revealed that their relationship had been challenging in the beginning but “the feedback we get from her now, now that she’s able to smile and laugh” has made a significant positive difference. Additionally, she noted that “now I get out more. When she was fussy I didn’t leave much, but it made me a stronger person.” She also pointed out that she has more caregiving perspective with her second baby, and “it’s been much easier the second time around. This is our last one, so I know it’ll be ok. Even when she wakes up a couple times a week, I just think about how this is our last one.”

Along with other aspects of caregiving, Laura and Jack have agreed on how to handle sleep. Both girls sleep in their own rooms and have been since they came home from the hospital. On average, Gabrielle was sleeping 10 and half hours a night, and napping two-to-three times per day for a total of approximately three hours. *Infant Sleep* was handled by working together to support one another during the newborn phase and overnight wake-ups, as “both [Jack] and I know we need to sleep so we switch off.” Barring illness, travel or teething, Laura believed that babies should stop signaling by six-months. Sleep log information indicated that Gabrielle had three night wakings across the five-day night period (i.e., one per night), but was reportedly teething and was easy to get back to sleep. Stress related to sleep was a 1 out of 5, and ranked “A Small Problem” on the BISQ. Other BISQ aligned with the sleep log in terms of average number of night wakings (i.e., one), the amount of time it took to get Gabrielle to sleep, and her average bedtime. One anecdotal discrepancy between the sleep log and interview data related to Gabrielle falling asleep in Laura’s arms, as “we’ve created this only one way to fall asleep in her bed. She won’t fall asleep in our arms – [she’s] very independent.” Laura

also seemed to be influenced by her familial culture and the dominant Western discourse related to sleep. She reported that she talked with relatives and her pediatrician about sleep, and read popular parenting books and websites for advice on how to handle infant sleep. When asked if she handled sleep similarly to her peers, she noted “Definitely not. My friend has an 18-month-old who still wakes up. She falls asleep on them in their arms – no thank you!”

Along with their relaxed family vibe, Gabrielle’s easy temperament, a great deal of social support and cultural ideals related to sleep, and due to the necessity of sleep for their jobs, Laura and Jack seemed to have thwarted any sleep-related anxiety or concern by implementing a plan from day-one with their girls. They both worked long hours and their daughters spent the most time in out-of-home care (i.e., 40 hours per week) then any of the other children in this study; however, their decisions were free of guilt and meant to make life better for the girls. As noted by Laura, “We work hard to provide for them.”

Across the Samples: Sociocultural Variables that Interact to Impact Sleep

It is important to conclude this chapter by looking at the way specific variables within each sample group influenced the development of sleep in five- to seven-month olds. The samples ended up being more similarly matched based on gender, race/ethnicity and SES than had been predicted. With the exception of one male respondent on the survey, all participants were female.

Frequency of problem and non-problem sleepers across the samples. Results indicated that both samples were more frequently classified as Non-Problem than Problem Sleeper respondents. Participants in both groups answered questions on the Prospective Dyad Form that asked 14 questions about pre- and postpartum sleep related

concerns, and rated their level of stress related to their baby's sleep. Even when endorsing numerous items on this form (i.e., more than 9), many rated their stress about their infant's sleep as a 1, 2 or 3. Given that the highest stress rating for the case study sample was a 3.5, it is interesting to consider how many survey respondents would have been considered Problem Sleepers had there been an opportunity for a follow-up survey or conversation. This is because factors on the Prospective Dyad Form that placed case study mothers into the Problem Sleeper category became clear after following up their responses through direct conversation during recruitment.

Additionally, both samples completed the BISQ to gather information meant to align with objective sleep measures (e.g., video recording, actigraphy, etc.), which also provided a rating of their infant's sleep. Out of the 88 survey participants and 5 case study mothers, only 1 respondent (survey) reported that their baby's sleep was "a very serious problem". This finding was commensurate with research that suggests infants rarely sleep poorly for extended periods of time (e.g., throughout the entire first year, etc.); rather, they may enter developmental periods when sleep becomes more problematic and signaling increases (Byars et al., 2012; St James-Roberts, 2012). On average, every caregiver in the survey and case study cohorts specified that their baby signaled overnight, although the most frequently reported age at which babies "should" cease signaling was six-months of age ($n = 26$ survey; $n = 2$ case study). This is significant given the developmental changes taking place between five- and seven-months of age and the potential for sleep disturbances that infants demonstrate during a time of developmental advancement (Emde, 1989; Scher & Cohen, 2015).

Co-sleeping across the samples. Along with this finding, another notable trend

indicated that approximately half of both samples endorsed co-sleeping in some capacity at some point with their baby, but were more accepting of co-sleep as a practice for “babies in general”. This finding provided evidence for a more recent trend in infant sleep literature about the shift in sleeping practices for Western, white, industrialized cultures (Ball, 2002; Brazelton & Sparrow, 2003; McKenna & Volpe, 2007), despite recent evidence suggesting that bed-sharing is an unsafe practice (AAP Task Force on SIDS, 2011b; Colvin, 2014). Interestingly, 3 of the 4 mothers in the case study sample who have engaged in some form of co-sleeping (Jane, Sarah, Tammy and Kimberly—typically bed-sharing and transitioning to room-sharing – although Kimberly reported only having Jennifer in their room for a few weeks) indicated that they knew “it was [considered] bad” by their pediatrician but did it anyway (Sarah, and also echoed by Tammy), while Jane would bed-share with no associated guilt (i.e., “I just lie [at the doctor’s office] and say she sleeps in her own bed in a separate room”). Since all mothers were recruited from the same pediatrician’s office and had babies within similar age ranges, they were asked the same series of well-baby questions (e.g., “Is she sleeping through the night or still waking up?”) and received similar information about how to handle infant sleep. For example, 4 of the 5 mothers (Jane, Sarah, Tammy and Laura) reported being told to “drop the midnight feedings” by six-months of age and to move their babies out of their rooms. The guidance given by the pediatrician’s office was not surprising given the APA’s recommendations on sleep (AAP Task Force on SIDS, 2011b), namely to abstain from bed-sharing at six-months of age. While not knowing advice that survey participants received from their pediatricians, another interesting finding was that both samples utilized some form of feeding (breast or bottle) to help

their baby in this age range return to sleep, along with rocking and walking with their baby during the nighttime hours. At least as it pertained to the case study participants, they were implementing these methods knowing that the advice was to refrain from feeding their babies overnight.

Sleep training across the samples. Both the survey and case study samples were split on how to handle sleep-training advice. Approximately half of the survey respondents indicated that they would not use a method like “Cry-it-Out” and answered “No” when asked if it was ok to allow a baby to cry overnight. For the 2 case study respondents who were classified as Problem Sleepers, Jane and Sarah, they seemed to indicate that sleep training was inevitable, although both expressed concern and anxiety about implementing the prescribed method from the pediatrician. In one specific interview, Sarah indicated that the pediatrician said

To close the door ... [at] 7:00 p.m. [and] just go back in there at 7:00 a.m. ...Part of me would like to ... do that because I trust what [the pediatrician] tells us, and it would not harm her in any way. ...I would need to ... leave the house in order for it to happen ...otherwise there's no way I would let her cry it out.

The advice case study mothers were given contrasted with what was considered acceptable by those in both samples related to sleep training methods. Tammy also voiced trepidation about receiving advice from the pediatrician related to sleep-training, but expressed confidence in her following her instincts as it related to Beth's sleep (i.e., “I'm not going to just let her cry!”). She also indicated that she would follow the advice of the pediatrician related to sleep practices (i.e., “I tell them everything so that they can tell me ‘that's right’ or ‘that's not right’”), but also relied on her own mother's advice who did not implement sleep training with her children. In a lot of ways, Tammy

highlighted the findings from the overall survey sample, in that she was not highly stressed about her baby's sleep, had a decent amount of social support, was not completely sure that she would employ sleep training (even though she knew it was effective) and found her baby Beth's night waking behavior normative for an infant her age.

Sharing sleep, social support and night waking. Overall, it was found that babies in this age range and demographic demonstrated some level of waking behavior, a finding in contrast to other reported information by both cohorts that babies around the age of six-months should sleep without signaling. For the case study mothers, this finding seemed related to whether they were bed- or room-sharing, as those in separate sleeping locations (Kimberly and Laura, both Non-Problem Sleeper respondents) had fewer recorded night wakings. The two dyads classified as Problem Sleepers (Jane and Sarah) engaged in co-sleeping. A higher percentage of survey sample Problem Sleeper respondents were co-sleeping (37.5%) than Non-Problem Sleeper respondents who were co-sleeping (28.2%). Further, a larger proportion of Problem Sleeper respondents in the survey group were waking 3 or more times per night (56.3%) when compared to the amount of Non-Problem Sleeper respondents waking at a rate of 3 or more times in the survey sample (23.9%). Across both samples, caregivers endorsed a high level of financial security (i.e., incomes well above the poverty line) and social support, in that the survey group indicated both partners tended to their waking infant overnight and for the majority of case study mothers, their partners and other family members provided a consistent level of support. For two of the Non-Problem Sleeper case study respondents, it was clear that out of necessity for their employment and mental health, they needed a

concrete plan for handling sleep (Laura and Kimberly, respectively). Even with Kimberly's baby's reported daytime fussiness, baby Jennifer clocked up to 12 hours of overnight sleep (sometimes more), mainly due to the plan of action put in place by her caregivers.

CHAPTER V

DISCUSSION

This chapter begins with a discussion of the summary of the findings related to factors that impact sleep in five- to seven-month old infants, followed by a reflection about the methodological approach. Interpretations of the findings are offered and limitations and future directions are presented. The chapter concludes with practical implications of the study.

Summary of Findings

Because adequate sleep is considered one of the most essential precursors for developmental gains and overall wellbeing (Ferber, 2006; Shonkoff & Phillips, 2001; St James-Roberts, 2012; Weissbluth, 2003), factors that impact the progression of sleep are of interest. The results of this study provide evidence that five- to seven-month olds are generally sleeping for consolidated chunks of time overnight, and that caregivers within the demographic sampled are similar in their sleep related beliefs and practices as well as the amount of infant night waking they are experiencing. Results also suggest that out of the three factors explicitly examined with case study methodology, maternal-driven variables appear to be the most influential component in sleep consolidation, followed by sociocultural contributors and infant characteristics. Of the three contributors examined in the case study, sound maternal mental health and adequate partner and social support

were associated with better sleep. Postpartum depression, anxiety and worry were tied to co-sleeping, which appeared to further perpetuate night waking behavior, and this interaction may have also been moderated by poor partner and overall social support for two of the five mothers in the case study sample.

Five- to Seven-Month Olds are Sleeping

Non-problem sleepers are more common. The survey and case study samples were demographically similar, and representative of middle- to upper-middle class, educated, employed Caucasian women living in a Western, industrialized context. Overall, there were more Non-Problem Sleeper than Problem Sleeper respondents across the two samples, and most babies were sleeping for consolidated periods of time overnight. The majority of participants in both samples revealed that their babies slept for approximately 10 hours during the night. Given that more babies in both samples were classified as Non-Problem Sleepers and were sleeping for an amount above what is considered in the sleep literature as “sleeping through the night” (i.e., a stretch of five or more hours; Anders et al., 1992; Pinella & Birch, 1993; St James-Roberts, 2012; St James-Roberts et al., 2001), these findings support the existing literature that more babies than not in this age-range sleep for some consolidated chunk overnight (Byars et al, 2012; St James-Roberts, 2012).

Night waking and co-sleeping. In general, most babies in this study were waking during the night. Survey sample results revealed that more babies categorized as Problem Sleepers woke at a higher frequency than those categorized as Non-Problem Sleepers. In terms of the case study dyads, those in the Problem Sleeper category (Jane/baby Bridget and Sarah/baby Kate) were waking more than the Non-Problem Sleepers (Kimberly/baby

Jennifer and Laura/baby Gabrielle), with the exception of one Non-Problem mother (Tammy/baby Beth) who reported night waking at a similar rate to the Problem Sleeper dyads. Across both samples, those that co-slept or endorsed having ever co-slept with their babies experienced a higher percentage of overnight wakings. Further, due to the in-depth nature of case study data, sleep log information provided more details about night waking. Both Jane and Sarah provided anecdotal information of one instance during the sleep log recording period when their baby was wide-awake and needed more intervention than feeding or a pacifier to get back to sleep (e.g., rocking, walking, feeding etc.). In contrast, Tammy indicated that most night wakings were resolved with nursing or giving a pacifier to her baby.

These findings related to sleep amounts and night waking frequency are not surprising given prior findings that only a small percentage of infants display stable night-waking issues across infancy and early childhood (Byars et al., 2012; St James-Roberts, 2012). Additionally, the five- to seven-month age range precedes major developmental and physiological tasks: forming attachments with primary caregivers (Landy, 2002; Zeanah & Smyke, 2009) and improving the ability to self-soothe due to biological maturation of innate sleep rhythms, respectively (Anders et al., 1992; St James-Roberts, 2012). Recalling Bronfenbrenner's Ecological Theory, inherent infant characteristics at the core of the model seem to be one of the biggest basic determinants impacting how the majority of babies sleep at this time in development.

Common Sleep Practices and Beliefs

Co-sleeping. The majority of participants in both samples indicated that co-sleeping in some capacity is acceptable, highlighting the paradigm shift taking place

particularly for those living in Western, industrialized settings (Abbott, 1992; Ball, 2002; Blair & Ball, 2004; Brazelton & Sparrow, 2003; Lindgren et al., 1998; Lozoff et al., 1984; McKenna & Volpe, 2007). However, survey participants were more frequently sleeping separately from their babies than co-sleeping. It may be that while more leniency is expressed about co-sleeping as a practice, the embedded cultural norms for this population to sleep apart from one's baby remains the most prominent practice in this particular sample. The lack of reported co-sleeping may be due to a desire for privacy (e.g., while Jane enjoyed bed-sharing with Bridget, she indicated that it would be nice for her and her husband, Bill, to have their bed back after the renovation was complete), partner disapproval (e.g., Sarah indicated that she was not totally against having Kate move into her own room, especially because the sleeping arrangement had caused tension between her and her husband, Steve), or minimization of nighttime parenting to improve sleep quality (e.g. Laura and her husband Jack worked long hours and experienced positive outcomes from sleeping separately from their daughters, and Kimberly's mental health was positively impacted by sleeping separately from Jennifer).

Sleeping through the night. Across the samples, six-months of age was the most frequently reported time for babies to stop signaling their caregivers overnight. After obtaining information from the case study sample, it was clear that this is the advice given by medical staff during well-baby checks, and is also the age at which the AAP recommends moving babies to their own sleeping space (AAP Task Force on SIDS, 2011b). Infant sleep seems to be impacted by major developmental changes, thus disturbances and improvements occur in tandem with new relational, communicative, motoric or cognitive advancements. Six-months is one of many times throughout

development when major growth is evident, but due to the fluidity of development, it is unlikely that a single profile of sleep will sustain throughout infancy and early childhood. Six-months appears to be more of an arbitrary standard that is part of the dominant discourse in Western, industrialized culture, than a true marker of when consolidated sleep occurs for most infants. The noted six-month marker is most likely perpetuated by emphasis from pediatricians and the popular media that this age is the time when babies “should” sleep without signaling.

Sleep training. The samples indicated a level of discomfort with sleep training, specifically when asked about a specific technique such as “cry-it-out”. Interestingly, both samples implied that sleep training was likely, in that half of the survey group reported that they plan to use a sleep training method, and three of the case study mothers discussed sleep training as a definite possible. Further information gleaned from the case study mothers revealed that the bulk of their information related to sleep training came from their pediatrician’s office. The recommendation was presented along with the advice to drop nighttime feedings at around six-months, and as outlined in the aforementioned section, that babies should generally be sleeping through the night by this age. Across the samples, respondents were uncomfortable with sleep training, but not necessarily against implementing in their homes.

Partner and social support. In both cohorts, there was evidence to suggest that nighttime caregiving was happening at a higher rate with both parents. Over half of survey participants indicated that it was the responsibility of both partners to help with night waking behavior. However, when comparing survey participants, those classified as Problem Sleepers respondents more frequently reported that it was their own

responsibility to handle overnight waking, rather than both partners in the household. It was also found that more Problem Sleeper survey respondents reported having been criticized by family or friends for how they handled their baby's sleep. These two findings highlight the possibility that those classified as caregivers of Problem Sleepers were having difficulty accessing positive partner and social support resources. Three of the five case study mothers (Tammy, Kimberly and Laura, all Non-Problem Sleepers respondents) indicated that their partner helped with nighttime waking. The two other case study mothers (Jane and Sarah, both Problem Sleepers respondents) indicated lower levels of partner consensus related to sleep, and Sarah in particular revealed extremely minimal outside social support. Tammy, Kimberly and Laura had access to strong social support networks through friends and family, and seemed to align with the beliefs and practices of their support resources. Such an alignment may help to foster a sense of parenting validation and empowerment, leading to more decisive and purposeful caregiving practices.

Bronfenbrenner and the dominant discourse. Located in the Macro- and Exosystems of Bronfenbrenner's (1994) Ecological Theory, findings presented here demonstrated the influence of overarching cultural beliefs and values ingrained in a culture (e.g., independence/autonomy are important, and solitary sleeping is more conducive to that ideal) and the impact of direct policies on related practices (e.g., it is best to refrain from co-sleeping after six-months). Additionally, at the Microsystem level the broader beliefs from larger influences were evident in the caregiving choices expressed by the two samples (e.g., co-sleeping is acceptable, but perhaps more so for others than for themselves; babies should not wake or be fed overnight after six-months

of age; sleep training will likely need to happen, but is not going to be a positive experience). Finally, it is possible that participants in both samples did not want to report that they were co-sleeping due to the stigma surrounding it as a practice. For example, having received the recommendation from her pediatrician that babies should not bed-share, Jane revealed that she would simply withhold information during well child checks about Bridget sleeping in her bed.

Variables that Impact Sleep and Bronfenbrenner: An Appropriation of Ecological Theory

Figure 3 highlights the application of Bronfenbrenner's theory specifically to infant sleep and also takes into account aspects of El-Sheikh and Sadeh's (2015) recent appropriation of the model applied to sleep. In the center, "The Infant" is the individual, and in this case "inherent factors" include typical developmental processes, sleep characteristics and infant temperament. Moving outward, the next level is "The Immediate Context", a reconceptualization of the Microsystem, and includes the maternal factors that impact sleep including mental health and maternal perceptions of her infant. Further out from the center, similar to El-Sheikh and Sadeh (2015) the next level condenses the Macro-, Exo- and Mesosystems into one broad level to include "The Sociocultural Context" involving beliefs, ideals and social support related to sleep. This level includes factors as broad as overarching entities like the AAP and also takes into account the role of partner and social support on caregivers of young infants. Finally, the outermost level, like Bronfenbrenner's Chronosystem, encompasses "Maturation and the Passing of Time", including the changes that occur for the caregiver but primarily the

infant, who is developing and changing at a rapid pace.

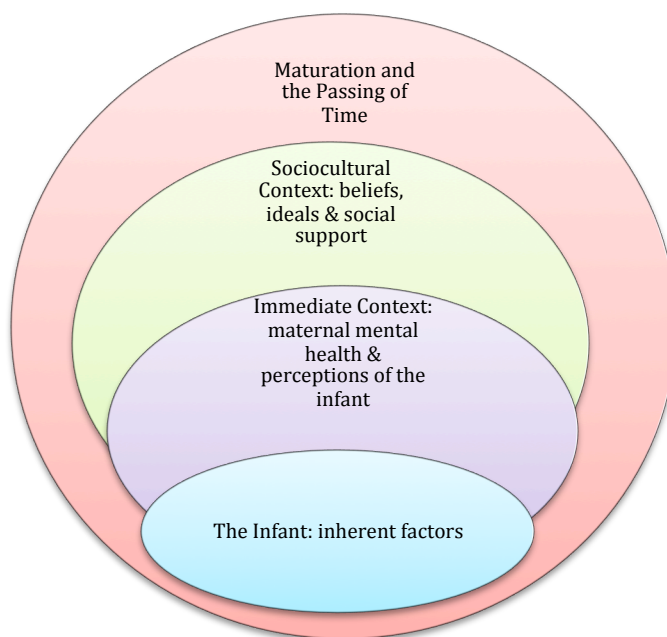


Figure 3. Application of Ecological Theory to Infant Sleep

The immediate context: Maternal contributions. Related to the case study sample, findings from this investigation provided further support for the mother-driven model as presented by Teti and Crosby (2012) and other studies that have found a link between poor maternal mental health and maladaptive sleep-related cognitions, with infant sleep difficulties (see Armitage et al., 2008; Scher, 2008; Tikotzky & Sadeh, 2009). The model specifies that mothers with a history of postpartum depression or anxiety-ridden cognitions in regards to sleep will lead to sleeping in close proximity to their infants and faster reaction times when babies cry overnight. The two mothers who were classified as having Problem Sleeper respondents endorsed elevated levels of depression/anxiety (Sarah) and postpartum worry (Jane).

Sarah's pre-existing diagnosis of depression and anxiety appeared to impact how she approached and perceived her baby's sleep. Sarah and her baby Kate had transitioned from bed- to room-sharing. Sarah was on constant alert for Kate, tending to her when she made noise overnight and indicating that she would struggle with sleep training if she and her husband, Steve, decided to implement an approach. Her primary method for handling overnight waking was with breastfeeding. While she derived happiness from breastfeeding Kate to sleep during the day, she expressed frustration and resentment when engaging in this routine overnight, often wondering how long this approach to handling Kate's sleep would last. The combination of sleep deprivation with increased worry about the future seemed to further fuel her anxiety and increase her attentiveness to Kate overnight.

The other Problem Sleeper dyad, Jane and Bridget, also lent support to the Teti and Crosby (2012) model. Jane reported high levels of guilt associated with her lack of excitement and happiness during pregnancy. She viewed Bridget as her least robust child of her three, and voiced concern about being apart from her overnight. Bed-sharing allowed her and Bridget to remain in close proximity; however, they breastfed throughout the night, often times for bursts of an hour going back and forth with Bridget latching on and falling asleep, only to wake up a few minutes later to nurse again. It appeared that bed-sharing was commensurate with her caregiving practices and beliefs, as she enjoyed being near her daughter overnight, but the situation was starting to dually conflict with her sleep ideals and amounts, as well as her relationship with her husband.

As the mother of a Non-Problem Sleeper infant, Tammy was an interesting comparison to Sarah and Jane. Tammy and baby Beth were room sharing. Interestingly,

Non-Problem Sleeper Beth, was waking a similar number of times as Problem Sleeper babies Kate and Bridget. However, Tammy did not voice extreme concern or stress related to night waking behavior, rather she handled the waking by either breastfeeding or giving Beth a pacifier, and felt some amount of waking for a baby her age was normal. Additionally, she did not report any occurrences of waking that were long or drawn out. Beth was generally back to sleep within a few minutes. Tammy appeared to have established a suitable balance between listening to her caregiving instincts and the advice provided by others in her context (e.g., her mother, the pediatrician, her boyfriend, Michael), and took a lot of pride in her parenting. Thus, it appeared that Tammy's supportive others, positive mental health and outlook on caring for her daughter allowed her to handle sleep in more positive manner than either Sarah or Jane.

Both Kimberly and Laura, as Non-Problem Sleepers, provided more evidence in support of the mother-driven model. Specifically, they both indicated that sleep challenges were not conducive to their lifestyles or caregiving ideals. Their daughters slept solitarily early on, and at the time of data collection, both mothers expressed happiness with their daughters' ability to sleep throughout the night. In both families, there was an agreed upon approach to handling sleep, primarily to be as hands-off as possible throughout the night to encourage self-soothing. While Kimberly had the most elevated scores across the paper-and-pencil measures and the most verbalized concerns about her daughter, she was confident in her approach to sleep and had achieved positive results, thereby dampening any negative sleep-related behaviors in her baby as well as any self-doubt that could have led to increased anxiety or sleep disturbances.

The sociocultural context. Here, the impact of partner support on sleep is discussed, along with the contributions made by the broader social support system, beliefs and ideals encompassing each of the case study mothers.

Partner support. Related to the sociocultural context, results from the case study sample suggested that the presence of strong partner and social support helped to increase sleep duration. For the three Non-Problem Sleeper respondents – Tammy, Kimberly and Laura – partner agreement related to handling sleep seemed to improve the cohesion among the families and provided a united front in handling their babies’ sleep. In essence, these mothers made plans with their partners that were jointly instituted. For Kimberly and Laura, it meant sleeping separately from their babies and being careful about responding too quickly to noises or crying overnight (e.g., “The pause” according to Kimberly). In Kimberly’s case, sleep was described as essential to her mental well-being; for Laura, it was vital that she and her husband Jack get sufficient sleep due to their demanding schedules. In the case of Tammy, they were room-sharing due to space constraints, but felt that their arrangement was working for their family. For all three women, they engaged in a unified, proactive (rather than reactive), approach to handling sleep with their partner: making a specific plan and sticking to it. Research has shown that sleep location reactivity (i.e., varying from the sleep location plan) leads to more unhappiness and discord in the household (Teti et al., 2015) and to poorer sleep quality (Taylor et al., 2008; Youngclarke & Anderson, 2007), while having the support of a partner to handle daily caregiving tasks and night waking improves sleep for both the mother and infant (Tikotzky et al., 2015). In contrast, the Problem Sleeper respondents, Jane and Sarah, indicated either anecdotally or as evidenced by the DAS Dyadic

Consensus score or both, a level of tension and disagreement with how to handle sleep behavior, especially overnight waking. While their husbands were involved (e.g., helped with meals, bedtime and getting their children ready to leave the house, etc.) and active members of the family (e.g., did grocery shopping, worked jobs that helped pay the bills, etc.), disagreeing or pressuring the mother to handle sleep differently than she wanted appeared to be a mediating factor in her stress and anxiety level related to sleep.

Extended social support. Extended social support beyond the partner relationship also appeared to support the approaches that mothers took towards sleep that subsequently impacted their babies' sleeping patterns. Out of the two Problem Sleeper dyads, Sarah expressed having little access to outside social support. In combination with her and her husband not agreeing on how to handle Kate's sleep, it seemed difficult for Sarah to make decisions about how to manage Kate's night waking. Her primary source of advice was reportedly her pediatrician's office, and as noted previously, the recommendations clashed with her caregiving ideals. The other Problem Sleeper respondent, Jane, had a large extended family in the area who were involved with her children. However, Jane had received pressure from her extended family to, in her words, "cut the cord" and spend some time apart from baby Bridget. Additionally, she expressed disparate caregiving ideals than those presented to her at the pediatrician's office, and found the recommendations about sleep irritating and upsetting. The Non-Problem Sleeper respondents, Tammy, Kimberly and Laura, all indicated positive sources of extended support beyond their partners, and talked about sleep and approaches to overnight caregiving with friends and family. Also, these three women were generally comfortable with the advice provided by their pediatrician. The contributions of the

sociocultural context lend support for a transactional model as outlined by Sadeh and colleagues (2010). As it related to this study, mother's who experienced elevated levels of depression, anxiety or worry and also faced challenges with partner and social support regarding sleep, appeared to have more difficulties making decisions or plans in relation to sleep. Subsequently, maternal and partner sleep was further disrupted and this led to ongoing mental health challenges. Maladaptive mental health then seemed to start the cycle over, triggering struggles with decision-making and poorer sleep quality, both of which were met by marital or social dissonance regarding mothers' sleep-related choices.

The infant. In considering the center of the model, The Infant, it appeared that babies in both samples were sleeping in ways that were expected for their age. Specifically, they were "sleeping through the night" by clocking in sleep durations of about 10 hours overnight. One difference within both the survey and case study groups related to night waking, as those classified by their caregivers as Problem Sleeper infants were generally waking at a higher rate than Non-Problem Sleeper infants. Related specifically to the case study sample and measuring infant temperament, babies were generally rated as low on negative affect and high on positive affect; however, there were a few exceptions. For Jane (Problem Sleeper respondent) and Tammy (Non-Problem Sleeper respondent) IBQR Negative Affect was elevated. Observation data, while notably short and occurring at only one time point, did not corroborate these numbers for either baby (i.e., both were happy, smiley and interactive with no bouts of excessive crying), and in Jane's case, it is possible that her rating was due to her perception of her baby, Bridget, as "delicate" and less resilient than her other children.

Two mothers, Sarah (Problem Sleeper respondent) and Kimberly (Non-Problem Sleeper respondent) rated their babies as low on IBQR Positive Affect. In Sarah's case, her description of Kate was not surprising given Sarah's reported experiences with postpartum depression and anxiety, and her inclination to feel overwhelmed by her baby's sleep habits. Notably, in contrast, she had described her baby as "easygoing" during the interview. Kimberly's baby, Jennifer, was the only infant to demonstrate a level of dysregulation during the interview session. As noted in Kimberly's results, it appeared that Jennifer was over stimulated by her mother's attempts to keep her from crying. She was not excessively fussy and engaged positively with both the researcher and her mother. While she may be prone to higher levels of reactivity (i.e., according to her mother she has two major bouts of crying each day), any exhibited emotional reactivity does not appear to impact her sleep. With the exception of moving a lot in her sleep, Jennifer had the longest and most consistent stretches of sleep across all of the infants in the case study sample. Her longer sleep duration was interesting, given the results from a recent study by De Marcas et al. (2015) indicating that babies who demonstrated higher levels of sensory reactivity also exhibited poorer sleep. While in Kimberly's case the longer sleep duration finding may be accurate, it is also possible that it may be a misrepresentation on the sleep log, perhaps by accident or due to socially desirable responding.

Like the mother-driven model, Teti and Crosby (2012) also highlighted an infant-driven model whereby infants were waking at a higher rate and causing their mothers more mental health distress and close proximity parenting. The findings presented here similarly support a mother-driven model over an infant-driven model, and also show the

impact of sociocultural factors on sleep consolidation (i.e., a transactional model). It appears that inherent biological infant processes are at play, and, as shown in research, whether or not it is categorized as stressful relates more to caregiver interpretation of the behavior than how the baby is actually sleeping (Armitage et al., 2008; Kirjavainen et al., 2004; Sadeh et al., 2010; Scher, 2008; Teti & Crosby, 2012; Tikotzky and Sadeh, 2009).

Methodological Reflections

The original intent of this methodological design was to gather information from a broad, heterogeneous sample (survey) in order to inform the selection of a smaller, likely homogenous sample (case study). The survey was uploaded to the researcher's social media page and shared among friends and acquaintances. In addition to being re-posted through social media, it was also shared on one urban new mother's group social media page, and on a well-known parenting page that provides resources and advice for new caregivers, particularly those with excessively fussy infants. Similarly, due to recruitment constraints outlined in Chapter Three for the case study sample, demographic variability in that group was limited.

As planned, preliminary analysis of survey results assisted the researcher in identifying new questions to ask case study mothers. Survey data also provided information about dominant discourses related to beliefs about sleep that are trending in current research, mainly related to when babies "should" stop signaling caregivers overnight, the best location for babies to sleep overnight, and the level of comfort caregivers have with sleep training methods like "Cry-it-Out". Going into each case study data collection session, the researcher was also aware of the sleep-related concerns

new parents experience pre- and postpartum, which also helped to inform questions on the Semi-Structured Infant Sleep Interview.

Mixed-methodology was helpful in providing a broad scope of information. Survey data provided access to a larger subset of the population, and generated several questions about how families handle sleep in their homes. Case study was a major strength of this research design because it allowed the opportunity to pose follow-up questions and attain pertinent information that was inaccessible in the survey sample. For example, even though no mother endorsed a 4 or 5 on the Prospective Dyad Form, it was clear after spending time with each one in person and hearing their stories who was struggling the most with sleep. In a sense, delineation among Problem and Non-Problem for the case study participants was not as clear cut as anticipated; however, having the ability to talk and probe more deeply about certain aspects of their relationship with their baby and feelings about sleep aided understanding of the nuanced differences among the two categories of sleepers. This information was further enhanced by the multiple questionnaires and sleep log completed by each mother.

The case study methodology also facilitated understanding of what was happening during well-baby checks. One of the mothers reported lying to the nurse about how sleep was handled in her home because she felt uncomfortable having an honest conversation. As discussed below, these observations generated specific recommendations for who may be ideally suited to discuss infant sleep with families and for how these conversations might ideally go.

Limitations and Future Directions

Sample

The survey sample was suitable for making comparisons and drawing some conclusions about five- to seven-month old infant sleep; however, the sample ended up being comprised primarily of female participants (i.e., mothers) with similar sociodemographics. It is less plausible to make generalizations beyond the homogenous Western, white, well educated and financially stable group of mothers who completed the survey. Additionally, because respondents were generally married or living in a two-caregiver household, it was impossible to uncover the impact of single parenting – or lack of partner/social support – on infant sleep.

The case study cohort ended up being smaller than originally planned, mainly due to recruitment and funding issues. Additionally, due to the small number of individuals recruited, it would not have been reasonable to exclude those that met entry criteria based on the similarities among the sample. Again, the participants were white, well educated and financially secure, and all of the infants were female. A broader sample would have been helpful in attaining more in-depth information about this phenomenon. It can be argued that such a small sample size does not lend itself to generalizability; however, the counter argument within case study proponents is that this approach uniquely contributes to social science research and increases the understanding of a phenomenon. Moreover, “the goal is not make the case study be all things to all people ... The goal is to allow the study to be different things to different people” (Flyvberg, 2006, p. 238; Stake, 2006; Yin, 2009). For the researcher using case study methodology, it becomes possible to fully appreciate the uniqueness of the participants’ experiences. While they appeared

similar based on sociodemographics, each dyad presented individual characteristics that set them apart. Having the opportunity to enter someone's home and talk with them in a face-to-face manner afforded direct follow-up to questions (impossible with the survey sample in this study) and increased understanding of nuanced behavior that is unprecedented in the existing research on infant sleep in five- to seven-month olds. Existing studies often relied on an objective measure (e.g., actigraph) and paper-and-pencil measures (e.g., sleep logs, questionnaires), but did not consider these methods in tandem with an in-depth interview and naturalistic observation.

It was required that infants in this study be healthy, born full-term, and without any known impediments from labor and delivery. Additionally, mothers in the study were required to be at least 18 years of age and fluent in English. Participants were not included if they had a neurological disorder (e.g., cerebral palsy, hydrocephaly, seizures, blindness) or a genetic disorder (e.g., Down syndrome, Fragile-X-syndrome). Although these exclusions were intended to control for the influence of significant health issues on outcomes, these may have also limited the generalizability of the study.

Funding constraints. It is important to note that both the survey and case study samples were greatly constricted due to a lack of external funding. All materials were paid for by the researcher and broadening the scope of the samples was logistically challenging because increasing the size would translate into more costs that the researcher was required to pay. With external funding, a study similar to this one could increase the amount of recruitment sites and participant remuneration for online and in-person subjects.

Data Collection

Case study questionnaires and interviews. It was possible that participants responded with biases or in a socially desirable manner when filling out questionnaires and answering interview questions. Besides assuring participants of the confidentiality of their information and attempting to establish rapport, this issue was difficult to circumvent. In three cases, the researcher followed up with mothers who had left out responses or who had endorsed high levels of depression/anxiety. For all mothers who had missed certain items, none of them did so on purpose (i.e., not in an attempt to avoid difficult/personal questions). For those who had significant responses on mental health and other paper-and-pencil measures, it was clear they were responding honestly at follow-up (e.g., “Yes, I had a feeling that would come back high,” etc.), and were offered resources to mental health providers in the area.

Sleep measures. While interview questions and sleep logs provided a decent amount of sleep data, there was a lack of objective information in the proposed study. Actigraph or video recording technology were not a part of the research design due to budgetary constraints; however, the BISQ (Sadeh, 2004) was added due to its alignment with more objective measures.

Survey data. As the Internet based survey was not conducted face-to-face or even over the phone, the Survey Sample participants were subject to presenting biases and false information, as is possible with any online survey-based sample. Since there was the potential for this sample to mislead the researcher, data was carefully assessed to look for major inconsistencies or extreme responses. Accordingly, there were a fair amount of participants who were removed from the total sample, either through a logic

function applied to the Survey Monkey protocol that redirected participants to a “Thank You but You’ve Been Disqualified” page, or during data cleaning of those who did not meet the entry criteria.

Follow-up. This study did not lend itself to a longitudinal design. One of the main reasons for this design is that it supplies both breadth and depth of data (Mabry, 2008; Cresswell & Clark, 2011). Given time and budgetary constraints, the methodological design utilized allowed the researcher to gather a large amount of information, including rich, in-depth data from Case Study participants. Future studies should consider use of a longitudinal design in examining the study’s research questions.

Future Directions

Conduct future studies that involve longitudinal design. While this study did not lend itself to a longitudinal design, conducting follow-up assessments with both cohorts at other prominent times in development would provide interesting information about the formation and maintenance of sleep behaviors across ages. It would also be useful to examine the effect of time on maternal well-being, especially as mothers move out of the first year of life with their new baby, and sleep inevitably becomes more consolidated.

Examine more variables and diversify the sample. In the survey sample, maternal mental health and infant temperament were not examined due to the challenges accessing and supporting individuals who may have endorsed elevated or clinical levels of depression or anxiety, or heightened concerns for their infant; however, given the current study’s findings, it would be useful to examine those constructs as they pertain to

infant sleep in a broader sample with more resources in place to follow-up and ensure their safety.

Related to both survey and case study methodologies, since there was a marked lack of single parents in this study, it would be beneficial to consider the impact of single-caregiver households and lower SES on infant sleep in future studies. Finally, one other difference between the Non-Problem and Problem Sleepers related to the occurrence of formula feeding for the Non-Problem Sleepers. Future investigations could examine a broader sample to see if there are associations between formula feeding, solitary sleeping conditions, and more consolidated sleep.

Future research should also seek a more heterogeneous sample of participants via broader recruitment sources. These could include other online sources beyond social media, such as parenting resources like Parents.com and BabyCenter.com. The survey could also be uploaded on a diverse array of list-servs available to new parents of Latino, African American, Asian or Native American backgrounds or those who are members of groups for single parents. The survey could also be available in numerous languages to attract a more diverse sample. It may also be plausible to offer the survey through home visiting programs, whereby a family's home visitor asks a caregiver complete the survey during a scheduled visit.

Implications

Normalization for Parents

Often caregivers may turn to the Internet or popular parenting resources to find out if their baby's behavior is "normal". As the results of this study indicated, a high percentage of caregivers believe babies should stop signaling at around six-months of age

– information further perpetuated in resources for exhausted caregivers; however, a discrepancy exists which is not commonly discussed (i.e., most babies at this age do continue to wake and signal). Caregivers also look for answers related to how long certain phases will last, especially in regards to sleep. The information gathered from this study corroborates literature that is found in academic research. This includes findings that most babies wake and signal and that rarely does a baby remain in the same sleep pattern in the long-term; rather, changes in sleep come and go especially with developmental advancements, shifts in life circumstances and in the face of other setbacks, such as illness. With the vast amounts of developmental changes five- to seven-month-olds experience, it is not surprising that on average, across these two samples, babies were waking at least one time per night.

It is also important for families to understand the strong influences they have on their infant's sleeping habits and patterns. While some babies seem to be prewired to signal less overnight, this study highlighted the significant impact that caregiver perceptions and mental well-being have on the development of sleep. Mothers who were less depressed and anxious (specifically case study mothers) or felt more supported (i.e., access to quality partner or social support) seemed to have babies who slept better. Moreover, across the two samples, those who felt more supported or less depressed felt less concern about their baby's sleep or temperament. Knowing the normative processes infants undergo in their sleep patterns, and understanding the influence caregivers have on their baby's sleep habits will be helpful for families when they encounter a sleep-related challenge.

Work with Pediatricians, Obstetricians and Other Medical Professionals

Along with caregivers understanding their role, it is important for medical practitioners who come into contact with new parents on a regular basis to use their pre- and postpartum obstetric and well-baby appointments as an opportunity to have open communication with families. Specifically, if a mother or her partner are struggling with their mental health, feeling supported, and/or specifically, baby's sleep, it will be beneficial to talk openly in a way that leads to offering resources to caregivers. This may mean discussing the normal sleep processes through which infants move and what to expect in terms of night waking, and also talking openly about the parents' mental health, social support and self-efficacy. This provides a port of entry to normalizing their experience, even if they are plagued with anxiety, guilt, confusion or depression, and an opportunity to offer resources and referrals for therapy.

Additionally, there is a clear message the AAP wishes to convey to practitioners and ultimately, to caregivers of infants in order to lower the incidence of SUID's. Specifically, safe sleep happens when babies are in separate beds/cribs. This study demonstrated that, despite the recommendation to abstain from bed-sharing, many families bed-share or believe it is a suitable practice. This shift is also evident in existing research on individuals in Western, industrialized societies who have historically voiced opposition to co-sleeping, but are increasingly expressing acceptance (Ball, 2002; Brazelton & Sparrow, 2003; McKenna & Volpe, 2007). With this in mind, medical personnel can attempt to have open lines of communication whereby families can present what they are actually doing overnight, not what they think their doctor wants to hear. The AAP's message is not without good reason, as a recent study found alarming rates of

bed-sharing deaths due to unsafe sleeping conditions in infants who were six-months of age and younger (Colvin et al., 2014). It is important, however, to create in these conversations a supportive space where caregivers can speak openly and without judgment about their sleep practices.

As this study has shown, no two babies are alike, or perhaps as importantly given the mother-driven model, no two mothers are alike, nor can pediatricians and other medical staff take a one size fits all approach to how they talk about sleep and make recommendations to families. Caregivers are asked specific questions about their baby's sleep behavior (e.g., waking amounts, overnight feeding schedules, etc.) and about their sleep location. Yet, as this study has demonstrated, maternal and broader contextual variables, like partner support and cultural beliefs, play an important role in how a baby sleeps. The context involved begs the question: Who should be talking with families of infants about their sleep? Infant Mental Health teaches consideration of all aspects of a family unit in addressing concerns. Providing advice about sleep is tricky, but with proper training and knowledge about the layers of factors that impact sleep in infancy, it may be possible to create individual plans conducive to each families' varied needs. Perhaps medical professionals interested in the complexities of sleep will take on the individualized sleep plans as a challenge, but given the time demands on the medical community, perhaps other professionals working with families may be ideally suited to address sleep concerns in a more individualized, contextualized, and nondirective manner.

One way to reach families with varied sleep needs is through home visiting. A non-directive home visiting approach such as the Fussy Baby Network® entails listening

to families about their experiences and understanding the context of the entire family unit. Fussy Baby Network® aligns with Bronfenbrenner's Ecological Theory, as it takes all contributing factors into consideration before creating a plan. Findings from this study are congruent with the approaches taken by the Fussy Baby Network®. Other home visiting programs could incorporate these findings into their approach and psychoeducation for caregivers.

Conclusion

Clearly, infant sleep is a complex construct. As demonstrated through Ecological Theory, numerous variables are responsible for sleep consolidation in infancy in five- to seven-month olds. It is hoped that the findings from this study regarding the layers of factors that relate to sleep in five- to seven-month-olds are useful for caregivers and professionals working with families around struggles with infant sleep.

APPENDIX A
INTERNET SLEEP SURVEY

Background Information:

1. What is your age?
2. Is your baby between 5 and 7 months of age?
3. What is your gender?
4. What is your racial or ethnic identification?
5. What is your primary language (i.e., the one you speak most of the time)?
6. What is your marital status?
7. What is the highest level of education you have completed?
8. Which of the following categories best describes your employment status? (Nine options were listed)
9. What is your approximate average household income?
10. Was your baby born healthy, full term and without any significant birth complications?
11. Does your baby have a neurological (e.g., cerebral palsy, hydrocephaly, seizures, blindness) or genetic disorder (e.g., Down syndrome, Fragile-X-syndrome)?

Brief Infant Sleep Questionnaire (BISQ)/Your Baby's Sleep

12. Are you the baby's?
 - a. Father
 - b. Mother
 - c. Grandparent
 - d. Other
13. Baby's date of birth
14. Baby's gender
15. Baby's birth order
 - a. First and only
 - b. Oldest
 - c. Middle
 - d. Youngest

Please provide information about sleeping arrangement and position for your baby over the LAST WEEK:

16. What is the sleeping arrangement in your household?
 - a. Infant crib in separate room
 - b. Infant crib in parents'/caregivers' room
 - c. In parents'/caregivers' bed
 - d. Infant crib in room with sibling
 - e. Other
17. In what position does your child sleep most of the time?
 - a. On his/her belly
 - b. On his/her side
 - c. On his/her back

18. How much time does your child spend in sleep during the NIGHT (between 7 in the evening and 7 in the morning)?
 - a. Under 7 hours
 - b. 7-9 hours
 - c. 9-11 hours
 - d. 11 hours or more
19. How much time does your child spend in sleep during the DAY (between 7 in the morning and 7 in the evening)?
 - a. Under 1 hour
 - b. 1-2 hours
 - c. 2-3 hours
 - d. 3-4 hours
 - e. 4-5 hours
 - f. 5 or more hours
20. Average number of night wakings per night (provide your best estimate)
21. How much time during the night does your child spend awake (from 10 in the evening to 6 in the morning)?
 - a. My baby is always asleep during that time
 - b. Under 1 hour
 - c. 1-2 hours
 - d. 2-4 hours
 - e. 4-6 hours
 - f. 6 or more hours
22. How long does it take to put your baby to sleep in the evening?
 - a. Under 1 hour
 - b. 1-2 hours
 - c. 2-3 hours
 - d. 3 or more hours
23. How does your baby fall asleep? (Select all that apply)
 - a. While feeding
 - b. Being rocked
 - c. Being held
 - d. In bed alone
 - e. In bed near parent
24. When does your baby usually asleep for the night (hours/minutes)?
25. Do you consider your child's sleep as a problem?
 - a. A very serious problem
 - b. A problem
 - c. A small problem
 - d. Not a problem at all

Prospective Dyad Form (PDF)/The following questions ask that you indicate your beliefs about infant sleep and your baby's sleep before and after he/she was born

26. Prior to the birth of your baby, did you ever worry about (select all that apply):

- a. How much babies should sleep?
 - b. What sleep deprivation might feel like?
 - c. How to get a baby to sleep?
 - d. Caregiving techniques, like sleep training?
 - e. A baby's sleep location (e.g., In your bed? Your room? Their own room?)
 - f. (If applicable): How your baby's sleeping habits may impact other members of your household?
27. Since your baby's birth, have you felt concerned about (select all that apply):
- a. The amount your baby sleeps?
 - b. The amount of sleep you get every night?
 - c. The time it takes your baby to fall asleep, for naptime or bedtime?
 - d. The amount your baby wakes up overnight?
 - e. Methods to get your baby to sleep?
 - f. The location of where your baby sleeps?
 - g. (If applicable): How your baby's sleep habits impact your spouse/partner/other family or people in the home?
28. On a scale of 1 to 5, with 1 being no stress and 5 being high stress, how stressful do you find your baby's sleep?

Please provide some information about your beliefs related to infant sleep.

29. What is an acceptable amount of sleep for a 5-7 month old infant?
- a. Under 7 hours
 - b. 7-9 hours
 - c. 9-11 hours
 - d. 11 or more hours
30. What is the age at which babies should sleep through the night?
31. Is it ever ok for YOUR baby to sleep in your bed?
32. IN GENERAL, is it ever ok for a baby to sleep in its caregiver's bed?
33. Is it ever ok for YOUR baby to sleep in your room?
34. IN GENERAL, is it ever ok for a baby to sleep in its caregiver's room?

Please provide some information about how you manage overnight waking in your household and your thoughts on sleep training.

35. Is it ever ok for babies to be left alone to cry overnight?
36. Is cry-it-out an effective method of sleep training for babies?
37. Is cry-it-out an approach you have used or plan to use in your house?
38. Whose responsibility is it to tend to the baby overnight?
- a. Mine
 - b. My partner's
 - c. Both of us
 - d. N/A, I'm a single parent

Please provide some information about your personal beliefs related to your baby's sleep habits.

39. How comfortable are you with how much your baby sleeps overnight?
 - a. Very comfortable
 - b. Somewhat comfortable
 - c. Not comfortable, he/she could sleep more
 - d. Not comfortable, he/she could sleep less
40. Does your baby ever sleep in your bed?
41. Does your baby ever sleep in your room in a separate sleeping location (e.g., co-sleeper, bassinet, pack-n-play, etc.)?
42. Do you ever nurse, bottle feed, rock or pat your baby back to sleep? (Select all that apply)
43. Have you ever sought help for your baby's sleep behavior?
44. In thinking about your friends or family members, does your baby wake up more than other babies?
45. Have friends or family ever criticized your approach for handling sleep?
46. Please feel free to provide any additional comments about your experience with infant sleep.

Beliefs About Infant Sleep:

47. How many hours a night should 5-7 month old babies sleep?
48. Is it ok for babies to sleep in your bed? Your room?
49. What is the age at which babies should sleep through the night?
50. Should babies be left alone to cry overnight?
51. Is cry-it-out an effective method of sleep training for babies?
52. Is cry-it-out an approach you have used or plan to use in your house?
53. Whose responsibility is it to tend to the baby overnight?

Your Baby's Sleep:

54. Are you comfortable with how much your baby sleeps overnight?
55. Does your baby ever sleep in your bed? Your room?
56. Do you ever nurse, bottle feed, or rock your baby back to sleep?
57. Have you ever sought help for your baby's sleeping behavior?
58. In thinking about your friends or family members, does your baby wake up more than other babies?
59. Have friends or family members ever criticized your approach to handling sleep?

APPENDIX B
PROSPECTIVE DYAD FORM

ID #: _____

Date completed: _____

Type of Sleeper: **Problem** or **Non-Problem**

This form will be used to identify whether potential participants consider their babies to be “Problem Sleepers” or “Non-Problem Sleepers”. The items are meant to provide some background about a mother’s perception of her baby’s sleeping behaviors and her current level of stress related to how her baby sleeps.

I. Problem or Non-Problem Sleeper: In order to be considered a “Problem Sleeper”, the mother answers “Yes” to 10 or more of the following items:

1. Prior to the birth of your baby, did you ever worry about:
 - How much babies should sleep?
 - What sleep deprivation might feel like?
 - How to get a baby to sleep?
 - How to get a baby to remain asleep?
 - Caregiving techniques, like sleep training?
 - A baby’s sleep location (e.g., in your bed? Your room? Their own room?)
 - (If applicable): How your baby’s sleeping habits might impact other members of your household?
2. Since your baby’s birth, have you felt concerned about:
 - The amount your baby sleeps?
 - The amount of sleep you get every night?
 - The time it takes your baby to fall asleep, for naptime or at bedtime?
 - The amount your baby wakes up overnight?
 - Methods to get your baby to sleep?
 - The location of where your baby sleeps?
 - (If applicable): How your baby’s sleep habits impact your spouse/partner/other family or people in the home?
 - Mother’s perception of sleep score: _____

- II. Stress related to infant sleep:** On a scale of 1 to 5, with 1 being no stress and 5 being high stress, how stressful do you find your baby’s sleep behaviors?
- a. “Problem Sleepers” rate their distress as a 4 or 5 out of a possible 5
 - b. “Non Problem Sleepers” rate their distress as a 1 to 3 out of a possible 5
 - Mother’s distress score: _____

APPENDIX C

PARTICIPANT DEMOGRAPHIC FORM

ID #: _____

Date completed: _____

Date received: _____

1. How old are you? _____
2. Are you married?
 - a. Married – 1
 - b. Separated – 2
 - c. Divorced – 3
 - d. Widowed – 4
 - e. Single – 5
3. Are you currently living with your partner? Yes – 1, No -2
4. What date were you married on? *Date married:* ____/____/____
 - a. *Years married* ____/____ (year/month)
5. Do you have a religious preference?
 - a. Protestant – 1
 - b. Catholic – 2
 - c. Jewish – 3
 - d. Muslim – 4
 - e. Agnostic or Atheist – 5
 - f. Other – 6
 - g. None – 7
6. Are you Hispanic/Latino? Yes – 1, No – 2
7. What racial group do you classify yourself as?
 - a. African American – 1
 - b. American Indian or Alaskan Native – 2
 - c. Asian – 3
 - d. Caucasian – 4
 - e. Native Hawaiian/ Other Pacific Islander – 5
 - f. Some other race – 6
 - g. Two or more races – 7
8. What is your highest level of education? (in years up to 20+) _____
 - a. School – 0 1 2 3 4 5 6 7 8 9 10 11 12 (GED – 12)
 - b. Vocational/ technical – 13 14 15 16
 - c. College – 13 14 15 16
 - d. Post graduate – 17 18 19 20+
9. Are you employed more than 15 hours per week? Yes – 1, No – 2
10. What is your occupation? _____
 - a. Hollingshead code _____

11. Did you have a Boy – 1/Girl – 2? Name: _____
12. How many weeks pregnant were you when the baby was born?
 - a. Born before 36 weeks – 1
 - b. Born at or after 36 weeks – 2
13. Did your baby require Neonatal Intensive Care Unit treatment for longer than 2 days? Yes – 1, No – 2
14. Is your infant Hispanic/Latino? Yes – 1, 2 – No
15. What racial group do you classify your infant as?
 - a. African American – 1
 - b. American Indian or Alaskan Native – 2
 - c. Asian – 3
 - d. Caucasian – 4
 - e. Native Hawaiian/ Other Pacific Islander – 5
 - f. Some other race – 6
 - g. Two or more races – 7
16. How many other children are living at home? _____
17. How old is your partner? Age: _____
18. Is your partner Hispanic/Latino? Yes – 1, No – 2
19. What racial group would you classify him/her as?
 - a. African American – 1
 - b. American Indian or Alaskan Native – 2
 - c. Asian – 3
 - d. Caucasian – 4
 - e. Native Hawaiian/ Other Pacific Islander – 5
 - f. Some other race – 6
 - g. Two or more races – 7
20. What is his/her highest level of education in years? _____
 - a. school – 0 1 2 3 4 5 6 7 8 9 10 11 12 (GED – 12)
 - b. vocational/ technical – 13 14 15 16
 - c. college – 13 14 15 16
 - d. post graduate – 17 18 19 20+
21. Is your partner employed for more than 15 hours per week? Yes – 1, No – 2
22. What is his/her occupation? _____
 - a. Hollingshead code _____
23. Do you have medical insurance coverage for your infant? Yes – 1, No – 2
24. How many minutes by car, approximately, do you live from your infant's medical provider?
 - a. _____ minutes
25. Where do you primarily receive health care for your infant?
 - a. _____
 - b. _____

26. Who else besides you and your partner care for your infant?
- a. Relative? Yes – 1, No -2
 - b. In-home daycare by a nonrelative? Yes – 1, No – 2
 - c. Licensed daycare? Yes – 1, No – 2
 - d. Unlicensed daycare? Yes – 1, No – 2
27. How many hours per week is your newborn cared for by someone other than you and your partner? _____
28. What sort of community do you live in?
- a. Large city – 1
 - b. Small city – 2
 - c. City suburb – 3
 - d. Town – 4
 - e. Rural – 5
 - f. Farm – 6
29. What is your estimated total household income?
- a. \$9,999 or less – 1
 - b. \$10,000 to \$19,999 – 2
 - c. \$20,000 to \$29,999 – 3
 - d. \$30,000 to \$39,999 – 4
 - e. \$40,000 to \$49,999 – 5
 - f. \$50,000 to \$59,999 – 6
 - g. \$60,000 to \$69,999 – 7
 - h. \$70,000 or more – 8
 - i. Do not wish to share – 9

APPENDIX D

SLEEP LOG

ID #: _____

Date completed: _____

Date received: _____

Please complete for 5 consecutive days

Day #1

Morning wake-up time: _____

Please list all feedings (when and what? Nursed? Bottle? Solids? and any notes):

Nap Start Time	Nap Wake Up Time	Duration	Location (crib, arms, carrier, car seat, etc.)	Comments (took lots of rocking or bouncing, went right to sleep, etc.):

Bedtime (include any information about events prior to bedtime routine, when bedtime started, feedings, time your baby was asleep, etc.):

Night Wakings (list only wake up time)	Fed? Y/N	Location for sleep after wake up	Comments (typical night, out of the ordinary, etc.):

Please include any other information about your baby's sleep over the last 24 hours:

APPENDIX E

EDINBURGH POSTNATAL DEPRESSION SCALE

ID #: _____

Date completed: _____

Date received: _____

As you have recently had a baby, we would like to know how you are feeling. Please respond with the answer that comes closest to how you have felt in the past 7 days, not just how you feel today. (Interviewer: circle **one** response on each line)

In the past 7 days:

E1. I have been able to laugh and see the funny side of things.	As much as I always could (0)	Not quite so much now (1)	Definitely not so much now (2)	Not at all (3)
E2. I have looked forward with enjoyment to things.	As much as I ever did (0)	Rather less than I used to (1)	Definitely less than I used to (2)	Hardly at all (3)
E3. I have blamed myself unnecessarily when things went wrong.	Yes, most of the time (3)	Yes, some of the time (2)	Not very often (1)	No, never (0)
E4. I have been anxious or worried for no good reason.	No, not at all (0)	Hardly ever (1)	Yes, sometimes (2)	Yes, very often (3)
E5. I have felt scared or panicky for no very good reason.	Yes, quite a lot (3)	Yes, sometimes (2)	No, not much (1)	No, not at all (0)
E6. I have been feeling overwhelmed.	Yes, most of the time I haven't been able to cope at all (3)	Yes, sometimes I haven't been coping as well as usual (2)	No, most of the time I have coped quite well (1)	No, I have been coping as well as ever (0)
E7. I have been so unhappy that I have had difficulty sleeping.	Yes, most of the time (3)	Yes, quite often (2)	Not very often (1)	No, not at all (0)
E8. I have felt sad or miserable.	Yes, most of the time (3)	Yes, quite often (2)	Not very often (1)	No, not at all (0)
E9. I have been so unhappy that I have been crying.	Yes, most of the time (3)	Yes, quite often (2)	Only occasionally (1)	No, Never (0)
E10. The thought of harming myself has occurred to me.	Yes, quite often (3)	Sometimes (2)	Hardly ever (1)	Never (0)

Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry*, 150, 782-786.

APPENDIX F
POSTPARTUM WORRY SCALE – REVISED

ID #: _____

Date completed: _____

Date received: _____

Using the rating scale below, let us know how often you are concerned about the following:

	0-----1-----2-----3-----4				
	0-10%	10-20%	20-50%	50-80%	80-100%
1. Parenting abilities	0	1	2	3	4
2. Harm occurring to your baby	0	1	2	3	4
3. Baby's appearance	0	1	2	3	4
4. Your appearance	0	1	2	3	4
5. Relationship with your spouse/partner	0	1	2	3	4
6. Relationships with your friends	0	1	2	3	4
7. Relationships with your in-laws	0	1	2	3	4
8. Relationships with other family members	0	1	2	3	4
9. The cleanliness of your surroundings	0	1	2	3	4
10. Obtaining new employment/ schooling	0	1	2	3	4
11. Child care	0	1	2	3	4
12. Finances	0	1	2	3	4
13. Household duties	0	1	2	3	4
14. Your free time	0	1	2	3	4
15. Baby's development	0	1	2	3	4
16. Baby's health	0	1	2	3	4
17. Your health	0	1	2	3	4
18. Your return to work/school (if applicable)	0	1	2	3	4
19. Spending time away from baby	0	1	2	3	4

20. Balancing your responsibilities 0 1 2 3 4

Moran, T. E., Polanin, J. R., & Wenzel, A. (2014). The Postpartum Worry Scale – Revised: An initial validation of a measure of postpartum worry. *Archives of Women's Mental Health*, 17(1), 41-48.

APPENDIX G

MATERNAL SEPARATION ANXIETY SCALE

ID #: _____
 Date completed: _____
 Date received: _____

Maternal Separation Anxiety Scale Parent Questionnaire

The following statements represent matters of interest and concern to parents. Not all people feel the same way about them. Answer the statements as you are feeling now. Read each statement carefully and circle the number at the right which most closely reflects YOUR degree of agreement or disagreement. Try to answer all statements without skipping items or looking back. Answer items without discussing any of them with anyone.

1	2	3	4	5
Strongly Disagree	Disagree	Somewhat Agree	Agree	Strongly Agree

1. I miss holding or cuddling my child when I am away from him/her. 1 2 3 4 5
2. My child is happier with me than with babysitters or teachers. 1 2 3 4 5
3. Children will be afraid in a new place without their mother. 1 2 3 4 5
4. My life wouldn't be complete without a career. 1 2 3 4 5
5. If a child is independent and outgoing, he/she will make friends easily without his/her mother's help. 1 2 3 4 5
6. When away from my child, I often wonder if his/her physical needs (dry diapers, enough to eat, etc.) are being met. 1 2 3 4 5
7. Holding and cuddling my child makes me feel so good that I really miss the physical closeness when I'm away. 1 2 3 4 5
8. I am more concerned with my child's physical safety than a babysitter or teacher. 1 2 3 4 5
9. It will be difficult for my child to adjust to someone else taking care of him/her. 1 2 3 4 5
10. I would resent my job if it meant I had to be away from my child. 1 2 3 4 5

11. My child will benefit from group experiences (i.e., nursery school, day-care, kindergarten) since they will provide him/her social experiences that he/she could not get at home. 1 2 3 4 5
12. When I am away from my child, I feel lonely and miss him/her a great deal. 1 2 3 4 5
13. Only a mother just naturally knows how to comfort her distressed child. 1 2 3 4 5
14. A child is likely to get upset when he/she is left with a babysitter. 1 2 3 4 5
15. I have a systematic plan for how I'm going to build my career in the world of work. 1 2 3 4 5
16. It is good for my child to spend time away from me so that he/she can learn to deal independently with unfamiliar people and new situations. 1 2 3 4 5
17. I like to have my child close to me most of the time. 1 2 3 4 5
18. I am naturally better at keeping my child safe than any other person. 1 2 3 4 5
19. I believe that my child misses me when I have to let someone else take care of him/her for a while. 1 2 3 4 5
20. A career or job brings me a lot of personal satisfaction. 1 2 3 4 5
21. Even though my child fusses a bit when I leave, I know he/she will be OK in a few minutes – after I'm out of sight. 1 2 3 4 5
22. I don't like to leave my child. 1 2 3 4 5
23. My child prefers to be with me more than with anyone else. 1 2 3 4 5
24. My child is afraid and sad when he/she is not with me. 1 2 3 4 5
25. I would not regret postponing my career in order to stay home with my child. 1 2 3 4 5
26. My child needs to spend time away from me in order to develop a sense of being an individual in his/her own right. 1 2 3 4 5
27. When I am separated from my child, I wonder whether he/she is crying and missing me. 1 2 3 4 5

28. I don't enjoy myself when I'm away from my child. 1 2 3 4 5
29. I worry that my child is never completely comfortable in an unfamiliar setting if I am not with him/her. 1 2 3 4 5
30. Children are very demanding and I often wish I had more time for my career. 1 2 3 4 5
31. Exposure to many different people is good for my child. 1 2 3 4 5
32. I worry when someone else cares for my child. 1 2 3 4 5
33. If I could choose between working full-time or staying home with my child, I would want to stay home. 1 2 3 4 5
34. There are times in the lives of young children with they need to be with people other than their mothers. 1 2 3 4 5
35. When away from my child, I worry about whether or not the babysitter is able to soothe and comfort my child if he/she is lonely or upset. 1 2 3 4 5

Hock, E., McBride, S., & Gnezda, M. (1989). Maternal separation anxiety: Mother– infant separation from the maternal perspective. *Child Development*, 60, 793–802.

APPENDIX H
ASSESSMENT OF PARENTING TOOL

ID #: _____

Date completed: _____

Date received: _____

The APT for Parents of Birth to 24 Month Old Children

Below are a number of tasks associated with parenting infants and young children that parents may want additional information and/or support with. For each statement below, please rate how much support/ information you would like to receive from a professional:

No support needed at this time		Moderate support needed at this time		Lots of support needed at this time
1	2	3	4	5

Caring for child's needs:

- ___ diapering my child
- ___ caring for my child's umbilical cord
- ___ dressing my child for comfort
- ___ burping my child
- ___ bathing my child

Child safety:

- ___ installing my child's car seat
- ___ fastening my child into a car seat and/or stroller
- ___ knowing what safety concerns exist in my home
- ___ selecting safe baby items (e.g., toys, furniture, clothing)

Holding and soothing:

- ___ holding my child in a way that pleases him/her
- ___ soothing my child when he/she cries
- ___ using a baby sling/carrier
- ___ soothing my child when he/she is teething

Feeding:

- ___ feeding my child (via breast and/or bottle)
- ___ supporting healthy weight gain in my child
- ___ introducing new foods to my child
- ___ helping my child use a spoon to feed him/herself
- ___ assisting my child in using a sippy cup

Sleep:

- ☐ supporting my child's sleep
- ☐ keeping my child safe during sleep

Health:

- ☐ making healthcare decisions for my child
- ☐ making an appointment with my child's physician
- ☐ deciding when to take my child to the emergency room
- ☐ attending a well-child exam or immunizations visit
- ☐ recognizing signs of illness in my child
- ☐ recognizing symptoms such as constipation and gas in my child
- ☐ treating minor symptoms such as a runny nose from home
- ☐ selecting safe remedies and medications for my child
- ☐ knowing which vitamin supplements to use and when
- ☐ taking my child's temperature

Overall development:

- ☐ supporting healthy development in my child
- ☐ looking at books with my child
- ☐ speaking to my child
- ☐ encouraging "tummy time" for my child
- ☐ supporting my child in rolling over and/or sitting up
- ☐ encouraging my child's attempts to speak
- ☐ supporting my child in standing, crawling and/or walking
- ☐ supporting my child in walking and/or running
- ☐ supporting my child in walking up and down steps
- ☐ supporting my child around other children
- ☐ encouraging my child's growing speech

Play time:

- ☐ finding activities that my child enjoys
- ☐ finding toys that my child enjoys
- ☐ knowing how to use an child seat or swing so he/she enjoys it
- ☐ getting my child to have fun with me

Self-care:

- ☐ caring for myself while meeting my child's needs
- ☐ completing household chores while meeting my child's needs
- ☐ getting my child to look at me or at something

- ___ separating from my child for a short time (e.g., daycare, outing)
- ___ maintaining my relationships with others
- ___ returning to work/school

Thank you, please continue to part two of the Survey

The APT: Part Two

For each statement below, please rate how much each statement applies to your feelings about yourself as a parent.

Disagree	Disagree Slightly	Agree Somewhat	Agree	Strongly Agree
1	2	3	4	5

- ___ I am coping well with becoming a parent or having another child.
- ___ I am a good parent to my child.
- ___ I am sensitive to my child's needs.
- ___ I am attentive to my child.
- ___ I enjoy being a parent to my child.
- ___ I am able to function well on little sleep.
- ___ I know when my baby feels mad, sad, happy etc.
- ___ I know how to keep my child safe.
- ___ I would be a good person for another parent to learn from.
- ___ I have all the skills needed to be a good parent to my child.
- ___ I meet my own expectations for parenting my child.
- ___ I manage the tasks of parenting my child.

Moran, T, Polanin, J. R., & Evenson, A. L. (In preparation).

APPENDIX I

INFANT BEHAVIOR QUESTIONNAIRE – REVISED

ID #: _____
 Date completed: _____
 Date received: _____

Infant Behavior Questionnaire – Revised Very Short Form

Today's Date _____ Date of Baby's Birth _____
 _____ month. _____ day _____ year
 Sex of Child _____ Age of Child _____
 _____ mos. _____ weeks

INSTRUCTIONS:

Please read carefully before starting:

As you read each description of the baby's behavior below, please indicate how often the baby did this during the LAST WEEK (the past seven days) by circling one of the numbers in the left column. These numbers indicate how often you observed the behavior described during the last week.

1	2	3	4	5	6	7	NA
Never	Very Rarely	Less Than Half the Time	About Half the Time	More Than Half the Time	Almost Always	Always	Does Not Apply

The "Does Not Apply" (X) column is used when you did not see the baby in the situation described during the last week. For example, if the situation mentions the baby having to wait for food or liquids and there was no time during the last week when the baby had to wait, circle the (X) column. "Does Not Apply" is different from "Never" (1). "Never" is used when you saw the baby in the situation but the baby never engaged in the behavior listed during the last week. For example, if the baby did have to wait for food or liquids at least once but never cried loudly while waiting, circle the (1) column.

Please be sure to circle a number for every item.

1. When being dressed or undressed during the last week, how often did the baby squirm and/or try to roll away?

1 2 3 4 5 6 7 NA

2. When tossed around playfully how often did the baby laugh?

1 2 3 4 5 6 7 NA

3. When tired, how often did your baby show distress?

1 2 3 4 5 6 7 NA

4. When introduced to an unfamiliar adult, how often did the baby cling to a parent?

1 2 3 4 5 6 7 NA

5. How often during the last week did the baby enjoy being read to?

1 2 3 4 5 6 7 NA

6. How often during the last week did the baby play with one toy or object for 5-10 minutes?

1 2 3 4 5 6 7 NA

7. How often during the week did your baby move quickly toward new objects?

1 2 3 4 5 6 7 NA

8. When put into the bath water, how often did the baby laugh?

1 2 3 4 5 6 7 NA

9. When it was time for bed or a nap and your baby did not want to go, how often did s/he whimper or sob?

1 2 3 4 5 6 7 NA

10. After sleeping, how often did the baby cry if someone doesn't come within a few minutes?

1 2 3 4 5 6 7 NA

- 11.** In the last week, while being fed in your lap, how often did the baby seem eager to get away as soon as the feeding was over?

1 2 3 4 5 6 7 NA

- 12.** When singing or talking to your baby, how often did s/he soothe immediately?

1 2 3 4 5 6 7 NA

- 13.** When placed on his/her back, how often did the baby squirm and/or turn body?

1 2 3 4 5 6 7 NA

- 14.** During a peekaboo game, how often did the baby laugh?

1 2 3 4 5 6 7 NA

- 15.** How often does the infant look up from playing when the telephone rings?

1 2 3 4 5 6 7 NA

- 16.** How often did the baby seem angry (crying and fussing) when you left her/him in the crib?

1 2 3 4 5 6 7 NA

- 17.** How often during the last week did the baby startle at a sudden change in body position (e.g., when moved suddenly)?

1 2 3 4 5 6 7 NA

- 18.** How often during the last week did the baby enjoy hearing the sound of words, as in nursery rhymes?

1 2 3 4 5 6 7 NA

- 19.** How often during the last week did the baby look at pictures in books and/or magazines for 5 minutes or longer at a time?

1 2 3 4 5 6 7 NA

- 20.** When visiting a new place, how often did your baby get excited about exploring new

surroundings?

1 2 3 4 5 6 7 NA

21. How often during the last week did the baby smile or laugh when given a toy?

1 2 3 4 5 6 7 NA

22. At the end of an exciting day, how often did your baby become tearful?

1 2 3 4 5 6 7 NA

23. How often during the last week did the baby protest being placed in a confining place (infant seat, play pen, car seat, etc.)?

1 2 3 4 5 6 7 NA

24. When being held, in the last week, did your baby seem to enjoy him/herself?

1 2 3 4 5 6 7 NA

25. When showing the baby something to look at, how often did s/he soothe immediately?

1 2 3 4 5 6 7 NA

26. When hair was washed, how often did the baby vocalize?

1 2 3 4 5 6 7 NA

27. How often did your baby notice the sound of an airplane passing overhead?

1 2 3 4 5 6 7 NA

28. When introduced to an unfamiliar adult, how often did the baby refuse to go to the unfamiliar person?

1 2 3 4 5 6 7 NA

29. When you were busy with another activity, and your baby was not able to get your attention, how often did s/he cry?

1 2 3 4 5 6 7 NA

30. How often during the last week did the baby enjoy gentle rhythmic activities, such as

rocking or swaying?

1 2 3 4 5 6 7 NA

31. How often during the last week did the baby stare at a mobile, crib bumper or picture for 5 minutes or longer?

1 2 3 4 5 6 7 NA

32. When the baby wanted something, how often did s/he become upset when s/he could not get what s/he wanted?

1 2 3 4 5 6 7 NA

33. When in the presence of several unfamiliar adults, how often did the baby cling to a parent?

1 2 3 4 5 6 7 NA

34. When rocked or hugged, in the last week, did your baby seem to enjoy him/herself?

1 2 3 4 5 6 7 NA

35. When patting or gently rubbing some part of the baby's body, how often did s/he soothe immediately?

1 2 3 4 5 6 7 NA

36. How often did your baby make talking sounds when riding in a car?

1 2 3 4 5 6 7 NA

37. When placed in an infant seat or car seat, how often did the baby squirm and turn body?

1 2 3 4 5 6 7 NA

Garstein, M. A., & Rothbart, M. (2003). Studying infant temperament with the Revised Infant Behavior Questionnaire. *Infant and Behavior Development*, 26, 64-86.

APPENDIX J

BRIEF INFANT SLEEP QUESTIONNAIRE

THE BISQ

Please mark only one (most appropriate) choice, when you respond to items with a few options.

- (Case Study only): Name of Responder: _____
- Date: _____
- Role of Responder: ☐ Father ☐ Mother ☐ Grandparent
☐ Other, Specify: _____
- (Case Study only): Name of the child: _____
- Childs Date of Birth: Month _____ Day: _____ Year: _____
- Sex: ☐ Male ☐ Female
- Birth order of the child: ☐ Oldest ☐ Middle ☐ Youngest
- Sleeping arrangement: ☐ Infant crib in a separate room
☐ Infant crib in parents' room ☐ In parents' bed
☐ Infant crib in room with sibling ☐ Other, Specify: _____
- In what position does your child sleep most of the time?
☐ On his/her belly ☐ On his/her side ☐ On his/her back
- How much time does your child spend in sleep during the NIGHT (between 7 in the evening and 7 in the morning)? Hours: _____ Minutes: _____
- How much time does your child spend in sleep during the DAY (between 7 in the morning and 7 in the evening)? Hours: _____ Minutes: _____
- Average number of night wakings per night: _____
 - How much time during the night does your child spend in wakefulness (from 10 in the evening to 6 in the morning)?
 Hours: _____ Minutes: _____
- How long does it take to put your baby to sleep in the evening?
 Hours: _____ Minutes: _____
- How does your baby fall asleep? ☐ While feeding ☐ Being rocked
☐ Being held ☐ In bed alone ☐ In bed near parent
- When does your baby usually fall asleep for the night:
 Hours: _____ Minutes: _____
- Do you consider your child's sleep as a problem?
☐ A very serious problem ☐ A small problem ☐ Not a problem at all

Sadeh, A. (2004). A brief screening questionnaire for infant sleep problems: Validation and findings for an Internet sample. *Pediatrics*, 113(6), 570-577.

APPENDIX K
DYADIC ADJUSTMENT SCALE

A. Most people have disagreements in their relationships. Please indicate below the approximate extent of agreement or disagreement between you and your partner for each item based on the following scale:

- 5 = Always agree
 4 = Almost always agree
 3 = Occasionally disagree
 2 = Frequently disagree
 1 = Almost always disagree
 0 = Always disagree

1. Handling family finances	5	4	3	2	1	0
2. Matters of recreation	5	4	3	2	1	0
3. Religious matters	5	4	3	2	1	0
4. Demonstrations of affection	5	4	3	2	1	0
5. Friends	5	4	3	2	1	0
6. Sex relations	5	4	3	2	1	0
7. Conventionality (correct or proper behavior)	5	4	3	2	1	0
8. Philosophy of life	5	4	3	2	1	0
9. Ways of dealing with parents or in-laws	5	4	3	2	1	0
10. Aims, goals, and things believed important	5	4	3	2	1	0
11. Amount of time spent together	5	4	3	2	1	0
12. Making major decisions	5	4	3	2	1	0
13. Household tasks	5	4	3	2	1	0
14. Leisure time interest and activities	5	4	3	2	1	0
15. Career decisions	5	4	3	2	1	0

B. PLEASE ANSWER QUESTIONS 16-22 BY CIRCLING THE NUMBER THAT BEST DESCRIBES YOU

- 0 = All the time
 1 = Most of the time
 2 = More often than not
 3 = Occasionally
 4 = Rarely
 5 = Never

16. How often do you discuss or have you considered divorce, separation or terminating your relationship?	5	4	3	2	1	0
17. How often do you or your partner leave the house after a fight?	5	4	3	2	1	0
18. In general, how often do you think that						

things between you and your partner are going well?	5	4	3	2	1	0
19. Do you confide in your mate?	5	4	3	2	1	0
20. Do you ever regret that you married (or lived together or going together)?	5	4	3	2	1	0
21. How often do you and your partner quarrel?	5	4	3	2	1	0
22. How often do you and your partner "get on each other's nerves?"	5	4	3	2	1	0

C. Please answer the following questions

23. How often do you kiss your mate?

- 0 = Never
- 1 = Rarely
- 2 = Occasionally
- 3 = Almost Every Day
- 4 = Every Day

24. Do you and your partner engage in outside activities together?

- 0 = None of them
- 1 = Very few of them
- 2 = Some of them
- 3 = Most of them
- 4 = All of them

D. HOW OFTEN WOULD YOU SAY THE FOLLOWING EVENTS OCCUR
BETWEEN YOU AND YOUR PARTNER?

- 0 = Never
- 1 = Less than once a month
- 2 = Once or twice a month
- 3 = Once or twice a week
- 4 = Once a day
- 5 = More often

25. Have a stimulating exchange of ideas	5	4	3	2	1	0
26. Laugh together	5	4	3	2	1	0
27. Calmly discuss something	5	4	3	2	1	0
28. Work together on a project	5	4	3	2	1	0

- E. There are some things about which couples sometimes agree and sometimes disagree. Indicate if either item below caused differences of opinions or were problems in your relationship during the past few weeks.

YES NO 29. Being too tired for sex

YES NO 30. Not showing love

G. PLEASE READ THE DIRECTIONS AND ANSWER THIS QUESTION

31. The choices below represent different degrees of happiness in your relationship. The middle point, "happy," represents the degree of happiness of most relationships. Please circle the number that best describes the degree of happiness, all things considered, of your relationship.

0	1	2	3	4	5	6
Extremely	Fairly	A little	Happy	Very	Extremely	Perfect
Unhappy	Unhappy	Unhappy		Happy	Happy	

H. PLEASE READ THE QUESTION AND ANSWER

32. Which of the following statements best describes how you feel about the future of your relationship?
- 5 I want desperately for my relationship to succeed, and *would go to almost any length to see that it does.*
 - 4 I want very much for my relationship to succeed, and *will do all I can* to see that it does.
 - 3 I want very much for my relationship to succeed, and *will do my fair share* to see that it does.
 - 2 It would be nice if my relationship succeeded, *but I can't do much more than I am doing* now to help it succeed.
 - 1 It would be nice if it succeeded, but *I refuse to do any more than I am doing* now to keep the relationship going.
 - 0 My relationship can never succeed, and *there is no more that I can do* to keep the relationship going.

Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family*, 38, 15-28.

APPENDIX L

INTERPERSONAL SUPPORT EVALUATION LIST

ID #: _____
 Date completed: _____
 Date received: _____

Interpersonal Support Evaluation List (ISEL)

This scale is made up of a list of statements each of which may or may not be true about you. For each statement check “definitely true” if you are sure it is true about you and “probably true” if you think it is true but are not absolutely certain. Similarly, you should check “definitely false” if you are sure the statement is false and “probably false” if you think it is false but are not absolutely certain.

1. There are several people that I trust to help solve my problems.
 ____definitely true (3) ____definitely false (0)
 ____probably true (2) ____probably false (1)
2. If I needed help fixing an appliance or repairing my car, there is someone who would help me.
 ____definitely true (3) ____definitely false (0)
 ____probably true (2) ____probably false (1)
3. Most of my friends are more interesting than I am.
 ____definitely true (3) ____definitely false (0)
 ____probably true (2) ____probably false (1)
4. There is someone who takes pride in my accomplishments.
 ____definitely true (3) ____definitely false (0)
 ____probably true (2) ____probably false (1)
5. When I feel lonely, there are several people I can talk to.
 ____definitely true (3) ____definitely false (0)
 ____probably true (2) ____probably false (1)
6. There is no one that I feel comfortable to talking about intimate personal problems.
 ____definitely true (3) ____definitely false (0)
 ____probably true (2) ____probably false (1)
7. I often meet or talk with family or friends.
 ____definitely true (3) ____definitely false (0)
 ____probably true (2) ____probably false (1)
8. Most people I know think highly of me.
 ____definitely true (3) ____definitely false (0)
 ____probably true (2) ____probably false (1)

9. If I needed a ride to the airport very early in the morning, I would have a hard time finding someone to take me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

10. I feel like I'm not always included by my circle of friends.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

11. There really is no one who can give me an objective view of how I'm handling my problems.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

12. There are several different people I enjoy spending time with.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

13. I think that my friends feel that I'm not very good at helping them solve their problems.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

14. If I were sick and needed someone (friend, family member, or acquaintance) to take me to the doctor, I would have trouble finding someone.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

15. If I wanted to go on a trip for a day (e.g., to the mountains, beach, or country), I would have a hard time finding someone to go with me.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

16. If I needed a place to stay for a week because of an emergency (for example, water or electricity out in my apartment or house), I could easily find someone who would put me up.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

17. I feel that there is no one I can share my most private worries and fears with.

____definitely true (3) ____definitely false (0)

____probably true (2) ____probably false (1)

18. If I were sick, I could easily find someone to help me with my daily chores.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
19. There is someone I can turn to for advice about handling problems with my family.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
20. I am as good at doing things as most other people are.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
21. If I decide one afternoon that I would like to go to a movie that evening, I could easily find someone to go with me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
22. When I need suggestions on how to deal with a personal problem, I know someone I can turn to.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
23. If I needed an emergency loan of \$100, there is someone (friend, relative, or acquaintance) I could get it from.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
24. In general, people do not have much confidence in me.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
25. Most people I know do not enjoy the same things that I do.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
26. There is someone I could turn to for advice about making career plans or changing my job.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)
27. I don't often get invited to do things with others.
____definitely true (3) ____definitely false (0)
____probably true (2) ____probably false (1)

28. Most of my friends are more successful at making changes in their lives than I am.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

29. If I had to go out of town for a few weeks, it would be difficult to find someone who would look after my house or apartment (the plants, pets, garden, etc.).

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

30. There really is no one I can trust to give me good financial advice.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

31. If I wanted to have lunch with someone, I could easily find someone to join me.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

32. I am more satisfied with my life than most people are with theirs.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

33. If I was stranded 10 miles from home, there is someone I could call who would come and get me.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

34. No one I know would throw a birthday party for me.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

35. It would be difficult to find someone who would lend me their car for a few hours.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

36. If a family crisis arose, it would be difficult to find someone who could give me good advice about how to handle it.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

37. I am closer to my friends than most other people are to theirs.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

38. There is at least one person I know whose advice I really trust.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

39. If I needed some help in moving to a new house or apartment, I would have a hard time finding someone to help me.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

40. I have a hard time keeping pace with my friends.

____ definitely true (3) ____ definitely false (0)

____ probably true (2) ____ probably false (1)

Cohen, S., & Huberman, H. M. (1983). Positive events and social supports as buffers of life change stress. *Journal of Applied Social Psychology, 13*(2), 99-125.

APPENDIX M

WORKING MODEL OF THE CHILD INTERVIEW

ID #: _____
 Date completed: _____

Working Model of the Child Interview

This is a structured interview to assess parents' internal representations or working model of their relationship to a particular child. The setting of the interview should be comfortable enough to allow for attention to the questions posed and a relaxed atmosphere that permits the opportunity for reflection.

The introductory section on developmental history is optional, depending upon the setting and purpose for which the interview is used. Otherwise, the interviewer should follow the outline. The interview allows for some follow-up probes, particularly those that encourage the individual to elaborate on responses. ...the interviewer [should] not make interpretative comments, since we are interested in the degree to which individuals make these links on their own. Requests for clarification about contradictions may be made but only for the purpose of ascertaining whether the individual maintains contradictory views of the infant and only after allowing the individual an opportunity to recognize, acknowledge, and resolve the contradictions on his/her own. Essentially, the purpose of the interview is to have individuals reveal as much as possible in a narrative account of their perceptions, feelings, motives, and interpretations of a particular child and their relationship to that child.

Interview

We are interested in how parents think and feel about their children. This interview is a way for us to ask you about *child's name* and your relationship to *him/her*. The interview will take us about an hour to complete.

(1) I'd like you to begin by telling me about your child's development.

(1a) Let's start with your pregnancy. I'm interested in things like whether it was planned or unplanned, how you felt physically and emotionally, and what you were doing during the pregnancy (working, etc.). *In a follow-up probe, find out how much the baby was wanted or not wanted.* Had you ever been pregnant before? Why did you want to get pregnant at this time in your life? When did the pregnancy seem real to you? What were your impressions about the baby during pregnancy? What did you sense the baby might be like (including gender, temperament/personality)?

The idea is to put the subject at ease and to begin to obtain a chronological history of the pregnancy. Additional probes may be necessary to make sure that the individual is given

a reasonable opportunity to convey the history of his/her reactions to and feelings about the pregnancy and the baby (which may or may not be the same).

(1b) Tell me about labor and delivery. Give some time to respond before proceeding. How did you feel and react at the time? What was your first reaction when you saw the baby? What was your reaction to having a boy/girl? How did your family react? *Be sure to include husband/partner, other siblings.*

(1c) Did the baby have any problems in the first few days after birth? How soon was the baby discharged from the hospital? Did you decide to breastfeed or bottlefeed? Why? What was the experience of breast-/bottle feeding like for you?

(1d) How would you describe the first few weeks at home in terms of feeding, sleeping, crying, etc. *This is often a very important time because it may set the “emotional tone” of the baby’s entrance into the family, particularly if the delivery and perinatal period were routine.*

(1e) Tell me about your baby’s developmental milestones such as sitting up, crawling, walking, smiling, and talking. *Be sure to get a sense of the ways in which the baby was thought to be different, ahead or behind in motor, social, and language development.* Did you have any sense of your baby’s intelligence early on? What did you think?

(1f) Did your baby seem to have a regular routine? What happened if you didn’t stay in the routine?

(1g) How has the baby reacted to separations from you? *Try to get a sense of the baby’s reactions at various ages.* Were there any separations of more than a day in the first or second year? How did the baby react? How was it for you? How did you feel? What did you do?

(1h) How and when did you choose your baby’s name? Find out about family names, etc. How well does your baby’s name fit him/her?

(2) Does your baby/child get upset often? *Give some time to respond before proceeding to specific queries.* What do you do at these times? What do you feel like doing when this happens? What do you feel like at these times?

(2a) What about when he/she becomes emotionally upset? Can you recall a specific example (or tell about a time when your child was emotionally upset [e.g., sad, frightened]). *Make sure that subject describes incident(s) about the child being sad, frightened and not only angry. Also, indicate that you want an example by providing a reasonably long time to think of one.* What did you do when that happened? What did you feel like doing? How did you feel or what was that like for you to see him/her upset

like that? *If the subject becomes extremely anxious and cannot recall an example, then proceed to part (2b).*

(2b) Tell me about a time when he/she was physically hurt a little bit (e.g.,

a bump on head, scraping knees, cuts, bleeding) – in terms of what happened, what you did and what you felt. Be sure to find out what the subject felt like and did.

(2c) Tell me about a time when your baby/child was ill (e.g., *ear infection, measles, flu/cold, etc*), in terms of what happened, what you did and what you felt like. *Again, include what this experience was like for the parent and how they responded to the child affectively and behaviorally.*

(3) Describe your impression of your child's personality now. *Give the subject enough time to respond to this before proceeding to specific descriptors below.*

(3a) Pick 5 words (adjectives) to describe your child's personality. After you have told me what they are, I will ask you about each one. *For each one.* What is it about him/her that makes you say that? *Then again for each one,* tell at least one specific incident which illustrates what you mean by each word that you chose. *You may tell the subject that it is fine to use any of the descriptors they used in response to the general probe above, but do not remind them what they said before you have given them time to recall themselves. Some subjects will have a hard time coming up with 5 descriptors. If you feel that they cannot come up with 5, then move on. The numbers are less important than the descriptions.*

(4) At this point, whom does your child remind you of? In what ways? When did you first notice the similarity? *If only one parent is mentioned ask.* In what ways does the child remind you of (the other parent)? *The following questions should be asked whether or not the parents have been mentioned.* Which of his/her parents is your child most like now? In what ways is your child's personality like and unlike each of his/her parents'?

(4a) Are there any family characteristics on your side you see in your child's personality? What about (other parent)'s side?

(4b) How did you decide on your child's name? How well does the name seem to fit?

(5) What do you feel is unique or different about your child compared to (what you know of) other children?

(6) What about your child's behavior now is the most difficult to handle? Give a typical example.

- (6a) How often does this occur? What do you feel like doing when your child reacts that way? How do you feel when your child reacts that way? What do you actually do?
- (6b) Does he/she know you don't like it? Why do you think he/she does it?
- (6c) What does the child do after you respond to the difficult behavior in the way you described? How do you imagine the child feels when you respond this way?
- (6d) What do you imagine will happen to this behavior as your child grows older? Why do you think so/what makes you feel that way?
- (7) How would you describe your relationship to your child now? *Give time to respond.*
- (7a) Pick 5 words (adjectives) to describe your relationship. For each word, describe an incident or memory that illustrates what you mean.
- (8) What pleases you most about your relationship with your baby? What do you wish you could change about it?
- (9) How do you feel your relationship with your child has affected your child's personality? *Give ample time to respond.*
- (10) Has your relationship to your child changed at all over time (*since birth*)? In what ways? What's your own feeling about that change?
- (11) Which parent is your child closest to now? How can you tell? Has it always been that way? Do you expect that to change (as the child gets older, for instance)? How do you expect it to change?
- (12) Tell a favorite story about your child – perhaps one you've told to family or friends. I'll give you a minute to think about this one. *If the subject is struggling, you may tell them that this doesn't have to be the favorite story, only a favorite.* What do you like about this story?
- (13) As you know, the first (age of child) months/years can be difficult at times – what is your worst memory of (child's name)'s first (age of child) months/years of life?
- (14) Are there any experiences which your child has had which you feel may have been a setback for him/her? Why do you think so? *Indirectly, we're trying to determine whether the parent feels responsible in any way for the setbacks. Therefore, be sure to give time to respond before moving on to the more direct questions which follow.*
- (14a) Do you have any regrets about the way you've raised your child so

far?

(14b) If you could start all over again, knowing what you know now, what would you do differently?

(15) Do you ever worry about your child? What do you worry about? How worried do you get about (*list each worry*)?

(16) If your child could be the same age forever, let's say you can freeze him/her in time – any age at all – what would you prefer that age to be? Why (what do you like about that age?).

(17) As you look ahead, what do you think will be the most difficult time in your child's development? Why do you think so?

(18) What do you expect your child to be like as an adolescent? What makes you feel that way? What do you expect to be good and not so good about this period in your child's life?

(19) Think for a moment of your child as an adult. What hopes and fears do you have about that time?

Zeanah, C. H., & Benoit, D. (1995). Clinical applications of a parent perception interview in infant mental health. *Child and Adolescent Psychiatry of North America*, 4(3), 539-554.

APPENDIX N
INFANT SLEEP INTERVIEW

ID #: _____

Date completed: _____

Beliefs about infant sleep:

1. How much should babies sleep overnight? How much does your baby sleep?
2. Are you comfortable with how much your baby sleeps?
3. Is there an age at which they should stop crying or waking up overnight?

Caregiving in Sleep:

4. How do you handle overnight wake-ups?
5. How successful have your efforts been in getting your baby back to sleep?
6. Do wake ups lead to feedings, bottles, or diaper changes?
7. How are naps going?
8. Based on what you know about naps, does your baby nap enough?

Social Support and Contextual Influences:

9. Have you ever reached out for advice about sleep (e.g., pediatrician, nurse, friend, family member)? What have those individuals told you?
10. Do you know if you handle sleep similarly or differently from your peers?

For “Problem Sleepers”:

11. What is most worrisome or upsetting to you about your baby’s sleep habits?
12. When did your baby’s sleep become more challenging?
13. What were you doing before that seemed to work? What changed?
14. How has this change affected your life?

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VITA

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