Addressing the Gap Between Recommended Infant Care Practices and Reality Using the Ecological Framework

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THESIS

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LIST OF ABBREVIATIONS

AAP	American Academy of Pediatrics
ABC	Alone, on their Back, and in a Crib
ASSB	Accidental Suffocation or Strangulation in Bed
EBF	Exclusive Breastfeeding
FMLA	Family Medical Leave Act
LC	Lactation Consultant
PnP	Pack ‘n Play*
PDS	Postpartum Depressive Symptoms
RnP	Rock ‘n Play Sleeper*
SAHM	Stay at Home Mom
SIDS	Sudden Infant Death Syndrome
SUID	Sudden Unexpected Infant Death
TPB	Theory of Planned Behavior

* Product images in Appendix F

SUMMARY

The Theory of Planned Behavior (TPB; Ajzen, 1991) has been applied to breastfeeding and infant safe sleep practices to understand why some parents do not follow the American Academy of Pediatrics recommendations. This theory has limited usefulness for these behaviors, however, because it does not account for the dynamic nature of these behaviors over time.

The current study addressed this limitation by assessing the TPB constructs and then applying principles from the Ecological Framework (Trickett, Kelly, & Vincent, 1985) to the contexts in which women perform these behaviors over the first 3 months postpartum. Eight women who were pregnant with their first child were interviewed using qualitative semi-structured interview guides during their third trimester of pregnancy to assess their plans and intentions, and at 10-14 weeks postpartum to assess their behaviors over time. Women also completed up to five phone interviews between delivery and the follow-up interview to collect data on their current feeding and sleep practices.

Results from the TPB analyses replicated several findings from previous research. Analyses also identified previously unreported factors that affect women's attitudes and perceived behavioral control over the behaviors of interest, most notably how women's behavioral intentions are influenced by considerations for the mother-infant dyad, and not just the needs of the infant. Results from the ecological assessment identified several contextual factors for which the TPB does not account, including accessibility and use of resources (e.g., medical advice or support, familial support, and products to support breastfeeding and infant sleep) and coping strategies and adaptive behaviors used to address challenges, and the interdependence of feeding and infant sleep behaviors over time.

SUMMARY (continued)

Findings from this study expand our understanding of dynamic and complex nature of breastfeeding and infant sleep during the early postpartum months. Future interventions, programs, and policy statements to promote breastfeeding and infant safe sleep will be more effective when they address the needs of the mother-infant dyad and consider contextual factors that help or hinder women's ability to perform these behaviors.

I. INTRODUCTION

The American Academy of Pediatrics (AAP) updates its recommendations for breastfeeding and infant safe sleep every 5-6 years (e.g., American Academy of Pediatrics, 2012; Task Force on SIDS, 2016). During the intervening years, the recommendations permeate conversations about best practices for infant care. Recommendations for new parents are filtered through the media, public health campaigns, hospital and pediatric clinic policies, and word-of-mouth through friends and family. Despite all these efforts, epidemiological and observational research show a wide gap between recommendations and actual behavior.

Breastfeeding and parent-infant bed-sharing are two clear examples of this gap. The AAP recommends that women exclusively breastfeed their infants for at least the first 6 months, followed by a combination of breastfeeding and solid foods up to a year (AAP, 2012). In Illinois, for example, 80.3% of mothers breastfeed at least some of the time during the first six months, but only 19.5% exclusively breastfeed at 6 months (Centers for Disease Control and Prevention (CDC), 2018). These rates are both lower than the national averages. The AAP Task Force on Sudden Infant Death Syndrome (SIDS) recommends that parents room-share without bed-sharing for at least the first 6 months (2016). Despite strengthening this recommendation between 2012 and 2017, bed-sharing rates have increased, with approximately 20% of mothers reporting that they usually share their bed with their infants for at least part of the night (Smith et al., 2016).

Regardless of the recommendation—whether it is about breastfeeding or safe sleep—the gap between reality and recommendation is often framed as "non-compliance" (e.g., Hauck, Signore, Fein, & Raju, 2008), that it is simply a choice to follow or not follow a recommendation. This framing ignores the complex context in which families make these

decisions, and the ripple effects of those decisions. This study prospectively investigated the contextual factors that influence parental decision-making, by tracking women's plans and expectations during pregnancy, and then following them through the first 12 to 14 weeks after giving birth. Infant feeding and sleep are the primary infant care behaviors of interest in this study. However, other factors (e.g., division of labor among married couples) were investigated in order to address the context in which these behaviors take place.

Infant Feeding

AAP recommendations. The AAP recommends that women exclusively breastfeed their infants for the first 6 months, and then complement breastfeeding with solid foods for up to one year or longer when mother and infant both want to continue (AAP, 2012). The AAP does not differentiate between breastmilk delivery methods (i.e., direct mother-infant breastfeeding and bottle-feeding expressed/pumped breastmilk either from the infant's mother or a donor), and considers an infant to be exclusively breastfed if they are exclusively *receiving breastmilk*, regardless of delivery method (2012).

Benefits of breastfeeding. There are numerous benefits to exclusive and extended breastfeeding for both the infant and mother. For example, results from a longitudinal study suggest that infants who were breastfed for at least one year had higher IQ scores, higher educational attainment, and higher incomes into adulthood than infants who were breastfed for less than one month. These differences were seen after controlling for maternal education and family income at birth, infant birth weight, and infant sex (Victora et al., 2015).

Breastfeeding is also a protective against Sudden Unexpected Infant Death (SUID) (Task Force on SIDS, 2016). Meta-analytic findings show that breastfeeding is protective in and of itself, and not simply a proxy indicator for other protective factors like socioeconomic status

(Hauck, Thompson, Tanabe, Moon, & Vennemann, 2011; Ip, Chung, Raman, Trikalinos, & Lau, 2009; Vennemann, Bajanowski, Brinkmann, Jorch, & Yu, 1997). The protective mechanism of breastfeeding is not fully understood, though biomedical evidence suggests that breastfed infants have lower arousal thresholds during certain stages of sleep (Horne, Parslow, Ferens, Watts, & Adamson, 2004; Kahn et al., 2002), which means they are more likely than formula-fed infants to be able to wake themselves up if, for example, they were having troubles breathing. Additionally, breastfeeding provides overall immune system support (Galland & Elder, 2014), which could also be protective against SUID.

Breastfeeding is also beneficial for the mothers. For example, women who breastfeed have a lower risk of certain types of breast cancer (Ip et al., 2009; Kwan et al., 2015) and ovarian cancer (Ip et al., 2009; Luan et al., 2013), and lower risk of developing Type II diabetes (Ip et al., 2009) than those who do not initiate breastfeeding. Breastfeeding may also reduce women's risk of postpartum depressive symptoms (PDS) (Hahn-Holbrook, Haselton, Dunkel Schetter, & Glynn, 2013).

Initiatives to encourage breastfeeding. Given all the benefits of breastfeeding, there are several initiatives aimed at increasing breastfeeding rates in the U.S. One such example is the Healthy People Initiative from the U.S. Department of Health and Human Services, which set goals for 2020 to improve the health of all U.S. residents (DHS, 2019). Using 2006-2007 rates as the benchmarks, the Healthy People 2020 initiative included several individual-level and hospital and employer-level objectives aimed at increasing breastfeeding rates (see Table 1).

Table 1. Healthy People 2020 Objectives and Current U.S. and IL Rates

	Healthy People 2020		Current Rates	
Breastfeeding Objectives	Base Rate	Goals	U.S.	Illinois
Infant Ever Breastfed	74%	81.90%	83.20%	80.30%
Infant EBF for 6 months	14.10%	25.50%	24.90%	19.50%
Infant Given Formula w/in 2 Days	24.20%	14.20%	17.20%	20.70%
Hospitals w/ Recommended Lactation Support	2.90%	8.10%	26.10%	22.30%
Employers that Provide Lactation Room	25%	38%	NA	NA

There has been considerable progress toward these goals. During 2015—the most recent year with available national and state-level breastfeeding data—83.2% of infants in the U.S. were ever breastfed, and 24.9% of infants were exclusively breastfed through 6 months (CDC, 2018). Illinois is lagging behind the national averages on all measures except the percentage of infants born in Baby-Friendly Hospitals. The Baby-Friendly designation follows the "Ten Steps to Successful Breastfeeding" developed by the World Health Organization and the United Nations International Children's Emergency Fund (UNICEF, 2005). The Ten Steps include, for example, helping women initiate breastfeeding within 30 minutes of giving birth and having infants "room-in" with their mothers to promote on-demand breastfeeding. The room-in rates have increased in the past decade, with now over 50% of infants rooming-in with their mothers; over 90% of infants who do not room-in are brought to their mothers for feeding during the night (Barrera, Nelson, Boundy, & Perrine, 2018).

Hospital programs like the Baby-Friendly Hospital Initiative and public messaging campaigns have been successful on several fronts. A recent review of Baby-Friendly Hospital programs (Munn, Newman, Mueller, Phillips, & Taylor, 2016) showed that, overall, these programs have increased breastfeeding initiation rates (Hawkins, Stern, Baum, & Gillman, 2015; Hawkins, Stern, Baum, & Matthew, 2015; Merewood, Mehta, Chamberlain, Philipp, & Bauchner, 2005; Perrine et al., 2012; Philipp et al., 2001; Vasquez & Berg, 2012) and

breastfeeding duration (Digirolamo, Grummer-strawn, & Fein, 2008; Hawkins, Stern, Baum, & Gillman, 2015; Hawkins, Stern, Baum, & Matthew, 2015; Labbok, Taylor, & Nickel, 2013; Merewood et al., 2007). Baby-Friendly Hospital programs are most effective when hospitals implement more of the "Ten Steps to Successful Breastfeeding" (Munn et al., 2016).

The improved rates of breastfeeding initiation and duration were also seen for infants who had been admitted to the Neonatal Intensive Care Unit (NICU) (Merewood, Philipp, Chawla, & Cimo, 2003; Parker et al., 2013). NICU admission, overall, does not negatively impact breastfeeding initiation rates (Callen & Pinelli, 2005; Colaizy & Morriss, 2008), and there is no significant difference in feeding behavior between infants who are admitted to the NICU and those who are not (Pierro, Abulaimoun, Roth, & Blau, 2016). However, there are differences between racial groups. One study found that African American mothers were less likely to provide breastmilk to their infants at the time of NICU discharge, and were three times more likely to exclusively provide formula at NICU discharge (McCall, Soliman, & Bany-Mohammed, 2018).

Breastfeeding initiation and cessation. A woman's choice to breastfeed is influenced by several factors, including the breastfeeding promotion initiatives in hospitals, as described above. Breastfeeding initiation is often influenced by family members. Women are more likely to initiate breastfeeding in the hospital if their mothers breastfed, which is likely due to breastfeeding being socially normative and women receiving breastfeeding support from their mothers (Benoit, 2010; Isabella & Isabella, 1994; Pierro et al., 2016). Women in north Texas, for example, wanted breastfeeding advocacy, emotional support, and encouragement from their mothers (Grassley & Eschiti, 2008). Given that breastfeeding was not always socially acceptable, women may find that their mothers are unsupportive of breastfeeding. For example, women in

one qualitative study reported that their mothers actively discouraged them from breastfeeding, suggesting that they should not breastfeed in public, or that breastfeeding would make their breasts saggy (Radzyminski & Callister, 2016).

Fathers can also play a significant role in breastfeeding initiation and duration. For example, infants are less likely to be breastfed and less likely to be breastfed at 6 months if their young fathers (ages 18-24 years old) reported that the pregnancy was unplanned compared to infants of young fathers of planned pregnancies (Wallenborn, Masho, & Ratliff, 2017). There was no significant difference in breastfeeding initiation and duration rates between fathers of planned and unplanned pregnancies in men over the age of 24. This suggests that fathers' support of breastfeeding—and of the mother and pregnancy more generally—impacts the decisions women make about breastfeeding, and that impact varies with age. The authors of this study recommend that health care professionals develop interventions to support young fathers and families in an effort to increase breastfeeding rates.

Nationally, 83.2% of mothers initiate breastfeeding at birth, but only 24.9% exclusively breastfeed at 6 months (CDC, 2018). The national rate of breastfeeding (not *exclusively* breastfeeding) at 6 months is higher, 57.6%, reflecting variations in feeding strategies, including supplementing with formula and/or introducing solid foods prior to 6 months (CDC, 2018). Approximately 17.2% of breastfed infants receive formula within 2 days (CDC, 2018). Women may choose to feed their babies a combination of breastmilk and formula for a variety of reasons. In one study, for example, the three most common reasons for supplementation were low milk supply, a desire to rest, or already planning to supplement (Pierro et al., 2016).

Regardless of familial support and advocacy from the medical community, the recommendation to exclusively breastfeed for 6 months is elusive for the vast majority of women

in the United States due to structural barriers. Results from a nationally representative study show that women who take more than 12 weeks of maternity leave have higher odds of predominately breastfeeding beyond 3 months; but less than 14% of women take leave beyond 12 weeks, and almost 35% not taking any leave at all (Ogbuanu, Glover, Probst, Liu, & Hussey, 2011). Laws meant to support maternity leave (i.e., The Family Medical Leave Act of 1993) and protect breastfeeding mothers at work (e.g., provisions in the Affordable Care Act) do not apply to all workers and workplaces, leaving gaps in protections for women who want to breastfeed beyond their maternity leave.

Even when breastfeeding is initiated in the hospital, it may be difficult to sustain. It can be painful (Ahluwalia, Morrow, & Hsia, 2005), and women may not be supported to initiate or continue breastfeeding (Grassley & Eschiti, 2008). Women may also purposefully formula feed to increase paternal involvement (Earle, 2000). The result of these personal and systemic issues is that the majority of women do not reach the 6-month recommendation.

Infant Sleep

AAP recommendations. The American Academy of Pediatrics also periodically releases recommendations regarding infant sleep, with the primary goal of reducing rates of Sudden Infant Death Syndrome (SIDS) and other sleep-related deaths. There were approximately 3,600 sudden unexpected infant deaths (SUID) in 2017, of which about 1,400 were classified as SIDS, 900 due to accidental suffocation or strangulation in bed (ASSB), and 1,300 due to unknown causes (Centers for Disease Control and Prevention (CDC), 2019). When the AAP came out with its first safe sleep recommendations in the mid 1990s, their primary focus was on getting parents and caregivers to places infants on their backs to sleep. At the time, mnemonic devices like

"Back to Sleep" and "Face Up to Wake Up" were used to help parents remember the recommendation.

The ABCs of infant safe sleep. Since the 1990s, research has linked several other sleep behaviors to reduced SUID risks. The mnemonic device has been updated to address three sleep practices that are protective against SIDS: it is recommended that babies should sleep Alone, on their Backs, and in a Crib (ABC). "Alone" refers to the recommendation not to share a sleep surface with an infant. "On their Backs" is the long-standing recommendation to place infants in a supine position instead of a side or prone position for sleep. "In a crib" refers to the recommendation that infants sleep on a flat and firm surface, though this is not necessarily intuitive from the phrase. Though it is not included in the mnemonic device, the AAP also recommends that parents room-share with their infants for at least the first 6 months, and then ideally up to a year; room-sharing without bed-sharing has been shown to reduce the risk of SIDS by up to 50% (AAP, 2016).

The ABC messaging frames these behaviors as equally attainable and modifiable. However, research suggests that this is not the case, in part because the recommendations only account for the needs of the infant and not those of the mother-infant dyad (or the family as a whole). By examining the research into why families may deviate from the recommendations we can see that some of these behaviors are potentially less modifiable than others. Additionally, we can see how the competing needs of family members may influence the decisions parents make about infant sleep.

Alone. The AAP recommends that infants should not share a sleep surface with an adult (e.g., co-sleeping or bed-sharing). This recommendation has been in several previous AAP statements, and it has permeated public health messaging (Peacock et al., 2018). Despite the

recommendation, approximately 20% of mothers report that they usually share their bed with their infants for at least part of the night (Smith et al., 2016). Bed-sharing is not an all-or-nothing behavior, however; not all families bed-share every night, or even all through the night. For example, in one study almost 45% of families reported bed-sharing at least some of the time (Willinger, Ko, Hoffman, Kessler, & Corwin, 2003).

A recent literature review showed there are several reasons mothers choose to bed-share (Ward, 2014). Some major themes included: bed-sharing to facilitate breastfeeding (e.g., Weimer et al., 2002); bed-sharing to increase length and quality of sleep, or to calm a fussy infant (e.g., Chianese, Ploof, Trovato, & Chang, 2009); bed-sharing to promote mother-infant bonding (e.g., Lathen, 2009); and because of familial or cultural traditions (e.g., Aslam, Kemp, Harris, & Gilbert, 2009; Ateah & Hamelin, 2008; Baddock, Galland, Taylor, & Bolton, 2007). The various and often overlapping reasons for bed-sharing suggests that: (a) this behavior is likely an adaptation to the challenges of infant sleep; (b) it may be difficult to change bed-sharing practices without addressing the underlying reason parents bed-share, and; (c) simply providing parents with SUID risk information may not be enough to change bed-sharing behavior because such information does not address the needs of the mother-infant dyad. The most recent AAP recommendations partially address the needs of families who bed-share by giving advice for parents who may accidentally fall asleep with their infants. However, the AAP still recommends against bed-sharing as a regular sleep practice and does not offer suggestions on how to reduce SUID risks for families who choose to bed-share as a regular practice.

On their back. The recommendation to place infants on their backs to sleep is strongly supported by international and national research showing that infants sleeping prone are at an increased risk of SUID. The Back to Sleep campaign from the 1990s dramatically reduced SIDS

rates. However, some communities—particularly communities of color—have been skeptical of and reluctant to take the advice. We still see differential rates of supine sleeping today; approximately 10% of White infants and 20% of Black infants are placed to sleep on their stomachs (Colson et al., 2009).

Placing an infant to sleep on its back seems like a simple behavior to change, but research with low-income Black and Latino women show that women are often balancing the competing needs for safety and consolidated sleep when choosing how to position their infants for sleep. Women may know the "right" position, but choose to place their babies to sleep on their stomachs out of concern that babies can choke when lying on their backs, or because everyone sleeps better (and longer) when their babies sleep on their stomachs because they are more comfortable in that position (e.g., Mathews, Joyner, Oden, Alamo, & Moon, 2015; Moon, Oden, Joyner, & Ajao, 2010). Public health messaging and interventions attempt to educate families about the risks associated with prone sleeping, but they do not address the underlying reason that many families choose the prone position—that parents may be placing their babies to sleep on their stomachs as a way to encourage their infants to sleep longer.

In a crib. The "in a crib" recommendation is the most condensed part of the ABCs and it merits unpacking. In short, "crib" is a proxy for a flat, firm surface without any extra or loose bedding; this includes infant cribs as well as bassinets, play yards (e.g., Pack 'n Plays, see Appendix E for product image), and portable cribs that conform to the standard set by the Consumer Product Safety Commission.

Parents are encouraged to avoid using inclined sitting devices such as car seats, swings, strollers, and infant carriers for infant sleep locations. The risk these surfaces pose is linked to airway obstruction, particularly for infants under 4 months old who may have poor neck control

(Bass & Bull, 2002; Cerar, Scirica, Osredkar, Neubauer, & Kinane, 2009; Cote, Bairam, Deschesne, & Hatzakis, 2008; Merchant, Worwa, Porter, Coleman, & deRegnier, 2001). These products are ubiquitous, particularly car seats. Most families cannot avoid owning a car seat, even when they do not own a car. This is, in part, because many hospitals have policies requiring parents to have an infant car seat prior to being discharged from the hospital; many hospitals even require that staff perform Car Seat Tolerance Screenings prior to discharging a woman and her infant. The Car Seat Tolerance Screening is recommended by the National Highway Traffic Safety Administration (NHTSA, 2015).

Swings and other inclined seats are also very popular, and often traded or sold between parents once infants outgrown them. The Fisher Price Rock n' Play Sleeper (RnP, see Appendix E for product image) is one such popular item that topped many must-have baby product lists in recent years (e.g., Kaplan, 2016). In April 2019, Fisher Price recalled over 4.7 million RnPs because over 30 infant deaths had been linked to the product since 2009 (CPSC, 2019; Hsu, 2019). Despite the recall, many parents loyal to the product do not plan to return their RnPs; many plan to keep them for when they have kids in the future (e.g., Biviano, 2019).

Though the cause of many of the RnP-related deaths is unknown, one leading hypothesis is that the infants fully or partially rolled into the side of the RnP and suffocated when they were unable to roll back. Therefore, the risk of RnPs and other inclined seats may be related to the fact that any seat at an incline is likely to need sides in order to keep a small infant in place, and it's the sides that may increase the risk of ASSB.

This relates to another part of the "in a crib" recommendation, which is that infant sleep surfaces should be kept clear of any loose bedding or pillow-like objects to reduce the risk of suffocation or entrapment (AAP, 2016). This includes bumper pads, which the AAP discourages

parents from using, but it is not one of the prominent or well-known recommendations. Given that many parents are unaware of the dangers posed by bumper pads, several municipalities have taken action to remove them from the market. For example, the city of Chicago was the first city in the country to ban bumper pad sales (Gabler, 2011). Breathable bumper pads, typically made with mesh, are the only bumper-like products available for purchase within the city.

Room-sharing. The AAP also recommends that infants room-share with their parents for at least the first 6 months, and ideally up to a year, as it has been shown to decrease the risk of SIDS by up to 50% (Blair et al., 1999; Carpenter et al., 2004; Mitchell & Thompson, 1995; Tappin, Ecob, & Brooke, 2005). Room-sharing can also make nighttime infant care less difficult because the infant is in close proximity. Despite the potential benefits, a nationally representative survey found that only about 60% of families were following this recommendation (Smith et al., 2016).

The low rate of room-sharing may be due, in part, to how the recommendation does not account for the needs of the family. This was evident when there was considerable public attention to the updated recommendations in the fall of 2016. Despite the room-sharing recommendation being in previous policy statements, it received strong pushback in the popular press, with parents and critics citing the negative consequences of depriving parents of sleep (e.g., Cain Miller & Carroll, 2016). Parents often report that their babies are loud sleepers; babies may grunt and move around in their sleep without actually waking up. This can disrupt parents' sleep, leading them move their baby to another room after weighing the benefits of room-sharing against their need for better sleep. Some parents also report that everyone's sleep quality and duration improve—and their baby's sleep consolidates—when the parents and infant do not share a room.

Sleep consolidation and sleep training. Infants are not born with an established 24 hour sleep-wake cycle, but develop it during the first months of their lives (Jenni, Deboer, & Achermann, 2006). Naturalistic infant sleep patterns are difficult to measure because parental behavior (e.g., swaddling in an attempt to help infants sleep longer) strongly affects infants' activity patterns (Jenni et al., 2006, p. 149). However, evidence suggests that infants naturally consolidate their sleep—resulting in the reduction and eventual elimination of nocturnal wakings—between 6 and 12 months (Iglowstein, Jenni, Molinari, & Largo, 2003).

Parents can experience negative outcomes related to the naturally unconsolidated sleep of their babies. Women who reported infant sleep problems were twice as likely to experience serious psychological distress and poor general health than women who did not report infant sleep problems; additionally, infant sleep problems had a greater (negative) impact on psychological distress for women *without* a history of depression than for women with a history of depression (Martin, Hiscock, Hardy, & Davey, 2007, p. 950). Fathers also experience negative effects due to infant sleep problems, though not as strongly as mothers. Fathers reporting infant sleep problems were at an increased risk for poor general health, and were at an increased risk of serious psychological distress when *their partner* was experiencing serious psychological distress (Martin et al., 2007). The differential effects on mothers and fathers could be due, in part, to the different demands of infant care placed on women and men at night, particularly when women are breastfeeding.

Many parents turn to sleep training methods in an effort to encourage infant sleep consolidation before it would naturally occur on its own. Sleep training is generally defined as behavioral interventions to consolidate infant sleep, and to prevent or eliminate nighttime waking in infants and toddlers (Ramos & Youngclarke, 2006). The four categories of sleep training

methods can be seen in Table 2 (Mindell, Kuhn, Lewin, Meltzer, & Sadeh, 2006, p. 1266). Though there are few studies directly comparing the efficacy of these methods to each other, the available evidence suggests that no method is significantly more effective than any of the others (Mindell et al., 2006). Collectively, behavioral sleep interventions are effective and have been shown to significantly reduce sleep disturbances when compared to non-intervention groups (Mindell et al., 2006). Longitudinal evidence also suggests that sleep training does not cause long-term negative consequences to infants' behavior and emotional health, nor does it negatively affect infant attachment styles (Gradisar, Jackson, Spurrier, & Gibson, 2016).

Table 2. Sleep Training Methods (Mindell, Kuhn, Lewin, Meltzer, & Sadeh, 2006, p. 1266-67).

Method	Description
Unmodified Extinction	"Unmodified extinction procedures for sleep problems involve having the parents put the child to bed at a designated bedtime and then ignoring the child until a set time the next morning (although parents continue to monitor for illness, injury, etc.). Behaviors that are ignored include crying, tantrums, and calling for the parents. Exceptions to ignoring the child include any concerns that the child is hurt, ill, or in danger. The biggest obstacle associated with extinction is lack of parental consistency. Parents must ignore their child's cries every night, no matter how long it lasts. If parents respond after a certain amount of time, the child will only learn to cry longer the next time. (p. 1266)"
Graduated Extinction	"Typically, parents are instructed to ignore bedtime crying and tantrums for specified periods. The duration or interval between check-ins with the child is often tailored to the child's age and temperament, as well as the parents' judgment of how long they can tolerate the child's crying. Either parents can employ a fixed schedule (e.g., every 5 minutes) or they can wait progressively longer intervals (e.g., 5 minutes, 10 minutes, then 15 minutes) before checking on their child. With incremental Graduated Extinction, the intervals increase across successive checks within the same night or across successive nights. The checking procedure itself involves the parents comforting their child for a brief period, usually 15 seconds to a minute. The parents are instructed to minimize interactions during check-ins that may reinforce their child's attention-seeking behavior. (p. 1266)"
Positive Routines and Faded Bedtime	"Positive routines involve the parents developing a set bedtime routine characterized by quiet activities that the child enjoys. Faded bedtime with response cost involves taking the child out of bed for prescribed periods of time when the child does not fall asleep. Bedtime is also delayed to ensure rapid sleep initiation and that appropriate cues for sleep onset are paired with positive parent-child interactions. Once the behavioral chain is well established and the child is falling asleep quickly, the bedtime is moved earlier by 15 to 30 minutes over successive nights until a pre-established bedtime goal is achieved. A scheduled wake time is established and daytime sleep is not allowed, with the exception of age-appropriate naps. (p. 1266-67)"
Scheduled Awakenings	"Scheduled awakenings involve parents awakening and consoling their child approximately 15 to 30 minutes before a typical spontaneous awakening. This strategy begins with establishing a baseline of the number and time of spontaneous nighttime awakenings. Preemptive awakenings are then scheduled. Parent-induced scheduled awakenings are typically followed by the parents' usual response to a spontaneous awakening, such as rocking or nursing the child back to sleep. Scheduled awakenings are then faded out, by systematically increasing the time span between awakenings. (p. 1267)"

The AAP does not address behavioral sleep training or sleep consolidation in its recommendations for infant safe sleep. This omission has several consequences for other components of the safe sleep recommendations, as well as the AAP's overall mission of reducing SUIDs. First, sleep training methods implicitly require parents to stop room-sharing; ignoring an infant's cries would be more difficult if the parents were in the room with their baby. The low rates of room-sharing through the first year are understandable when sleep training methods are considered. A recent study comparing room-sharing infants with independent sleepers showed that room-sharing was associated with reduced sleep consolidation at 4 and 9 months (Paul et al., 2017). This study did not specifically assess sleep training methods, but did find that at 4 months, independent sleepers were more likely to have a consistent bedtime routine, be put to bed drowsy but awake, and go to bed before 8pm (Paul et al., 2017)—all of which suggest some level of sleep training or behavioral modification.

Second, sleep consolidation—though helpful for parents—may reduce infants' ability to arouse themselves during sleep and subsequently increase SUID risk (Moon & Hauck, 2017). Failure to arouse is thought to be one potential mechanism for SIDS (Harper & Kinney, 2010), and is thought to be why prone sleeping and exposure to smoke are risk factors and breastfeeding is a protective factor against SIDS (Moon & Hauck, 2017). By omitting research and guidance on sleep training, the AAP leaves an information void to be filled by sleep training advocates. Most sleep training methods are meant to be implemented prior to 6 months (e.g., Ferber, 2006; Weissbluth, 2015) the age at which sleep starts to naturally consolidate and SIDS risk dramatically decreases (U.S. Department of Health and Human Services, n.d.). This is not to suggest that sleep training methods increase the risk of SUID, but to highlight that sleep training may be one of several reasons parents do not follow the room-sharing recommendation.

Addressing the Discrepancy between Recommendations and Behavior

There has been a concerted effort at the national level by stakeholders (e.g., service providers, researchers, medical professionals) to develop interventions to address the discrepancies between breastfeeding and infant safe sleep recommendations and parenting behaviors. One such group is the National Center for Education in Maternal and Child Health[1] (Bronheim, 2017), which bases its conversational approach to interventions on the Theory of Planned Behavior (TPB) (Ajzen, 1985; Ajzen, 1991; Ajzen, 2005). The use of the TPB is evidence-based and has been applied to breastfeeding duration and infant sleep position in previous research. First, I will describe the theory, and then describe how it has been applied to breastfeeding and infant sleep position.

The Theory of Planned Behavior

The Theory of Planned Behavior (Ajzen, 1985; 1991; 2005) posits that the *intention* to perform (or not perform) a behavior is predictive of the behavior being performed. We can predict intentions—and therefore behaviors—by examining three constructs that determine intentions: attitudes toward that behavior; subjective norms about that behavior; and the control people perceive to have over the behavior (Ajzen, 1991).

Attitude toward the behavior refers to "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (1991, p. 188). Subjective norms refers to "the perceived social pressure to perform or not to perform the behavior" (1991, p. 188). Perceived behavioral control refers to "the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles" (1991, p. 188). Perceived behavioral control is not to be confused with *actual*

[1] Formally the National Action Partnership to Promote Safe Sleep (NAPPSS; Bronheim, 2015)

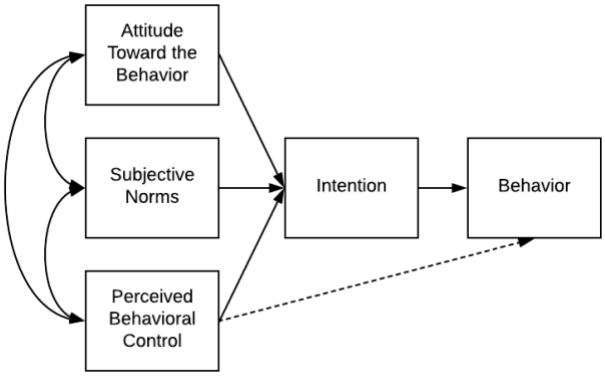
control—it assesses a person's *perception* of control after they take into account possible challenges they may face in performing a particular behavior. The importance of attitudes, subjective norms, and perceived behavioral control vary depending on the behavior of interest. The TPB does not theorize that they all account for equal amounts of variability in intentions, and therefore behaviors; for example, attitudes may be more influential than perceived behavioral control and subjective norms for some behaviors, and less important for others.

Figure 1 (Ajzen, 2005, p. 118) illustrates three important features of the TPB. First, perceived behavioral control may influence intentions through motivation. For example, if one believes they have little control over a given behavior, they likely will not intend to do that behavior because they see little chance for success. Therefore, we expect perceived behavioral control to account for unique variability in intentions, independent of attitudes or subjective norms. The solid line between perceived behavioral control and intentions indicates this link.

Second, the TPB assumes that perceived behavioral control can affect behavior independent of intentions (indicated by the dashed line between perceived behavioral control and behavior). Perceived behavioral control can directly predict behaviors when the *perceived* level of control accurately assesses *actual* levels of control; a person is more likely to perform a behavior when they accurately predict future challenges and possible solutions for those challenges. In contrast, if perceived behavioral control does not reflect *actual* control, then the direct link between it and behavior is not expected. This is not to be confused with *low* perceived behavioral control, when a person predicts many obstacles with few possible solutions. As long as it reflects *actual* control—whether low or high—it should predict unique variability in behavior performance.

Third, the TPB does not account for any additional constructs or variables between Intention and Behavior, suggesting that the TPB may be best suited to situations in which the time between forming an intention and executing a behavior is short. As the duration between Intention and Behavior increases, the chance increases that other variables (e.g., more information, the behavior of others, etc.) will modify the theorized relationship.

Figure 1. The Theory of Planned Behavior (Ajzen, 2005, p. 118)



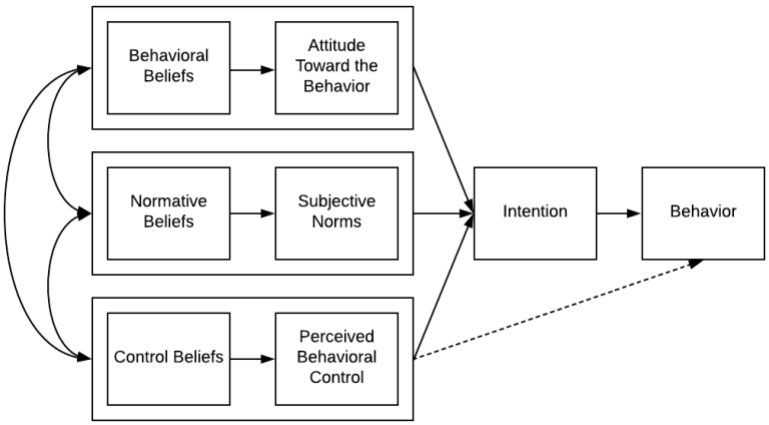
TPB further proposes that there are beliefs underlying the development of attitudes, norms, and perceived behavioral control (Figure 2; e.g., Ajzen, 2005). These antecedents describe the beliefs that influence the three constructs that predict intentions. Behavioral beliefs are the antecedent to attitudes, and are beliefs about the outcome of the behavior and how strongly one believes the behavior will lead to the outcome. The expectancy-value model exemplifies this point; if a person believes that a behavior will lead to positive outcomes, then that person is likely to have a positive attitude toward that behavior. Conversely, if a person believes that there are few benefits to performing the behavior, or that performing the behavior is not likely to produce positive outcomes, that person will have a negative attitudes.

Normative beliefs are the antecedent to subjective norms, and are a person's belief that people close to or important to them approve or disapprove of a given behavior, or that people like them (social referents) also engage in that behavior. Normative beliefs also depend on a

person's motivation to comply with what others may want or expect. The TPB theorizes that a person will have positive subjective norms about a behavior when they believe their social referents or important people in their lives approve of the behavior, and when that person is motivated to comply. Conversely, the TPB theorizes that a person will have negative subjective norms about a behavior when they believe others disapprove of the behavior, and when that person is motivated to comply. The motivation component is important because the beliefs of others may be of little import if a person is not motivated to comply. In a case like this, we would expect that subjective norms would have little to no relation to a behavioral intention because the person did not feel pressured by social norms or expectations to perform a behavior.

Control beliefs are the antecedent to perceived behavioral control, and are a person's beliefs about their ability to successfully perform a given behavior. Control beliefs can be based on personal past experiences or observations of others performing the behavior. They are also based on an assessment of the possible barriers and facilitators of the behavior, as well as the resources necessary to perform the behavior.

Figure 2. Beliefs as the Informational Foundation of Intentions and Behaviors
(Ajzen, 2005)



The Theory of Planned Behavior and breastfeeding duration. Four published articles tested the ability of the TPB to predict breastfeeding duration.[2] Information about the studies' methodologies—including how they measured TPB constructs—is in Table 3. Two articles (Avery, Duckett, Dodgson, Savik, & Henly, 1998; Duckett et al., 1998) analyzed data from the same sample and used different analytic techniques: I combined their information in Table 1, and I differentiate their findings below, when appropriate (e.g. more detailed results from one analysis). For reading ease, I refer to the articles by the last name of the first author: Avery (Avery et al., 1998), Duckett (Duckett et al., 1998), Bai (Bai, Middlestadt, Peng, & Fly, 2010), and Wambach (Wambach, 1997). The results from the four studies reveal a complicated picture of how the TPB applies to breastfeeding.

The only consistent finding across all four studies was that attitudes about breastfeeding significantly predicted intentions: women with more positive attitudes about breastfeeding were more likely to be breastfeeding at each study's follow-up. Additionally, the Duckett article found that both attitudes about breastfeeding and attitudes about formula were directly associated with breastfeeding duration (the behavior) for women who return to work within the first 6 months: positive attitudes about formula feeding were related to decreases in breastfeeding durations, whereas positive attitudes about breastfeeding were related to increases in breastfeeding durations. For stay at home moms (SAHM), these attitudes were indirectly related to breastfeeding duration through their relationship with Intention.

Subjective norms did not predict intentions in any of the studies except for in the Bai study, in which subgroup analyses showed the effect of subjective norms on intentions was significant only for married women, and non-significant for unmarried women. Results from the

[2] Only studies with U.S. samples are described here because of the unique family leave policies and social norms around infant care practices like breastfeeding and bed sharing.

Duckett article provide one possible explanation for this; their structural equation modeling analyses showed that subjective norms were significantly predictive of attitudes about breastfeeding for SAHM and women who planned to work more than 20 hours/week, but not for women who planned to work less than 20 hours/week. This finding indicated that subjective norms are possibly an antecedent to attitudes about breastfeeding instead of a key predictor of intentions, at least when the TPB is applied to breastfeeding.

None of the studies found a direct relationship between perceived behavioral control and breastfeeding behavior. This suggests that perceived behavioral control does not accurately reflect *actual* behavioral control, or put another way, the women in these studies were unable to predict their actual level of control over breastfeeding. All of the studies except the Bai study found that perceived behavioral control was significantly predictive of intention to breastfeed. This study's unique sample could explain this counter-intuitive finding; this issue is addressed later in this section.

Table 3. Methodologies of Studies Applying the TPB to Breastfeeding Duration

	Avery et al., 1998 & Duckett et al., 1998	Bai et al., 2010	Wambach, 1997
METHODOLOGY			
Recruitment	Large private hospital in a major Midwestern city	WIC centers and 1 hospital in Indiana	Two university-affiliated OB-GYN clinics, a local health dept., private clinics, and childbirth classes in Midwest
Eligibility	First time breastfeeding, over 18yo, English speaking, no serious illness or complication, Full-term infant receiving normal newborn care	Postpartum 3m or less, Over 18yo, English speaking, Currently EBF	Ability to speak and read English and access to a telephone. Only women who initiated breastfeeding were sent follow-up survey
Demographics	N = 602 Avg Maternal Age: 28.3yrs (SD=4.9) Married: 85.2% Education: 53.5% BA or higher Planned RTW 5-20hrs by 6 months: 13.5% Planned RTW 21-40hrs by 6 months: 56.1% Planned Homemaker at 6 months: 30.4%	N = 78 Avg Maternal Age: 27.4yrs (SD=5.4) Married: 57.5% Living with baby's father: 69.2% White: 70.5% Education: 47.4% BA or higher	N = 135 Avg Maternal Age 28.2yrs (SD=5.1) Married/Cohabitating: 89% Education: 49% BA or higher Median income: 32.5-39K White: 87% First time Breastfeeding: 73% RTW: 22% had returned to work at follow-up.
Measure Time points	Baseline measure in hospital immediately after delivery; follow-up phone calls at 1, 3, 6, 9, and 12m	Baseline survey self-administered at recruitment site, phone interview at 6m postpartum	Baseline prenatal data collected in person or by mail. Follow-up survey mailed at 4wks, reminder call at 6wks
MEASURED CONSTRUCTS			
Intentions	How many weeks in all do you intend to breastfeed?	Rate the likelihood they would EBF for 6m. 7pt scale (extremely unlikely to extremely likely)	Indicate feeding plans on a 7pt scale (definitely will bottle-feed to definitely will breastfeed)
Attitudes	Rate bottle feeding and breastfeeding using 7pt semantic differential scales with the following 8 adjective pairs: Pleasant-Unpleasant | Embarrassing-Not Embarrassing | Healthy-Unhealthy | Repulsive-Attractive | Convenient-Inconvenient | Unnatural-Natural	Rate breastfeeding using 7pt semantic differential scales with the following 8 adjective pairs: Good-Bad | Easy-Difficult | Relaxing-Exhausting | Natural-Unnatural | Pleasant-Gross | Convenient-Inconvenient | Time Saving - Time Consuming | Rewarding-Embarrassing	Attitudes on Breastfeeding Scale (ABS) (Cusson, 1985): advantages of breastfeeding to baby and mother, convenience/inconvenience of breastfeeding, and whether breastfeeding is worthwhile despite reported inconvenience (17Qs)
Behavioral Beliefs	Women's "cognitive evaluation of the consequences to mother and infant of breastfeeding (19 Qs) or bottle feeding (19 Qs) 6m or more. 7pt scale "unlikely" to "likely"	Did not measures	Did not measure
Subjective Norms and Normative Beliefs	Women's "global evaluation of the degree to which influential persons in her life endorse breastfeeding." Friends and family (5Qs); health care professionals (5Qs)	Rate possible referents' opinions about agreeing to EBF for 6m, 7pt scale (extremely disagree to extremely agree). Referents were 'most people who are important to me' and 'most mothers like me.'	Beliefs about significant others' expectations: "definitely should breastfeed" to "definitely should bottle feed" (4Qs). Motivation to comply with others' expectations: "do not care at all" to "care very much" (4Qs).
Perceived Behavioral Control	Women's judgment about the degree to which she can successfully breastfeed. Assessed both personal control over breastfeeding and specific control beliefs (e.g., "I will be able to get enough help if I encounter problems")	Women's judgment about their control over the circumstances, e.g., was breastfeeding up to them or out of their control. Women's confidence, e.g., "how sure" or "how confident" they were about EBF for 6m	Women's PBC over future breastfeeding plans, the degree of anticipated ease or difficulty of breastfeeding and confidence in their ability to breastfeed (3Qs)
Potential Moderators	Maternal age | marital status | source of prenatal care | delivery type | planned employment | breastfeeding knowledge | breastfeeding difficulties during the 1st month	Marital status | maternal age | education level | WIC participation	Maternal age | income | education | previous breastfeeding experience | breastfeeding support postpartum | breastfeeding problem severity postpartum
Outcome	Weeks continued giving *any* human milk, measured up to 12m	"Using only breastmilk; fully breastfeeding, either by direct nursing or using a bottle; and giving no solids, no infant formula, no cow's milk, no goat's milk, no juice, and no water for the full 6 months from birth"	Duration measured at 4-6wks, asked mothers if they were still breastfeeding. Their definition allowed for supplementation

The four studies also tested the effects of some demographic characteristics on TPB model components. The Avery and Duckett studies found that maternal age and education, and breastfeeding knowledge were significantly related to breastfeeding duration; the TPB does not predict these relationships. Additionally, they found that these variables had indirect effects on Behavior through their relationships to attitudes about breastfeeding and attitudes about formula. The Bai study found that marital status, age, education level, and WIC participation indirectly affected behavior through intention. Maternal age, income, education, and previous breastfeeding experience were not significantly correlated with Intention in the Wambach study. None of the studies tested race as a modifying variable in their models, likely due to their samples being predominately White.

Only two studies (Avery & Duckett) tested how plans to return to work affected breastfeeding duration. The Avery study found that women who planned to return to work full- or part-time sometime before 6 months postpartum were approximately twice as likely as SAHM to wean earlier than they had planned. The Duckett study created three structural equation models—one for each return to work plan: SAHM; <20hrs/week by 6 months; > 20hrs/week by 6 months. The two models for the women who returned to work showed that breastfeeding knowledge and maternal education had direct effects on breastfeeding duration—independent of their effects mediated by attitudes about breastfeeding or intention. This relationship was not present in the SAHM model, indicating that the TPB components are not equally important for women who return to work and women who do not. Wambach reported that 22% of her sample had returned to work by 6 weeks postpartum, though she did not report if the women were working full-time or part-time, and did not test any work-related variable in the model.

The lack of consistent findings across the four studies could be due—in part—to three methodological issues. First, none of the studies collected TPB construct data that was not biased by varying levels of personal experience. The Wambach was the only one to collect data prepartum, but almost one-third of her sample already had experience breastfeeding. The Avery and Duckett studies collected baseline data while women were still in the hospital. They limited their sample to first-time breastfeeding women, but the women might have already breastfed in the hospital (e.g., potentially received support, information, or advice from hospital staff) prior to being recruited into the study. The Bai study recruited women up to 3 months postpartum, and excluded women who were not EBF at the time of recruitment. The late recruitment period in this study may explain why they did not detect a significant relationship between perceived behavioral control and intention because it is likely that perceived behavioral control was aligned with *actual* behavioral control because women could have already successfully overcome their challenges with breastfeeding. It could also be that there was not much variability in the sample's perceived behavioral control scores—for the same reason that *perceived* and *actual* behavior control may be aligned—which limits its predictive value.

Second, the studies defined and measured breastfeeding intentions and duration differently from one another, with varying levels of specificity. Intention to breastfeed was measured in three different ways, by asking women: how many weeks they intended to breastfeed (Avery; Duckett); the likelihood that they would be EBF at 6 months postpartum (Bai); to indicate their feeding plans on scale from "definitely will bottle-feed" to "definitely will breastfeed" (Wambach). Breastfeeding was also defined differently across the studies. Three studies use definitions of breastfeeding that allow for formula supplementation or the introduction of solid foods, by asking women if they are providing any breastmilk (Avery;

Duckett) or if they are breastfeeding (Wambach) at follow-up. In contrast, the Bai study used a very specific definition of EBF that does not allow for formula supplementation or the introduction of solid foods. Almost 80% of the women in their study introduced solid foods prior to 6 months, meaning that just over 20% of the sample was EBF at follow-up.

Third, the studies inconsistently measured the antecedents to the core predictors of intentions. Only the Avery and Duckett studies measured behavioral beliefs (antecedent to attitudes), such as beliefs about outcomes related to breastfeeding or formula feeding. Three studies (Wambach, Avery, and Duckett) measured normative/referent beliefs (antecedent to subjective norms), though the Wambach study was the only one to measure motivation to comply with subjective norms. The Wambach study combined subjective norms and motivation to comply into one variable on a scale from 1-49 (M = 12.9, SD = 6.10). Combining the antecedent with subjective norms limits our ability to see if, for example, subjective norms were positive but motivation was low, or if both subjective norms and motivation were low. All the studies measured control beliefs (antecedent to perceived behavioral control) to varying degrees. However, none of the studies investigated any contextual factors that may affect their participants' level of perceived control (e.g., plans to return to work, access to medical support such as LCs, etc.).

The Theory of Planned Behavior and sleep position. One published study has applied the TPB to infant sleep position. Colson and colleagues (Colson, Geller, Heeren, & Corwin, 2017) applied the TPB to the infant sleep position practices of a large (n=3297), nationally representative sample of women with infants between the ages of 2 and 6 months old. The women were recruited while at the hospital, and completed the survey by telephone or online. Sleep position behavior was measured by assessing the infants' *usual* sleep position and *all* their

sleep positions over the last two weeks. Intention for sleep position was measured by asking women their intentions for sleep positions (i.e., back, side, stomach) in the next two weeks.

Women in the sample were categorized into four groups based on the combination of their intentions and behaviors, as shown in the Table 4 below. Strikingly, only 57.6% of the women surveyed exclusively intended to lie their infants on their backs to sleep, and the first group represented the 43.7% of the sample who intended to and followed through with only supine sleeping—representing the "gold standard" of infant sleep positions. Logistic regression analyses produced several significant adjusted odds ratios related to the TPB variables. The "gold standard" group was the referent group in these analyses; here I will report only the adjusted odds ratios of the intended prone group to the "gold standard" group. First, women who reported low levels of perceived behavioral control were, on average, 3.5 times more likely to intend to use the prone position. Second, women who reported positive subjective norms about prone sleeping were 11.6 times more likely to intend to use the prone position. Third, women who had positive attitudes about prone sleeping (e.g., it was healthy for the baby, it was more comfortable, it would keep the baby from choking) were 130 times more likely to intend to use the prone position.

Table 4. Safe Sleep Intentions and Behaviors (Colson et al., 2017, p. 5)

Sleep Position Intention and Practice	Percentage
Intend Only Supine, Practice Only Supine	43.70%
Intend Only Supine, Practice Other	13.90%
Intend Side or Side and Back	26.10%
Intend Includes Prone	14.90%

These significant findings suggest that all three theorized TPB variables are significantly predictive of infant sleep position intentions. The findings also indicate that interventions addressing subjective norms and attitudes could significantly reduce the rates of intended prone position use. The study also found evidence that such interventions could be effective; women who received AAP recommendation-consistent advice from their doctor were significantly less likely to intend to use side or prone sleeping positions. Furthermore, women who received advice inconsistent with AAP recommendations were 2.6 times more likely to intend to use the prone position and 1.9 times more likely to intend use the side position. Both of these findings—coupled with the impact of subjective norms—suggest that doctors and other influential people around women can affect intentions and behaviors by supporting supine sleeping.

This study has methodological limitations similar to those in the studies investigating breastfeeding duration using the TPB framework. First, all of the women had personal experience with infant sleep position. The women completed their surveys between eight and 60 weeks postpartum, meaning they all had recent personal experience that could affect the TPB variables. Additionally, only 37.1% of the sample were first-time mothers. One could argue that statistically controlling for infant age and maternal parity—as the study did—would isolate the effects of the TPB variables. This is true mathematically. However, it assumes that the effect of, for example, having another child is equally impactful for all women. It also does not address *why* having more than one child could affect the outcome. For example, the messaging from health professional and important family members may not be consistent from one birth to the next.

Second, collecting data at only one time point resulted in measuring behavior chronologically *before* future intentions, meaning that the researchers are assuming that behavior

from the previous two weeks will continue in the following two weeks. The data measurement procedure (i.e., the phone interview or completing the survey online) could itself work as a form of intervention and have somehow affected the participants' behavior going forward. This methodological limitation left the researchers unable to directly test the statistical relationship between Intention and Behavior.

Limitations of the Theory of Planned Behavior. There are two assumptions underlying the TPB that limit its application to infant feeding and sleep. First, the TPB is designed to predict behaviors performed by an individual, not by a dyad, and especially not by a mother-infant dyad in which psychosocial constructs (i.e., attitudes, subjective norms, and perceived behavior control) are irrelevant and unmeasurable in the infant. The TPB does not account for any effects the infant may have on their mother's ability to perform behaviors. This may partially explain why, for example, none of the TPB-Breastfeeding studies found a direct link between perceived behavioral control and breastfeeding; *perceived* and *actual* behavioral control may be misaligned because women cannot predict their babies' behavior and ultimately cannot fully control it, either.

Second, the TPB relies on the assumption that behavior is completely under the conscious control of the individual—that only internal psychosocial factors determine whether someone performs a behavior. As previously discussed, the TPB does not account for any additional constructs or variables that may be present between intention and behavior. This approach to understanding of human behavior does not account for other internal physiological factors or external contextual factors that can affect a person's ability to perform a given behavior.

When the behavior in question is one that is performed repeatedly over time, the consequences of these two assumptions are exacerbated. For example, a mother and her infant

both have to execute the behavior of breastfeeding; no matter how much the woman wants to breastfeed, she will be unable to if her infant does not also want to engage, or she may have conflicting feelings about breastfeeding if it is causing her pain or she is experiencing a low milk supply. If challenges occur over several attempts at a behavior, not only have new variables been introduced into the model between intention and behavior, but a feedback loop may develop in which experiences with the behavior may change the original underlying psychological constructs (i.e. attitudes, subjective norms, and perceived behavioral control). Over time, regardless of whether breastfeeding is effortless or challenging, the experiential knowledge from each breastfeeding attempt can feed back into the underlying constructs, potentially changing them in such a way that the intention—and therefore the behavior—also change.

The TPB does not account for the dynamic processes described above, leaving a gap in our understanding of what occurs between intention and behavior for infant feeding and sleep practices. The Ecological Framework from Community Psychology (Trickett, Kelly, & Vincent, 1985) is one theoretical framework that helps fill that gap.

The Ecological Framework

The Ecological Framework (Trickett, et al., 1985) frames human behavior as a part of a larger dynamic system. This framework is frequently applied to community- and school-based research, and has not been applied to the system changes that occur when parents bring home their first child. The four principles of the Ecological Framework (i.e., cycling of resources, adaptation and coping, interdependence, and succession) are one approach to fill the gap left by the TPB.

Cycling of resources. Resources are broadly defined within the ecological paradigm and can include people, settings, and events. *People* can act as resources when they are "in a position

of influence, those who enjoy status within their small group, and those who themselves have access to diverse and multiple resources" (p. 288). Friends and family members, and medical professionals such as pediatricians and LCs, are likely to be resources for first-time mothers. *Settings* are structural elements of the environment; the ecological framework recognizes both currently existing formal and informal settings, as well as the potential for new settings and structures within the environment to meet a particular need. Many families prepare for a new baby by transforming a room or space within a room into a nursery, or join new-moms groups—both would be considered settings within the ecological framework. *Events* are resources because "they clarify the nature of the norms, processes, and values in the community and create opportunities" (p. 290). Many events in early parenthood are planned, such as visits from friends and family, or going to scheduled infant check-ups with a pediatrician; events can also be unplanned, such as attending a drop-in lactation clinic, or running into a friend while on a walk and catching up over coffee.

Any given example of a resource may include more than one type of resource. For example, attending a new-moms' group likely contains all three types of resources. First, the other members and the leader of the group are all people with experiential knowledge and emotional support from which a participant could benefit. Second, the setting itself is often serving a dual purpose, such as the back room of a mother and infant store, or a meeting room at a medical center; these settings offer assistance in other areas as fulfill multiple needs within a system. Finally, attending the group itself is a planned event, but the activities or topics discussed at the event may be unplanned; for example, the discussion may change from week-to-week depending on who attends and what information they want to discuss. Unplanned events are influential resources because they give us "an opportunity to define and express what we really

believe" (p. 290). Within a new-moms' group one would expected a shared level of understanding around the common experience of motherhood, which would hopefully foster a level of safety and trust for women to express themselves.

Analysis of systems resources attends to the conservation, management, and creation—the cycling—of those resources. To track the *conservation* of resources, one must know which resources are necessary for the system to maintain itself in its current form, the resources that are currently available, and the resources that will be necessary when the system needs to change. Resource *management* are the plans/schedules/routines put in place to help conserve resources over time. New resources may be *created* or developed as a way to solve a problem or meet a new need within a changing system. Overall, analyses of systems resources watch for how and why different resources are activated—particularly when they are activated in an effort to cope or adapt to new challenges.

Adaptation and coping. Adaptation and coping are the mechanisms through which growth and change occur within a system. Coping strategies are "efforts of individuals and settings to respond to stress, withstand impairment, and express competence when crisis occurs… coping activities are ameliorative" (p. 294). Adaptations are "patterned activities, structures, policies, and beliefs that individuals and setting that have *developed over time* to maintain themselves and the integrity of their activities…adaptations are more likely to be generative" (p. 294).

Analysis of adaptation and coping focuses our attention on events within the system that activate another resource or behavioral change, and/or an event whose impact ripples throughout the system. It is difficult at any given moment to distinguish a strategy as either coping or adaptation because the "success" of any given strategy depends on its immediate *and* long-term

utility. The difficulty of this distinction is amplified during the early months of parenthood because infants' needs are constantly in flux. It is only with hindsight that one might see a strategy as coping (either because it only worked for a limited amount of time or because it was not sustainable) or as an adaptation (because it became a routine that was sustainable through other challenging events within the system).

Interdependence. The principle of interdependence highlights three ways in which people and settings are interdependent. First, people within a setting interact with each other. This is obvious, as none of us live in isolation. The importance of this idea is never clearer, though, than within the familial context. New parents are wholly responsible for the safety and wellbeing of their infant. These new responsibilities often cause dramatic shifts in previous behavior patterns. For example, newborns rarely sleep longer than a few hours at a time; their sleep behaviors inevitably affect the sleep duration and quality of their parents.

Second, settings affect people and their behaviors. People often take cues from settings to adjust their behavior, such as how we behave differently in a classroom than we do in our living room. New parents—particularly women—may experience settings' demand characteristics differently after having a child. Continuing to breastfeed after returning to work—keeping up with the demands of her job while also pumping breastmilk several times a day—is one example of how women may experience settings differently after having a child. Third, people affect their settings; some work settings have devoted space resources for lactation rooms, for example. The presence of an infant dramatically changes the household/familial setting with the addition of new furniture, appliances, and other products that often accompany the arrival of a new baby.

Analysis of interdependence focuses our attention to these three ways in which people and settings interact. Of particular interest in the familial setting are how infant behavior—and

the infant care choices parents make regarding infant feeding and sleep—interacts with parental behavior, and how the overall setting is impacted.

Succession. The principle of succession stresses the importance of time in two ways. First, the Ecological Framework situates a system within its historical context, drawing attention to previous experiences and behavioral patterns that shaped its current configuration and norms. Within a familial system, the historical context may include expectation each partner has about their roles as parents, the norms around parenting they wish to follow, and even their typical behavioral patterns around how they make decisions together. All of these examples potentially affect the dynamics within the current system, and they all might change over time as the familial system acclimates to the addition of a new family member.

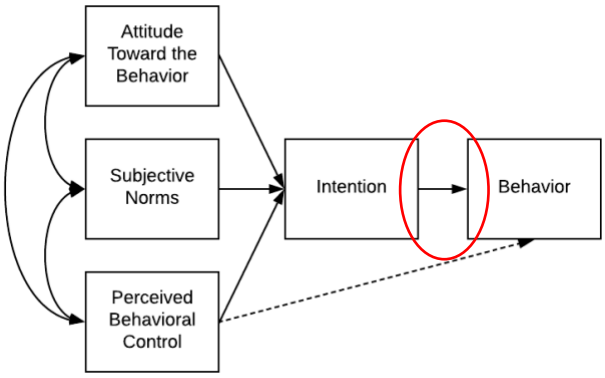
Second, succession requires longitudinal and repeated assessment. Monitoring the maintenance, conservation, and management of resources—for example—would be difficult to do retrospectively because often people are unaware of small changes within their system. Longitudinal assessment also focuses our attention on coping strategies and adaptations, when they are activated, and if they are "successful" in the short and long term.

Succession (and time) is not assessed independently of the other three principles. Succession is a perspective used in the Ecological Framework to situate the setting in a historical and temporal context that is unique to its own time and place. This is not to say that using the Ecological Framework leads to findings that are not generalizable, but it does force us to acknowledge that there are limitations to the knowledge gained through any ecological assessment. In fact, using this framework provides a schema with which to understand other settings and contexts, and to gain a better understanding of the underlying processes that cause settings to be different from each other.

What the Ecological Framework Adds to the Discussion

The major limitation of applying the TPB to continuous behaviors is that the theoretical model does not account for any additional input between intention formation and behavior performance (circled in Figure 3). Applying the Ecological Framework to behaviors provides a framework with which to address this limitation.

Figure 3. The Theory of Planned Behavior Limitation for Continuous Behaviors



Each of the four principles of the ecological framework add depth and context to what we would already know from the TPB. An awareness of succession—attending to the historical and current context in which behaviors occur—strengthens what we already know about attitudes, subjective norms, and perceived behavioral control, and allows those constructs to change over time as parents gain more experience. Understanding familial history of breastfeeding exemplifies why succession is an important factor to consider. For example, women who were breastfed as infants are more likely to breastfeed than women who were not breastfed in infancy (Di Manno, Hons, Macdonald, & Knight, 2015). Additionally, men who were breastfed as infants are more likely than men who were not breastfed to encourage and support their breastfeeding partners (Di Manno et al., 2015). Explicit attention to historical context adds to our

understanding of how attitudes, subjective norms, and perceived behavioral control develop and possible points for intervention.

Monitoring the cycling of resources alerts us to the resources that families create, activate, and maintain as their infants develop and as their systems change (e.g., when one or both parents return to work). Knowing which resources are needed—and when families are in most need of those resources—would also aid in intervention development.

Framing parenting choices as coping strategies and adaptation shifts our focus away from conceptualizing behaviors as binary and static choices (e.g., there is considerable variation in bed-sharing, including if it is planned or unplanned, if it is all night or part of the night, and if it is every night or only in response to a fussy or sick infant). Additionally, when we think of behaviors as coping strategies and adaptations, it draws our attention to *why* parents perform these behaviors, and can alert us to underlying problems that could be addressed in less risky ways.

Acknowledging the interdependence of people and behaviors within a system complicates our understanding of any given behavior because we are no longer isolating its effects from the system. Interdependence is a critical framing when assessing overall infant care practices because of how strongly linked infant feeding and sleep are in the early months. The analysis of interdependence in this study will focus on these two behaviors because they are commonly isolated in both the AAP recommendations and the research on which those recommendations are based. The recommendations lack the adequate recognition of how feeding and sleep are interrelated, and how neither practice occur in isolation. For example, breast milk is more easily digestible than formula because of its high concentration of carbohydrates and low concentration of protein and fat (James & Dobson, 2005; McKenna, Thoman, & Anders, 1993),

which results in infants needed to nurse more frequently than formula-fed infants. And breastfeeding women need to either nurse or pump at night to keep their supply levels because breast milk production is regulated by infant demand (Galbally, Lewis, McEgan, Scalzo, & Islam, 2013). This more frequent nighttime arousal requires more nighttime feedings, ultimately affecting parents' sleep. The period of limited and disjointed sleep can last months—far beyond even the most generous maternal leave benefits; 6 month-old infants who are breastfed are more likely to wake during the night and have trouble sleeping alone than formula-fed infants (Galbally et al., 2013). Therefore, by following the EBF recommendation, parents might be contributing to their own lack of sleep.

Interdependence also refers to the interdependence between people within the system, and how their behaviors do not occur in isolation. All of these infant care decisions are often happening within the context of people becoming parents for the first time. First-time expectant parents routinely estimate a more egalitarian division of labor between parents than eventually becomes their reality (e.g., Khazan, Mchale, & Decourcey, 2008). The discrepancy between prepartum expectations and postpartum reality has consequences for relationship satisfaction (e.g., Block, 2016) and co-parenting collaboration (e.g., Khazan et al., 2008). Unmet expectations and negative experiences can also lead to symptoms of depression and poor relationship adjustment (Harwood, McLean, & Durkin, 2007).

The Ecological Framework has great potential to help us understand first-time mothers' experiences during the early postpartum months. This would be the first study to use it in this way. I am drawn to using the Ecological Framework because it is foundational to my graduate training, theoretical perspective, and philosophy of science. I also have personal experience—through my own prepartum planning and postpartum experiences—with how the principles can

be applied to such a complex life transition. Also foundational to my training is the practice of reflecting on how my own identity, experiences, and biases influence my research.

Researcher Reflexivity

Personal and functional reflexivity are two forms to explore within psychology in general, and feminist psychology in particular (Wilkinson, 1988). Personal reflexivity refers to the researcher's identity, the privileges and limitations afforded to that identity, and how that identity influences the work. Functional reflexivity "entails continuous, critical examination of the practice/process of research to reveal its assumptions, values, and biases" (p. 495). Wilkinson argues—and I agree—that these two forms of reflexivity are inseparable, and therefore the following discussion does not always cleanly distinguish between the two.

I am a White, cis-gender, heterosexual, middle-class, highly educated, married woman with a young child. I am, in many ways, similar to the participants in this study. My visible identity situated me as an insider and I was able to build strong rapport with each of the women. However, parts of my personal identity (e.g., experiences with infant feeding and sleep) were well outside what could be considered a typical experience. Because of that, it was very important to me not to disclose my personal story with my participants until after the study was completed. I did not want to scare or bias them in anyway. It was also important to me to position myself as someone who did not always adhere to the medical recommendations for feeding and sleep. During recruitment and eligibility screening, I disclosed that I had a child and that "we had a pretty rough time and did many things we probably weren't supposed to do" as a way to make it clear that I came from a place of personal experience. I also told all the women that my main interest was in understanding what women do, how they make those decisions, and how they feel about their experiences; my place was not to judge them, and I was not holding

them to the medically recommended standards. I disclosed details of my experiences to each participant after their final interview, and only at the level of detail that seemed relevant to the relationship I had built with each of them. I am confident that throughout the study, the women were not aware of my personal beliefs about infant feeding and sleep because they were open and honest about practices that I do not personally support, as well as condemning strategies I had used.

Because I struggled through early parenthood, I was often hypersensitive to signs that the women may have been experiencing similar challenges (or challenges my close friends had experienced). This led to me, for example, checking in fairly regularly on some of the women's state of mental health. I would remind them that I am not a clinician, though I would tell them how common their experiences were and that I was concerned for them. It was important to validate their experiences, even if it meant—at times—being less professional than I would regularly conduct myself. They all let me into their lives at an incredibly personal and vulnerable time, and it would have been unethical not to intervene, even if it meant biasing the outcome in any way. My concerns never rose to the level of needing to find help for any of the women.

The research process was deeply personal because of how it forced me to reflect on my own experiences; following these eight women showed me how aberrant my experiences were. It was also personal because it strengthened my understanding of how sociopolitical culture and context impact the early months of parenthood. For example, the United States' regulatory and legal structure of workplace protections for working parents (e.g., access to paid parental leave, protections for nursing mothers, etc.) lags far behind many European countries and other economically developed nations (Toh, 2018). Given that the U.S. and European contexts are so different on these issues, much of the breastfeeding and infant sleep research from European

countries lacks the external validity to be directly generalized to the U.S. I have carefully considered how and when to apply findings from places outside of the U.S. because these legal regulations and systemic differences matter. To this point, the findings from this study are likely generalizable to a very small—and privileged—segment of the U.S. population. I critically analyze the generalizability of this study in the discussion section.

Purpose of the Study

The purpose of this study is two-fold: first, to use the TPB framework to describe the participants' prepartum plans for infant feeding and sleep, and analyze the impact of their attitudes, subjective norms, and perceived behavioral control their postpartum behavior. Second, to address the limitations of the TPB by applying the principles of the Ecological Framework to the critical period between intention development and the performance of the focal behaviors (i.e., feeding and sleep). This analysis complements the TPB constructs and highlights contextual and longitudinal factors that may supersede women's prepartum intentions for breastfeeding and infant sleep location.

Significance

Our understanding of the gap between intentions and behavior for infant feeding and sleep is limited in two ways. First, infant feeding and safe sleep research tends to be quantitative and cross-sectional, which limits our ability to understand how women's infant care practices may change over time as their babies mature or as they experience changes in their lives, such as returning to work. This study addressed this limitation by collecting prospective longitudinal qualitative data: longitudinal data show change and adaptation over time, and collecting data qualitatively allows women to describe their unique situation and how they feel about their experiences.

The second limitation is that infant feeding and safe sleep practices are commonly studied in isolation and thus do not address their interdependent nature. This study addressed this limitation by using the ecological framework from community psychology conceptualize infant feeding and sleep as part of a larger context, specifically that changes in the familial context (e.g., mother returning to work, infant not sleeping as expected, etc.) have direct and indirect effects on other parts of the system (e.g., mother/parent sleep deprivation).

This study is the first to apply the Ecological Framework to the early postpartum months of first-time mothers. The novel combination of the Ecological Framework with the TPB addresses the fundamental limitation of applying the TPB to complex and continuous behaviors like infant feeding and sleep practices.

II. METHODS

The research protocol was reviewed and approved by the Institutional Review Board at the University of Illinois at Chicago (Appendix A).

Participant Recruitment

Participants were recruited through local birthing classes and referrals. I presented at private birthing classes and prenatal classes held at the UI Health Medical Center, and handed out flyers with the study information and my contact information. During these five-minute presentations I explained the study and expressed my personal interest in this work as a mother, and stressed that the interviews would be a safe environment in which to share the joys and challenges of early motherhood. Women were eligible for this study if they were pregnant with their first child, were not pregnant with multiples, and were comfortable speaking conversational English. Twelve women were screened for participation; two were ineligible because they were not comfortable speaking conversational English, and two were ineligible because we were unable to schedule their first interview prior to them delivering.[3]

Data Collection

Participants completed two in-person interviews. Prepartum interviews were completed at approximately 34-38 weeks gestation, and follow-up interviews were completed between 10-14 weeks postpartum. Interviews were scheduled at the participants' convenience, typically in their homes or coffee shops. The interviews typically lasted 1-1.5 hours. Participants also completed up to five short phone interviews on a bimonthly basis between their delivery and their follow-up interview.

[3] Several other recruitment strategies were implemented but unsuccessful; these will be addressed in the discussion section.

Data collection took place from April 2017 to July 2018. Participant enrollment occurred in four waves: three participants gave birth between mid-May and early June 2017; two participants gave birth between late July and early August 2017; two participants gave birth in early November 2017; and one participant gave birth in mid-January 2018.

Semi-structured interviews. All interviews followed semi-structured interview guides (see Appendix B) that assessed participants' thoughts, feelings, behaviors, and experiences. The prepartum interview assessed the women's expectations and plans for their infants' sleep and feeding, and from where or whom they had received information or advice on these topics. Participants completed a demographic questionnaire at the beginning of this interview. The follow-up interview assessed the participants' current infant feeding and sleep practices, asked whether participants had received new information, and collected narratives about how feeding and sleep had changed over time.

In addition to the in-person interviews, I conducted up to five short phone interviews with each participant every other week between their delivery and their follow-up interview. The purpose of these phone calls was to collect prospective data on feeding and sleep practices, instead of relying on retrospective reports at follow-up. All participants completed at least four phone interviews typically lasting 10-20 minutes.

Data management. With the participants' permission, all interviews were digitally recorded to aid in the analysis process. All interviews were transcribed by Home Pro Transcribing, a local transcription service provider that was approved by the University's Institutional Review Board. During the interviews themselves, participants used names (e.g., their husbands' or children's names) only if they felt comfortable doing so; it was important to make that explicit and optional because anyone the participant discussed had not consented to

participate in the research. Additionally, there was no audio recording during the conversations when participants provided any locating information (e.g., secondary phone numbers, home addresses) Data are stored and results are presented using pseudonyms.

The following steps were taken to protect participants' confidentiality. All data file labels reflected participants numeric identification codes and pseudonyms. I am the only person with access to the encrypted file that links participant names and IDs, and encrypted documents such as consent forms and interview notes (hard copies were shredded). All audio files (as .wav files) and transcripts (as .docx files) are accessible to me, and were accessible to six undergraduate research assistants while they completed inter-rater reliability checks on 25% of the data. These data files do not contain any identifying information.

Data Coding

Methodology and data analysis should always be guided by, and in service of, the research questions (Saldaña, 2016). Directed qualitative content analysis was the most appropriate methodology given that the research objective was to apply existing frameworks (i.e., the TPB and the Ecological Framework) to the data. See Appendices C and D for the coding guides. All data were coded and analyzed in Excel. Directed qualitative content analysis is, as indicated by its name, directed by existing theory or prior research, with coding categories defined *a priori* (Hsieh & Shannon, 2005). I created *a priori* categories to capture data relevant to the TPB constructs and the Ecological Framework principles, as well as data indicating infant care plans and practices (e.g., feeding plans and behaviors). The coding scheme developed and evolved over time into a combination of descriptive coding, emotion coding, and *in vivo* coding.

Descriptive coding techniques are used to identify the topics being discussed, primarily using nouns as codes (Miles, Huberman, & Saldaña, 2014; Saldaña, 2003; Wolcott, 1994).

Descriptive codes are useful for answering "what" questions (e.g., what advice/information do women receive, what are their feeding and sleep plans). Descriptive codes were initially based on the TPB and Ecological Framework constructs, and over time sub-codes further differentiated the data. For example, I developed sub-codes for *resources* to indicate who or what the resource was. Additionally, I created codes and sub-codes when the theoretical models did not address issues important to the infant care process. *Resources* does not explicitly include tangible resources like products within the Ecological Framework, so I created a code and sub-codes for infant care products because they were instrumental to how women adapted to and coped with challenges.

Emotion coding labels the "emotions recalled and/or experienced by the participant, or inferred by the researcher about the participant" (Saldaña, 2016, p. 124; Goleman, 1995; Kahneman, 2011; Prus, 1996). The research questions regarding how women feel about their experiences (i.e., how strongly they feel about their plans, and how they feel about receiving advice) were best answered by focusing on emotions. For example, data within the category of "feelings about sleep" were coded for the emotions the women felt.

Both descriptive and emotion coding relied on *in vivo* coding, a coding technique that uses participants' specialized terms as codes (Charmaz, 2006). Coding and analysis using *in vivo* highlights how terms can have multiple or different meanings, and how subgroups and communities can use these terms differently than the general population and attribute value to them. The term "exclusive breastfeeding" is illustrative of the importance of *in vivo* coding. The American Academy of Pediatrics does not differentiate between breastmilk delivery methods (i.e., direct mother-infant breastfeeding and bottle-feeding expressed/pumped breastmilk), and considers an infant to be exclusively breastfed if they are exclusively *receiving breastmilk*,

regardless of delivery method. The women in this study—and other women within their social network (including groups on social media sites)—have a highly specific definition of exclusive breastfeeding, one which considered *what* the baby is eating and the method by which it is *delivered*. The more nuanced lay definition of infant feeding distinguishes between EBF and exclusively pumping, with gradations between those two behaviors. These nuanced infant feeding definitions also carry social value, which is discussed in the results section.

Data Analysis

My analytic process followed the general qualitative analysis steps outlined by Johnny Saldaña (2016), described below. Analysis was iterative and grounded in the themes and ideas that emerged from the data.

Pre-coding. Pre-coding (Layder, 1998) is an important preliminary step to (re)acquaint yourself with the data by reviewing transcripts for "codable moments" that strike you as important (Boyatzis, 1998). Pre-coding took place during data collection, after several follow-up interviews. The primary objective of the pre-coding stage was to develop the *a priori* content analysis categories and to sort the data into these categories. This qualitative content analysis technique primarily functions as a way to organize—not code—the data. In addition to the *a priori* categories based on the TPB and the Ecological Framework, I created additional categories based on my notes and memories of the interviews (e.g., feeding plan, duration of feeding plan, sleep location plan, duration of sleep location plan, sources of advice for feeding information, and sources of advice for sleep information).

Two undergraduate researchers and I coded the prepartum and follow-up interviews for two (25%) participants. The purpose of this reliability check was to clarify the definitions of my

categories, codes, and sub-codes. We matched on approximately 80% of our coding[4], and agreed on all discrepancies. Initial reliability was low because the research assistants, who do not have children, found the coding unclear. My codes likely seemed vague to them because I relied on experiential knowledge of parenting. The data from this coding process were not used in final analyses, but this process was crucial in further developing the coding scheme that was used in the final analyses (see Appendix C).

First cycle coding. First cycle coding was based on the final coding scheme (Appendix C) and was done in Excel spreadsheets. I coded 100% of the prepartum and follow-up interviews. I trained two undergraduate research assistants—two young women who were not involved in the pre-coding process—and they first coded 25% of the participants' interviews in order to establish reliability. We matched on approximately 90% of our coding, and agreed on all discrepancies. One of the research assistants coded 100% of the prepartum interviews with similar reliability.

I also coded 100% of the phone interview data (see Appendix D), and two undergraduate research assistants—two young women not involved in coding the in-person interviews—also coded 100% of the interviews. We first established reliability on 25% of the phone calls (all of the phone interviews for two participants). We matched on approximately 85% of our coding, and were able to come to agreement on all discrepancies.

Transitioning from first to second cycle coding. The transition from first to second cycle coding is an ideal time to take a step back and begin conceptualizing the organization of

[4] Qualitative reliability statistics can be—as in this case—difficult to accurately calculate because perfect matches are rare (e.g., we may code the same passage, but if one of us codes a larger section of that passage we would technically not "match). Therefore, what we considered a "match" was more liberal than it would be in a quantitative study, and the reliability percentages were calculated by hand. Nevertheless, reliability was established in all cases of disagreement (sometimes due to unclear code definitions).

themes and patterns. I did this primarily through writing analytic memos. I had begun this process during pre-coding; it was during the transition period that I added to and refined those original memos, in addition to writing new ones. One example of this is a memo on "division of labor." I first began writing this memo during the pre-coding stage because several women said they wanted their husbands to share equally in infant care responsibilities, and they described how their husband's work schedules factored in to how the division of labor might work out in practice. The "division of labor" memo helped guide me to pay attention to how the division of labor influenced, for example, nighttime infant care and how women felt about nighttime care and sleep. Generally, the analytic memos helped guide second cycle coding.

Second cycle coding and analysis. The purpose of second cycle coding is to develop a conceptual or theoretical organization from the first cycle codes by reorganizing those codes into smaller categories (Saldaña, 2016). During this stage I did pattern coding, which identifies similarities and attribute meaning to those patterns (Miles et al., 2014). In some cases, it was also helpful to think of these patterns as "scripts," or shared ways of knowing, interpreting, or acting in the world (Daiute, 2014). Attitudes about breastfeeding and sleep were clear examples of patterns/scripts. All the women held fairly strong beliefs/attitudes about breastfeeding and sleep prior to giving birth, and fell into two reliable patterns, which will be discussed in the results section. Reliability on second cycle coding and the analysis of attitudes was established with two graduate-level coders. I matched 94% with one coder, and 100% with the other. We spent time after we had coded to discuss our analytic decision-making process.

III. RESULTS

Participant Characteristics

The sample of eight participating women represents a relatively homogenous and privileged subsection of mothers in the United States (see Table 5). The sample was predominantly White: seven women identified as White, one identified as Puerto Rican. Their median age was 32 (range: 26 to 37). The women were all married and lived only with their husbands; they also all planned their pregnancies. The women were highly educated: one has her PhD, two have their MA, three have BAs, and one attended some college. Correlated with education level, their combined household incomes (median: $150,000, range: $70,000 to $275,000) were well above the national median of $61,372 (U.S. Census Bureau, 2018).

The women were all employed full-time, and all had at least 8 weeks of maternity leave. Specific data were not collected for all women regarding whether leave was paid or unpaid. However, two said their leave was not protected under the FMLA, and four said their leave was a combination of (usually partially-paid) maternity leave and accrued sick/vacation paid time off.

Table 5. Participant Characteristics

Participant	Age	Race Ethnicity	Education	Family Income	Expected Delivery	Maternity Leave Plan
Elizabeth	33	White	PhD	200k	Spring	12wks
Catherine	31	White	MA	150k	Spring	4 months
Georgianna	29	Puerto Rican	MA	150k	Spring	15-17wks
Mary	31	White	BA	100k	Summer	12wks*
Jane	36	White	BA	150k	Summer	12wks
Charlotte	33	White	BA	85k	Fall	8wks[+]
Lydia	26	White	some college	70k	Fall	12wks**
Caroline	37	White	BA	275k	Winter	12wks

*Mary was not eligible for FMLA protection because she had not been at her job for a year. She used short-term disability benefits for her leave, which she started a few weeks prior to delivery
[+]Charlotte and her family moved out of state approximately 11 weeks after delivery, so she did not RTW until approximately 16 weeks.
**Lydia was not eligible for FMLA protection because she split her full-time hours between two organizations. Her 12 weeks of leave were unpaid.

Prepartum Breastfeeding Intentions

All of the participants intended to follow the AAP recommendation to initiate breastfeeding at birth and give their infants breastmilk for at least the first 3 to 6 months. There was, however, variability in their attitudes toward breastfeeding and in their perceived behavioral control over their ability to breastfeed. There was little variability in their social norms about breastfeeding, though some of the participants felt strongly about following social norms just to please others.

Attitudes toward breastfeeding. Attitude toward the behavior—in this case breastfeeding—is "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (Ajzen, 1991, p. 188). All of the women planned to breastfeed and had generally favorable attitude about breastfeeding. Thematic analysis of

attitudes identified two general attitudes: *passionate* attitudes and *pragmatic* attitudes. Table 6 summarizes each attitude's defining features. Women's attitudes were assessed on these features and their attitudes were categorized as either *passionate* or *pragmatic* based on the totality of their comments.

Table 6. Defining Features of Passionate and Pragmatic Attitudes

Passionate	Pragmatic
Prioritizes what is biologically natural	Does not prioritize what is biologically natural
Plan is a part of their vision of motherhood or part of their maternal identity	Plan is not a part of their maternal identity
Motivations for plan based on more than just what is recommended	Resort to the "default" or what is recommended up to the point it is no longer practical
Working around baby's schedule (more baby-led)	Fitting baby into their routine (more parent-led)
Less open to alternative plans	More open to alternative plans

Passionate about breastfeeding. The first group—the *passionate* group—included Catherine, Georgianna, Charlotte, and Jane. This group valued how breastfeeding was biologically natural, and they often cited that as a top reason they chose to breastfeed. As Catherine said, "… it [breastfeeding] obviously is a natural process and it's something that you produce naturally and makes sense kind of why, you know, what the purpose is." In addition to believing breastmilk was more natural than formula, this group also distinguished baby-on-breast nursing as more natural than bottle-feeding expressed breastmilk. Jane said, "The benefits again to my body, to the baby, to like the idea of this like bonding, and again like, why are we hooking up a machine to our body to extract something that the baby knows how to do? It just doesn't make sense to me." Jane's comments indicate that she does not equate breastmilk from nursing and expressed breastmilk fed from a bottle.

The *passionate* group saw breastfeeding as a part of what it meant to be a mother. They believed the act of breastfeeding was a part of nurturing and providing for their babies. They also spoke about how they were influenced to breastfeed because their own mothers had done so.

> I think I've always wanted to breastfeed. I remember my mom telling me that I was breastfed when I was really young, and she would joke and say that's why you're so smart. *Georgianna*
>
> I mean my mom breastfed, I was breastfed. … She [mom] did, she's a hippie and like you know she was also able to work part-time. And I think, actually when I did ask her this later because my mom and I have this amazing relationship and I kind of put her on a pedestal too. *Jane*
>
> So, I definitely think it's my mom doing it for me and my two siblings and I don't know. I feel like for whatever--I don't even know where I absorbed this, but I feel like it's just common knowledge that it's what you should do if you can, and it's what's best for the baby. *Catherine*

Charlotte differed from the others in this group because her mother and sister both attempted to breastfeed, but were unsuccessful in the long-term. She said, "I don't have a family history of any breast feeding as being successful, so I just want to try. But, I think… Yes [family members] tried and been unsuccessful…"

The *passionate* group knew that breastfeeding was recommended, but their motivations for breastfeeding were tied to the potential benefits more than to the fact that it was recommended. They saw breastfeeding as a way to bond with their infants. As Charlotte said, "I think the initial [process] will be awkward and weird and uncomfortable. I'm hoping that it turns to comfortable and like nurturing and feeling like I have a closeness with the baby you know… like I'm the one that not only grew you, but provided, is providing for you." Catherine also hoped for it to be a bonding experience, "I mean it would make me happy if it was fairly easy for me to do, and if I enjoyed the experience and I felt like it was a good bonding experience between me

and my infant, the baby...yeah." Jane was highly motivated to breastfeed because of its positive effects on bonding and on her recovery after giving birth.

> And in addition to, I don't want to think about feeding as only nutrients because it is a comforting factor, it is a closeness, it is a bonding. … Yeah, I mean like the benefits of breastfeeding for my body I think are important too. The idea that the hormones that are released help me through post-partum, help me with uterine contractions, help me with weight loss. Those things are very important to me. *Jane*

Overall, this group planned to take a baby-led approach to breastfeeding, at least during their maternity leave. Jane, for example, said, "I think we're going to be really kid focused and try to see how, how to read our baby. But I also think that we're not going to be the kinds of parents that like are, the baby's going to do what we do, too." Catherine was open to taking a more baby-led approach, but was unsure of how she would react to the situation.

> And then I'm curious how I will feel about, you know, you're sort of tethered to this child [laughter] and I'm really curious to see if... [clears throat]...if I feel like that's totally fine and I'm happy to be that way, or if I start to experience a little bit of like, oh, my gosh I need some space or I need like some time away. And also, I wonder about kinda always having your body sort of be used in that way and like again, will I feel happy to do that, or will I feel a little bit like, oh, my god, this is too much? And like I don't really know what my experience will be, yeah. *Catherine*

The women in the *passionate* group were all aware that breastfeeding could be challenging and that it might ultimately not work for them, but they spoke of the alternatives (formula and pumping) as things they would have to do in extreme circumstances.

> I mean I know that, you know, from what I've read and what I know, I think that if you can do it and if it's possible, I think breastfeeding is what's best, the best option for the child, but I'm also acknowledge that if it's extremely difficult or if I'm not able to do it, or you know, I have to be open to other alternatives. I mean I feel fairly strongly about it, but not like, I have to do this, or I'll die, yeah. *Catherine*

> So again like I just try to be really kind to myself and say if anything were to happen, like feeding the baby is the most important thing however that happens. But ideally, yeah I would like to stick to it as much as possible. … I think the only thing I would, like right now I'm very like exclusively thinking about breastfeeding. And because of that I haven't really put a lot of thought in. If there is a curve ball and I realize that I have to do formula, I think that's when I would start doing more research on like the nutrition my child needs, and that plan or timeline might change. *Georgianna*

> And now I would say it would be really hard if we can't breastfeed, which is one of those things that I need to also like begin to let go of if that is something that has to...[laughs] … Yeah, I hope that I actually can breastfeed for as long as I can. Also knowing that like I am someone who needs sleep, and this might be a total pie in the sky dream and I might be killing myself trying to do it. [laughs] And I might be a horrible wife in the process. The benefits again to my body, to the baby, to like the idea of this like bonding, and again like why are we hooking up a machine to our body to extract something that the baby knows how to do. It just doesn't make sense to me. *Jane*

This sense of having to use formula indicated that it was less valued by the group, that it was a last resort. This was—in part—because they had the time to dedicate to exclusively breastfeeding during their maternity leave. As both Georgianna and Charlotte expressed, they understood why women may choose to use formula, but neither of them considered it given their circumstances.

> And I've also heard of women today who like from day one when they get pregnant they say I'm doing formula because I don't want to deal with these inconveniences. And I'm not judging and I'm not saying that's selfish or that's wrong or whatever. Like that's their choice and I respect it. But in many ways, I think that's like been in the back of my mind and if we cannot for any reason breastfeed or if we have to not breastfeed or whatever the case is, I think I'd be a bit more accommodating for that. *Georgianna*

> I don't know I feel it is kind of like the natural progression unless you have like a medical or a moral reason of why you don't want to do it. Or, even if you are going right back to work immediately afterwards, you know, maybe it isn't convenient for you, it's more convenient to do formula. But, I don't have those excuses, you know, I have eight weeks to acclimate. I have all those medical reasons of why it seems like a good idea, you know, I think it's just all natural. *Charlotte*

Pragmatic about breastfeeding. The second group—the *pragmatic* group—included Elizabeth, Mary, Lydia, and Caroline. The women in the *pragmatic* group were aware of

breastfeeding's benefits, and saw breastfeeding as a natural process. However, compared to the *passionate* group, this group was less interested in—or did not prioritize—the naturalness of the process.

> I do believe in the antibodies and things like that that you can pass along to the baby. And the naturalness of it. That's really it. I mean, I know it's recommended now. I definitely have heard that it goes in phases. Everyone did it, no one did it, and now it's back. And so some of the benefits as to why people are doing it again, I do believe in that. And it just seems natural. *Caroline*

> Well, I'm deeply pragmatic person, and so the appeal is like… is this is something we already do, this is why we're called mammals in the first place, it's inexpensive, there's a lot of reasons to do it, and I'm not really sure the reasons not to do it unless there's something wrong with the baby and they're not responding to it. And, because I'm pragmatic I wouldn't want to follow through with something for my own ego or self-satisfaction, or just to be right. *Mary*

In the quote above, Caroline is motivated to breastfeed because it is natural, but her overall attitude toward breastfeeding was *pragmatic*. Similarly, Lydia also believed in doing what was natural, saying, "So my mom did raise us to try to go natural with everything, which is a good thing." There was also a general feeling within this group that they should breastfeed because it was recommended and expected, not necessarily because they wanted to do so.

> I didn't really [choose]. It was kind of the default [breastfeeding]. I really haven't done reading about... I don't know, any kind of reading I've done is like very light. I know that they say breastfeeding is better, but I really don't know the specific reasons and it's kind of just the default is supposed to be. *Elizabeth*

> But they all tried [friends], and so you know, I just was like, well then, I'll do that, too. I don't know. Maybe I'm like a follower. [Laughs] When I actually started thinking about it, I'm like, well, everybody's doing it, so... [Laughs] I guess I'll do it, too. *Caroline*

Though they all felt breastfeeding was natural, they did not have the same personal connection with it as the *passionate* group. Elizabeth said, "It obviously sounds like a challenge

and a chore. So, I don't see myself as kind of like a hippy, pull out my boob anywhere in public. I don't imagine it being this big joyful bonding thing, but maybe it will." Caroline, similarly, was hesitant to breastfeed in public.

> I honestly would, in theory, like to avoid nursing in public at all costs, just because I don't personally feel that comfortable right now. However, I also know that that is going to be a part of my life because if I ever plan to leave the house, it's [Laughs] gonna have to happen. So, just overcoming that is gonna be interesting. I mean, I fully intend to be someone who is out and goes out, and if I have to nurse, I have to nurse. But that is something that I'm not comfortable with at all. Yet. *Caroline*

Both Lydia and Mary were looking forward to breastfeeding being a bonding experience, but they did not want to exclusively nurse, indicating a preference for taking a parent-led approach to breastfeeding.

> I think the closeness, just being able to hold him and everything like that. Definitely. … I want to do it my own way though, I don't want him to be completely attached to me because of course if there's a babysitter, then he won't eat for them. *Lydia*

> And, I'm hoping that the pain and the suffering is similar to athleticism where it's got some sort of like use at the end of it… and like that would be fantastic to be able to have that kind of connection, and also just like instant food source. … But, I think the first three weeks I really want to try for breastfeeding, and then find some way to introduce a bottle. And, if it's a bottle of breast milk that's fine, if it's a bottle formula that's also fine, but definitely some kind of bottle feeding has to happen, so that I can get some sleep, and [husband] can do night feedings… because I just I don't want to do latched feeding around the clock. *Mary*

Caroline also endorsed introducing bottles as a way to prepare for the transition when she returns to work, and also to involve her husband.

> Yeah, I do plan to start breast feeding right away. I would like to introduce bottles sooner rather than later and, you know, I haven't done a lot of reading on this, when you do that, because I do want to make sure that we're ready to go when it's time for daycare and that's not stressful, like oh my gosh, we haven't tried bottle feeding yet the week before, and worry my child's not gonna eat. I also [Laughs], unknown to [husband],

> know that, in my head, have the certain times where bottle feeding, I would like to have that be something that the child gets used to so he can help out more with some of the feedings. But I haven't done any sort of research or have any thought in my head as to when exactly that would happen. *Caroline*

The *pragmatic* group also set limits on how long they planned to breastfeed, their limits were based on social norms around the acceptability of breastfeeding older children.

> I don't know if this is one of your questions, but I do not anticipate breast feeding into toddlerdom. … So, I definitely know that, like, people have had their timelines changed by how their baby is developing. But, if baby is taking breast milk still, and they're taking it by the bottle, then I would wean off breastfeeding probably within a year, or whenever baby starts to get more like ambulatory… just because it's like a big gangly thing on your boob. *Mary*

> Definitely not past a year. My mom breastfed for past a year. Some of my siblings have two, I don't know how they did it. And it might get a little awkward after that because after they start to walk around and they're actually a toddler now, and especially after they can say mommy I want to eat, that would just be awkward to me. *Lydia*

The *pragmatic* group—more so than the *passionate* group—included their wants and needs in our overall discussions about breastfeeding, and took a more parent-led approach to breastfeeding. Lydia's primary concerns were related to not wanting her son to be "completely attached" to her because she worried about babysitters feeding him if she was away, for example, "if I want to go hang out with my girlfriends or something like that and my husband has to babysit." At the time of the prepartum interview, Lydia planned to bring her baby to work with her, so she did not include her plans to return to work as an important factor in her breastfeeding plans. Returning to work weighed heavily for the rest of the *pragmatic* group. They all had plans to pump at work and all had space to pump (e.g. private or semi-private office, lactation room). Their concerns were related to how pumping would fit into their work schedules and responsibilities.

> … mentally, that seems like a really long time. [Laughs]. … Some people have told me it's easier to breast feed, and then part of me is like, I don't know how...annoying, I guess is the word I think of, when I'm back at work. So having to go pump and whatever as I'm back at work is what I'm envisioning being...limiting or something. I don't know. *Caroline*

> Well, I need to return to work, so even… so we definitely have to have bottle feeding so that I can return to work. It's okay if it's breast milk because I can pump it, and I have a breast pump. But, before I return to work, I mean I want to be able to like leave the house and you can feed baby with a bottle… like [husband] is a parent and this is his kid too, and he should be able to feed it. *Mary*

> I definitely want to for six months if I can. And then I would like to up to a year, but I think that might depend on work and pumping and I've heard different things about that…If it's really really tough on work and making my life really really hard, then I can see myself switching and weening her earlier in six months to a year, but in an ideal world, I would do it for a year, but not after a year. *Elizabeth*

Compared to the *passionate* group, the *pragmatic* group was generally more open to formula (either supplementing or exclusively) than the *passionate* group. Caroline said, "No, I'm not thinking exclusively. I would supplement with formula, for sure. I don't know if I'll make it to six months. I have this mini-goal in my head, for some reason, and I don't know…" Lydia was also open to formula, "I'm open to formula, definitely. … I know you're not supposed to start them on a bottle for like the first I think month, but as soon as he is able to go on a bottle, it'll be half and half. Like bottle, breast-feeding, whether I pump or not." Mary's top concern was "fed is best… I just want to have a healthy baby, and it'd be nice if I don't have to buy formula, but if I have to buy formula, then I will buy formula." Elizabeth was also open to alternatives.

> I'd prefer to breastfeed if I can, but I don't plan on getting depressed if that's a problem, and I have to supplement or can't… As of now, I would feel OK if my body doesn't let me do that. … Yes, in the beginning, so I will try as much as I can to make breastfeeding work, but I notice some people can't for whatever reason biologically. And if that what happens to me, then that's what happens, and that's OK. She will be on formula, she will be fine. And then, I think I would like to do it for at least six months. *Elizabeth*

To be clear, the *pragmatic* group wanted to breastfeed. However, their choice to do so was primarily based on its practicality, health benefits, and because it was "the default." Breastfeeding was not a central component of how they saw themselves as parents or as mothers. Collectively, this group felt less strongly about sticking to their breastfeeding plans.

Subjective norms about breastfeeding. Subjective norm refers to "the perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188). Unlike their attitudes about breastfeeding, there were no clear thematic differences in the subjective norms. This was true for how they experienced the subjective norms around them and the norms they either explicitly or implicitly endorsed. The women were—overall—supported in their plans to breastfeed by their husbands and friends and families. Additionally, breastfeeding (at least attempted breastfeeding) was normative within all of the women's social networks, particularly amongst friends and female family members. They also all knew women who had tried and were ultimately unable to breastfeed. This is exemplified in Mary's retelling of her friend's experience.

> … I think it's probably best informed by a story of a friend of mine who has a one and a half year old now, and she like lives on a farm, and she's a super hippie, and she's wonderful, and I love her, but she simply could not breastfeed her daughter. And, she tried very hard, and something was happening, there was milk coming out, but her baby wasn't growing very quickly and was really fussy because she was hungry all the time, and she finally like broke down and got some formula, and her baby started to sleep better and immediately started gaining weight, and became like a different baby. And, she was just like… she went through a lot of emotional problems with that because she felt like she couldn't provide for her child, and that she was you know breaking all her personal laws of nature, and that she had to like really go through all this different kind of shame that a lot of women experience. … And, you have to kind of figure out a way to stop caring about what other people think about it. And, so she started to care about like what does my daughter look like, and what makes her happy? And, that's where she got through. And, so it's like that's what I want. *Mary*

Elizabeth recounted the experience of a friend of hers who decided not to pump after returning to work.

> I do know that my friend who's also put stock here in the psychologist, she has a baby and she stopped breastfeeding I think at like four months when she went back to work which is like I don't want to be having to be dealing with pumping, so I stopped it sooner, and she was totally fine with that, and it's been going fine. So, it kind made me more relaxed, but you don't think about that as an option. *Elizabeth*

All of the women shared similar stories, or generally acknowledged that they knew it was possible they may not be able to breastfeed long-term. As exemplified by Mary and Elizabeth, there was a level of comfort that came with knowing that they would not be alone if they did not strictly follow the recommendations.

Extended family members were often not strong influences on breastfeeding intentions. This was often related to their lack of experience with breastfeeding or inability to give advice.

> I think many of them [family] are ambivalent or just like really neutral and they don't really care. I wonder if I was very open about saying I am strictly going to bottle feed formula because I want to not have to breastfeed or be on a schedule, or like share that responsibility with my husband. *Georgianna*

> [Interviewer: do you have support from family] No, honestly no I don't have any other family that has success with it, so they don't have a… they're like okay good luck, you know? [Int: support but can't give advice?] I think So, I think for the most part it's support. I think there's a few people who definitely just don't have a generally good view of breastfeeding. *Charlotte*

They also shared the feeling that, as Elizabeth put it, breastfeeding was the "default." This norm was set by their social networks as well as their OB-GYNs and the hospitals at which they delivered.

> No one's ever said you should, but it's always been assumed. So I remember the first time I met my doctor, she said it and I quote, she said you're going to breastfeed right? *Georgianna*

> And the hospital in and of itself is a baby centric hospital. So like they get bonuses based on if the baby breastfeeds within the first hour. So not only will I be supported, even if it wasn't part of my plan they're going to push this [laughs]. *Jane*

> And, my particular set of doctors seem to be really strong about breastfeeding, and I hope that I'm good at breastfeeding because if I decide like I don't know that I wanted to do this, I don't want to have to fight with my doctors about it. … that the medical community we're part of, they are very strong into breastfeeding to the point where it sounds more like they're going to push for breastfeeding… to push you past a point of discomfort, and say like you're going to struggle with it, and you should just keep going. And, really, really put more of the emphasis on breastfeeding… and I can understand why they would do that, but I definitely have a jaded sense with kind of like… *Mary*

Georgianna, Jane, and Mary expressed mild discomfort with the implication that breastfeeding was expected. Georgianna and Jane were both passionate about their breastfeeding plans, but also noted the way in which their doctor/hospital spoke to them would have been off-putting had they not planned to breastfeed.

Though they were not asked, Mary and Lydia both explicitly said they were uninterested and unmotivated to comply with the social norms around breastfeeding, independent of their own intentions. Mary was frustrated with the no-win situation in which women found themselves. When recounting her friend's struggle with breastfeeding, she said,

> And, it's sort of a common thing being a woman where it's like whatever you do, it's the wrong thing… you know you're either a slut or you're going to be a prude, or you're either going to be breastfeeding which is terrible, or you're going to be using the formula which is terrible. And, so it's like you know you're just damned either way. … I just want my baby to be fed. If I can't do breastfeeding, we have the money to afford formula. I really don't give a crap about like formula versus breastfeeding in terms of stigma. *Mary*

Mary's comment highlights one consequence of the movement to make breastfeeding the social norm—the eventual backlash and stigma placed on women who do not breastfeed. She also

talked about how the social norms around breastfeeding in public had not yet caught up to the expectation that women breastfeed:

> I have, I have, but the way I feel about it is like I don't really have body issues about breastfeeding in public, and so I'm not really like worried about decorum… especially if I'm like tired and baby's hungry, like I don't fucking care, I'm going to do what has to be done. And, I if it's like a gross bathroom or something, then I'm not going to go into a gross bathroom to make people feel better. But, if I can find like a private place where I can just like be with my baby then that sounds great. We live next to a park that has all kinds of wonderful events during the summer, and so I'm fine with like just sitting out in the park and breastfeeding which is like super public, and will probably upset somebody, and I really don't care… because you don't even see very much with like. *Mary*

Lydia's familial situation differed from the other women; she was one of 11 siblings, all of whom lived within a few hours' drive. Breastfeeding was normative in her family, though she had sisters and sisters-in-law who either supplemented or fed exclusively formula. Lydia expressed why she was resistant to the norm in the following way:

> I want to do it my own way though, I don't want him to be completely attached to me because of course if there's a babysitter, then he won't eat for them. I've seen it multiple times with my siblings and with kids that I've babysat. It's absolutely miserable to be a babysitter when you cannot soothe the baby or feed the baby because they need to eat but if they're so used to feeding directly from their mother, then they're not going to want a bottle and they're not going to want you. So, I know you're not supposed to start them on a bottle for like the first I think month, but as soon as he is able to go on a bottle, it'll be half and half. Like bottle, breast-feeding, whether I pump or not... But yeah, I'd probably stop not as soon as I can, but I wouldn't go as long as most people do I think. Or as long as most people in my family do. *Lydia*

Charlotte worked in the service industry, which put her in the unique situation of having relative strangers tell her their unsolicited views on breastfeeding. She was used to getting unsolicited advice and she did not factor it into her breastfeeding plans. One woman said to her:

> … and she one hundred percent was like you're already ruining your body by getting pregnant, why would you ruin the rest of your body by breastfeeding, and are you going

> to be one of those… and she said cows for two three years feeding your breasts you know your baby… and I just was kind of like… I don't know if I'd use the word cow. So, I don't know. And, then she started giving me advice about how you know there was formula out there and there was nothing wrong with formula babies. And, I was just like okay, alright. *Charlotte*

She attributed this attitude—and others like it—to a generational difference:

> Yeah it's a very strong opinion, you know, it's just generational I would say… anybody over… any client over forty five maybe… I don't know what your experience has been, but it seems to be like I don't know why you're doing it, and you're… you're not going to be able to leave the house, and you know like very kind of strongly like against, and then everybody younger has been like… just you know that's so great that you can do that, and how long are you planning on going, and they want me to say like a year. And, I'm like… I haven't figured it out yet. I just don't tell anybody my plan because they have such strong opinions about it. *Charlotte*

Perceived behavioral control over breastfeeding behavior. Perceived behavioral control refers to "the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 1991, p. 188). Four themes emerged related to perceived behavioral control: (a) commitment to breastfeeding; (b) ability and ease with which they would be able to pump at work; (c) ability to address anticipated challenges; and (d) friends' and biological family members' experiences with breastfeeding. The women's attitudes toward breastfeeding influenced their commitment to breastfeeding and how strongly their plan to return to work factored into their planned breastfeeding duration. Their attitudes did not strongly impact their ability to anticipate and address breastfeeding challenges, or how they gauged their own chance of breastfeeding success based on the success of others.

Commitment to breastfeeding. Level of commitment varied based on either having a *passionate* or *pragmatic* attitude about breastfeeding. The *passionate* group (Catherine,

Georgianna, Charlotte, and Jane) felt more strongly about sticking to their breastfeeding plan than the *pragmatic* group. Catherine said, "I mean I feel fairly strongly about it, but not like, I have to do this, or I'll die, yeah." Charlotte "definitely want to try breastfeeding," but as discussed later, she was concerned about her ability to successfully do so because women in her family had not been successful. Georgianna and Jane both were dedicated to breastfeeding, though they also acknowledged it might be difficult.

> I am really dedicated to it. I really, I know that that's the healthiest thing for baby and mommy. I also know that there are challenges with it as well including pumping, finding time, being on a schedule, the equipment that comes with it. Like the slew of things that I don't know yet are going to come with it, it's going to come. So again like I just try to be really kind to myself… *Georgianna*

> Very strongly, but the problem with that of course is when you have expectations they often disappoint you… And now I would say it would be really hard if we can't breastfeed, which is one of those things that I need to also like begin to let go of if that is something that has to...[laughs] *Jane*

In contrast, the women in the *pragmatic* group were less committed to breastfeeding, and this was often connected to their openness to alternative feeding methods. This group generally endorsed a "fed is best" approach to feeding, exemplified by Mary saying, "I just want to have a healthy baby, and it'd be nice if I don't have to buy formula, but if I have to buy formula, then I will buy formula." Mary's desire to avoid buying formula was based on financial considerations, not on a desire to avoid feeding her daughter formula. As Elizabeth said, "I'd prefer to breastfeed if I can, but I don't plan on getting depressed if that's a problem, and I have to supplement or can't. As of now, I would feel OK if my body doesn't let me do that." The *pragmatic* group's lower commitment to breastfeeding was not because they could not anticipate challenges or because they did not have access to resources (e.g., breastfeeding supplies or support), it was

based more on their general attitude toward breastfeeding and their openness to alternative feeding methods.

Ease and ability to pump at work. All of the women planned to breastfeed for at least the first 3 months, and they all reported their goals as ranges, typically either 3-6 months or 6-12 months. The lower end of the range (regardless of the value) represented what they thought they could reasonably do, and the higher end of the range represented their aspirational goal.[5] The women assessed what was reasonable for them based on their maternity leave, ability to pump at work, and expectations about their own ability to breastfeed. Three months of EBF was theoretically an obtainable goal of all the participants because they all ended up with at least 12 weeks of maternity leave.[6]

None of the women had specific plans for pumping at work (although many of them knew a lactation room was available, they did not know where it was located or how to reserve the space), but they all reported that they planned to do so. All of the women knew whom to contact to set up accommodations. Catherine, Caroline, and Mary all said they would be using a designated lactation room in their office building. Jane, Georgianna, Lydia, and Elizabeth all had private or semi-private offices in which they expected to pump. Charlotte was confident that she would be able to pump at work, but indicated that it would be challenging; she worked in the service industry and had a variable schedule. Charlotte knew it was possible, though, because one of her coworkers was able to pump at work for her three children. This influenced her goal of breastfeeding 3-6 months: 3 months was reasonable because of maternity leave, and 6 months was aspirational given the anticipated difficulties of pumping at work.

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[5] All of the women knew the AAP recommends exclusive breastfeeding (EBF) for the first 6 months and breastfeeding up a year, but this recommendation did not directly factor into how long they planned to breastfeed.
[6] All of the women planned to take at least 12 weeks of maternity leave, except for Charlotte. She planned to take 8 weeks of leave, but did not return to work until after 3 months because she and her family moved out of state.

None of the women were concerned about having space to pump, but the women in the *pragmatic* group were concerned about having the time to dedicate to pumping during their workday. Elizabeth said, "If it's really really tough on work and making my life really really hard, then I can see myself switching and weening her earlier in six months to a year, but in an ideal world, I would do it for a year, but not after a year." Charlotte felt similarly, "…and then part of me is like, I don't know how...annoying, I guess is the word I think of, when I'm back at work. So having to go pump and whatever as I'm back at work is what I'm envisioning being...limiting or something. I don't know." Women in the *passionate* group were also concerned about fitting pumping into their work schedule, but did not frame it as a potential reason to stop breastfeeding, such as when Georgianna said, "I also know that there are challenges with it as well including pumping, finding time, being on a schedule, the equipment that comes with it. Like the slew of things that I don't know yet are going to come with it, it's going to come. So again like I just try to be really kind to myself."

Ability to address anticipated challenges—where or to whom to go for help. The women's attitudes about breastfeeding did not differentially affect the challenges they anticipated, nor their access to resources to address those challenges. All of the women anticipated mild challenges with latching and breast soreness, and all reported they knew of products (e.g., creams and nipple shields) and home remedies (e.g., cabbage leaves) that could resolve those issues. Beyond these mild challenges, all of the women reported that they had either personal or professional sources of advice they could go to for more help:

> So I probably would go straight to friends just through quick texts and stuff like that. My sister, my older sister--even though it's been six years for her--and then the lactation consultant, too. So I have no problem asking for help, and I think if I was feeling uncomfortable or thinking we were struggling, either going directly to that New Mother, New Baby… or through the hospital, with the resources they have, too. *Caroline*

> So, I have a lot of friends who've had lactation consultants and I don't know. I do not expect it to be easy, but I expect that we'll get whatever kind of help or intervention we need to help in how ever many weeks it takes to get a rhythm and get it working. *Elizabeth*

> Lactation consultant, I think the pediatrician, I think the midwives are a good source for that. … I mean again, so these two friends … and then my mom. And anyone who has had a baby in the last year. I think I would really just like solicit advice from them and ask like what are you doing and what have you done and what worked for you. I think that it's just good to do that, just get information because again, nothing is going to work the same for everyone. And so to have information and to know that you're not crazy if you do this, like if there's someone else that did this, it feels a little better. *Jane*

The women generally did not plan to ask their mothers or mothers-in-law for help. Lydia was unique in her appreciation for her mother as a trusted source of breastfeeding advice, stating, "For breastfeeding and pumping, I would definitely go straight to my mom just because she's had the most experience with it." Among the other women there was a sense that their mothers and mothers-in-law would not be useful resources, primarily because it had been so long since they had their own babies. Elizabeth said, "Maybe my mother-in-law, but I feel like it's been so long since she had a baby." Caroline agreed, saying:

> I would not go to my mother-in-law. [Laughs] I, honestly, probably would even hesitate to go to my mom 'cause I know she would just look at me like, I have no idea. Did you try this, this and this? Which is pretty funny. I feel like people go to their moms, but I'm like, no. She's too out of it now. *Caroline*

Georgianna generally felt she would not go to family members for help. Additionally, the fact that her own mother had passed away the previous year left her feeling that something was missing for her, saying:

> But because of that, that was a really scary turning point in my life where even though I knew I wasn't going to call my mom every day because we had a tumultuous relationship, still the fact that I don't have like a grandmother or an aunt or a mom to call up, it made

> me a little hesitant to start this process. … and I don't have the best relationship with my husband's parents. They're also like sixty plus. There's a huge age gap between us, whereas my parents are in their forties. And so like when it comes to asking advice of them, I always feel a little uncomfortable because our lives are just very different. *Georgianna*

Friends' and biological family members' breastfeeding experiences. As first-time expectant mothers, none of the women had personal experience with breastfeeding, however, they relied on the experiences of biological family members and friends as a way to gauge their control over breastfeeding. In describing others' experiences, the women frequently focused on women who—for a variety of reasons—did not breastfeed for as long as they had originally intended.

Several women referenced genetics and/or biology as one potential factor for why women may not be able to breastfeed. Elizabeth's reference was explicit and general—that there could be a genetic reason for some women, saying, "… I notice some people can't for whatever reason biologically. And if that what happens to me, then that's what happens, and that's OK." Charlotte also explicitly linked genetics to one's ability to breastfeed, and she related this to her mom and sister's experiences:

> Yes tried and been unsuccessful… so I mean I know there's genetic reasons why. I may not ask them particular… She [sister] five years ago when she had her baby, she tried, and she said it was just too hard, and that latching wasn't happening, and she didn't have a lactation consultant that could really help her. So, didn't work out, and you know there's the most important thing is fed is best. So, if he can't, if it doesn't work out for us, then yeah I already got formula samples sent to me. *Charlotte*

Catherine also referenced her mother's experience breastfeeding, but did not link her mother's challenges to her own ability to breastfeed:

> I mean I hope that it's fairly easy for me, but I also am aware that for some women it can be really challenging, and like for my own mom, I know she had issues breastfeeding me and she had to get a lactation consultant and she had to really work through a lot of challenges. And so, I'm aware that that also exists, too. I guess I'm just like hoping that it's just like easy and I don't really do anything else, yeah. [laughter] *Catherine*

Summary of Prepartum TBP Constructs Regarding Breastfeeding

All of the women in this study intended to breastfeed their babies. They all generally experienced the same subjective norms about breastfeeding in two ways: breastfeeding promotion from the medical community, and from women in their social networks. None of the women felt beholden to the social norms, and several noted how the social norms might be off-putting for women who fall outside that norm. The differences between the women were apparent in their attitudes and how those attitudes affected different components of their perceived behavioral control. The *passionate* group (Catherine, Georgianna, Jane, and Charlotte) prioritized the naturalness of breastfeeding, generally took a more baby-led approach to infant feeding, and was less open to alternatives to baby-on-breast nursing. They, generally, had a higher level of perceived behavioral control, as indicated by their stronger commitment to breastfeeding. In contrast, the *pragmatic* group (Elizabeth, Mary, Lydia, and Caroline) did not prioritize the naturalness of breastfeeding, and was more open to formula than the *passionate* group. The *pragmatic* group tended take a more parent-led approach to infant feeding by factoring in their needs and feelings into their decision more so that the *passionate* group. This was apparent in regards to introducing bottle-feeding within the first month or two. Their *pragmatic* attitude was also related to their perceived behavioral control in two ways. First, they were less committed to their breastfeeding plans, which were related to being more open to formula. And second, the three *pragmatic* women who planned to pump at work (Elizabeth, Mary, and Caroline) all felt that the burden of pumping at work was a potential reason they

would stop breastfeeding. All of the women—regardless of which attitude they held—similarly framed their implicit and explicit discussions of control. The control they felt was more about being able to control *that* their baby was fed, not *how* baby was fed. In other words, they all wanted to breastfeed but the ultimate goal was feeding, so many of them expressed that they would be ok if they could not breastfeed.

Postpartum Breastfeeding Behavior

Initially, the follow-up interviews were scheduled based on the number of weeks postpartum. Elizabeth, Catherine, and Georgianna were all interviewed at 12 weeks, at which point none of them had returned to work. All of the other women were scheduled for their follow-up interview at least one full week after they had returned to work in order to collect better data on their return to work. Although some relevant return-to-work data were not collected for Elizabeth, Catherine, and Georgianna, this did not impact data collection specific to breastfeeding cessation; the women who were not breastfeeding at the time of this interview had stopped breastfeeding for reasons unrelated to their return to work.

Mary, Jane, Caroline, Catherine, and Elizabeth were all exclusively breastfeeding at the follow-up interview. Of these women, Elizabeth was the only one who had ever given her baby formula; her daughter was fed formula during a brief stay in the NICU, and she was able to transition back to exclusively providing breastmilk within a week of the NICU stay. All of these women had started pumping to build up a stockpile for when they returned to work. They were also using their expressed breastmilk for feedings when they were away from their babies, or when their husbands or other family members helped with feedings. Catherine was exclusively pumping, and had done so since the first week. Though the AAP does not distinguish between

breastmilk through direct contact or through pumping, Catherine was unhappy with this arrangement:

> I mean I think I felt disappointed and I felt like, you know at least he's getting breast milk. If he wasn't getting breast milk, I think I'd feel a lot worse. But I do know there are certain things about breastfeeding, like directly breastfeeding that are more beneficial. So, I think about that every once in a while, and kinda feel guilty or feel like, oh, god, I should've tried harder. But then I'm just, you know, this is what I'm doing and he's getting breast milk and that's the most important thing to me, yeah. *Catherine*

Charlotte and Lydia were primarily providing breastmilk and supplementing with formula. Charlotte had exclusively pumped (no direct nursing) and supplemented with formula for several weeks. By the follow-up interview she had returned to nursing and was supplementing one bottle of formula at night. Lydia had attempted several times in the proceeding weeks to nurse but eventually began exclusively pumping breastmilk. She also supplemented formula at night and when she was away from her baby.

Georgianna transitioned exclusively to formula feeding by the follow-up interview. She initially struggled with her milk supply and her daughter did not adequately gain weight. She pumped as much as she could and then supplemented with formula. Georgianna described how pumping was impacting her life and what finally led her to transition to exclusive formula feeding:

> I think everyone firsthand saw how much trouble it was. They saw me cry. They saw me super unhappy. So when I made the decision everyone was like yeah, do it, we support you. And they used those words. They really were invested in me feeling better and being happier. I think everyone was okay with that. … Baby was only two months there were still people who were trying to meet baby for the first time and I would have to excuse myself to go upstairs and pump. I remember my best friend, who again doesn't have a baby, she just said you are tied to this idea of what motherhood experience would be which is breastfeeding but is this pumping every two hours up in your bedroom the experience that you want to? … I was like damn you're wise; this is why you're my best friend. I'm like you're right. She's like that's no experience that you want so don't do it. I

> was like okay, alright. She's my friend who's very hippy, very natural and if anyone's going to breastfeed it's my best friend. So for her to just be this is not your truth, you don't need to be in your room stuck all day, that's not bringing you joy and peace. I was like okay, you're right. *Georgianna*

Breastfeeding and the Theory of Planned Behavior

The TPB framework would have predicted that women in the *passionate* group (Catherine, Georgianna, Charlotte, and Jane) would all be more likely to be EBF at follow-up because they were more strongly dedicated to their breastfeeding plans and because they saw breastfeeding as part of their role as mothers. The *pragmatic* group (Elizabeth, Mary, Lydia, and Caroline) would also likely be breastfeeding at follow-up because they planned to do so, but there would be more uncertainty given that they did not feel as strongly about breastfeeding as the other group. The women's perceived behavioral control was influenced by their attitudes, which the *passionate* group being generally more committed to breastfeeding than the *pragmatic* group. All of the women shared other elements of perceived behavioral control, including access to resources and breastfeeding support, feeling supported by husband and family members, and having a supportive social network. Though their commitment to breastfeeding differed based on their attitudes, overall the women had adequate levels of perceived behavioral control that would likely predict breastfeeding at follow-up.

At follow-up, Mary, Jane, Caroline, Catherine, and Elizabeth were all in compliance with the AAP recommendations, and Charlotte and Lydia were partially compliant. Georgianna was the only woman exclusively feeding her infant formula, though her prepartum perceived behavioral control and attitude about breastfeeding would not have predicted this outcome. Georgianna's experience exemplifies the limitation of the TPB—specifically that it does not account for any external factors, physiological, or psychological processes that may take place

between the formulation of an intention and the execution of a behavior. Georgianna was "really dedicated" to her plan, was well-supported by family, and believed she would be able to overcome breastfeeding challenges. Despite being well positioned to be successful, she was unable to reach her goal. Catherine's experience was similar, and she was unhappy with her situation although she was still technically following the recommendation. The TPB in its basic form does not account for any variables to influence the relationship between intention and behavior. The Ecological Framework will be applied later in the results section to fill this gap in our understanding of the contextual and dynamic factors that led each woman to their postpartum feeding situations. First, though, I will apply the TPB to infant sleep intentions and behavior.

Prepartum Infant Sleep Intentions

For the purposes of these analyses, the AAP safe sleep recommendations are limited to four factors: supine sleeping, sleeping on a flat surface, no bed-sharing, and room-sharing for at least the first six months. None of the women in the study planned to follow these AAP recommendations in full (See Table 7). Sleep training intentions are included in Table 7 and throughout the results section because of their prominence and impact on plans for other infant sleep behaviors.

Table 7. Prepartum Intentions to Follow AAP Recommendations

Participant	Supine	Flat Surface	No Bed-Sharing	Room-Sharing for 6 months	Sleep Train
Elizabeth	Follow	Follow	Follow	Not Follow	Yes
Catherine	Follow	Follow	Might Not Follow	Follow	If Necessary
Georgianna	Follow	Not Follow	Follow	Not Follow	Yes
Mary	Follow	Follow	Follow	Not Follow	Yes
Jane	Follow	Follow	Might Not Follow	Follow	Yes
Charlotte	Follow	Follow	Follow	Not Follow	Yes
Lydia	Follow	Follow	Might Not Follow	Follow	Yes
Caroline	Follow	Follow	Might Not Follow	Not Follow	Yes

The only recommendation that all the women planned to follow was to place their infants on their backs to sleep, though Lydia admitted struggling to remember if babies should be placed on their stomachs or their backs to sleep[7]. Seven women planned to use either a stand-alone bassinet or a PnP bassinet for nighttime sleep; only Georgianna planned to use the RnP for nighttime sleep, and it was unclear if she knew this was against AAP recommendations. None of the women planned to bed-share, but Jane, Caroline, and Lydia recognized that it might happen, and Catherine was the most open to it. She knew it was not recommended, but thought it could be safe with certain precautions, saying "I think it can be a reasonable way to sleep." All of the women planned to room-share initially, but only Catherine, Jane, and Lydia planned to room-share for at least the first 6 months.

Attitudes toward infant sleep practices. Attitude toward the behavior—in this case infant sleep—is "the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question" (Ajzen, 1991, p. 188). The thematic framework for breastfeeding attitudes also applied to the attitudes about infant sleep (Table 8 is a duplicate of Table 6, inserted here for easy reference).

Table 8. Defining Features of Passionate and Pragmatic Attitudes (Repeated)

Passionate	Pragmatic
Prioritizes what is biologically natural	Does not prioritize what is biologically natural
Plan is a part of their vision of motherhood or part of their maternal identity	Plan is not a part of their maternal identity
Motivations for plan based on more than just what is recommended	Resort to the "default" or what is recommended up to the point it is no longer practical
Working around baby's schedule (more baby-led)	Fitting baby into their routine (more parent-led)
Less open to alternative plans	More open to alternative plans

[7] I intervened, and recommended the mnemonic devices "Face Up to Wake Up" and "Back to Sleep" to help her remember

All eight of the women most closely align with having a *pragmatic* attitude about infant sleep. None of the women in this sample could be wholly classified as *passionate* about infant sleep practices using the criteria above. Catherine and Jane endorsed elements of *passionate* and *pragmatic* attitudes—which will be discussed below—but the totality of their attitudes put them in the pragmatic group. Additionally, none of the women spoke of sleep as it related to their identities as mothers or how they envisioned motherhood, so that is not a part of the results presented below.[8]

Briefly, a woman with *passionate* attitudes about infant sleep would likely want to room-share or bed-share because those practices are more consistent with biology and evolution than having an infant sleep in a separate room. She would also be more likely to see her plan as part of her identity as a mother and place value on her chosen practice, particularly if she followed principles of attachment parenting.[9] She would likely also adjust her sleep pattern to fit her baby's need, and may opt to let her baby's sleep consolidate more naturally without intervention (e.g., she would not want to sleep train). The results, therefore, will be organized based on the defining features of *pragmatism*, with attention to when Catherine and Jane endorsed *pragmatic* and *passionate* views.

Prioritizing what is natural. Catherine and Jane both endorsed the idea that room-sharing was natural. Catherine was also open to the idea of bed-sharing under certain conditions:

> Yeah, and again to me, that seemed similar to breastfeeding, like that seems natural. Like your baby's so small and little and of course they would want to sleep in close proximity to you and because you're feeding them frequently, it makes sense from like a logistical standpoint that they be right there and able to… I think that babies know your smell,

[8] Maternal identity may only be a relevant factor for women who are more *passionate* about infant sleep.
[9] Attachment Parenting is an approach to parenting that tends to be more baby-led, and includes parenting practices such as bed-sharing, breastfeeding on-demand, and baby wearing (using carriers instead of strollers) (Sears & Sears, 2001)

> they're comforted by your voice and your presence, and it makes sense that they would be in the same room as you. So, yeah. I buy that. [laughter] *Catherine*

> So I recognize that the recommendation is that the child have their own space and not sleep in the bed with you for safety reasons, but I'm also open to the fact that if they are a child that needs to be next to you to sleep or isn't able to sleep in a bassinet, then I sort of have like a contingency plan of essentially either kicking my husband out into the couch and buying some kind of co-sleeper to sleep in the bed with me. Or-- Or buy a larger bed, like a king-size bed and then have him sleep in a co-sleeper in between us. *Catherine*

Jane thought room-sharing made sense for nighttime care, "But I think having the baby in the room and readily accessible for me to breastfeed and for us to see those signs will help with getting to know our baby and getting to know what it needs." She had received conflicting advice on bed-sharing and ultimately felt that it was unsafe:

> Yeah, the midwives and we have also gone to these baby prep classes, infant safety with registered nurses. They have said things like this is where the baby should sleep. But they also have said it's important for the baby to be in your room, but not in your bed. [laughs] Be in your room, but not in your bed; very, very explicitly that. And then last night at our birthing class she's like it's fine for your baby to be in your bed, which like freaks me out a little bit. *Jane*

Caroline and Lydia did not reflect on what might be natural about infant sleep; their attitudes were more defined by other factors (e.g., parent-led approach to infant care, logical concerns about nighttime care). The other four women (Elizabeth, Georgianna, Mary, and Charlotte) did not talk about what was natural about sleep, but instead focused on what healthy sleep would look like, both in terms of what was healthy sleep for the baby and for the parents. They all thought of bed-sharing as an unhealthy sleep habit. In addition to potentially being unsafe, they also thought it could have detrimental effects on infant development and on the parental relationship.

> I definitely know plenty of cultures and people personally who have slept with baby in the bed with them. It sounds like a smothering or a dropping risk for one thing, but it's also just like… I don't want… like it's really hard to get baby out of the bed again. Once baby is in the bed sleeping with you, then you've established like a kind of cuddling sleeping pattern which means that like… it's always better to sleep cuddling a person… like who would ever want to not do that? *Mary*

> Also I've seen families and children, even like my little sisters who slept with parents for a really long time and I think that has like implications on developmental … I mean I've seen kids form like five to like even eight, my step-son still sleeps with his mom. And I think that's because of convenience and circumstances. They live with his grandparents, things like that. But I just don't think that's very healthy, personally. And so I would like to wean baby off of that space as quickly as possible. *Georgianna*

> My marriage is really important, and I don't want that to affect that special time for us. So, A, it's about me and [husband], but B, it's about just the baby growing up being conditioned that that's like a security thing and you can do that for years and years and years before they don't want to do that anymore. I don't want a ten-year-old in bed with us. *Elizabeth*

> She [her sister] had attachment issues, so did my nephew, she's a helicopter parent. She only recently finally has admitted to it. And, we did not prompt her, she did it her own, she's like I'm a helicopter parent, leave me alone, and I was like what? But, she didn't… I mean she jumped every time he blinked, you know? And, I just don't think it's good, I don't think that's healthy. *Charlotte*

Follow recommendations until they are no longer practical. All of the women were willing to follow the room-sharing recommendation until it was no longer practical. As Mary succinctly said, room-sharing was a good idea "as long as you can still feel sane." The predominant feeling among the women was that room-sharing would not be practical once they returned to work and/or when they planned to sleep train their infants. Jane, for example, was advised not to room-share once she returned to work, "But again, I've also heard that moms going back to work, like you'll never want to do that, you'll never want your baby in your room if you're going back to work." Elizabeth rejected the AAP recommendation to room-share for a year because that practice was not compatible with sleep training:

> Yes, I know that the AAP now says a year for SIDS, but we're not going to do that. ... Well, I guess I want her at whatever critical time it is as far as the sleep training goes for her to be in a different room to not have that... like the constancy of like knowing that we exist, but we're in a different room, and so she's going to cry and cry and cry. The psychologist in me is thinking is the older she gets and more developed she is, it's going to be harder to transition her to a different room. *Elizabeth*

Many of the women did not specifically use the words "sleep training," but instead described encouraging sleep consolidation. Catherine put it this way when she spoke of returning to work:

> Well, I mean I'll be more on a set schedule, so I'll have to be up at a certain time and get home at a certain time, so I think that it might be a situation where perhaps I'm putting in more effort to make sure that they're sleeping consistently or regularly or I have to make a plan for how I'm gonna--I don't function well on no sleep and I need sleep to feel good, and so I'm gonna have to, depending on the kid and how it works out, I definitely will have a more focus on what I can do to improve the situation if it's not going the way that, yeah. *Catherine*

Caroline and Elizabeth both expressed a level of distaste for how long the AAP recommended room-sharing; Caroline said room-sharing for a year was "insane," and Elizabeth said, "We're not doing that. [laughter]." Both Caroline and Elizabeth planned to do nighttime feeding and diaper changes in the nursery while they were still room-sharing, which negated the benefits of room-sharing that some of the other women hoped they would experience, like making nighttime care easier.

Parent-led infant sleep. All of the women were concerned about how they would react to their infants' nighttime sleep habits, particularly once they returned to work. They were concerned about getting enough sleep, and all of them were aware of how much sleep they needed in order to function during the day. Elizabeth, Georgianna, Mary, and Caroline saw sleep training (or at least encouraging sleep consolidation) as the natural consequence of meeting their sleep needs.

> Anyway, sleep is going to be a really big thing for me and us. [Interviewer: How so?] I want her sleep trained, sleeping through the night, not co-sleeping. I'm going to kind of more on the extreme end, I think, like that. First, it's breastfeeding, it never happens, but sleeping, I want my sleep, and I want her to learn to sleep, and just kind of as a clinical psychologist, my best friend is a sleep psychologist. Anyway, I feel kind of more strongly about that. … I think it's going to make it really hard, because I'm returning to work at three months, and I know that sleep regression happens around four months and I think it's going to be really tough not sleeping and having to go to work full-time. *Elizabeth*

> I think that this makes me the most anxious because I love sleep. … Yeah, I think sleep is really important. And again, I think about my lifestyle and my husband's and our family's and sanity and I think that is super important to be able to sustain because I cannot, like one thing I cannot do is work anymore. Like my husband is not going to stop school. These are things that we're just going to have to continue doing and so like I know that sleep for family and baby are really important. *Georgianna*

> My expectations are that I'm going to be surprised by my own emotional status because I don't operate very well with a little sleep. I get very snippy and grumpy and very… and little sleep for me is like seven hours or something. It's going to be really hard to get up to seven hours, so I'm not sure how great I'll look, so I think I'll surprise myself with how cranky I am, and I hope that it doesn't result in any kind of like massive meltdowns…. Yeah I definitely love the idea of sleep training, and I definitely feel myself leaning more toward like having a… a not rigid, but a planned… a planned approach to what is and is not okay for baby to do. *Mary*

> And then after that, the hope is to, I have the idea in my head that as soon as we can start getting some sort of schedule for sleep or what have you--and I don't think that really happens until closer to the three months mark, right when I'm going back to work--the better. … I'm someone who could probably get by on five hours and be okay… I have not read the books. I know it's something that comes, it's gonna be part of our life at some point… I know it has to be done, and I think it's something that should be done, but just going through it and just having to sit there and listen and know that you are trying to move towards the next step of, you know, of sleep pattern or what have you. *Caroline*

Catherine, Jane, Charlotte, and Lydia were also concerned about getting an adequate amount of sleep, but were less clear on how they would encourage sleep consolidation. They also were more hesitant to endorse rigid sleep training tactics.

> I don't function well on no sleep and I need sleep to feel good, and so I'm gonna have to, depending on the kid and how it works out, I definitely will have a more focus on what I can do to improve the situation if it's not going the way that, yeah. *Catherine*

> Yeah, I mean the biggest concern I have is it's getting just enough… it's not about over sleeping or anything like that, but just getting enough to function, and do not make these stupid mistakes. ... Oh I mean like a day, like I can function fine on just six hours. Absolutely, yeah. ... I think I could, I think I could definitely handle that for like two years just fine, I mean that's not a big deal to me… I mean we're definitely going to try our best to get him sleeping… well I just don't understand sleeping through the night for the first six months. *Charlotte*

> I mean I'm someone who really gets grouchy when I am sleep deprived. The two things that are constant in my life are I need to be well fed and slept. I am like a baby in that way, so I think it would be really hard for me both psychologically and physically to figure that out and to be okay with being sleep deprived. *Jane*

> But yeah, I'm kind of prepared, I was a little worried about getting up every two hours to have to feed him throughout the night in those first few months because I know that's their time when they're trying to regulate their sleep and it probably won't change or get longer, like longer times in-between until he's maybe later, two months, three months, probably even later than that, so I'm a little prepared for the two hours but it did freak me out at first. It's like I need my sleep, I love sleep, but I'm probably never going to be able to sleep again. [both laugh] *Lydia*

All of the women saw their need for sleep as critical to their ability to care for their babies. Many of the women framed this concern as somehow being selfish, which indicated a subjective norm about how parents, and mothers in particular, are expected to sacrifice their sleep needs. Mary summed up what many of the women felt:

> Selfishly, I would say that the most important thing about sleep is that the parents can survive, and like get enough sleep to keep raising their baby. Because I feel like baby's going to sleep whenever baby can sleep. And, that there's not quite as much freedom and went to sleep for the parent. So, it's more like how can how can these parents still be adequate parents, you know? *Mary*

Openness to alternatives plans. All of the women were open to alternative sleep plans, their openness was in service of mitigating the negative effects of infants' erratic sleep patterns.

All of the women were more concerned about sleep issues than feeding, and expressed their desire to do whatever they could to get adequate sleep. For example, when I asked Charlotte how she planned to put her baby to sleep, she responded, "by any means necessary."

Openness to alternative plans took form in primarily three ways. First, none of the women had decided on a specific sleep training plan but had a general idea what they would do; they were open to when they would start and which methods they would use. Second, half of the women (Catherine, Jane, Lydia, and Caroline) were at least somewhat open to the possibility that they might bed-share at some point, though Catherine was the only one who did not frame bed-sharing as inherently dangerous. These data were represented in the parent-led infant sleep section above and therefore will not be duplicated here.

And finally, the women were open to—and had already acquired— at least two different sleep location products (e.g., cribs, bassinets, RnP, PnP, swings) and a variety of infant carriers, sleep sacks, swaddles, and other products recommended to either help infants go to sleep or to stay asleep longer. The sleep sacks and swaddles, in particular, were primarily meant for nighttime sleep. Whereas the multiple sleep locations (minus their intended nighttime bassinet use) were primarily seen as options for daytime sleep. However, many of the women considered them as potential options for nighttime sleep as well.

Subjective norms about infant sleep. Subjective norm refers to "the perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188). Generally, the women experienced or reported fewer subjective norms about infant sleep than they did about breastfeeding. Even then, they were more like recommendations or vague comments about sleep and not viewed as necessarily normative. They did have subjective norms about sleep training and bed-sharing, which were previously discussed in the attitudes section. All of the women

endorsed—to varying degrees—the norm of sleep training being a necessary part of their long-term sleep plan. Additionally, most of the women endorsed anti-bed-sharing norms. Catherine was the only woman to go so far as to consider it a viable option for her and her family. These data are not presented here given that they were reported in the previous section. Beyond those norms, the most prominent sleep norm was the idea that infant sleep would be awful, and families should not tell others if they had positive sleep experiences. The other prominent norm was related to room-sharing.

Norms about lack of sleep. There was a strong sense among several women that sleep deprivation was a normative part of every early parenting experience. All of the women received this unsolicited advice, and many found it to be unhelpful.

> … but then the other kind of advice that I've gotten is just very cynical where it's like you're just not going to sleep. Just be prepared to suffer and never sleep again, and live through the worst years of your life. It was like wow thanks that's really encouraging. … It's just like, it's the common currency I think when people are talking about you know sleeping with a newborn, or sleeping with a baby, they're like oh you don't sleep, and so it's just like okay… so I guess we don't really talk about this too much… *Mary*

> But I have heard mothers who were like oh girl please, like once you're so exhausted you're going to blah, blah, blah. And like that kind of makes me uncomfortable because one, like it just does. *Georgianna*

A few women also referenced the norm that families should not talk about getting *good* sleep during the first few months. Charlotte said, "I have a couple clients who are like oh yeah we've been a week [meaning their baby was a week old], we're fine. Those people are terrible people, they should not be telling everybody that." Mary and Caroline made similar references.

> … however there is a couple at our church who do sleep very well currently with their newborn, and they just simply won't really tell their parents about it because it's so taboo. They're like we're getting really great sleep and nobody would… people will kill us if they knew. *Mary*

> After that [asking doctors for advice], it would be friends and what they've done. Except for the friend who's got a baby that sleeps twelve hours a night. … I don't wanna know what's going on when that happens. *Caroline*

Room-sharing norms. The women reported that the norm of room-sharing was influenced by the medical community's suggestion, based on the evidence that room-sharing reduces the risk of SIDS. Mary and Charlotte, for example, both cited the AAP recommendation to room-share as a way to reduce SIDS risks.

> I would like it to be, but I also know that SIDS research, like our doctors were telling us that it's up to a year in the same bedroom… dramatically reduces the risk of SIDS. And, SIDS is just like the worst boogeyman for parents… it's just like and then your baby dies without any reason. … I had heard somewhere that people like… you don't come home and immediately put your newborn infant into a crib, and then I read an article about SIDS and about like sleeping in the same room … And, so we had this bassinet option, and I was like okay, so that's a way of getting baby in the room to help prevent SIDS, and also it makes a lot more sense with feeding at night so that you get all the way up and go into the nursery. *Mary*

> I think it was the recommendations of the American pregnancy, APA whatever. … As a government organization, and it really would emphasized the SIDS risks, and so that's why, if that make sense… that's what jumped out of me is that if you keep in room, you know, for three months, the risk of SIDS goes down… if you wait until blah blah, risk of SIDS goes down. … Yep, yeah I mean that's the game plan. *Charlotte*

Room-sharing was only intergenerationally normative in Lydia's family. Her mother room-shared with several of her younger siblings, and she said it was "Normal in my family." The other women in the study indicated that room-sharing was normative only more recently. This was most apparent by all of the women—again, except for Lydia—saying they would not reach out to their parents' generation for sleep advice (this will be more thoroughly discussed in the perceived behavioral control section). Mary pinpointed this intergenerational shift, which she said was related to both sleep location and sleep position.

> There might be some generational push back. Like, I haven't talked to my parents about it at all, but I know that it's common… it's common for older generations to be like we didn't do that, or like we never had to do that with you. And, that a lot of the sleep cycles and the research on SIDS is within the past like fifteen to twenty years, so it's outside of when I was a baby. And, that I think I probably like slept on my stomach you know probably all kinds of dangerous things, and that if my parents see me suffering and struggling, and doing something different than what they did, that they might be like why don't you just do what we did, and that maybe like a way that they offer to help, but it's actually not really helpful… because I can see that happening. *Mary*

There was not a particularly strong subjective norm about room-sharing among the other women. Many of them framed it as more of a personal choice to fit their situation. For example, Catherine and her husband lived in a one-bedroom apartment, so their decision to room-share was based on that, as well as the recommendation. When asked how she decided to room-share, she said,

> You know, I think that, I mean one thing is that we have a one-bedroom apartment so there's not a ton of options. And I think, again like I don't know how I acquired this knowledge but I know it's recommended that the child sleep in your room for the first six months and I think they even upped it to a year. *Catherine*

Jane also framed her decision to room-share more in terms of it fitting in with her own needs and not predominately due to the AAP recommendation.

> I mean I think I always wanted that because again I want to be close and be able to hear and see without being super disturbed too, without me having to get up and go to a different room. But yes, I also have more recently heard about the advice of keeping the baby close will allow you to respond to the cues a little bit easier. *Jane*

Perceived behavioral control over infant sleep behavior. Perceived behavioral control refers to "the perceived ease or difficulty of performing the behavior and it is assumed to reflect past experience as well as anticipated impediments and obstacles" (Ajzen, 1991, p. 188). Factors

important to the women's level of perceived behavioral control were: (a) their feeling that infant sleep was unpredictable; (b) their belief that infant temperament—at least in part—determined infant sleep quality; (c) their available sleep location options; (e) sources of advice to address sleep challenges, and; (e) their expectations for the nighttime care division of labor with their husbands.

Infant sleep is unpredictable. The women overwhelming felt that they had little control over sleep, though they tried to mentally prepare themselves. Catherine summed up this feeling when she said, "I'm sort of thinking of all the possibilities and I just, I don't know what it's gonna be like, so yeah. I'm hoping for the best but preparing for the worst, maybe. [laughter]" Charlotte echoed this feeling, saying "If it ends up being easy, and knock on wood, that's going to be awesome, but I already assumed it's not going to be." Caroline also felt she had little control, saying, "For me, I don't know how much control I'm gonna have, but if there is a way for me to encourage longer sleep--and I don't know how that happens--that's what I would try to do…" Jane expressed uncertainty about what sleep would be like and felt it was futile to make predictions.

> I really have no idea and like it just seems silly to try and anticipate what that will be. I would love to think that it will sleep at least three hours at a time. [laughs] … And I also don't like want to put the expectation on it. I just don't know, and it doesn't do me any good right now to try and like pretend to know or pretend. Like do I want to be up every two hours? No. Do I have a choice with that? Probably not. [both laugh] *Jane*

Infant temperament. The women's perceived lack of control was attributed to the general knowledge that infant sleep is "terrible," as Elizabeth put it. The women indicated that they believed infant temperament was primarily responsible for the variability in infant sleep quality. Catherine, for example, believed these differences were innate.

> I mean I'm sort of trying to prepare myself for anything, so I know that some babies are good sleepers … Uh-huh. I mean I think you just, I think you get a kid with a certain temperament and a certain ability to feed and sleep, and so I think part of that is kinda built into the kid and the just not knowing like what that's gonna be, yeah. *Catherine*

When I asked Georgianna about what she thought sleep would be like, she said, "Ideally baby sleeps through the whole night, but I have also heard parents who have told me yeah, it's like baby was like pure magic…" Lydia also endorsed the idea that sleep differences were innate.

> … I don't really think there's a manual or a plan for that specific thing just because as I said every child is different and you could have one kid that will sleep through the night no problem what-so-ever, you could have the next kid who has trouble sleeping and wants you to self-soothe them so you have a little bit more trouble with him so it's really going off of the kid and what they're preference is and what you can help them with. *Lydia*

Elizabeth indicated that her belief in temperamental differences was limited. Elizabeth identifies the source of this belief in her academic training, saying, "I think being a clinical psychologist and kind of a strong behaviorist" influenced her understanding of infant sleep. When I asked her if she thought sleep training would work for every child[10], she said, "Yes, I think it should work with every child. There's going to be variations in how difficult it will be to do, but I think sleep is a biological thing that I think you can behaviorally manipulate."

Options for where their babies would sleep. Despite feeling they had little control over *how* their babies would sleep, the women had control over *where* their babies would sleep. This was, in part, due to the availability of resources at their disposal. All of the women had purchased or borrowed a sleep location product that could be moved around the house, and were small enough to fit in their bedrooms. Mary—influenced by the room-sharing

[10] I only asked Elizabeth about the limits to the temperament theory because she had identified a strong theoretical and research-based framework.

recommendation—acquired more products than originally intended in order to adhere to this recommendation.

> I had heard somewhere that people like… you don't come home and immediately put your newborn infant into a crib, and then I read an article about SIDS and about like sleeping in the same room, and like we're not going to fit that crib in our room. So, it was like oh god, what are we going to do? And, so we had this bassinet option, and I was like okay, so that's a way of getting baby in the room to help prevent SIDS, and also it makes a lot more sense with feeding at night so that you get all the way up and go into the nursery. *Mary*

Georgianna also altered her plans, but it was because of recommendations from other women.

> I imagine she's going to sleep with us in our room for the first two months. We do have our nursery completely built and created, designed along with a crib. But we're recommended by a few people the different types of sleepers. … Rock and play, and three moms were just like that's the best thing ever, you have to get it. And when I got it from the registry, when it was shipped to my house I was like this doesn't seem like a safe bed because they're like, they're really portable and they're really small. And so I don't know how it works just yet. Apparently, that's where the baby sleeps for the first couple of weeks, months. And then you can transition them to the crib, maybe, I don't know. *Georgianna*

Lydia noted that having multiple sleep locations was ideal because she wanted her son to be able to fall asleep in various places.

> I think I would like him to sleep in different places just because there's a certain amount of conditioning that goes into childbearing and if you--… So if he falls asleep in the same basinet every night, he's going to get used to that bassinette but if he falls asleep in the bassinette all night or if he falls asleep in the bouncer another night or in different places, he'll get used to being able to sleep pretty much anywhere and so it'll be easier for him to sleep, it'll be easier for other people to babysit him if they have their own bouncer and want to use that and I don't have to bring mine over there. So I just want him to be very versatile with his preferences on where to sleep. *Lydia*

Only Catherine felt that her location options were limited or restricted, because she lived in a one-bedroom apartment, but she still had a contingency plan.

> So, we'll probably get either a pack and play type thing or a crib. And depending on the space, either keep him in that in our bedroom or move him to like a space we're gonna carve out. We have a big separate dining room and living room, so we might carve out one of those spaces for him to sleep in there. *Catherine*

Ability to address anticipated challenges. All of the women had several different resources available to them that they could use to address sleep challenges. They all had a variety of sleep-related products (see Appendix F for product images). They all had multiple sleep location products (e.g., cribs, stand-alone bassinets, PnPs, RnPs, swings). They also all had several different types of swaddles and sleep sacks—either purchased, gifted, or borrowed—that they planned to use to encourage higher quality infant sleep. They also endorsed using noise machines and other products intended to soothe their babies. I also asked all of the women about their intended use of products meant to detect movement and/or oxygen levels during sleep.[11] Some of the women had not heard of these products, and Georgianna was the only one who planned to use one.

> When we went to the registry, or when we went shopping afterwards, my husband ended up finding another one that was same brand, not so much comparable, but it had the pad that you put under the mattress and it monitors movement. And at that point that kind of made more sense to me because it's supposed to detect even the slightest movements and it will alert you if baby stops moving. And like at that moment I was like oh well if I'm looking at my phone and baby's, Lord forbid anything were to happen, but like if baby's not breathing I wouldn't know. It just looks like baby's sleeping. But that could be cool. So we ended up getting that one. *Georgianna*

The women had several different people to whom they would go for advice if they were experiencing infant sleep challenges (Table 9). As was the case with feeding advice, the women overwhelmingly said they would not seek advice from their parents' generation. They typically

[11] These products are usually marketed as a way to reduce SIDS because they alert parents when an infant stops moving.

attributed this to the fact that their parents' infant care experiences—and by extension, their advice—were outdated. Only Lydia and Catherine considered going to their mothers for sleep advice. Almost all of the women trusted the advice of a doctor; Charlotte *only* trusted their advice and said she would not reach out to anyone else. The women put the most value in the advice of their friends and siblings. Jane and Mary said they would most want advice from people had also struggled with sleep challenges.

Table 9. Trusted Sources of Advice for Infant Sleep Challenges

Participant	Doctor	Friends or Siblings	Books	Parents	In-Laws	Internet
Elizabeth	Yes	Yes	Yes	--	--	--
Catherine	--	Yes	Yes	Yes	Yes	Yes
Georgianna	Yes	Yes	--	--	No	Yes
Mary	Yes	Yes	--	No	Yes	--
Jane	Yes	Yes	Yes	No	--	--
Charlotte	Yes	No	--	No	No	--
Lydia	No	Yes	--	Yes	No	--
Caroline	Yes	Yes	--	No	No	--

Nighttime care division of labor. There were three ways in which the women talked about how they would share nighttime care responsibilities with their husbands, they either: (a) expected their husbands to help but had not discussed it with them; (b) had talked to their husbands about their expectations but did not have specific plans; or (c) had developed specific plans with their husbands. Their expectations about the nighttime division of labor were influenced by their plans to breastfeed, and that limited how much their husbands could do at night without also disturbing their own sleep (i.e., if their husbands did a nighttime feeding—either formula or breastmilk—the women would either have to wake up and pump, or they would sleep through that feeding and risk lowering their milk supply).

Lydia was the only woman who had not talked to her husband about her expectations, but nonetheless expected her husband to help with nighttime care. For the first months she anticipated that her husband would sleep in the spare bedroom and she would room-share with their son. When I asked if her husband had shared any of his expectations with her, she said,

> He has not given anything. [laughs]… I think he has no idea. [laughs]… I think he thinks that I'm going to be the one that gets up every two hours, which I probably would be because he can't feed him. Not for the first month or something like that but if it's like a situation where it's just soothing, he can do it, but I don't think he understands that concept yet where if he doesn't need to be fed, then he can change him or he can soothe him so he can do it, he can put him back to sleep. So it's really going to be a big change for him. Definitely. It might be a little stressful at first. Maybe a little bit more than just a little stressful but I think he'll cope well with it. He's just got to work on his patience. *Lydia*

Lydia did not say if she had plans to talk to her husband about her expectations, and implied that he would learn these expectations after the baby was born.

Catherine, Jane, Charlotte, and Elizabeth had conversations with their husbands about their expectations. Catherine and Jane had talked to their husbands about nighttime infant care, and both of them said their husbands deferred to them on the topic. This was due to their husbands' easy going nature and/or their shared sense that they could not fully anticipate what their nights would entail. Neither of the women said that their husbands planned to help out in any way at night, however.

> Again, I don't think he really--again, he sort of defers to me and we both sort of thought through the logistics together a little bit, and I think he's also open to seeing just kinda how things work out and how things play out and we're both, oh my gosh, we're not gonna get any sleep, or this is gonna be hard. [laughter] So, yeah. *Catherine*

> He's totally fine. My husband is completely, like he's a very easy person and is very open and has opinions about things being very natural and being kind of what he remembers as his upbringing… I don't think again he's given it much thought. I think he knows it's

> going to be hard, but again we've taken these classes. We've heard that babies feed like every two hours and he's like every two hours? [laughs] So you know. *Jane*

Charlotte and her husband had discussed nighttime care. She expected to be mostly responsible for their son at night, though her husband did explicitly offer to help when needed.

> He definitely thinks that that ball is at my court, and he has no idea how it works, he doesn't understand anything related to it. Well, he just pretty much is like he thinks… and he definitely assumes that like initially I can provide extra so that he can help at nights…. No, I mean so he has explicitly said to me that if say I'm having a really hard day, baby hasn't slept all day, fussy, this and that… that he needs me to tell him and he will take over for that night. It doesn't matter to him if he doesn't sleep much and has to go to work the next day, that's fine. So, but the expectation is that mostly I would be the one that night to… because there's probably be a feeding thing for the most part. But, if it's just changing, which I doubt, I don't think a newborn is all like ah, I just need to be changed and I'll be fine. He's dirty. Got to sleep it'll be fine. So, I think that you know the way we talked about is that he… he's aware of what's going to be going on. He also has a sister with three kids. So… he has no other details at all, he still has an idea, you know? *Charlotte*

Elizabeth had also discussed her expectations with her husband. She expected she would primarily be responsible at night, but did expect that eventually her husband would handle at least part of the night on a more regular basis. She folded this discussion into the larger topic of overall division of labor in her marriage.

> And then I was like wait, then I'm going to be the one doing all the morning and the afternoon [daycare drop-off and pick-up]. I was like, that seems really invalid. So, I would like to do it as fifty, fifty as possible, but the reality is I know I'm going to have to do more of the overnight stuff, but I've heard that you can start introducing one bottle a day kind of early to get them used to it, but you don't want nipple confusion around…. And so, I've told [husband] about that, and this is all just what I get from my friends and whatever. And I'm like, well, you can do one feeding overnight with the bottle. And then I'll do the rest. I don't know. I would like him to have to. I don't want to get resentful or feel like I'm doing everything. So, I want even things like that that I hope that we can do it as fifty, fifty as possible, but I don't know what will happen. *Elizabeth*

Georgianna, Caroline, and Mary had sketched out plans with their husbands, with the expectation that they would regularly take responsibility for infant care during at least part of the night. Georgianna's husband suggested a plan based on him working late into the night, but she was skeptical of how well it would work in practice.

> My husband's in grad school so his plan, it's really funny, his plan is that mommy and baby go to bed around eight o'clock and then he'll stay up and do grad school homework. And if baby wakes up for first feeding, he'll feed the baby because he's already up doing grad school homework. He's like he just has these wild ideas. And I was like okay, sure. … But that's his plan to help me out at night so I can sleep until at least, and then have like the five o'clock morning feeding. *Georgianna*

Caroline initially said that she and her husband had not talked much about nighttime care (the first quote), but she later remembered that they had. He was present for the latter part of the interview, so his comments are embedded within hers.

> I also [Laughs], unknown to [husband], know that, in my head, have the certain times where bottle feeding, I would like to have that be something that the child gets used to so he can help out more with some of the feedings. But I haven't done any sort of research or have any thought in my head as to when exactly that would happen. *Caroline*

> We haven't really talked about it. Actually, he read a book. [Husband], what was that book called? The dude book you read? [Husband: Something about guys and babies. I don't know.] Yeah, I don't know. But anyways, but you seemed pretty...liked one of the feeding plans or something like that. We'll have to go back and look at it again. But it was something about--[Husband: I remember. I remember what it was.] Oh, well, what was it? [side conversation] Well, right, but at some point, you would handle bottle fee--this is also why I wanted the bottle situation to come sooner rather than later--but I think at some point, it was like he would handle--[Husband: I would basically handle the nighttime feeding, go to bed, sleep all night, then you'd take care of the rest.] And then I'd take--[Husband: And then I'd take the morning.] Then you'd take the morning again. And that's while I was home, though. Right? [Husband: Yes. And that wouldn't work with breastfeeding, now that I think about it.] Well, right, which is why bottles would be involved. [Laughs] But essentially, trying to come up with something schedule-wise 'cause he'll be back at work after about two weeks, and so if there's a way for him to help feed before he goes to bed, and then I take care of nighttime, like he just said, and then he takes care of the early morning feeding as he gets up to go to work, that would be ideal. *Caroline and her husband*

Mary and her husband were the most prepared for dividing up infant care responsibilities at night. Their plan also differed from the rest of the women because it was based on their natural sleep patterns—Mary's husband was a night owl and she was an early riser.

> We have a schedule on Google Docs. It's loose, it's loose. … And, this is right now planned on… it's fun… to find out when we generally sleep currently, or to the extent we are able to either stay up, or kind of be present for the baby during the day, or at night. … I think… well for one thing, it can't happen until [husband] can feed the baby. So, I mean it could kind of happen, and then [husband would] just have to unfortunately wake me up so I can feed the baby. But, it's pretty much like however it happens. I'm assuming that we come back with baby and I will be very tired, and [husband] will probably also be pretty tired. And, so neither of us will be in peak form, and we'll probably not be in our natural rhythm of sleep, and we'll just be like complete… Yeah, it'll be just complete chaotic mess for maybe the first couple weeks…

Summary of Prepartum TPB Constructs Regarding Infant Sleep

All of the women intended to follow the AAP recommendation to place their babies on their backs for sleep on a separate sleep surface, and to room-share with their infants for at least the first three months. None of the women planned to bed-share, though Catherine thought it could be a "reasonable way to sleep" under certain conditions. All of the women were categorized as having a *pragmatic* attitude toward sleep. They were all willing to follow the AAP recommendation to room-share, but only up until a certain point, typically related to when they returned to work. Elizabeth was the only one to explicitly connect her plans to sleep-train with her plans to stop room-sharing, but women like Caroline thought it would be nicer to sleep in separate rooms once she returned to work. All of the women endorsed some method of sleep-training, primarily out of concern for their own sleep once they returned to work. Jane and Catherine endorsed components of the *passionate* attitude, but the totality of their attitudes were more in line with the *pragmatic* attitude.

There were several subjective norms about infant sleep. The norm to avoid bed-sharing was indistinguishable from their attitudes about bed-sharing, making it difficult to distinguish if they did not want to bed-share because of the norms or their personal beliefs. Room-sharing is a relatively new norm; all of the women knew people within their own generation who had room-shared, and several women noted that their parents had not done so. The norm that all parents are sleep deprived was also prevalent, indicated by their feelings that sleep would be "terrible." Mary, Caroline, and Charlotte all made comments that indicated this norm was strongly enforced by others, meaning that families were discouraged from sharing with others when their sleep experiences did not fit this norm.

The women had overall low levels of perceived behavioral control over their infants' sleep. They noted that newborn and infant sleep is primarily driven by temperament and their feeding needs during the early months. Though they felt they had little control over how their babies slept, they did feel that they had control over where their babies slept. The women had several resources available to address the sleep challenges they anticipated, including products (e.g., different sleep locations, swaddles and wraps, and soothers/white noise machines) and people whose advice they trusted.

All of the women expected their husbands to help with nighttime infant care. Lydia had not told her husband about her expectations. Catherine, Jane, Charlotte, and Elizabeth had conversations with their husbands, but none of them had developed plans for regularly sharing responsibility at night. Georgianna, Caroline, and Mary and their husbands planned to take shifts during the night, and they expected this to be a regular arrangement. Of these three couples, Mary and her husband were the only ones who developed their schedule based on their regular sleep habits.

Postpartum Infant Sleep Behavior

The participants' infant sleep behaviors at follow-up can be seen in Table 10. None of the women completely followed the AAP recommendations. Jane, Charlotte, and Lydia were all rooming-in, but they had all bed-shared at some point during the past 3 months, and Charlotte and Lydia were used inclined sleepers at night. Of the five women who had transitioned their babies to a different room, Elizabeth, Catherine, and Mary had all stopped room-sharing within the first 2 weeks, and Georgianna and Caroline stopped room-sharing at 8 weeks. All of the women were placing their infants on their backs to sleep, though Lydia had placed her son in the prone position on several occasions.

Lydia was the only woman who regularly shared a bed with her baby, it was their regular sleep environment for approximately the first four weeks after which point she used the inclined bouncer on the floor next to her bed. Charlotte bed-shared during the first week because it was the only way for everyone to get sleep; after the first week they started using the RnP for nighttime sleep in their room. Catherine and her husband both took turns co-sleeping on their couch with their baby during the first couple weeks. They took shifts at night, and during the first two weeks their son would only reliably sleep while being held[12]. At around two weeks they stopped co-sleeping on the couch and transitioned him to the bassinet in the living room. Jane tried bed-sharing at around 4 weeks for part of the night, typically from about 3am-6am.[13] She and her husband eventually agreed that their bed was not big enough for them all to bed-share, so this practice lasted less than a week.

[12] During the 2 week phone call I recommended that Catherine and her husband stop co-sleeping on the couch with their son, and explained the risk. I empathized with their situation and told her that my recommendation was only out of concern for his safety.

[13] Jane was uncomfortable with bed-sharing and her husband thought they should be bed-sharing all night and every night. I recommended some bed-sharing resources (e.g., Wiessinger, West, Smith, & Pitman, 2014) because Jane was nervous about bed-sharing but wanted to learn more.

Table 10. Infant Sleep Practices at Follow-Up Interview

	Location				Sleep Quality		Nighttime Strategies	
Participant	Room	Location	Transitioned out of Room	Ever Co-Slept	Wakes per Night	Longest Stretch	Division of Labor	Sleep Training
Elizabeth	Nursery	PnP Bassinet	2 weeks	No	1	6hrs	None	Positive Routines
Catherine	Living Room	Bassinet	< 1 week	Yes	3	3-4hrs	Shifts	None
Georgianna	Nursery	Crib	8 weeks	No	0	NA	NA	Positive Routines
Mary	Living Room	PnP Bassinet	< 1 week	No	0	NA	Shifts	Positive Routines
Jane	Room-In	Bassinet	NA	Yes	2*	4hrs	None	Positive Routines
Charlotte	Room-In	RnP	NA	Yes	3 to 5	4hrs	None	None
Lydia	Room-In	Bouncy Seat	NA	Yes	4	4hrs	None	Graduate Extinction
Caroline	Nursery	Crib	8 weeks	No	1	6hrs	None	Positive Routines

*Jane's daughter was sleeping through the night (no wakings) until she went back to work

By the follow-up interview only Catherine and Mary were still sharing responsibility for nighttime care with their husbands. Catherine and her husband were struggling with the arrangement, mostly due to their son still waking up three times a night to eat.

> I think we're getting used to waking up with him. We still are doing the shift where my husband--I go to bed at seven thirty, eight, sleep 'til midnight, my husband then goes to bed around twelve thirty or one and then sleeps 'til six or seven. So, we've been switching off who-- … And we recently this week, I actually started to sleep back in our bed at midnight, and then I leave my door open and I usually sleep with ear plugs but I take my ear plugs out. And so, it's worked well where I can hear him very well, and so I've been sleeping in the bed and then getting up when he cries. *Catherine*

Mary and her husband had a much more positive experience with taking shifts because Mary's husband naturally liked to go to bed later (typically 2am-3am) and sleep in, while Mary liked to go to bed early and wake up early. Their natural sleep patterns allowed them to take shifts and still get a reasonable amount of sleep. Additionally, their daughter started sleeping through the night (i.e., not waking up to be fed or changed) at approximately 12 weeks. Because of this, Mary's husband started going to bed earlier (around 12am-1am) and Mary's schedule was unchanged. Mary felt fortunate for their situation, saying, "For my own sleep, I'm averaging about seven hours. I would like to average eight. I'm like asking for whipped cream on top of my ice cream."

All of the women except Charlotte and Catherine had begun implementing some elements of sleep training, and neither of them had plans to use sleep training methods in which they left their babies to cry for any amount of time. Most of the women were implementing positive routine elements (e.g., regular bedtime, a bedtime routine) at the time of the follow-up interview. Jane, Georgianna, and Mary did not have plans to sleep train because their daughters were all sleeping through the night, but were open to the idea if their sleep situations worsened.

Elizabeth had started positive routines in preparation for sleep training at around 4 months; she scheduled an appointment with their pediatrician just to talk about sleep training methods. Lydia tried the graduated extinction method at approximately 8 weeks. A friend had suggested she do this to help her son become more comfortable sleeping in his crib for naps.

> Just try to do that during the day [suggestion from her friend]. He'll get used to it. It'll be fine. Let him cry a little bit. After ten minutes just give up. She said every two minutes though go in there, calm him down, soothe him, rock him, put him back down, let him whimper a little bit not fully blown crying but whining. But she always kept on saying every two minutes go in there calm him down, don't pick him up unless you have to, and then just put him back in. Try for ten minutes at a time, if he doesn't take it just pick him up and let him go to sleep his normal way. So that's what I started doing actually on New Year's Day. And I did that for the whole week. I would take him into his room at ten o'clock. I have a little baby monitor thing on my phone that you can put in how long he sleeps. … So it took him maybe, it varied between five minutes and ten minutes of falling asleep. The first day it took him about ten to fifteen minutes to fall asleep. And I would go in there and soothe him every two minutes. Then the next day it took him five minutes or six minutes. And then the day after that it was four minutes. So it kept on going down and he started getting used to it. I think the first day he stayed asleep for forty five minutes. He fell asleep in there; he stayed asleep for forty five minutes. And as I said I don't let him cry, I let him whine. So he'll be like wha, wha or something like that. If he was full blown crying I would definitely pick him up. *Lydia*

Lydia did not believe that what she was doing was sleep training. However, Lydia's friends and family disapproved of her methods and scolded her in private (via text) and in public (on Facebook).

> But I took a picture of him while he was sleeping. And I was so proud of him and I put it on Facebook. And I said day one of sleep training accomplished. And she saw that and she texted me and she was just like how can you do that? That's torture. You can't do it at two months. And I'm like how is it torture? I wasn't doing anything. I let him sleep in his own room. And my sister actually commented on it too and she said oh you know you're not supposed to do it that early. And I didn't actually understand that wasn't sleep training. Sleep training is putting them in their room, letting them cry themselves to sleep. *Lydia*

Lydia was personally offended by these interactions, and decided to no longer post comments like this on Facebook and stopped asking her friend for any help or advice.

Infant Sleep and the Theory of Planned Behavior

The TPB framework would predict that none of the women would be fully compliant with the AAP recommendations because none of them intended to follow all of them. Catherine, Lydia, and Jane all intended to room-share for the first six months, but they also thought there was a chance that they would bed-share. Their ambivalence on bed-sharing was due to two factors. First, they all had family members who bed-shared (Catherine and Lydia) or who were supportive of bed-sharing (Jane was more nervous about bed-sharing than her husband). Second, they all said in their prepartum interviews that they might bed-share. The rest of the participants (Elizabeth, Georgianna, Mary, Charlotte, and Caroline) intended to follow the room-sharing recommendation for the first 3 months, but not the full 6 months.

The women's attitudes about infant sleep were mostly *pragmatic*, though Catherine and Jane endorsed some elements of the *passionate* attitude. Their *pragmatic* attitudes were primarily driven by their desire to balance their infants' needs with their own, and this was closely related to their plans to sleep train their babies. Most of them also endorsed anti-bed-sharing attitudes, which were indistinguishable from their subjective norms about the practice.

The women perceived that they had low levels of behavioral control over their infants' sleep, and they felt that much of infant sleep quality was determined by temperament. Several of the women anticipated low-quality sleep and were concerned about their ability to function (e.g., as parents, and when they returned to work). Much like with breastfeeding, the women favored asking their friends (or siblings) for infant sleep advice over asking their parents or in-laws. All of the women expected that their husbands would share responsibility for nighttime care. Lydia

was the least in sync with her husband: she expected regular nighttime help but had not shared her expectations with her husband. Catherine, Jane, Charlotte, and Elizabeth discussed nighttime division of labor with their husbands but did not have explicit plans for their regular involvement. Georgianna, Caroline, and Mary had made plans with their husbands about regularly taking shifts at night; Mary and her husband had the most specific plan, which was based on their natural sleep patterns.

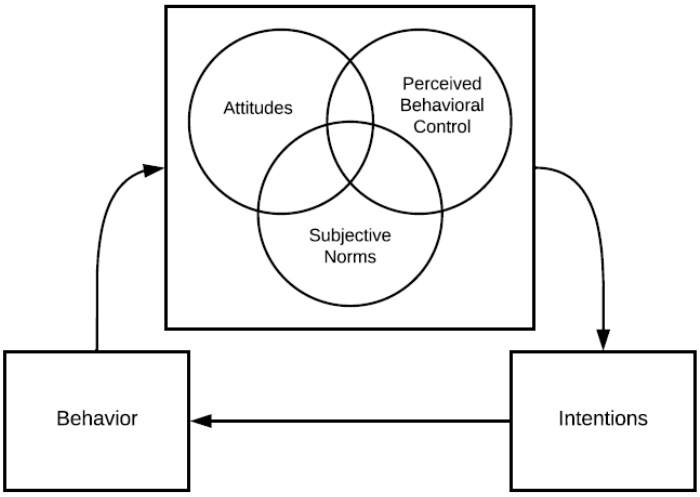
By the follow-up interview, most of the women were following through with their intended sleep behaviors (and were not AAP compliant). All of the women were placing their babies in the supine position for sleep. Charlotte, Jane and Lydia were still room-sharing, as they had intended (Charlotte's prepartum plan was to room-share for 3 months, not the full 6 months). Elizabeth, Georgianna, Mary, and Caroline all stopped room-sharing by 8 weeks at the latest, which was approximately a month earlier than they had planned. Catherine had planned on room-sharing, but by the follow-up interview they were only room-sharing part of the night (when her husband was in the living room with their baby during his shift of the night).

These results are to be expected given that the women had low levels of perceived behavioral control and had *pragmatic* attitudes about infant sleep. In particular, their need for sleep led many of them to abandon room-sharing earlier than they had planned (Elizabeth, Georgianna, Catherine, Mary, and Caroline), or to bed-share when they had intended not to (Lydia, Charlotte, and Jane). As with breastfeeding, the TPB framework does not account for the contextual factors and events that happen between intention development and behavior performance. First, a new Cyclical TPB is proposed based on the previously reported results. Then the Ecological Framework was applied to the data to further address the limitations of the TPB in explaining behavior.

Applying the TPB to Repetitive and Long-Term Behaviors

The TPB is most useful when predicting one-time events with a short duration between intention development and behavior performance. Given that breastfeeding and infant safe sleep behaviors are repetitive over long periods of time (up to a year if one follows the AAP recommendations), the TPB would be more useful if thought of as a cyclical process that occurs with each performance of the behavior. Figure 4 illustrates the proposed Cyclical TPB; this figure represents when intentions lead to the planned behavior (e.g., when a woman plans—and is able to—breastfeed). This exploratory analysis will rely on individual-level examples instead of the entire sample of women.

Figure 4. Proposed Cyclical TPB



The Cyclical TPB has two novel elements that make it more applicable to repetitive and long-term behaviors such as breastfeeding and infant safe sleep practices. First, results from the previous analyses indicate that the TPB psychosocial constructs (i.e., attitudes, subjective norms, and perceived behavioral control) are not mutually-exclusive. For example, it was difficult to tease apart women's attitudes and subjective norms about bed-sharing because they were so closely intertwined. The figure above presents them as a Venn diagram instead of three

independently measurable constructs; the degree of shared and independent influence each has over intentions is not static, but likely changes over time and differs between individuals. This proposed model also hypothesizes that they act collectively and independently to influence intention, though as previously stated, their level of independent influence will vary over time.

Second, the Cyclical TPB proposes that behavior feeds back into attitudes, subjective norms, and perceived behavioral control, such that successful or unsuccessful behaviors can themselves alter these psychosocial constructs. For example, every time a woman successfully breastfeeds, her attitude about breastfeeding is likely to either stay the same or become more positive, and her perceived behavioral control becomes more closely aligned with *actual* behavioral control. It is also likely that the impact of the TPB constructs wanes over time. As breastfeeding becomes more routine, a woman may be less likely to reassess her attitudes, perceived behavioral control, and subjective norms because she is behaving as intended.

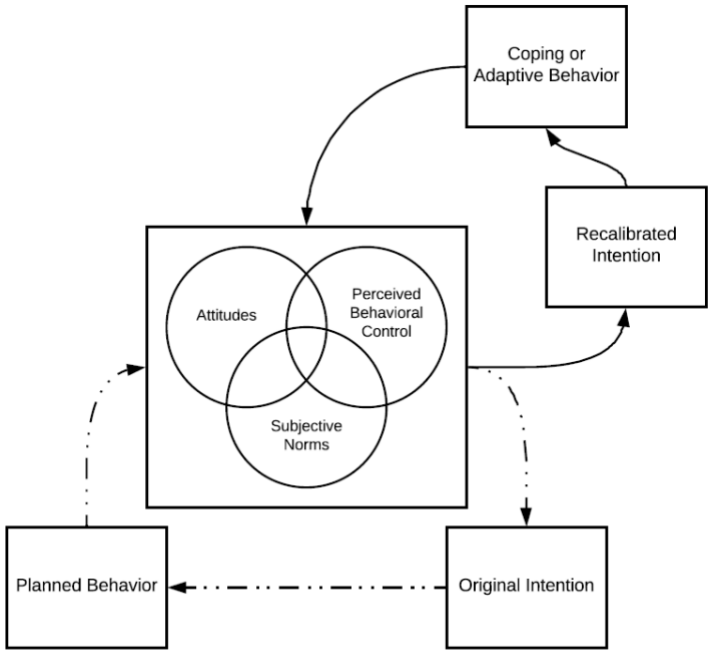
Jane's experience with breastfeeding and sleep is exemplative of the Cyclical TPB in Figure 4. Jane had a *passionate* attitude about breastfeeding and a *passionate-pragmatic* attitude about sleep; she planned to breastfeed for up to a year (possibly weaning earlier if she became pregnant with her second child), and planned to room-share for approximately 6 months. Jane did not experience any major complications with breastfeeding. The only exception to this was at around 8 weeks her daughter would sometimes not latch and would become very frustrated. Jane and her husband introduced the pacifier to calm her down and then she would be able to latch. Jane initially did not plan to use a pacifier, and said about this, "I just have you know a few more -- a few more tools in my toolbox that I didn't have to before." This slight adjustment to her original plan is illustrated by the Cyclical TPB: Jane had difficulty performing her intended behavior (breastfeeding), and she was able to get back on track by slightly adjusting her attitude

about pacifiers. Going through this process led to higher perceived behavioral control, as indicated by her seeing this as another "tool in her toolbox."

Jane's experience with sleep was also positive, and by the follow-up interview she was still room-sharing without any significant challenges. When I asked her how sleep was going, she said, "Well I thought this was going to be much harder. I really did. I thought that...Am I jinxing myself? … [Laughs] I also didn't know what it was going to be like having her in our room. And that's gone really well, too." Not every night was easy, but Jane had had enough success with room-sharing that she had no intention of stopping in the foreseeable future. Her performance of the room-sharing behavior had been positively-reinforcing over time, which strengthened her attitude and perceived behavioral control. Overall, Jane was pleased with how things had been going, she noted, "Yeah we've gotten into a routine. I told him [her husband] the other day I was like, 'I really like our life. Are you liking our life right now? Is it ok?' He's like 'oh yeah, it's fine.' So...we're into a routine."

The Cyclical TPB model requires new elements to reflect what happens when the intended behavior is not successfully performed as planned. Figure 5 illustrates how the Cyclical TPB feedback loop would look when there is a disconnect between intention and behavior, creating the need for recalibrated intentions and new adaptive/coping behaviors.

Figure 5. Cyclical TPB When Behavior is Not Successfully Performed Over Time



The Cyclical TPB model accounts for instances in which the original intention does not result in the planned behavior. Catherine's experiences with feeding is illustrative of the process depicted in Figure 5. Catherine—like Jane—had a *passionate* attitude about breastfeeding. She had planned to breastfeed for up to a year, but was never able to establish a decent latch. Catherine described the process by which she altered her breastfeeding plan:

> He wasn't latching. So, in the hospital he wasn't latching. He was born with a lot of fluid in his lungs and in his mouth and they had to suction it all out, and so the lactation consultant said he might have that sort of adverse reaction to having stuff in his mouth. And yeah, he was just having trouble. And it's hard work, I mean I just didn't realize how hard it was gonna be. I mean for some babies it's easy. So, they started me pumping in the hospital. And yeah, then I think I just had anxiety about his weight and that he was gaining weight and so I would try to breastfeed but then he would have a lot of trouble. And so, I would just say okay, just give him the bottle 'cause I just wanted him to eat and gain weight. We had a lactation consultant come to the house, it didn't really help, so I just at one point decided I'm just gonna keep doing this. But then I realized it's just a lot of work. *Catherine*

Her early unsuccessful attempts led Catherine to reevaluate her attitudes and perceived behavioral control and she decided that feeding her baby was more important than *how* she fed her baby. She was producing enough milk to feed her son, even if she was not able to feed him by the method she had originally intended. She was still technically following the AAP recommendation because she was exclusively providing breastmilk to her son, but she did not see it that way.

> I mean I think I felt disappointed and I felt like, you know at least he's getting breast milk. If he wasn't getting breast milk, I think I'd feel a lot worse. But I do know there are certain things about breastfeeding, like directly breastfeeding that are more beneficial. So, I think about that every once in a while, and kinda feel guilty or feel like, oh, god, I should've tried harder. But then I'm just, you know, this is what I'm doing and he's getting breast milk and that's the most important thing to me, yeah. *Catherine*

Through this process Catherine was also exposed to external subjective norms about pumping that left her feeling conflicted about her new plan.

> My midwife was shocked that I was pumping exclusively, and was sort of like, that's a lot of work and I don't know how long you're gonna be able to do that for. [laughter] And when I said six months, she looked at me like, you're crazy, but. [Interviewer: How do you feel about that?] Well, in a way I felt good because someone acknowledged that it was hard, so that was nice, but at the same time...I don't know, it was a little bit negative, I guess or a little bit like discouraging. *Catherine*

The shifts in Catherine's attitudes, subjective norms, and perceived behavioral control let her to also recalibrate her intended duration, saying, "My goal now is six months, and then I'll kinda re-evaluate and see what my supply's like and how I feel about it."

The Cyclical TPB adds the dimension of time (and changes over time), but is still limited in its ability to fully describe the process by which original intentions and behaviors are abandoned for new ones. This is due, in part, to its limited focus on internal psychological

processes and the exclusion of external factors that help or hinder the performance of a behavior. It is also limited because it does not take into account that the success of these behaviors depends on the mother *and* the infant. Applying the Ecological Framework to the early postpartum months provides nuanced understanding of how these processes unfold over time, including how the behaviors of people within the familial system (e.g., the woman and her baby) interact with and depend on one another.

Ecological Assessment of Infant Feeding and Sleep Behaviors

Georgianna's ecological assessment is presented because her experience was one of the most demonstrative of how the Ecological Framework complements and enhances the Cyclical TPB because she was not performing her intended behaviors at follow-up. Table 11 provides an overview of the Ecological Framework constructs of interest. The ecological assessment is presented as a chronological narrative, indicating when resources were activated, behavior changed in order to cope with or adapt to the situation, and when contextual components were interdependent.

Table 11. Principles of the Ecological Framework Applied to the Postpartum Context

Principle	Definition/Description
Cycling of Resources	The creation, activation, and maintenance of resources within the system.
Persons	Anyone of influence within the family's social network
Division of Labor	Husband's input/advice/information/support or behavioral intervention (e.g., taking shifts at night, sharing feeding responsibilities)
Informal Advice	Information or advice from a person without medical expertise (e.g., friends and family). Can also be in the form of moral support or encouragement
Informal Intervention	Active behaviors from others that either positively or negatively influence the situation. Typically positive in nature (e.g., family member visiting and helping out with household tasks or child care)
Medical Advice	Information or advice from medical professional
Medical Intervention	Active behavior from a medical professional (e.g., introducing formula while infant is in NICU, visit from LC)
Settings	Structural elements of the environment that affect behavior (e.g., availability of a second room/nursery)
Events	Experiences, including challenges that arise
Planned Events	E.g., visits from friends and family, or going to scheduling infant check-ups with a pediatrician, vacations)
Unplanned Events	E.g., unexpected encounter with a friend or family member, unexpected challenges when performing intended behaviors)
Products	Any products that families use to aid in performing their intended behaviors, or to address challenges
Parental Leave/Work Schedule	Anticipated parental leave, including: duration, if it was covered by employer or the Family and Medical Leave Act (FMLA) (not every woman was specifically asked if it was paid leave, many of them volunteered that information); Either woman or her husband having flexibility in their work schedule
Coping and Adaptation	Behavior changes in response to events within the system
Interdependence	Any time when one behavior (e.g., feeding) affects or impacts the other (e.g., sleep)
Succession	Time, primarily indicating when events occurred and resources were activated. Also indicates duration of behaviors.

Georgianna's first 12 weeks as a mother were challenging, particularly in regards to breastfeeding. The difficulties began when her daughter had to be readmitted to the hospital to receive UV-light treatment for jaundice. While in the hospital "one of the nurses was a little pushy about formula. I understand. I completely understand. The faster she fed and pooped it out, we could go home which was obviously what we wanted, too." She resisted this advice, so the nurses recommended that she pump; they wheeled a pump into their hospital room and said, "here you go" without any support or instructions. This was one point at which Georgianna wished she had received help/support from the hospital staff, she pumped but was unsure if she was doing it correctly.

Georgianna's daughter struggled to gain weight during the first two weeks, and she was concerned it was because she was not producing enough milk. She compared her average pumping output (approximately 1oz total each session) to results from google searches, and decided to exclusively pump to better monitor how much her daughter was eating. She additionally bought a baby scale to regularly track her daughter's weight, about which she said, "I don't know if that's going to help me or drive me even more insane."

During the first two weeks Georgianna sought advice and support for lactation and pumping from two LCs, her personal doctor, and her pediatrician. The LCs thought her daughter's latch was adequate, and made several suggestions to improve milk extraction (e.g., massaging her breasts, holding her daughter in different positions while breastfeeding, getting a different breast shield for her pump). Georgianna also tried several home remedies and techniques to increase her milk supply (e.g., adequate sleep, increased her water intake, drank mother's milk tea, attempted nursing every hour to stimulate milk production).

Georgianna resisted supplementing formula until their 2 week appointment with their pediatrician (their third visit since leaving the hospital). Their pediatrician's "somewhat aggressive" recommendation that Georgianna start supplementing because her daughter was not back up to her birth weight. The pediatrician also advised that they wake the baby every two hours for feedings. The combination of scheduled feedings and Georgianna's pumping schedule did not allow for her and her husband to take night shifts as they had originally planned. Every two hours at night Georgianna would pump while her husband gave her daughter a bottle of formula. They continued this schedule for the next two weeks, at which point they stopped waking their daughter every two hours to feed her. During this time they continued to room-share, though supplementing formula negated many of the potential benefits (e.g., not having to leave the room for infant feeding).

Between 2 and 10 weeks postpartum Georgianna continued to pump while slowly increasing how much formula she supplemented until she fully weaned at 10 weeks. Sleep and feeding were most visibly interdependent during this eight week period. By week 4 they had stopped waking their daughter for night feedings for three connected reasons. First, their daughter was sufficiently gaining weight, likely because she had adequate milk/formula intake that she had not received during the first two weeks (through no fault of Georgianna). Second, their daughter was beginning to sleep longer stretches at night, up to 4-5 hours between feedings. This could have either been due to maturation, the formula she was eating at night, or a combination of the two. Third, Georgianna and her husband were feeling the cumulative effects of sleep deprivation and decided to sleep when their daughter slept. This was not entirely a conscious decision on either of their parts; Georgianna found it increasingly difficult to stick to her nighttime pumping schedule and slept through times when she had planned to pump. This

affected her supply, but it was already so low (24 hours of pumping produced enough milk for one or two bottles) that she decided to prioritize her sleep over continuing that pumping schedule.

Georgianna emotionally struggled with having to supplement with formula. Though she had mentally accepted her unplanned situation, she was still uncomfortable with letting others—even strangers—know she was feeding her daughter formula. She recounted, "But whipping out formula and shaking up a bottle. The first time I had to do it I was like, I think I'm going to go to the bathroom and shake the bottle. It feels silly to say that, but it's true. A part of me felt bad for doing that and I know I shouldn't and it's stupid and whatever." Georgianna knew she should not feel guilty for using formula, but felt bad anyway.

As she processed her situation, Georgianna tapped into several informal resources. Georgianna started asking friends about their breastfeeding experiences and found that women she assumed had EBF had actually supplemented with formula. Hearing this from trusted sources helped to normalize her experience. Her step-father helped further normalize her experience by recounting how her mother had supplemented with formula. This came as a shock to Georgianna. She had always thought she had been EBF, and could not have asked her more recently because her mother passed away the year prior. For Mother's Day, Georgianna posted a message on Facebook:

> I wrote a post about how I wanted to send love for those without naming out that I was actually struggling. That I want to recognize and show some love to all of the mothers who might be struggling, who physically can't or choose not too and it was interesting because I kind of opened myself for comments and all of the comments were overwhelmingly positive with some women just completely...Not even asking if I was struggling, but saying, "This was my experience. I really appreciate you posting this. I physically could not, blah-blah-blah," and so that made me question, "How come when it's several women including possibly my mother struggle with this?" I googled it and everything that popped up including some of the really nasty comments, ninety-nine

> percent of women can breastfeed and the other one percent either physically can't or I have no idea why any mom would choose not to--things like that--and another survey came out and said five to fifteen percent of women struggle with making enough, but I'm not a researcher, right? I could probably do it but it seems it's more than fifty percent or more than five percent of women who [can't breastfeed].

Georgianna had believed—as research suggests—that low milk supply was uncommon and that many women who could not breastfeed had just not tried hard enough. She came away from these interactions feeling much more at ease with her process; she worked incredibly hard to breastfeed and was just not able to.

At about 8 weeks postpartum, Georgianna grew increasingly unhappy about supplementing and pumping. She was holding on to pumping because of what it meant to her, "And I think because I created the space to say I'm still breastfeeding meant that I was creating a space to continue trying different things because I wanted to be successful so bad." She was also putting financial resources into her continued efforts to breastfeed, "So every couple of days I was buying a new gadget or a new thing or trying a new thing."

Georgianna wanted to be successful, but was also unhappy about how pumping was affecting her life and relationships. She had familial support and shared infant care responsibilities with her husband (on paternity leave) and her younger twin sisters (living with her while on summer vacation from college), so she did not have to pump, feed, and care for her daughter by herself. However, she preferred to pump in private, and she often felt "lonely" and isolated because of her frequent pumping schedule. Pumping also restricted Georgianna's ability to leave home. She had a manual pump and a car power adapter for her electric pump, but she preferred to pump at home and would leave places early (or not go out at all) in order to avoid pumping in public spaces. Around this time Georgianna had a conversation with her best friend about how she had been feeling.

> I remember my best friend, who again doesn't have a baby, she just said 'you are tied to this idea of what motherhood experience would be which is breastfeeding but is this pumping every two hours up in your bedroom the experience that you want to?' … I was like 'damn you're wise; this is why you're my best friend. I'm like you're right.' She's like 'that's no experience that you want so don't do it.' I was like okay, alright. She's my friend who's very hippy, very natural and if anyone's going to breastfeed it's my best friend. So for her to just be 'this is not your truth, you don't need to be in your room stuck all day, that's not bringing you joy and peace.' I was like 'okay, you're right.'

This conversation was a defining moment for Georgianna, and she decided that she was going to start weaning. Her husband and family were all supportive of her decision, "I think everyone firsthand saw how much trouble it was. They saw me cry. They saw me super unhappy. So when I made the decision everyone was like 'yeah, do it, we support you.' And they used those words. They really were invested in me feeling better and being happier."

Two major changes happened between weeks 8 and 10. First, Georgianna began to wean by reducing how often she pumped. By the follow-up interview at 12 weeks she was no longer producing milk. Second, her daughter began sleeping through the night and Georgianna and her husband decided to transition baby to her nursery. She had been finding it difficult to room-share because her daughter was a loud sleeper; her husband was quick to agree with her plan:

> My husband takes a lot of, and this is not to say he doesn't do his own research, but he's very much 'I know my wife and my wife wants things her way' and so when I said 'oh baby's going to sleep in our bedroom for the first year' he asked why because he wanted to know. He didn't know if that was. I was like 'pediatricians recommend it.' He was like 'okay' and that was the end of it. So that's why he thought it. However, when I was like 'hey it's really hard to sleep would you…' and he's like 'yes absolutely. Yes I was actually thinking about that.'

At her daughter's 2-month appointment, the doctor only confirmed that Georgianna was placing her daughter in the supine position for sleep, and did not ask about room-sharing practices.

By the follow-up interview, Georgianna had enough distance from her initial struggles with breastfeeding and supplementing to reflect on her process.

> Now that I'm far removed from it I think it was definitely the right thing. My baby needed to eat that was the most important but I internalized it in the moment as such a dreadful experience because I thought 'oh no how could these nurses make me want to do something that I don't want to do it? That's not best for my baby.' When really I could have thought 'oh no these doctors are really trying to scar my baby.'

This distance—and learning from other women about their challenges with breastfeeding—gave Georgianna a feeling of obligation to normalize supplementing and formula feeding for other women.

> I think at this point, because I'm so okay with it, there's probably no one I wouldn't tell. And I think that's two fold, one because I hate lying and I don't feel like I need to repress anything or keep quiet about things and then another part is because I think I definitely get into my moments where I'm on a soapbox or feel like I'm very pro woman or feminist or anything like that so I think a part of me would feel like I'm just perpetuating the problem if I'm not open and honest about my parenting struggles or that I do formula feed and that that's okay. So I think that's another reason why, if someone were to ask, I'd be nope she's just formula fed. I think how I say it, how I deliver it, and how soon I weaned is still hard for me. I didn't even go through the entire maternity leave which I thought I was going to do but I started before that.

Georgianna also reflected on the social norms around feeding and sleep, and how she saw there only being one right answer for how babies should be fed (breastfeeding), whereas there were more options for sleeping arrangements.

> I was going to say maybe in my experience, and I don't know if that's just because it's my experience, I feel like there is more of a spectrum for sleeping than there is for breastfeeding. It seems for breastfeeding everyone knows the right answer is breastfeeding is best. I don't know it seems like that to me. Again and I might be super sensitive about it but--… I believe everyone agrees that on your back is the best. And it could be also my social circle or maybe articles that I just happened to find but it seems like co-sleeping versus baby sleeping on their own is either way depending on parents' philosophy. And sleeping in a room for a year versus having baby into a crib in their

> own room as soon as you're ready also seems like it's parents' choice. Those parents who make their choice have their own philosophy and there's a following for that philosophy for sure. But it still seems like there's a lot of pros to both or arguments for both or followings for both or philosophies for both. Or strong cultures. But there doesn't seem to be a good enough argument for formula feeding. It's breast is best and you can't here's your other option. And that's fine but I think that's how I'm observing it.

Georgianna struggled with using formula because she had internalized this belief that there were no "good" reasons to use formula. At no point during her multiple visits with LCs, her doctor, and her daughter's pediatrician did anyone implicitly or explicitly give Georgianna permission to stop pumping, or suggest that it was OK if she stopped pumping. All of her conversations with people in the medical community were framed in terms of "supplementation," which implied continued pumping. It is possible they did not suggest exclusive formula feeding because they knew how determined she was to breastfeed; or perhaps Georgianna did not remember anyone saying it was OK. It is impossible to know if she would have been ready to hear that message until her best friend gave her the "tough love" talk; it is equally unknowable how much longer Georgianna would have pumped had she not reached out for support from others, in particular the influential conversations she had with her step-father and her best friend.

IV. DISCUSSION

The AAP regularly updates its recommendations for breastfeeding and infant safe sleep in order to promote these behaviors among parents and caregivers. Despite the recommendations—and several public health initiatives to promote these behaviors—not all families follow the recommendations. The Theory of Planned Behavior is one theoretical model that has been previously applied to breastfeeding and infant sleep position in an effort to understand why families do (or do not) follow the recommendations. The TPB accounts for how attitudes, subjective norms, and perceived behavioral control influence intentions, and how those intentions lead to the performance of a given behavior. The TPB does not, however, account for any influences (e.g., experience over time) that occur between the time when an intention is developed and the behavior is performed. This might be acceptable for a one-time behavior—or when there is little time between setting an intention and performing a behavior—but it limits the usefulness of the theory when there is considerable time between intention and behavior, and when the behavior is continuously repeated over time (as is the case for breastfeeding and safe sleep practices). This study addresses this limitation in two ways. First, the TPB was applied to longitudinal data from eight first-time mothers to thematically assess the elements of the TPB. These analyses identified new elements of attitudes and perceived behavioral control that have not been previously reported. And second, to apply principles from the Ecological Framework to address the limitations of the TPB when applied to longitudinal data. By attending to both contextual factors (from the Ecological Framework) and psychological factors (from the TPB), we gain a fuller understanding of how and why parents make infant care decisions. These complementary frameworks reveal several points of intervention to support families breastfeeding and safe sleep practices.

Several results from this study support the research findings from previous applications of the TPB. As with previous studies, women in this study tended to perform behaviors that they felt positively about, and did not perform behaviors about which they had negative attitudes. For example, all of the women had positive attitudes about breastfeeding, and they all attempted the behavior (though some with limited success). Additionally, women who had negative attitudes about room-shared did not continue the behavior for as long as recommended, or even as long as they originally intended.

The results from this study also replicated the previous finding that subjective norms about breastfeeding are not predictive of women's intention to breastfeed. Though the TPB would predict a significant relationship between subjective norms and intentions, the lack of a relationship could be explained in two non-mutually-exclusive ways. First, the social norms could not be present. This is likely not the case because all of the women reported social pressure to breastfeeding. Second, women are not motivated to comply with the subjective norms. The TPB theorizes that subjective norms are only influential when people are motivated to comply with the expectations of those around them. Results from this study showed that women were aware of the subjective norms to breastfeed but were not highly motivated to comply.

None of the previous TPB research found a direct relationship between perceived behavioral control and either breastfeeding or safe sleep behaviors. For this relationship to be present, perceived behavioral control would have to closely align with actual behavioral control, meaning that women would have to be able to account for and overcome all challenges they faced while attempting to perform the behavior. The occurrence of insufficient milk supply is a strong example of how this is not always the case. Some theorize that insufficient milk supply is a psychologically-based "syndrome" (e.g., Hill & Humenick, 1989) and not physiologically

based. If this is true, then women should be able to overcome this issue and stick to their breastfeeding intentions. Unfortunately, the research does not support this hypothesis. Duckett and colleagues (1998) found that insufficient milk supply was directly related to behavior and was independent of all other TPB factors. This suggests that insufficient milk supply is a real phenomenon and one that women cannot overcome simply through will power and hard work. Georgianna exemplifies this finding. She was *passionate* about breastfeeding, was well supported by her family, and activated several personal and medical resources (e.g., doctors and LCs) to increase her milk supply. Georgianna eventually decided to transitioned completely to formula because her daughter was not sufficiently gaining weight and because some of her friends and family members grew concerned that the frequent pumping and the stress it was creating was not healthy for her.

The results from this study also support the findings from previous research that the TPB components (attitudes, subjective norms, and perceived behavior control) are related to each other (Duckett, et al., 1998). There was considerable overlap between these constructs within the current study. At times, as was the case with attitudes and subjective norms about bed-sharing, it was sometimes difficult to disentangle personal attitudes from more general subjective norms. There was also considerable overlap between breastfeeding attitudes and perceived behavioral control; the women with *pragmatic* attitudes about breastfeeding were more open to supplementing or exclusively feeding formula, and this impacted their level of dedication to following through with their breastfeeding plans. Further qualitative research could more carefully tease apart these constructs; or alternatively, further qualitative research could expand the attitudinal styles developed in this study to encompass all three TPB constructs.

Several results from this study add new context to previous research applications of the TPB. First, this study expands our understanding of women's attitudes about breastfeeding and infant sleep. None of the previous TPB research measured women's attitudes as they related to their identity as mothers (or how they conceptualized motherhood), or their general approach to infant care. This is the first study using the TPB framework to expand the definition of attitude to include how women anticipate how these behaviors will fit into their own lives. This expanded definition acknowledges that these behaviors happen between the mother-infant dyad. This study identified two types of attitudes, *passionate* and *pragmatic*. One prominent feature of these attitudes relates to either having a more infant-led (*passionate*) or parent-led (*pragmatic)* approach. These approaches to infant care have not been previously addressed in the TPB research, and they have been identified as important predictors of breastfeeding in a limited number of other studies (e.g., Radzyminski & Callister, 2016). The *passionate* and *pragmatic* attitudes are likely not mutually-exclusive, as evidenced by Jane and Catherine endorsed both types of sleep-related attitudes. They are more likely to be continuous scales, with variability across each of the attitudes' defining factors. Further research with a more diverse sample would strengthen our understanding of the factors that make up these attitudinal styles.

The results from this study also emphasize the importance of including women's plans to return to work as a critical component of perceived behavioral control. The TPB breastfeeding model from Avery and colleagues (1998) theorized that returning to work was predictive of behavior but not of intentions. This study shows that not to be the case for both breastfeeding and infant sleep practices. In fact, returning to work (and their ability to pump at work) was a driving force behind both breastfeeding and sleep plans. This is likely applicable for women beyond the narrow sample of this study. For example, if a woman has to return to work within weeks of

giving birth and knows she will not be able to pump, she would likely not intend to breastfeed long-term, if at all. In situations such as this, interventions aimed at increasing perceived behavioral control or improving attitudes or subjective norms would be insufficient because they would not be addressing the underlying reason that the woman did not plan to breastfeed.

The proposed Cyclical TPB is also novel in its attention to potential changes over time, as well as how the performance of a behavior can feed back into attitudes, subjective norms, and perceived behavioral control. The idea that infant safe sleep practices occur in a cyclical nature is not new, however. The Mothers' Infant Sleep Safety Cycle (Lau & Hall, 2016) addresses the struggle to adapt, recognizing that infant sleep situations are fluid, cyclical, and influenced by a variety of factors (e.g., not only knowledge of best practices). The Cycle framework consists of five stages: (a) sleep safety expectations, (b) struggling with reality, (c) expectation modification, (d) rationalizing modifications, and (e) reevaluating infants' developmental capabilities. Mothers start with expectations, struggle when their expectations and reality do not match, revise and rationalize their expectations, and then reassess their situation based on their infants' current developmental state. The cycle repeats as infants develop new skills and their sleep patterns mature. The cycle is also influenced by how the mother perceives others' needs, such as taking over nighttime waking so her partner can sleep, or worrying about a crying infant waking an older child. Attitudes and judgment from friends, family, health care professionals may also affect the cycle; mothers may try advice from others, or may hide their practices because they fear judgment from others. Resource availability and accessibility can affect the cycle; resources include typical material and monetary resources as well as information and help from others. Conceptualizing resources this way is similar to the ecological framework. The Mothers' Infant Sleep Safety Cycle is limited compared to the Cyclical TPB and the Ecological Framework,

however, because it is behavior-specific and had not been applied to other behaviors (e.g., breastfeeding).

In addition to supporting and expanding several previous findings, this study's most significant contributions come from the ecological assessment, which illustrated the complexity of the early postpartum months. Georgianna's ecological assessment revealed several themes that were relevant for all or some of the other women. First and most importantly, feeding and sleep practices are interdependent and should be treated as such in future research. Second, the "breast is best" messaging leaves little room for women to feel supported when they cannot or do not want to breastfeed. Georgianna's experience is a clear example of how access to, and use of, medical and informal resources is not always sufficient. To frame this in terms of the TPB, Georgianna's perceived behavioral control was high and correlated with her actual behavioral control (in terms of her access to resources and willingness to use them), but there were factors beyond her control that made long-term breastfeeding untenable. This, in addition to the results from the TPB analyses, should raise concerns about interventions solely focusing on the TPB constructs without considering physiological and contextual factors that also influence parenting behaviors.

Strengths and Limitations

Strengths. The main strength of this study is the wide and deep scope of its qualitative and longitudinal data. Allowing participants to answer open-ended questions revealed that previous research too narrowly defined all of the TPB constructs. My position as an insider to the experience of motherhood was also a strength of this study. Drawing on my own experiential knowledge led me to ask questions others would have missed or not have drawn out during the analysis process (e.g., parenting style).

Limitations. The major limitation of this study is its homogenous sample of relatively privileged women. The recruitment procedure were designed to recruit a diverse sample, but several procedures resulted in no eligible participants. There are several potential reasons for the lack of diversity and overall difficulty with recruitment. First, participating in this study required a significant commitment from expectant first-time mothers. All of the women in this study had at least 12 weeks of maternity leave, so they may have found it less burdensome to participate than women who returned to work far earlier. Several women said they wanted to participate because they wanted to be reflective about their transition to motherhood. It is reasonable to assume that not all women have this desire to be introspective. Second, though I presented myself as outside of the medical community, I suspect that some women who saw my presentations were uncomfortable with the idea of sharing their experiences with a stranger, or with someone who had a level of academic expertise on the topic. Third, related to the second point, I also suspect that me being a white woman might have been a deterrent to some women's participation. Black and Latinx women would rightfully be hesitant to share their challenges with someone like me—the literature on breastfeeding and infant safe sleep predominantly focuses on deficits and what women do "wrong." Pregnancy and the early postpartum months can be difficult without having someone ask probing questions about how you care for your baby. And finally, results from this study show how many expectations are placed upon women when they become mothers (e.g., stigma for formula feeding, social norms against bed-sharing). I am genuinely surprised anyone wanted to share their experiences with me, let alone be so open and honest about their process.

External validity. The external validity of the results from this study is limited to women who fit the general characteristics of the sample, and likely do not apply to single mothers,

women without similar levels of economic and social resources, and non-white women. The results also likely do not apply to same-sex couples.

Although the results may not generalize, the construct definitions (i.e., attitudes, subjective norms, and perceived behavioral control), the Cyclical TPB, and the principles of the Ecological Framework have wide applicability and would be useful in understanding the aforementioned contexts that the current study does not address.

When I intervened. There were two general topics where—if the participant brought up the issue or I suspected something potentially dangerous was occurring—I crossed that invisible barrier between researcher and participant. First, if I suspected that a participant was experiencing symptoms of postpartum depression, I would ask her gentle and more specific questions about how she was feeling. This happened with three of the women; in each instance I inquired about their access to support and resources, normalized their feelings in a supportive way, and offered to assist with finding resources if they wanted the help. I expressed to these women—as well as the others—that their well-being was one of my top priorities and that it superseded the importance of their data or completing the study.

Second, during the prenatal interviews I told all the participants that I would not give advice or information unless it was regarding the practice of sleeping on a couch with their infant. I explained that co-sleeping on a couch was the most dangerous place for an infant to sleep. I brought up this issue again during a phone interview with one participant when she mentioned that she and her husband were co-sleeping on a couch with their infant. I expressed empathy for their sleep deprivation and suggested alternatives. By the next phone interview the participant reported that they had stopped the practice.

Recommendations for Interventions, Public Health Messaging, and Policy

The results from this study support several different recommendations for interventions, public health messaging, and public policy aimed at increasing breastfeeding rates and infant safe sleep practices. First, interventions solely focused on psychosocial constructs (i.e., attitudes, subjective norms, and perceived behavioral control) are limited in their ability to address known and unknown contextual barriers to breastfeed. Interventions should include information on addressing known barriers, such as teaching women about their legal rights to pump at work and breastfeed in public, and helping women navigate company policies to advocate for themselves.

Interventions should also inform women of potential unknown barriers, such as low milk supply, and that women are *not* at fault when they cannot overcome these barriers. The point at which a woman stops breastfeeding (because of a bad latch or low milk supply) is going to be different for every woman, but interventions and public health messaging would better support women if they acknowledged that it was OK to stop. Catherine, Georgianna, and Lydia all experienced external pressure to breastfeed even when it was detrimental to their own mental health. Georgianna's family and friends saw how much she was struggling and they all told her it was ok if she stopped. This was a turning point for her, and it is possible that if Catherine and Lydia had received similar messages, they too would have felt more positive about their overall experience.

Second, safe sleep messaging should more carefully consider the needs of the mother-infant dyad. The AAP's safe sleep recommendations are limited because they fail to address the underlying reasons why families bed-share and/or stop room-sharing before 6 months—that parents are desperate for adequate sleep. When asked how parents should handle long-term room-sharing, a members of the AAP Task Force on SIDS said that "parents will probably need

to get used to it" (Cain Miller & Carroll, 2016). This framing suggests there is no point at which parents can consider their own needs along with the needs of their infant. It also implies that parents are not allowed to air their frustration or ask for help. The SIDS/SUID research data may support the room-sharing recommendation, but parents will not follow it if their own sleep needs are not being met.

The fact that all of the women in this study endorsed mostly *pragmatic* attitudes about sleep says something about the nature of sleep—that it is a basic human need that cannot be substituted. The women overwhelmingly were more concerned about sleep than feeding because they knew that if they could not breastfeed they would be able to feed their babies formula. There is no analogous substitute for sleep. Additionally, because sleep is something that is primarily done in private, it is much easier for families to omit or lie about sleep to others, including pediatricians. Charlotte, for example, said, "And I think I wouldn't tell anybody if I did [fall asleep with her baby].[14]" Comments suggesting that parents should "just get used to" poor sleep can make them feel it is not safe to share their challenges with anyone. This can shut down important lines of communication through which families could be getting important safety information. The women's endorsement of mostly *pragmatic* attitudes about sleep also may say something about the cultural perspective of this homogenous sample.

Third, and most importantly, the challenges that many women face are related to their short and financially- and legally-precarious maternity leave. The women in this study are unique in their privilege, with at least 12 weeks of maternity leave and the ability to pump breastmilk at work. Their plans to return to work factored heavily in both their feeding and sleep plans, and we can assume this is true for most women in the United States. The only way to continue increasing

[14] Charlotte actually did bed-share during the first two weeks, but by the time of the follow-up interview had forgotten that she had.

breastfeeding and safe sleep practices rates is to work towards large systemic policy change that provides parental leave for new parents, and makes pumping at work accessible to more women.

Conclusion

The Theory of Planned Behavior has limited applicability to understanding infant feeding and safe sleep practices over time. Results suggest that either a Cyclical TPB, the Ecological Framework, or a combination of the two, could add to our understanding of how these behaviors are performed over time. This study identified several points of intervention, and made recommendations for such interventions and public policy.

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APPENDIX A IRB Approval
Approval Notice
Continuing Review

December 6, 2018

Hillary Rowe, MA
Psychology
Phone: (206) 963-7331 / Fax: (312) 413-4122

RE: Protocol # 2016-0904
"How First Time Mothers Problem-Solve Infant Feeding and Sleep Challenges in the First Six Months of Life"

Dear Ms. Rowe:

Your Continuing Review was reviewed and approved by the Expedited review process on December 6, 2018. You may now continue your research.

Please note the following information about your approved research protocol:

Please note that investigator training for Susan Altfeld expired on 08/04/2018, and she currently is not eligible to engage in research protocols submitted to the UIC IRB. All investigators and key personnel involved in human subjects research must complete a minimum of two hours of investigator training in human subjects protection every three years.

Protocol Approval Period: December 16, 2018 - December 15, 2021
Approved Subject Enrollment #: 20 (8 Subjects enrolled; closed to enrollment)
Additional Determinations for Research Involving Minors: These determinations have not been made for this study since it has not been approved for enrollment of minors.
Performance Sites: UIC, Catholic Charities WIC Food Centers
Sponsor: Department of Psychology, Provost Deiss Award for Graduate Research
PAF#: Not available, Not available
Grant/Contract No: Not available, Not available
Grant/Contract Title: Not available, Not available
Research Protocol(s):

a) How New Mothers Use Infant Care Advice During the First Six Months of Life; Version 3; 10/03/2017

Recruitment Material(s):

a) N/A – Closed to enrollment

Informed Consent(s):

a) N/A – closed to enrollment

Your research meets the criteria for expedited review as defined in 45 CFR 46.110(b)(1) under the following specific category(ies):

(6) Collection of data from voice, video, digital, or image recordings made for research purposes., **(7)** Research on individual or group characteristics or behavior (including but not limited to research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Please note the Review History of this submission:

Receipt Date	Submission Type	Review Process	Review Date	Review Action
11/20/2018	Continuing Review	Expedited	12/06/2018	Approved

Please remember to:

→ Use your **research protocol number** (2016-0904) on any documents or correspondence with the IRB concerning your research protocol.

→ Review and comply with all requirements on the guidance,
"**UIC Investigator Responsibilities, Protection of Human Research Subjects**"
(http://research.uic.edu/irb/investigators-research-staff/investigator-responsibilities).

Please note that the UIC IRB has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

Please be aware that if the scope of work in the grant/project changes, the protocol must be amended and approved by the UIC IRB before the initiation of the change.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact OPRS at (312) 996-1711 or me at (312) 996-9299. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Allison A. Brown, PhD
IRB Coordinator, IRB # 2

Office for the Protection of Research Subjects

Enclosure(s): None

cc: Michael E. Ragozzino, Psychology, M/C 285
Amanda Roy (Faculty Sponsor), Psychology, M/C 285
OVCR Administration, M/C 672

APPENDIX B Interview Guides
Semi-Structured Interview Guides
Demographic Questionnaire

For Researcher Use Only Participant ID:_____ Date:_____

Infant Care Advice Study Demographic Questionnaire—Prenatal Interview

1. How old will you be on your expected due date? _____

2. How do you identify either racially or ethnically? _____

3. What is your current relationship status with your baby's father?

_____

4. Are you currently employed? _____

Answer the following questions if you are currently employed:

a. How many hours do you typically work per week? _____

b. What are your plans for work after the baby is born (e.g., maternity leave, when you plan to return to work, etc.)? _____

_____

5. What is your approximate average annual family income (income that is available to you and your baby)?

_____

6. Circle your current education level
a. Some High School
b. High School Graduate / GED
c. Some College, No Degree
d. Associates Degree (e.g., AA or AS)
e. Bachelor's Degree (e.g., BA or BS)
f. Some Post Bachelor's Education, No Degree
g. Master's Degree (e.g., MA, MS, MSW)
h. Professional Degree (e.g., MD, JD, DDS)
i. Doctorate Degree (e.g., PhD, EdD)

7. Who do you live with (e.g., partner/spouse, in-laws, etc.)?

Prenatal Interview

As we talked about before I am interested in learning more about how first time mothers navigate the transition to motherhood. During this interview I will ask you about you think it will be like after your baby is born, where you've gotten information on taking care of your baby, and what—if anything—you have already done to prepare to bring your baby home. And then at the future interviews I'll ask you about how things are going, whether you've run into any challenges with feeding or sleep, and how you have problem-solved those issues. There are no right or wrong answers to any of the questions; I just want to know what your experiences have been and what you expect in the future.

We'll start off with some general questions.

1. Confirm due date

2. How is your pregnancy going so far?

3. How is work going for you in these last months?

4. How are you thinking and feeling about the transition to motherhood?

5. What do you imagine the early months of motherhood will be like?

Infant Feeding

6. Have you thought about how you will feed your baby?
    - 3 months
    - 6 months

7. How strongly do you feel about sticking to this plan?

8. What do you think feeding your baby will be like?
    - first 3 months
    - first 6 months
    - has your partner shared thoughts/feelings?
    - what would make you happy?

9. (If returning to work) What do you think feeding your baby will be like when you return to work? Will anything be different?

10. Tell me a little bit about how you decided—or how you will decide—how you would feed your baby. What has been particularly influential for you? For example, have you observed a friend or family member with her new baby, or have you gotten advice from someone?

11. How have you dealt with receiving advice/information that hasn't matched with how you have felt? (Or if only received congruent advice) How would you feel if someone gave you advice that didn't match what you wanted to do for your baby?
    - Most trusted?

- Least trusted?

12. Do you feel like you are supported in your plan for feeding your baby? OR do you feel like you would be supported when you do choose a feeding plan?

13. Have you bought, registered/received, or thought of buying, any supplies or devices that will help you feed your baby?
- Pillow
- Covers
- Nursing bra/shirts
- Breast pump
- Bottles
- Bottle warmer
- Nipple shield
- Nipple cream

14. Have you thought about when you might start feeding your baby solid foods?

15. Have you thought about how you might start feeding your baby solid foods (e.g., spoon feeding, baby-led weaning)?

16. What or who has informed your ideas about—and how you feel about—introducing solid foods?

17. Who or what are sources of advice (e.g., friends, family, online, medical professionals, etc.) that you would go to if you needed help with or had questions about feeding your baby?

18. Before we move on to talking about infant sleep, is there anything you'd like to add about your thoughts or feelings around how you will feed your baby?

Infant Sleep

Now I'm going to ask you some questions about how and where you expect your baby will sleep.

19. What do you think your sleep and your baby's sleep will be like:
Probe: for the first three months?
Probe: or the first six months?

20. Have you thought about where your baby will sleep over the course of the first six months?
Probe: Location
Probe: Are there multiple location options? (e.g., crib, bassinet, swing, etc.)
Probe: Will location differ during the day?

21 How strongly do you feel about sticking to this plan?

22. How do you plan to dress/cover your baby during sleep?
Probe: Blanket

Probe: Swaddle
Probe: Sleep sack

23. Tell me a little bit about how you decided—or how you will decide—how and where your baby will sleep? By "how" I mean how you will put your baby to sleep or help your baby sleep or stay asleep for longer. For example, have you observed a friend or family member with her new baby, or have you gotten advice from someone?

Probe: Has your baby's father shared an opinion on your baby's sleep? (give specific relationship name, e.g., husband, boyfriend, etc. If not a heterosexual couple, partner, wife, etc.). If so, what?

Probe: Doctor/medical professional
Probe: Parents/In-laws
Probe: Extended Family
Probe: Friends
Probe: Books/Magazines
Probe: Online groups, e.g., Facebook, parenting forums/blogs

24. How have you dealt with receiving advice/information that hasn't matched with how you have felt? OR How would you feel if someone gave you advice that didn't match what you wanted to do in terms of your baby's sleep?

Probe: Whose advice would you trust the most and/or take into consideration?
Probe: Whose advice would you trust the least?

25. Talk to me a bit more about what you expect when it comes to your and your baby's sleep. How do you think things will go?

Probe: What do you hope will happen in terms of your baby's sleep during the first six months?
Probe: Has your partner shared any expectations he/she has about all of your sleep?
Probe: What might be hard about your baby's sleep?
Probe: (If returning to work) What do you think your baby's sleep will be like when you return to work? Will anything be different?

26. When do you think your baby will be able to sleep for:

Probe: at least two hour stretches
Probe: at least three hour stretches
Probe: at least five hour stretches
Probe: at least eight hour stretches
Probe: Not wake up at all during the night (may wake, but doesn't need help resettling)

27. Do you feel like you are supported in your plan for your baby's sleep? OR do you feel like you would be supported when you do choose a plan for your baby's sleep?

Probe: Partner
Probe: Doctor/medical professional
Probe: Parents/In-laws
Probe: Extended Family
Probe: Friends who don't have kids

Probe: Friends who do have kids

28. Who or what are sources of advice (e.g., friends, family, online, medical professionals, etc.) that you would go to if you needed help with feeding your baby?

29. Have you bought, registered for/received, or plan to buy any products aimed at helping babies sleep?

Probe: Soothers (e.g., vibrating dolls or vibrators that sit under the crib mattress)
Probe: White noise machines
Probe: Humidifiers
Probe: Swaddle blankets or swaddle wraps
Probe: Sleep sacks
Probe: Mobiles
Probe: Swings, Rock ‘n Plays, etc.
Probe: Essential oils or lotions

30. Have you bought, registered for/received, or plan to buy any products aimed at increasing safety while they sleep, like products that monitor infant movement or oxygen level while they sleep?

31. What do you think of the practice of room-sharing, which is sharing a room—but not a sleep surface—with your baby?

32. What do you think of the practice of bed-sharing, or sleeping with your baby in the same bed, either part of the night or for the full night?

33. What do you think of the practice of teaching or training your baby to sleep?

Just a few more questions

34. So far we’ve been talking about your baby’s sleep and feeding separately, but I’d like to hear if or how you’ve thought about your baby’s sleep and feeding more holistically. For example, how one might affect the other, or how they may interact with each other.

Probe: Do you think that will change over time?
Probe: Why or why not?

35. What matters most to you when you think about feeding your baby?

36. What matters most to you when you think about your baby sleeping?

37. Some parents follow certain parenting philosophies that guide how they want to raise their children. Do you have any kind of parenting philosophy that may also be guiding some of what we’ve talked about today?

38. How do you feel after speaking with me today? Do you have any questions about the study?

Bi-Monthly Phone Interview

Thank you so much for taking the time to speak with me today. For this conversation, please think back over the last two weeks for all your answers.

1. How have the last two weeks been going?

2. Have there been any changes in the last two weeks, either for you or your baby?

3. Have you had any difficulties with your baby's feeding or sleep in the last two weeks?
   Probe: If so, what was the difficulty?
   Probe: How did you try to problem-solve that difficulty?

For these next two questions, think about the whole of yesterday, starting in the morning and into last night and this morning.

4. What did your baby eat yesterday?
   Probe: Approximately how many times?
   Probe: Where were all the places your baby was fed? For example, while being held in a chair/on the couch, in bed, at the table, in an infant seat, etc.
   Probe: Who fed your baby?

5. How did your baby sleep yesterday?
   Probe: When you put your baby to sleep yesterday for both naps and at night, how did you position your baby?
   Probe: Was the sleep position always the same, or did you place your baby down differently for different sleeps?
   Probe: How many naps did your baby take yesterday?
   Probe: Where did your baby sleep during those naps?
   Probe: Were all nap locations the same?
   Probe: Where did you put your baby to sleep last night?
   Probe: How many times did your baby wake up last night?
   Probe: What was the longest stretch of sleep your baby got last night?
   Probe: Did your baby sleep in the same place all night, or did you move your baby to any other sleep surfaces last night?
   Probe: What did your baby wear to bed last night?
   Probe: Did you use any sleep sacks or swaddles?
   Probe: Did you use any monitoring devices?

6. Final question, how are you doing?

Follow-Up Interview

As we've talked about before, I am interested in learning more about how first-time mothers problem-solve when they have difficulties with their babies' sleep or feeding. Over the past three months we've had our bi-monthly check-ins; today we're going to do another one of those, plus some more general questions about how your overall experience during this transition. As always, there are no right or wrong answers to any of these questions; I just want to know what your experiences have been and how they have compared to your expectations prior to giving birth.

1. How have the last two weeks been going?

2. Have there been any changes in the last two weeks, either for you or your baby?

3. Have you had any difficulties with your baby's feeding or sleep in the last two weeks?
   Probe: If so, what was the difficulty?
   Probe: How did you try to problem-solve that difficulty?

For these next two questions, think about the whole of yesterday, starting in the morning and into last night and this morning.

4. What did your baby eat yesterday?
   Probe: Approximately how many times?
   Probe: Where were all the places your baby was fed? For example, while being held in a chair/on the couch, in bed, at the table, in an infant seat, etc.
   Probe: Who fed your baby?

5. How did your baby sleep yesterday?
   Probe: When you put your baby to sleep yesterday for both naps and at night, how did you position your baby?
   Probe: Was the sleep position always the same, or did you place your baby down differently for different sleeps?
   Probe: How many naps did your baby take yesterday?
   Probe: Where did your baby sleep during those naps?
   Probe: Were all nap locations the same?
   Probe: Where did you put your baby to sleep last night?
   Probe: How many times did your baby wake up last night?
   Probe: What was the longest stretch of sleep your baby got last night?
   Probe: Did your baby sleep in the same place all night, or did you move your baby to any other sleep surfaces last night?
   Probe: What did your baby wear to bed last night?
   Probe: Did you use any sleep sacks or swaddles?
   Probe: Did you use any monitoring devices?

So now I'd like you to think more generally about the last three months. And after that we'll talk more in-depth about feeding and sleeping separately.

6. How have the last three months been going?
    Probe: How have you been feeling?
    Probe: Have you had any health-related or other issues related to pregnancy/delivery/etc. since your baby was born?
    Probe: And how is your baby doing?

7. (ask if M was planning to return to work) Have you returned to work?
    Probe: How has returning to work been for you?
    Probe: How did your routine change when you returned to work?
    Probe: Do you feel like you've settled into a new routine?
    Probe: Who is caring for your baby while you're at work?

8. How has all of this compared to how you thought it would be?
    Probe: How are you adjusting to your new role as a mom?
    Probe: How is the rest of your family adjusting?

So now we'll talk about feeding your baby, and how that has been going over the past three months.

Infant Feeding

9. At our first interview you said (whatever she said at her first interview). How has your experience compared to what you thought it would be like?
    Probe: Has anything gone particularly well?
    Probe: Has anything been unexpectedly difficult?
    Probe: How do you feel about that?

10. In the last three months, has there been anything that has made you change or rethink your original expectations for feeding your baby?
    Probe: This could either be something you've learned along the way or experiences you've had.
    Probe: Or it could be maybe information or advice you've gotten from someone, or having observed someone else with her child.
    Probe: Has your partner said that his/her expectations have changed since your baby was born?

11. In each of our phone check-ins we've talked about any new information or advice you may have gotten when you were trying to problem-solve a difficulty you were having. Was there anything that was particularly useful to you, or any particularly unhelpful information or advice?
    Probe: What was the advice?
    Probe: Where or from whom did you get that information (e.g., friends, family, online, medical professionals, etc.)?
    Probe: Did you use the advice?
    Probe: Did you find it useful?

12. How have you dealt with receiving advice/information that hasn't matched with how you have felt? OR How would you feel if someone gave you advice that didn't match what you wanted for your baby?

Probe: Whose advice would you trust the most and/or take into consideration?
Probe: Whose advice would you trust the least when it comes to information about how to feed your baby?

13. Is there anyone that you purposely do not tell about how you're feeding your baby?

Probe: Who haven't you told?
Probe: Why have you decided not to tell them?

14. Do you feel like you are supported in how you are feeding your baby?

Probe: Partner
Probe: Doctor/medical professional
Probe: Parents/In-laws
Probe: Extended Family
Probe: Friends who don't have kids
Probe: Friends who do have kids

15. [Check previous weekly interviews] Have you started feeding your baby solid foods (e.g., something other than breast milk or formula)?
If YES,

Probe: When did you start feeding your baby solid foods?
Probe: What kinds of solid foods has your baby tried?
Probe: How did you decide it was time to start feeding your baby solid foods?
Probe: Did you get advice from someone about it?

If NO,

Probe: Have you thought about when you might start feeding your baby solid foods?
Probe: Have you thought about how you might start feeding your baby solids?
Probe: What kinds of solid foods do you think you will start with?
Probe: What or who has informed your ideas about, and how you feel about introducing solid foods?

16. Talk to me a bit more about how feeding your baby is going. What has feeding your baby been like?

Probe: How has the experience been overall?
Probe: Has it changed at all in the last three months? (e.g., breast to bottle)

17. How has feeding your baby been the same or different from what you expected?

Probe: have you had any successes (e.g., personal triumphs)?
Probe: Have you had any difficulties (e.g., personal setbacks)?

18. If returned to work: How has feeding your baby changed since you returned to work?

19. What do you hope will happen in terms of your baby's eating during the next 3 months?

Probe: Has your partner expressed any hopes or expectations about your baby's eating during the next 3 months?

20. Who or what are sources of advice (e.g., friends, family, online, medical professionals, etc.) that you would go to if you needed help with feeding your baby?

Probe: Has this changed over time? Is there someone who you would now go to that you wouldn't have before, or someone you are not going to ask for advice anymore?

21. Before we move on to talking about how your baby is sleeping, is there anything you'd like to add about your thoughts or feelings around feeding your baby?

Infant Sleep

22. How is sleeping going for you overall?

Probe: Your sleep
Probe: Baby's sleep
Probe: Partner's sleep
Probe: Other family members' sleep

23. Tell me a little bit more about where your baby sleeps.

Probe: Are there multiple location options? (e.g., crib, bassinet, swing, same room or different room, etc.)
Probe: Does location differ during between day and night? (Especially if child care is out of the home)
Probe: Does your baby sleep in the same place during the whole night? Or do you move your baby at different times of the night? Tell me more about what a typical night of sleep looks like for you and your family.

24. How do you dress/cover your baby when it sleeps? (e.g., blanket, swaddle, sleep sack, etc.)

25. Is there anything in the sleep locations with your baby?

Probe: Blankets
Probe: Pillows
Probe: Comfort objects
Probe: Stuffed animals

26. At our first interview you said (whatever she said at her first interview). How has your experience compared to what you thought it would be like?

Probe: Has anything gone particularly well?
Probe: Has anything been unexpectedly difficult?
Probe: How do you feel about that?

27. In the last three months, has there been anything that has made you change or rethink your original expectations for your baby's sleep?

Probe: This could either be something you've learned along the way or experiences you've had.

Probe: Or it could be maybe information or advice you've gotten from someone, or having observed someone else with her child.
Probe: Has your partner said that his/her expectations have changed since your baby was born?

28. In each of our phone check-ins we've talked about any new information or advice you may have gotten when you were trying to problem-solve a difficulty you were having. Was there anything that was particularly useful to you, or any particularly unhelpful information or advice?
Probe: What was the advice?
Probe: Where or from whom did you get that information (e.g., friends, family, online, medical professionals, etc.)?
Probe: Did you use the advice?
Probe: Did you find it useful?

29. How have you dealt with receiving advice/information that hasn't matched with how you have felt? OR How would you feel if someone gave you advice that didn't match what you wanted for your baby?
Probe: Whose advice would you trust the most and/or take into consideration?
Probe: Whose advice would you trust the least when it comes to information about how to feed your baby?

30. Is there anyone that you purposely do not tell about how your baby is sleeping?
Probe: Who haven't you told?
Probe: Why have you decided not to tell them?

31. Do you feel like you are supported in how your baby is sleeping?
Probe: Partner
Probe: Doctor/medical professional
Probe: Parents/In-laws
Probe: Extended Family
Probe: Friends who don't have kids
Probe: Friends who do have kids

32. Who or what are sources of advice (e.g., friends, family, online, medical professionals, etc.) that you would go to if you needed help with your baby's sleep?
Probe: Has this changed over time? Is there someone who you would now go to that you wouldn't have before, or someone you are not going to ask for advice anymore?

33. Talk to me a bit more about your baby's sleep. How is it going so far? How are you doing?
Probe: How long does your baby typically sleep at night before waking up?
Probe: How long does your baby typically nap?
Probe: How is it putting your baby to sleep? What do you typically do?
Probe: Have you been having any difficulties with your baby's sleep?

34. Has your baby slept in your bed with you?
Probe: Was that planned or unplanned?

Probe: What was/were the reason(s) you bed-shared?

35. Have you bought, received, or plan to buy any products aimed at increasing safety while they sleep, like products that monitor infant movement or oxygen level while they sleep?

36. Do you have any plans to sleep-train your baby, or teach your baby to sleep through the night by not responding to its cries (if they haven't already)?
Probe: How do you feel about the idea of sleep training?
Probe: (If yes) Do you know which method you will use?

37. Have you heard of any sleep consultant agencies?
Probe: What do you think about that service?
Probe: (If yes) Have you considered using one?

38. What do you hope will happen in terms of your baby's sleep during the next 3 months?

39. When do you think your baby will be able to sleep for:
Probe: At least two hour stretches
Probe: At least three hour stretches
Probe: At least five hour stretches
Probe: At least eight hour stretches
Probe: Not wake up at all during the night (may wake, but doesn't need help resettling)

Just a few more general questions

40. So far we've been talking about your baby's sleep and feeding separately, but I'd like to if or how you've thought about or experienced feeding and sleep more holistically. For example, how feeding might affect sleep.
Probe: Have you noticed a relationship between feeding and sleep?
Probe: How do you see feeding and sleep being related to each other
Probe: Have you noticed any changes in the relationship between feeding and sleep over the past three months?
Probe: Do you think the relationship between feeding and sleep will change in the next three months?

41. Over the next three months, what matters to you most when thinking about feeding your baby?

42. Over the next three months, what matters to you most when thinking about your baby's sleep?

43. Some parents follow certain parenting philosophies that guide how they want to raise their children. Do you have any kind of parenting philosophy that may also be guiding some of what we've talked about today?

44. Thinking back to how you felt before you had your baby, have you or your partner rethought your parenting style or philosophy?

Probe: How has it changed?

45. How do you feel after speaking with me today? Do you have any questions about the study?

APPENDIX C Code Book

Code Book

Category / Subcategory		Description
THEORY OF PLANNED BEHAVIOR	**Intentions**	Plans for infant care
	Feeding	How women planned to feed their infants, includes substance (e.g., breastmilk, formula, etc.) and delivery method (e.g., nursing, bottle feeding, etc.)
	Sleep Location	Planned sleep surface (e.g., crib, bassinet) and location (e.g., parents' room, separate room) of that sleep surface for infant sleep
	Sleep Position/Cover	Position placed for sleep: prone, supine, or side. Cover: e.g., sleep sack, swaddle, etc.
	Planned Duration	How long women planned to continue their intended behavior
	Max Duration	The point at which women planned to stop their intended behavior
	Strength of Commitment	How strongly the women felt about adhering to their plan
	Attitudes	Attitudes about their intended behavior
	Beliefs and Expectations	Beliefs about the importance (or lack of importance) of the behavior. Expectations for how it would go and how they would feel about performing the behavior.
	Room-Sharing	Women's feelings about the practice of room-sharing
	Bed-Sharing	Women's feelings about the practice of bed-sharing
	Sleep Training	Women's feelings about the practice of sleep training
	Social Norms	Women's perceptions of expectations regarding the behavior. Including expectations of friends and family members
	Influences	Anything that influenced the women's decision to breastfeed, including: advice from medical community, friends and family modeling the behavior, feelings about it as a natural behavior, books they've read, social media groups, etc.
	Motivations to Adhere to Norms	Response to implicit or explicit norms. Includes discussions of how they adhere to or go against perceived norms
	Perceived Behavioral Control	How much control women felt they--as an individual--had over their success in doing their intended behavior
	Control Beliefs	How much control women felt that anyone would have over the outcome of performing the intended behavior
	Anticipated Challenges	Any challenges that women anticipated experiencing with the intended behavior (breastfeeding, for example: latch problems, insufficient milk supply, pumping at work, etc.; sleep, for example: sleep deprivation, difficulties returning to work, etc.)
	Caveats to Plan	Any reason(s) women gave for why they may not meet their goals (breastfeeding, e.g.,: depending on pumping at work, knowing other women who were unable to breastfeed, etc. sleep, e.g., may end room-sharing early so everyone sleeps better, concerns about sleep deprivation when returning to work, etc.)
	Level of Support	If women felt supported in their plan by influential people in their lives, e.g., husbands, extended family, work supervisors, friends, etc.
	Return to Work Situation	How returning to work--and their work environment--would affect their ability to follow-through with their intended behavior. (breastfeeding, e.g.,: pumping accessibility at work, including topics such as: dedicated space, supportive supervisors, time in schedule, etc. sleep, e.g.,: ability to function on less than a full night's sleep, etc.)
	Sources of Advice	Where/to whom women would go to for advice if they experienced challenges with their intended behavior, includes people/places women would *not* go to for help or advice

Codebook, cont.

Category / Subcategory		Description
ECOLOGICAL FRAMEWORK	**Resources**	Anything a woman/family may seek out or use
	People	Anyone of influence within the family's social network
	Informal Advice	Advice, information, or support from non-medical professionals, e.g., friends, family
	Informal Intervention	Anytime a non-medical professional acts in a way to intervene with the family, e.g., mother-in-law coming over to watch the baby while parents sleep; friend sending a box of infant care supplies (products)
	Medical Advice	Advice, information, or support from medical professionals, e.g., OB-GYN, pediatrician, LC
	Medical Intervention	Anytime a non-medical professional acts in a way to intervene with the family, e.g., admitting infant to NICU, nurses feeding infant formula while in hospital
	Settings	Structural elelments of the environment that affect behavior (e.g., availability of a second room (nursery), new moms' groups with open settings that allow for mingling vs. settings that are more like classrooms)
	Events	Experiences, including challenges that arise
	Planned Events	E.g., visits from friends and family, or going to scheduling infant check-ups with a pediatrician, vacations
	Unplanned Events	E.g., unexpected encounter with a friend or family member, unexpected challenges when performing intended behaviors
	Products	Any products that families use to aid in performing their intended behaviors, or to address challenges
	Coping and Adaptation	Behavior changes in response to events within the system
	Interdependence	Any time when one behavior (e.g., feeding) affects or impacts the other (e.g., sleep)
	Succession	Time, primarily indicating when events occurred and resources were activated. Also indicates duration of behaviors
SYSTEMS CONTEXT	**Flexible Work Schedule**	Either woman or her husband having flexibility in their work schedule
	Parenting Philosophy	Question: Thinking about parenting on a continuum, with one end being entirely parent-directed and parent-focused (everything on the parents' schedule) and the other end being entirely baby-directed and baby-focused (everything on the baby's schedule), where do you see yourself and how you're approaching this?
	Maternity Leave	Anticipated maternity leave, including: duration, if it was covered by employer or the Family and Medical Leave Act (FMLA) (not every woman was specifically asked if it was paid leave, many of them volunteered that information)
	Other Help	Included: husband's paternity leave, family visiting from out of town, in-town family helping with childcare/etc.
	Mental Health	Any mention of the women's mental health throughout the interview; was not asked about directly
	Getting Advice	How the women generally felt about getting unsolicited or solicited advice, and how they anticipated handling that type of situation
	Emotional Labor	The work (visible or invisible) that women do to manage the transition to having a baby and the planning for infant care, for example: planning the nighttime routine, strategizing how to get baby to and from daycare, etc.
	Division of Labor	Women's plans and expectations for how infant care labor would be divided between her and her husband, often including the women describing their husbands' plans and expectations for how they would be involved in infant care

APPENDIX D Phone Interview Coding
Phone Interview Coding Instructions

We need to collect summary information from each of the phone call transcripts. These do not have to be quotes unless you think a quote would be useful. Below is a template of the form that you will fill out for each phone call. The text in red are the instructions/descriptions for what type of information we need for each section. Note that I ask for more information in the interview than I am asking you to put in here.

Interview Week: Week in transcript file name **Date:** Date in transcript file name
*Note: not all women were interviewed every two weeks, so it's ok if one is missing from the 2, 4, 6, 8, 10, 12 sequence.

Feeding: All I am interested in here is what baby is eating and if mom is pumping. In the early weeks, it's likely to be exclusively breastfeeding (EBF), though some women were exclusively pumping (EP) and one eventually went to exclusive formula (EF). There were also women who were primarily breastfeeding and supplementing with formula. In those cases you can say just that "primarily breastfeeding and supplementing with formula # bottle per day" and note when they say that bottle is being fed; I usually asked, and it seemed to be mostly the bottle right before bedtime, but it wasn't always.

Nighttime Sleep Location and Wakes/Night: All I want here is the sleep surface (usually a Rock & Play, a bassinet, or a crib) and then where (parents' room, baby's room/nursery, or some other room—usually the living room). Also include how many times the baby tends to wake up each night, sometimes women gave a single number or would give a range about what was typical.

These first two areas—feeding and nighttime sleep location—should be pretty short, no more than a sentence or two, and you can also just type short-hand, nothing too fancy.

The Challenges and Changes section (below) is where I'm trying to capture all the ways that women are either using resources to address an issue, or how they are trying to cope or adapt to a change. I am defining resources very broadly, including asking for help from friends or family, getting advice from a lactation consultant. Resources can also be the items they use to try to deal with a challenge. Basically, I want to know what women are doing to get through the first few months—are they having problems and how are they dealing with them.

The Challenges and Changes section can be repeated as many times as needed. For example, they may have problems with both feeding and sleep one week, or may have several problems with feeding in one week and use a bunch of different strategies to try to address one challenge. In the case of using multiple strategies to address one challenge, you can number the strategies below that one challenge, or you can just have the same challenge listed multiple times with a single strategy below it. There might also be weeks where they don't report any challenges, and you can just write that.

The information for the challenge/change section usually comes up when I ask them if they've had any changes, and it can also come up when I ask them if they've used any new products (sometimes they'll lead with the new product and then I'll discover a new challenge they've had).

Challenge/Change: this can be anything from sore nipples, low milk supply, sleep deprivation, problems latching, etc.
What Did She Do To Address The Challenge: This can also be just about anything, and can also be more than one thing. For example, if the challenge is sleep deprivation, the woman and her husband might each take a shift at night, they have a family member come over to watch the baby while they sleep, they might try a different swaddle, or they might move the baby to another room (see the note up above—it's ok to list them all under the same challenge, or to create a new challenge header for each strategy).

OVERALL: Be sure to read through the entire transcripts, some conversations were more fluid than others, and information can come up throughout.

APPENDIX E Participant Summaries

Participant Summaries

Elizabeth. (White; 33 years old; spring due date/delivery; PhD, employed full time)

Prepartum Plans and Expectations. Elizabeth was generally excited, happy, and nervous about becoming a parent, though she expressed that the reality of becoming a mother had not set in yet. She imagined the early months would be hard and stressful, and that she would get very little sleep. Elizabeth planned to take 12 weeks of maternity leave; her husband planned to take 2 weeks leave after the baby was born, and considered using vacation time if needed. Elizabeth and her husband also anticipated semi-regular help with infant care from their parents.

Breastfeeding. Elizabeth planned to breastfeed for 6 months to a year, but said she might wean the baby earlier if she had difficulty breastfeeding or if pumping proved a problem when she returned to work. If this happened, she did not *plan on getting depressed* about it. Overall, Elizabeth was not looking forward to breastfeeding. She thought it sounded like *a challenge and a chore* and she did not expect it to be *this big joyful bonding thing*. Elizabeth preferred to breastfeed over formula feeding, but viewed it as *the default* rather than a *choice*.

Sleep. Elizabeth expected the baby's sleep (and therefore her own) to be *terrible* during the early months. She planned to use a bassinet in her room until around 4 months, and then transition her daughter to a Pack 'n Play (PnP) in the nursery when they began sleep training; she rejected the idea of following the AAP recommendation to room-share up to a year. She did not want to bed-share—citing concerns that it would affect her marriage—but said she would *see how I feel later*. She planned to place her daughter to sleep on her back, and to use a swaddle for nighttime sleep. Elizabeth was eager to sleep training her daughter as soon as possible because *I want my sleep, and I want her to learn to sleep*. She felt more strongly about sleep training than about breastfeeding, citing concerns about being sleep-deprived when she returned to work at 3 months.

Reality at Follow-Up. Overall, the first 12 weeks went well for Elizabeth and her family, though at times she felt overwhelmed and exhausted. She and her husband have been able to do self-care activities in part because their parents, particularly her mother-in-law, were regularly helping with infant care; Elizabeth felt the first 12 weeks would have been very difficult without her mother-in-law. She was becoming increasingly anxious about returning to work, specifically about getting enough sleep to function. Elizabeth would not return to work for another two weeks, but was already preparing for the transition by pumping (to build a stockpile of breast milk), and feeding her daughter expressed breast milk in a bottle. She had also scheduled a practice-run at the daycare: she planned to stay at the daycare some or all of the day to observe.

Breastfeeding. Elizabeth's daughter had a brief stay in the NICU, during which the NICU nurses fed her formula while Elizabeth was strongly encouraged to pump. It was challenging to wean her daughter off formula and transition to EBF, but Elizabeth and her husband were able to do that within a week or so after returning home from the hospital. Elizabeth did not experience any major challenges or complications with breastfeeding, though she did have common issues such as engorgement and pain initially with latching. Her daughter did not have any problems latching until the day prior to the 12-week interview; Elizabeth was unsure of the cause, and planned to ask her pediatrician if the problem continued. Elizabeth's feelings about breastfeeding did not significantly change postpartum.

Sleep. The sleep deprivation was difficult for Elizabeth and her husband, and it was much harder than she expected. Elizabeth transitioned her daughter to the PnP in the nursery after room sharing for two weeks; the baby was a loud sleeper and Elizabeth felt this was a good move for

the entire family. Prior to moving her daughter to the nursery, Elizabeth spoke with pediatrician, who approved of the move. Elizabeth was eager to sleep train, and had made a separate appointment with her pediatrician specifically to discuss sleep training. At the time of the follow-up interview, Elizabeth's daughter was typically waking once a night to nurse.

Catherine. (White; 31 years old; spring due date/delivery; MA, employed full time)

Prepartum Plans and Expectations. Catherine was excited about becoming a mother, and was trying to focus on being mindful about the process. She felt it was better to be open to multiple possibilities because she knew she could not possibly know how her life would change. Catherine planned to take 4 months of maternity leave, using her employer-offered 3 months of leave and then using paid time off (vacation and sick leave) for the fourth month. Her husband planned to take 4 weeks of leave when she returned to work, so someone would be home with their son through the first 5 months, at which point they hoped to join a nanny-share.

Breastfeeding. Catherine planned to breastfeed for at least six months, and nurse on-demand while she was on maternity leave. She valued the *simplicity and minimalism* of breastfeeding, and chose to breastfeed because it felt natural and was best for babies. She felt *fairly strongly* about adhering to her plan, but also felt she had to be open to alternatives if it was too difficult or if she was unable to breastfeed. Catherine planned to pump when she returned to work and nurse when she was with her son; her office had a lactation room, and she thought that it would be easy to pump and store milk while at work.

Sleep. Catherine was mentally preparing herself for the lack of sleep during the early months. Catherine and her husband lived in a one-bedroom apartment, so room sharing—at least initially—made the most sense to them. Catherine felt that room-sharing, and even bed-sharing made sense on a basic human level, that it was natural for a baby to want to sleep near their caregiver. Catherine had already thought through possibly buying a larger bed or *kicking my husband out to the couch* in order to reduce the risks of bed-sharing; she was also well-informed about other contextual factors that increase SUID risks during bed-sharing. Catherine was less open to the idea of sleep training her son, she was not sure how that would make her feel or if she could handle letting her son cry for extended periods without comforting him. However, Catherine expressed concerns about her own sleep, saying that she needs sleep to feel good, and does not function well on no sleep. Therefore, she was not entirely opposed to some type of sleep training.

Reality at Follow-Up. Overall, the first 12 weeks—particularly the first 3 weeks—were challenging for Catherine and her family. She felt that having and caring for a baby was *way harder* than she thought it would be. Initially she struggled with very strong emotions, *crying every single day, feeling overwhelmed* during the first 3 weeks, but by the 12-week interview she felt more like herself and that she was *getting used to it*. Catherine still had one more month of maternity leave and her husband would take a month of paternity leave she returned to work.

Breastfeeding. Catherine had difficulties with latching from the time she was in the hospital; the LC hypothesized that her son was having an adverse reaction to breastfeeding because he had been born with fluid in his lungs. The hospital staff encouraged her to pump, and during the early weeks she favored feeding him breastmilk through a bottle over nursing because she was concerned about him gaining weight and knew nursing was more difficult for him. An LC came to her house, but Catherine said *it didn't really help.* She tried several times to nurse

during the preceding 12 weeks, but was essentially exclusively pumping. She was disappointed that she could not breastfeed, but said she would feel worse if he was not getting breastmilk. Catherine planned to exclusively pump until 6 months and then reevaluate.

Sleep. Sleep had also been challenging for Catherine and her family; her son was waking three times a night. In an effort to make sure she and her husband got several hours of uninterrupted sleep; Catherine and her husband took different shifts during the night. The baby slept in a bassinet in the living room: Catherine's husband stayed in the living room until midnight with the baby so Catherine could sleep, then Catherine was responsible for feedings and changes from midnight until the morning. Her son's difficult and unpredictable sleep schedule had led her to reconsider sleep training; she planned to speak with her pediatrician about it at their next visit.

Georgianna (Puerto Rican; 29yrs old; spring due date/delivery; MA, employed full time)

Prepartum Plans and Expectations. Georgianna was *very excited* to become a mother, and had had the *baby bug* for a few years prior. Georgianna's mother—who had passed away the year prior—had bi-polar disorder, which made her own mental health through the transition salient to her. Georgianna had 15-17 weeks of maternity leave, her husband planned to take 2 months of paternity leave right after the baby was born, and her college-aged twin sisters planned to spend the summer living at Georgianna's house. They planned to put their daughter in daycare when Georgianna returned to work. She was against having her mother-in-law care for her baby during the day; she did not want to cross that boundary with her in-laws.

Breastfeeding. Georgianna planned to breastfeed her daughter for approximately six to eight months. She was *really dedicated* to her plan to breastfeed, and said it was something she had always wanted to do. Georgianna was aware that some women have difficulty breastfeeding, and she was concerned that she might not be able to produce enough milk for her daughter. She said she would be *kind to herself* if she was unable to breastfeed, but wanted to stick to her plan as much as possible. Georgianna planned to pump while at work. She shared an office with a colleague, and thought it would be feasible to pump in her office.

Sleep. Georgianna was most worried about sleep, saying several times that she *loves* sleep. She planned to room-share for the first two months in a Rock n' Play (RnP) to make nursing easier, then transition her daughter to a crib in her own room quickly because she was *totally against* room sharing beyond three months. Her husband offered to take a night feeding, but this plan would not result in more sleep for her because she would likely have to pump at night.

Georgianna was determined not to bed share because of safety concerns, and was concerned about negative long-term effects on child development. Georgianna planned to sleep train no earlier than two months, though she was unsure of which technique she would use. She felt a sleep schedule and sleep training were important because *baby is going to have to work around mom and dad's work schedule*.

Reality at Follow-Up. The first few weeks were difficult for Georgianna and her family. Her daughter had jaundice and so they had to stay in the hospital longer than expected. Their primary struggles were with feeding (described below). Georgianna had not yet returned to work at the follow-up interview; she was anxious about returning to work. They had originally planned to put their daughter in daycare, but Georgianna saw some *red flags* there regarding safety issues

and she and her husband decided to have her mother-in-law care for their daughter during the day. This was not was Georgianna had originally wanted, but they had done several practice days and she had begun to feel more comfortable with the situation.

Breastfeeding. Georgianna struggled with breastfeeding from the very beginning and began pumping and supplementing with formula almost immediately when her daughter was treated for jaundice. During the first eight weeks, Georgianna consulted several LCs, her own doctor, and her daughter's pediatrician to help her be able to breastfeed. Her primary issue was that she was not producing enough milk and her daughter was not gaining weight, and they also experienced problems with latching. By eight weeks she had begun weaning because the frequent pumping schedule and the stress from trying to increase her milk supply was *not very good* for her mental health. She was spending 30 minutes pumping every 2-3 hours, meaning that she missed time with family and her baby. She decided to wean because she could not see herself continuing this schedule once she returned to work. Her husband and family supported her decision to wean—they knew she was *miserable*. By the follow-up interview, Georgianna was exclusively formula feeding and had come to terms with the disappointment she had felt about supplementing and weaning because, ultimately, *I needed my baby to eat.*

Sleep. Georgianna was very pleased with her daughter's sleep, and said it was *great*. They room-shared for the first eight weeks with their daughter in a bassinet. Her husband *broke* the bed-sharing rule: he brought the baby into their bed to rock her to sleep and then he fell asleep. Georgianna disapproved, and took her daughter and put her back in her bassinet. This seems to have only happened one time. They transitioned their daughter to her own room around eight weeks because she was a noisy sleeper and she was affecting their sleep. Around the same time, their daughter also began consistently sleeping all the way through the night; they did not sleep train, their daughter *never cries* when they put her in her crib at night. They stopped fully swaddling their baby around ten weeks and were currently swaddling the lower half of her body because she liked to suck her hand or thumb to self-soothe.

Jane (White; 36 years old; summer due date/delivery; BA, employed full time)

Prepartum Plans and Expectations. Jane and her husband were *super* excited to become parents; she felt lucky that they had no problems conceiving despite their age. Jane generally approached parenthood with a *beginner's mind*, and wanted to be mindful throughout the birth and the early months. Jane planned to take at least 12 weeks of maternity leave; with that and her husband's flexible work schedule they planned to delay daycare for the first six months. Neither Jane nor her husband had much family in the area; their mothers each planned to travel to visit during the first few weeks, and Jane and her husband planned a 10-day trip out of state to visit family approximately six weeks after the baby was born.

Breastfeeding. Jane had thought *lots* about breastfeeding; she planned to breastfeed for six months to a year, and noted that she would wean when they tried to conceive their second child.[15] She felt *very strongly* about adhering to her plan, but acknowledged her high expectations could disappoint her. Jane decided to breastfeed because it was a natural human process, she valued the benefits of breastfeeding, and because her mother and several of her friends had breastfed. She had not figured out how feeding would change when she returned to work. She thought she would be able to pump in her office, and she was hopeful that she would be able to nurse at lunch on occasion because she worked very close to her home.

Sleep. Jane felt that it was *silly* to try to anticipate what sleep would be like, she hoped to be able to get three-hour stretches of sleep, but acknowledged that it she did not have a choice in the matter. They planned to room-share with their daughter in a bassinet for the first six months, at which time they would transition her to a crib in her own room. Jane knew that room sharing was recommended, and she saw the practical benefits it had to nighttime infant care. She would consider moving her daughter to her own room earlier than six months if it helped everyone sleep better. Jane received mixed messages about bed sharing: she knew the medical community did not recommend it, but her birthing class instructor promoted the practice. They agreed that it could be dangerous, but she was more nervous about it than her husband was.

Reality at Follow-Up. Jane was *totally happy* being a mom. She was overwhelmed in the beginning mainly due to the sleep deprivation, but by around six weeks postpartum they had all seemed to find a groove, she characterized their situation as *just chugging along*. Jane began going to a breastfeeding support group after her daughter was born, and was still attending the weekly event at the time of the follow-up interview. She attended for the support from other women and not specifically for any breastfeeding support from the LCs who ran the event. Jane's husband returned to work after two weeks, but was able to work mostly at nights and on the weekends so that their daughter was with the nanny only about 16 hours/week. Jane found returning to work to be *a real struggle*; she decided that she did not *need to get an A+ back at work*. She was able to pump in her office with no issue.

Breastfeeding. Jane initially had trouble with cracked and sore nipples, but was able to get through it without any major issues. Her daughter had a great latch and her supply was sufficient, and there were no concerns about the baby gaining weight. Jane started pumping and stockpiling breastmilk at four weeks, and introduced the expressed breastmilk in a bottle at six weeks. They shortly experienced a latching problem around ten weeks after they gone on a trip out of state; Jane was able to *trick* her daughter into nursing by starting with a pacifier in her mouth and then switching in her breast for the pacifier. Jane was still committed to her original breastfeeding plan, and would wean when trying to conceive her second child.

[1515] Jane emailed me in the fall of 2018 to tell me she had her second child.

Sleep. Sleep was challenging during the first four weeks. Though Jane was nervous about bed sharing, she reported sporadically bed sharing partway through the night at four weeks. Her husband wanted to bed-share, but Jane was nervous about it. They did some more research on the topic and by six weeks had decided that they would not bed-share. Their daughter continued to sleep in her bassinet in their room. They briefly tried doing graduated extinction at night during the eighth week; Jane said she could not *leave her crying for more than 3 minutes*. They tried this only briefly, and decided by the time of the follow-up interview that sleep training was not necessary because her sleep was so consistent. Jane's daughter began sleeping all the way through the night (no wakes for feeding) between ten and twelve weeks. The baby went back to waking one to two times per night when Jane returned to work. Overall, though, Jane and her husband were content with their current sleep situation.

Mary (White; 31 years old; summer due date/delivery; BA, employed full time)

Prepartum Plans and Expectations. Mary felt very confident and optimistic about having a baby, but she felt it was ultimately *not something you can prepare for in any way*. Mary did not qualify for maternity leave or FMLA because she had not been at her job for a year, and was planning to use short-term disability to take her 12 weeks of maternity leave. Mary's husband had seven weeks of paid leave from his company; he planned to take the first couple weeks off and then work a few days a week until Mary returned to work. Mary and her husband did not have family living nearby, but they had a strong social support network through their church and online communities.

Breastfeeding. Mary planned to *attempt breastfeeding* for at least the first three weeks; she wanted to introduce a bottle—either expressed breastmilk or formula—around that time so her husband could do night feedings. She did not want nurse *around the clock*. Mary was not strongly attached to the idea of breastfeeding. She described herself as *pragmatic* and ultimately wanted her *baby to be fed*, and did not *give a crap about* the stigma that often comes with formula feeding.

Sleep. Mary felt that the most important thing about sleep *is that the parents can survive*. She expected her emotional status to surprise her in the early months because she does not *operate very well* when sleep deprived. They planned to room-share for the first three months, using a PnP bassinet. Mary wanted to transition their daughter to her crib in her own room *as soon as possible*, which she defined as not before six months. Mary did not want to bed-share because she worried about smothering her baby. Mary and her husband naturally had different sleep patterns—she would go to bed early and he would stay up into the early hours of the morning—so they planned to continue this schedule once their baby was born. They had set up a *loose* schedule on a spreadsheet as a way to plan for their shifts. Mary *definitely love[d]* the idea of sleep training, though she recognized that a lot of any strategy's success would depend on her ability to follow-through with a plan.

Reality at Follow-Up. Overall, things were going well for Mary and her family at the follow-up interview. Mary had returned to work prior to the interview; Mary's husband used some of his remaining paternity leave during this time to help with the transition. Breastfeeding and sleep were both going really well. The primary challenges Mary faced were the result of her workplace. Prior to going on maternity leave, Mary's supervisor implied that she would have flexibility in her work schedule when she returned. This was not the case, and Mary was upset

about the process and about how little time she was getting to spend with her daughter. Mary experienced additional challenges with pumping at work, which are discussed below.

Breastfeeding. Mary experienced several common challenges in the early weeks of breastfeeding, including cracked and sore nipples, and a *sloppy* latch. Mary and her baby were able to overcome these challenges and were successfully breastfeeding at the follow-up interview. Mary was originally unsure of how long she would breastfeed, but she revised her original goal and was now planning to breastfeed for at least one year. As planned, Mary began pumping almost immediately so her husband could help with nighttime care. Her daughter took well to the bottle and did not experience any nipple confusion.

Mary faced several bureaucratic challenges related to pumping when she returned to work; though she had a private office, she was initially unable to pump in it because her interior-facing walls were windows and the organization for which she worked would not allow her to cover the windows. The nearest lactation room at her work was in a separate building and was not well managed. Mary—with the help of her supervisor—was able to work with the organization's administration to get a privacy shade.

Sleep. Mary described her daughter's sleep as *embarrassingly better* than what she had expected. Mary and her husband stuck to their plan to take shifts at night, with Mary going to bed early and her husband staying up late. This strategy worked well for them because their shifts aligned with their typical sleep patterns. At the follow-up interview, Mary's husband was able to do the one night feeding while Mary slept, so Mary was not experiencing any sleep deprivation due to nighttime feedings. They quickly learned that room sharing did not make sense for them given their shift schedule, and moved the PnP bassinet to the living room within a few days of returning home from the hospital. Neither Mary nor her husband ever co-slept with their daughter. They had not tried any sleep training strategies because they were content with their current sleep situation.

Charlotte (White; 33 years old; fall due date/delivery; BA, employed full time)

Prepartum Plans and Expectations. Charlotte was very excited to become a mom, and she thought it would be *fantastic*. She also knew it would be *stressful, [and] really difficult.* She planned to take 8 weeks of maternity leave; her husband had two weeks of leave, but with the holidays he essentially had an extra week. Charlotte described herself and her husband as very calm and relaxed, and predicted that they would "*probably going to break a bunch of rules because I know I feel totally fine about it.*

Breastfeeding. Charlotte *definitely wanted* to try to breastfeed for at least the first 3 months, and planned to wean of breastfeeding by around 6 months. Her mother and sister were unable to breastfeed, so Charlotte was cautiously optimistic but knew *there's genetic reasons* why she might be unsuccessful. Charlotte felt really dedicated to her breastfeeding plan, and felt that it was *just all natural.* Charlotte worked in the service industry, she anticipated being able to pump at work but was not sure there would be a dedicated space for her to do so. One of her coworkers with whom she was close was also expecting a child around the same time (her third child) so she was helping Charlotte think through the logistics of pumping at work.

Sleep. Charlotte assumed *the worst* when it came to sleep. Her biggest concern was being able to get enough sleep, though she thought she would be able to function on five to six hours of sleep. She planned for her son to room-in with her and her husband, sleeping in a bassinet, for

the first 3 months; after 3 months, she considered moving him to the crib in a separate room. She felt *pretty strongly* about sticking with her plan, but was open to transitioning her son to his own room earlier if he was a noisy sleeper. Charlotte was *not into* bed sharing because her husband represented several risk factors that would make bed sharing too dangerous.

Reality at Follow-Up. Charlotte felt that, overall, things had been going well after some initial challenges. Charlotte unexpectedly delivered her son via C-section two and a half weeks early; her son was born at a low birth weight, so in addition to having initial troubles with EBF, they were concerned about him gaining weight. Charlotte's maternity leave was longer than expected because her husband accepted a new job on the east coast. She extended her maternity leave and did not return to work at eight weeks; she was spending the extra time preparing to move. Charlotte planned to look for work in their new location once they relocated.

Breastfeeding. Charlotte experienced difficulties breastfeeding while in the hospital: she met with two LCs during her stay who *were like not helpful at all.* Concerned about her son's weight gain, she pumped and supplemented with formula until she could meet with the LC in her insurance network, which happened around 4 weeks postpartum. With the LC's help, Charlotte was able to resume breastfeeding, and was *95%* breastfeeding by 12 weeks, supplementing formula one bottle a day, typically the last feeding before putting her son to bed. Charlotte wanted to continue to breastfeed and pump once she returned to work, but was unsure it would be possible in a new job.

Sleep. Sleep was challenging during the first few weeks because Charlotte's son would only sleep while someone held him. Charlotte bed-shared for about a week because it was the only way they could get sleep; she moved her son to a RnP in their room after that week because she was concerned that bed-sharing was too risky. At the 12-week interview, Charlotte's son was still sleeping in the RnP and was waking three to five times a night to nurse. Charlotte planned to sleep train at some point, using a graduated extinction method, though she currently felt like his sleep was *good* and that *it's hard for me to like change that*. She did plan to move her son to his crib in their room at 3 months, and then move his crib into a separate room at 6 months.

Lydia (White; 26 years old; fall due date/delivery; some college, employed full time)

Prepartum Plans and Expectations. Lydia was one of 11 children from an observant Catholic family. Lydia's mother had raised them to *go natural with everything*, (e.g., breastfeeding, bed sharing, no vaccinations), and Lydia was generally skeptical of most medical advice. As one of the youngest in the family, Lydia had seen a wide spectrum of parenting behaviors from her siblings. Lydia was resistant to implicit pressures from her family to practice the *attachment parenting* behaviors to which many of her siblings ascribed. However, she was confident that she could set her own course and her family would still support her.

Lydia planned to take 12 weeks of unpaid maternity leave; she did not qualify for FMLA because she split her full-time hours between two offices, and she did not work 30 hours at either location. Her husband did not have paid leave from his job, but had saved up PTO to be home for the first week. Both Lydia and her husband had large extended families within an hour's drive, though Lydia was resistant to relying on them for regular help with childcare. Lydia planned to bring her baby to work with her; she had a private office at her primary job and had the support of her supervisor to try it out. Finances were a salient concern for Lydia and her husband; money was the driving force behind Lydia's plan to bring her baby to work.

Breastfeeding. Lydia planned to breastfeed, but noted that she *wanted to do it my [her] own way, though.* She had seen some of her nieces and nephews unable to take a bottle, and she did not want her baby to *be completely attached* to her. She did not have a plan for pumping at work because she intended to bring her baby to work with her; however, she did plan to pump at home to build a stockpile for times when she was away from her son. Lydia was open to formula because she was not sure she would be able to produce enough milk. Lydia did not want to breastfeed past one year because she felt it was awkward when toddlers can ask to nurse.

Sleep. Lydia was unsure of what her baby's sleep would be like, but she was expecting to be nursing every 2-3 hours around the clock for the first few months. In terms of sleep location, Lydia had an idea of what she wanted, but was prepared to *play it by ear*. Lydia wanted her son to sleep in a Moses basket on her bed, but she was unable to find one. She wanted something like this because she wanted the baby on the bed with her but was worried about rolling onto him while sleeping. She planned to *kick* her husband out of their bed for the first few months to make this arrangement less risky. Lydia planned to room share for about four to five months; she did not want the arrangement to go on too long because she did not want her son to be dependent on having someone else in the room to sleep. Lydia planned to do some type of sleep training around five months.

Reality at Follow-Up. Prior to returning to work, Lydia determined that bringing her son to work with her was not feasible. She and her husband intended on hiring a nanny, but Lydia's mother offered to watch their son while Lydia was at work; her mother did not like the idea of a stranger watching the baby. After the first few weeks, Lydia was solely responsible for nighttime care because her husband's job required him to be up early in the morning. Lydia was nervous about leaving the baby with her husband because he was inexperienced and was still unsure of himself as a parent, which left Lydia to do most of the labor related to infant care.

Lydia was generally resistant to advice that she perceived as judgmental.[16] For example, a friend told her not to warm bottles in the microwave because the liquid does not evenly heat;

[16] All of the participants were willing to disregard advice or information that was incompatible with their parenting behaviors. Lydia was different from the rest in how she described these types of events, how often they occurred, and how personally she took the advice. Her siblings, and some of her friends, frequently offered unsolicited

Lydia was adamant that shaking the bottle and testing the temperature on her wrist was enough. In another instance related to sleep, several of Lydia's friends and family members publicly scolded her on Facebook for trying a graduated extinction method of sleep training at around two months. In both cases, Lydia was insistent that she had done nothing wrong; she stopped posting about sleep on Facebook and stopped going to these friends and family for advice.

Breastfeeding. Lydia began supplementing with formula within days of returning home from the hospital; she did not feel like she was producing enough milk. Lydia started pumping around the same time as a way to help her milk come in. She went to exclusively pumping within weeks because her son would not nurse. People in her family told her that he would not nurse because he was becoming accustomed to eating from a bottle and had *nipple confusion.* Lydia rejected this explanation, and instead attributed his "nursing strike" to his previous negative experiences and struggles with the strong flow of milk when nursing. Lydia changed her breastfeeding goal, and now planned to wean around six or seven months because exclusively pumping was too difficult. At the time of the follow-up interview, Lydia was pumping and storing her milk, but feeding her son exclusively formula; she suspected something about her milk was causing his poor nighttime sleep.

Sleep. Lydia began bed sharing shortly after returning home from the hospital, and it took on several different iterations throughout the first months. Lydia was solely responsible for nighttime infant care: she would co-sleep with the baby on her bed (in her arms, next to her, or in a co-sleeper) and her husband slept on the couch. This general arrangement was still happening at the follow-up interview, though Lydia had stopped bed sharing and instead had her son sleeping in an inclined seat (a PnP attachment) on the floor next to her bed. Her husband's frustration with the sleep situation prompted Lydia to try transitioning her son to his crib in his own room around two months. She started with naps and tried a graduated extinction method to get him used to the space and sleeping flat on his back.

Lydia also struggled with her son waking approximately 4-5 times per night. She brought this up with a friend of hers, who suggested that Lydia may not be feeding her son enough at night (she was feeding him approximately 2oz) and he could be waking because he was hungry. He began to sleep longer stretched when Lydia fed him a more age-appropriate amount of formula at night—and explicitly said she was using formula to help him sleep better at night. She was also concerned that he was not drinking enough formula during his middle of the night feedings, so she purposely kept him awake for about an hour each time he woke up to make sure he drank a full bottle.

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advice—sometimes scolding her for doing something of which they did not approve. Lydia often took this personally and stopped seeking advice from those who had offended her.

Caroline (White; 37 years old; winter due date/delivery; BA, employed full time)

Prepartum Plans and Expectations. Caroline and her husband had difficulties conceiving, so they were preparing and excited to become parents but also she felt like *it's not real yet*. Caroline's winter due date influenced how she envisioned the first months, particularly that she would not know *what's up and down* for the first weeks. Caroline planned to take 12 weeks of maternity leave, after which she would return to work full time and her son would spend two days a week at home with her mother or mother-in-law and three days at daycare.

Breastfeeding. Caroline planned to breastfeed for 6 months, definitely during her maternity leave, and then she would *play it by ear* when she returned to work. She chose to breastfeed because she believed in the health benefits for her baby, noting that it was currently the recommendation though it had not always been. She also chose breastfeeding because all of her friends had tried. She did not feel that strongly about her goal, and said she would be okay if she did not make it to 6 months; Caroline said that breastfeeding for a year felt *like a really long time*. She planned to try pumping when she returned to work, but was also open to supplementing with formula.

Sleep. Caroline planned to have her son sleep in a PnP bassinet in their room until she returned to work at 12 weeks; she said the AAP recommendation to room-share for a year seemed *insane* to her. She did not feel strongly about her plan and said that it depended on how they were all sleeping. Caroline assumed that sleep training would be *part of their life at some point*, saying, *I know it has to be done*, though she did not know what method she would use. She did not want to bed share because she was concerned about safety; to avoid accidentally falling asleep with her baby during the night, Caroline planned to nurse and change diapers in the nursery.

Reality at Follow-Up.

Breastfeeding. Caroline had some latching issues in the days after arriving home from the hospital. She saw an LC during her second week at home; the LC's advice helped Caroline continue to breastfeed. In addition to the latching issues, Caroline also had mastitis a couple times, repeated clogged ducts, and oversupply at 4 weeks. She introduced bottles with breastmilk around 4-6 weeks to prepare for her first night out without the baby. Caroline's employer had several accommodations for employees who pumped during work, including pumping rooms on every floor that had schedules managed by an LC employed by the company, refrigerators in which to store expressed milk, and a medical-grade pump that was available for use. Reflecting on her feeding expectations, Caroline noted that breastfeeding—and especially pumping at work—was a *commitment* and that she would reevaluate her goals at six months because she was currently pumping three sessions a day, totaling 1.5 hours of her work day.

Sleep. Caroline felt *really lucky* because her son's sleep was better compared to the *horror stories* she had heard. They were room-sharing for the first eight weeks, her son slept in a bassinet in their room and she would take him to the nursery for night feedings and diaper changes. They transitioned their son into his crib in his own room around eight weeks, at which time he began waking once per night. They made the transition because she wanted to have her son in his own room before she returned to work, and the baby was keeping her and her husband awake at night because he was a noisy sleeper. Caroline and her husband tried several different sleep swaddles and sleep sacks to help their son sleep more soundly at night. They stopped using swaddles once he regularly broke out of them, their pediatrician said at that point they were *done with* swaddles.

Caroline's son still regularly napped in a swing; this made her feel like a *slacker* because

she thought she should be trying to make him more comfortable in his crib. Since she had returned to work, the burden of naps was primarily on the daycare as well as her mother and mother-in-law; she felt that her family members would have a more difficult time with sticking to crib napping because they would say, *he likes it [the swing], he'll stay in there.* Upon Caroline's request, her mother had tried putting her son in the crib to nap. Caroline's instructions to her were, *I was like give it a shot, let him cry for a little bit, and if it's too much, then take him out and whatever*. She said she probably would not strictly enforce crib napping until after he was four months old.

APPENDIX F Product Images

Product Images

Pack ‘n Play with Bassinet and Changing Table

Rock ‘n Play Sleeper[17]

[17] Fisher-Price recently voluntarily recalled the Rock ‘n Play sleeper due to its links to infant deaths (Hsu, 2019).

Traditional Crib Bumpers

Breatheable/Mesh Crib Bumpers

VITA

Hillary L. Rowe, M.A.

EDUCATION

PhD in Psychology **Anticipated June, 2019**
University of Illinois at Chicago
Dissertation title: "Addressing the Gap Between Recommended Infant Care Practices and Reality Using the Ecological Framework"
Minor in Statistics, Methods, and Measurement

MA in Psychology **2013**
University of Illinois at Chicago
Thesis title: "Diversity in School-Based Universal Social and Emotional Learning Program Evaluations"

BS in Psychology **2006**
University of Washington, Seattle

RESEARCH INTEREST

Investigating how research can better inform public policy aimed at improving aspects of health and wellbeing of families and children. My current research is focused on improving policy and public health messaging and community engagement aimed at reducing Sudden and Unexpected Infant Deaths (SUID), especially among families and communities most at risk.

PUBLICATIONS

Rowe, H. L. & Trickett, E. J. (2017). Student diversity representation and reporting in universal school-based social and emotional learning programs: Implications for generalizability. *Educational Psychology Review.* doi: 10.1007/s10648-017-9425-3

Altfeld, S., Peacock, N. **Rowe, H. L.**, Massino, J., Garland, C., & Smith, S. (2017). Moving beyond "abstinence-only" messaging to reduce sleep-related infant deaths. *Journal of Pediatrics.* doi: 10.1016/j.jpeds.2017.06.069

Peacock, N. Altfeld, S., Rosenthal, A., Garland, C., Massino, J., Smith, S., **Rowe, H. L.**, & Wagener, S. (2017). Qualitative analysis of infant safe sleep public campaign messaging. *Health Promotion Practice.* doi: 10.1177/1524839917690339

Gordon, R. A., **Rowe, H. L.,** & Garcia, K. (2015). Promoting family resilience through evidence-based policymaking: Reconsidering the link between adult-infant bedsharing and infant mortality. *Family Relations, 64,* 134-152. doi: 10.1111/fare.12099

Allen, J., Mohatt, G. V., Beehler, S., & **Rowe, H. L**. (2014). People Awakening: Collaborative Research to Develop Cultural Strategies for Prevention in Community Intervention. *American Journal of Community Psychology, 54(1-2),* 100-111. doi: 10.1007/s10464-014-9647-1

Gordon, R. A., **Rowe, H. L.,** Pardini, D., Loeber, R., White, H., & Farrington, D. P. (2014). Serious delinquency and gang participation: Combining and specializing in drug selling, theft, and violence. *Journal of Research on Adolescence, 24(2),* 235-251. doi: 10.1111/jora.12124

Repacholi, B. M., Meltzoff, A. N., **Rowe, H.,** & Toub, T.S. (2014). Infant, control thyself: Infants' integration of multiple social cues to regulate their imitative behavior. *Cognitive Development, 32,* 46-57. doi: 10.1016/j.cogdev.2014.04.004

Trickett, E. J. & **Rowe, H. L.** (2012). Emerging ecological approaches to prevention, health promotion and public health in the school context: Next steps from a community psychology perspective. *Journal of Educational & Psychological Consultation, 22(1-2),* 125-140. doi: 10.1080/10474412.2011.649651

PUBLICATIONS IN PREPARATION

Rowe, H. L. & McGrenera, M. C. (in prep). Examining the External Validity of Research Investigating the Link Between Parent-Infant Bed Sharing and Sudden Infant Death Syndrome Risk.

Trickett, E. J. & **Rowe, H. L.** (in prep). External validity of social and emotional learning program evaluations.

REPORTS

Gordon, R. A., **Rowe, H. L.,** & Garcia, K. (2014). Guarding all infants in sleep. *The Illinois Report 2014*. Institute for Government and Public Affairs, University of Illinois.

Rowe, H. L. & Gordon, R. A. (2014). Summary of unanswered questions regarding infant mortality during adult-infant bedsharing. Institute for Government and Public Affairs, University of Illinois.

AWARDS

Honors College-Graduate College Excellence in Undergraduate Mentoring Award. University of Illinois at Chicago, 2017. $750 Award

Provost & Deiss Award for Graduate Research. University of Illinois at Chicago. Spring, 2017. $2500 Research funding award

Jamie Carter Graduate Training Award. Department of Psychology, University of Illinois at Chicago, 2017. $400 Research funding award

Young Researcher/Student Award: International Conference on Advancing a Population Health Intervention Research Agenda. Center for Disease Control and Prevention & Texas A&M University. Montréal, Québec, Canada. March 26th, 2012

Travel Award for Small Samples Methodology Conference. University of Alaska Fairbanks. Conference date: August 17th & 18th, 2012

CONFERENCE PRESENTATIONS

Rowe, H. L. (June, 2017). Combining Community Psychology and Harm Reduction Principles to Address Bed-Sharing and Infant Safe Sleep. Presentation at the Society for Community Research and Action Biennial. Ottawa, Ontario, Canada, June 24th, 2017.

Altfeld, S. A., Peacock, N., Massino, J. **Rowe, H. L.**, Garland, C., Smith, S., & Wishart, M. (November, 2016). Comprehensive, Targeted, and Tailored Safe Sleep Promotion: Home Visiting and SUID Prevention. Presentation at the American Public Health Association Annual Meeting. Denver, Colorado, November 2nd, 2016.

Rowe, H. L. & Trickett, E. J. (June 2015). Examining the External Validity of The Research Investigating the Link Between Parent-Infant Bed-Sharing and Sudden Infant Death Syndrome Risk. Presentation at the Society for Community Research and Action Biennial Meeting. Lowell, Massachusetts, June 27th, 2015.

Rowe, H. L. & Trickett, E. J. (June 2015). Student Diversity in Universal School-Based Social and Emotional Learning Programs. Presentation at the Society for Community Research and Action Biennial Meeting. Lowell, Massachusetts, June 26th, 2015.

Hofer, K. G., Gordon, R. A., Lambouths, D. III., & **Rowe, H. L.** (2014). Does ECERS Preschool Quality Predict Children's Cognitive Growth: Meta-Analysis of a Dozen Datasets. Society for Research on Educational Effectiveness Spring Conference, Washington, D. C., March 6th-8th, 2014.

Coleman, B. R. & **Rowe, H. L.** (2013). Interdependence: Relationships as a source of validity. Presentation at the Society for Community Research and Action Biennial Meeting. Miami, FL. June 27th, 2013.

Rowe, H. L. (June, 2013). Diversity in School-Based Universal Social and Emotional Learning Program Evaluations. Presentation at the Society for Community Research and Action Biennial Meeting. Miami, FL. June 28th, 2013.

Trickett, E. J. & **Rowe, H. L.** (June 2013). External Validity of Social-Emotional Learning Programs. Presentation at the Society for Community Research and Action Biennial Meeting. Miami, FL. June 28th, 2013.

Gordon, R. A., **Rowe, H. L.,** Pardini, D., Loeber, R., White, H., & Farrington, D. P. (2012). Co-occurrence of drug selling, gun carrying, and gang participation among boys in the Pittsburgh youth study. Presentation at the American Society of Criminology Meeting. Chicago, IL, November 14th, 2012.

Repacholi, B. E., Toub, T. S., & **Rowe, H. L.** (June 2012). Infants' Early Emotion Attributions. International Conference on Infant Studies. Minneapolis, Minnesota. June 8th, 2012.

Rowe, H. L. & Trickett, E. J. (March, 2012). External Validity of Social-Emotional Learning Programs. International Conference on Advancing a Population Health Intervention Research Agenda. Montréal, Québec, Canada. March 26th, 2012.

Rowe, H. L. & Trickett, E. J. (June, 2012). External Validity of Social-Emotional Learning Programs. International Conference on Community Psychology. Barcelona, Spain. June 23rd, 2012.

Rowe, H. L. (June, 2011) Factors of External Validity of Social and Emotional Learning Programs. Society for Community Research and Action Biennial Conference, June 16-19, 2011, Chicago, IL.

Rowe, H. L., Christensen, C., Coleman, B., Gauvin, R., Gur, O., Mart, A., & Relyea, M. (2009, October). *Community research: Looking back, moving forward.* Poster presented at the annual Midwest ECO Conference, Chicago, IL.

Repacholi, B.M., Toub, T.S, & **Rowe, H.L.** (2009). *Can 15-month-olds use visual-perceptual cues to predict another person's emotions?* Poster presented at the biennial meeting of the Society for Research in Child Development, Denver, CO, April.

INVITED PRESENTATIONS

Coleman, B. R. & **Rowe, H. L.** (2013). Reflexive science: Intersubjectivity and dialogue as methodology. Presentation at the UIC Qualitative Research Methods Discussion Group Meeting, Chicago, IL, April 24th, 2013.

Trickett, E. J. & **Rowe, H. L.** (March, 2012). External Validity of Social-Emotional Learning Programs. Invited Presentation, University of Illinois Urbana-Champaign, March 1st, 2012.

TEACHING EXPERIENCE

Undergraduate Community Psychology Lab Instructor **Fall 2016**
Department of Psychology, University of Illinois at Chicago
Implemented a writing-focused practicum course in which student groups conducted qualitative and quantitative research projects

Undergraduate Introductory Statistics Instructor **Spring & Summer 2016-18**
Department of Psychology, University of Illinois at Chicago
Implemented a half-flipped classroom, integrating lectures with group activities to apply recently-learned statistical techniques

Graduate Colloquium on the Teaching of Psychology **Fall 2012**
Department of Psychology, University of Illinois at Chicago
Introductory teaching course for first year psychology graduate students

Teaching Assistant **2009-2015**
Department of Psychology, University of Illinois at Chicago
Planned and led weekly discussion sections, graded papers, assignments, and exams for Introductory Statistics, Research Methods, Developmental Psychology, Community Psychology, and the Community Psychology Lab course

PROFESSIONAL ORGANIZATION MEMBERSHIPS

Society for Community Research and Action (SCRA), APA Division 27
American Public Health Association

PROFESSIONAL DEVELOPMENT AND SERVICE

American Psychological Association Policy Workshop and Advocacy Day, August 1st-2nd, 2017, Washington, D.C.

Community and Prevention Research Program Graduate Assistant, Aug 2009-June 2010 and Aug 2014-May 2016. Assist in the organization of program colloquium, manage Visiting Day scheduling, and assist with faculty candidate visits.

Committee on Graduate Studies Psychology Department Representative, June 2011-June 2013. Organized and implemented new student orientation for the Psychology Dept, and represented the department at Graduate Student Council meetings.

Cofounder and Co-Chair of the Student Advisory Board for the Diversity Advancement Committee, August 2012-June 2013

Community Research Partner, Alternatives Inc. Aug 2012-Nov 2013

Community Advisory Board member for Girls in the Game Charity 2011-2016

Student Ethnographer for the Small Samples Methodology Conference. University of Alaska Fairbanks. Conference date: August 17th & 18th, 2011

Review of presentation submissions for the Society for Community Research and Action Biennial Conference, February 2011 and December 2016

Student Ethnographer, Advancing the Science of Community Intervention: Frameworks, Processes, Methodologies and Outcomes, Chicago, IL, October 2009