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Hush Now Baby: Mothers' and Fathers' Strategies for Soothing Their Infants and Associated Parenting Outcomes

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Abstract

Objectives—The purpose of this study was to examine the types of soothing behaviors used by mothers and fathers of infants, differences in use trajectories over time, and associated parenting outcomes.

Methods—Longitudinal study of 241 families expecting their second child. Data were collected at 1, 4 and 8 postnatal months and included measures of parental soothing techniques, involvement in soothing, distress in response to infant crying, and parenting self-efficacy.

Results—Average number of soothing techniques used was 7.7 for mothers and 5.9 for fathers. Soothing frequency decreased over time and change patterns of soothing differed over time by gender. In couples who shared responsibility for soothing fathers felt more efficacious in parenting and mothers were less upset by infant crying.

Discussion—Clinicians are encouraged to support fathers' engagement in infant soothing, to facilitate the development of fathers' parenting confidence, and to promote fathers' involvement in children's health and healthcare.

Keywords

Parenting; Infancy; Father; Soothing; Parental Soothing of Infants; Father Involvement; Parenting Self-Efficacy

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Conflicts of Interest

The authors have no conflicts of interest or financial relationships relevant to this article to report.

INTRODUCTION

Behaviors such as parental soothing of the infant are foundational to the developing parent-child relationship, yet little is known about the daily soothing behaviors parents use. Helping the young infant regulate biobehavioral processes such as body temperature, food intake, and sleep-wake states is an important aspect of early parenting. Periods of crying are normative in infancy and, although crying frequency and intensity are likely related to infant temperament, parents of all infants must identify and use soothing techniques to calm their infants. Indeed, parents spend a great deal of time soothing their infants to help them maintain, or return to, a state of regulation. It is important for clinicians to understand and strengthen parental soothing behaviors because they serve a critical developmental need by entraining the infant's own capacities for self-regulation (Doi, Kato, Nishitani, & Shinohara, 2011; Zeman, Cassano, Perry-Parrish, & Stegall, 2006). Successful soothing reinforces parents to continue to use specific soothing techniques that calm the infant. This process boosts parents' confidence, creates a growing sense of trust within the infant, and sets the foundation for the establishment of positive parent-infant relationships. When parents' soothing attempts are unsuccessful, they may experience increasing levels of frustration, placing the parent-infant relationship at risk. In severe cases, parental frustration can lead to abusive behaviors such as shaking that threaten the very survival of the infant (Lee, Barr, Catherine, & Wicks, 2007).

Because parental soothing supports early developmental and relationship processes, more research is needed to understand the specific ways in which mothers and fathers soothe their infants on a daily basis. Although fathers have increased the time they spend on childcare in general, fathers continue to engage in less childcare than mothers across the family's childrearing years (Bianchi, 2011). During early infancy, mothers are more likely than fathers to take time off of work to care for the infant, leaving mothers with many more opportunities to engage in infant-care activities. Periods of infant crying and fussing, however, often occur in the evening (McGlaughlin & Grayson, 2001), when fathers are likely to be home, providing fathers an opportunity to engage more fully in this childrearing task.

Most families have more than one child and the transition from one child to two can be stressful for some parents (Volling, 2012). First-time parents may worry about the pregnancy, delivery and birth, as well as their abilities to care for an infant. In contrast, mothers expecting their second child have already been through the late night feedings, sleep deprivation, and care of a newborn, and report being more concerned about balancing the care of two young children and how their relationship with the firstborn will change once the baby has arrived (Richardson, 1983). Father involvement in infant caregiving may be critically important during this transition and men's abilities to soothe a young infant may contribute to the mother's mental health, the emotional adjustment of the first child, and overall family functioning. Further, balancing the care of both an infant and older firstborn may require that both parents be skilled at comforting a distressed infant. Fathers in the current study were part of a larger longitudinal investigation of changes in family life after the birth of a second child, and all men were experienced fathers in the sense that they had already cared for their firstborn during infancy. This is an important point to underscore

when examining parental soothing, particularly in the case of fathers, as many men may not have had experience with infants before their first child, so examining parental soothing for new fathers may not be the best means of addressing whether men can and do soothe their distressed infants. Thus, we were able to examine the soothing techniques of experienced fathers during the year following the birth of their second child. The main goal of this study was to compare the soothing techniques of experienced mothers and fathers with their second-born infants during the year following the birth.

The American Academy of Pediatrics (AAP) and the American Psychological Association (APA) have identified the study of father involvement in child health and development as a national health priority (APA, 2004; Schor, 2003). The majority of studies, however, examining parental soothing of infants have been conducted with mothers following single-event stressors such as immunizations (see, for example, Jahromi & Stifter, 2007; Lewis & Ramsay, 1999). In the few studies examining the soothing behaviors of fathers with their young infants, research with non-US samples has suggested that fathers spend approximately half the time that mothers spend in soothing their upset infants on a daily basis (Hossain et al., 2005; Sun & Roopnarine, 1996). However, because childcare practices are culturally informed, it is not known whether US fathers may exhibit similar patterns of daily soothing. This is the first study to examine types and rates of daily soothing in a US sample of experienced fathers and mothers.

In the parenting of older children, US fathers tend to interact in more physically active ways compared to mothers (MacDonald & Parke, 1986). Effective soothing, however, requires a dialing down of bio-behavioral activity, rather than a ramping up, so fathers may have more difficulties soothing their infants should they rely on more physical and stimulating sorts of soothing techniques. Although no studies have examined the daily soothing behaviors of fathers in the US, three studies using US samples have examined the specific soothing behaviors fathers used with their newborn infants during single-event episodes. Jones and Lenz (1986) videotaped father-newborn interactions and found that increased infant crying was associated with increases in affectionate/comforting physical touching and lower levels of stimulating behaviors. Kaitz and colleagues (Kaitz, Chriki, Bear-Scharf, Nir, & Eidelman, 2000) examined the ability of mothers and fathers to calm their upset babies during a brief, 75-second, interaction, and found that fathers tended to use less physical touch than mothers in their soothing attempts. Finally, when directed to soothe their crying one-month-old infants for up to five minutes during a home observation, Worobey (1983) found that mothers and fathers used similar types of soothing techniques. Taken together, these studies suggest that when they are explicitly asked to soothe their infants, fathers tend to use similar soothing strategies as mothers. What is not known is what soothing strategies fathers use with their babies on a daily basis, whether they are different from the strategies used by mothers and how these behaviors might change for fathers and mothers over the course of early infant development.

When parents feel ineffective in their soothing attempts, they frequently seek pediatric health care advice. Offering guidance to fathers, as well as mothers, about infant soothing presents a critical early opportunity for health care providers to promote enhanced father engagement in both (1) their relationship with their child and (2) their child's healthcare.

The AAP encourages the active support of fathers by pediatric health care providers (Schor, 2003), yet operationalizing this principle remains a challenge. Fathers increasingly attend well child visits, and may be involved in many healthcare tasks and decisions during their child's first three years of life (Garfield & Isacco, 2006). At the earliest well child visits, infant soothing can provide a substantive area for father engagement. Enhanced understanding of how fathers typically soothe their infants will inform the development of tailored recommendations to fathers, and may facilitate a direct relationship between fathers and health care providers that can be sustained over time.

Supporting parents, in particular fathers, with soothing is also of clinical importance because persistent infant crying can be a risk factor for *abusive head trauma* caused by *shaken baby syndrome* (Reijneveld, van der Wal, Brugman, Sing, & Verloove-Vanhorick, 2004; Stewart et al., 2011). This is especially relevant to fathers because research has demonstrated that victims of male perpetrators have more significant injuries and worse clinical outcomes (Esernio-Jenssen, Tai, & Kodosi, 2011). The risk for rough infant handling may increase when parents feel helpless to resolve the crying and their sense of competence is eroded. Conversely, a greater sense of parenting efficacy on the part of fathers is associated with reduced risk for paternal perpetration of child abuse and neglect (Dubowitz, Black, Kerr, Starr, & Harrington, 2000). Health care providers can play an important role in prevention by supporting fathers' acquisition of parenting skills (Dubowitz et al., 2000). The current study informs the provision of early health care services to fathers and their infants by investigating the typical soothing behaviors used by fathers as well as the influence of soothing involvement on the developing father-infant relationship.

Aims and Rationale of Current Study

This study examined the soothing behaviors of experienced (i.e., multiparae) parents after the birth of the second child, a time when the childcare needs within the family double, and fathers may be called upon to participate in infant and child care. We examined the longitudinal expression of the frequency and type of daily soothing behaviors that both parents used during the early months following the birth of the second child. The period surrounding the second birth can be stressful for some parents as they learn to balance the care of two young children. Caring for a fussy and difficult infant can challenge parents, and the challenge may be compounded when parents are trying to manage the care of a toddler as well. Parents reported whether they shared the responsibility of soothing the infant equally and their reactions to infant crying. We also examined the relations between shared responsibility for infant soothing and feelings of parental efficacy. Based on prior fathering literature with older children we predicted that: (1) fathers would use more active soothing techniques than mothers, (2) most fathers would not participate equally in soothing their infants, and (3) fathers who did share this responsibility would report stronger feelings of parenting efficacy. The primary translational goal of the present work was to inform health care recommendations to parents, in particular fathers, to support their involvement in infant soothing and to strengthen the father-infant relationship.

METHODS

Participants

Participants were drawn from a longitudinal sample of 241 families expecting their second child. The larger study, designed to investigate the experiences of families across the transition from one to two children, included five waves of data collection; parents were interviewed initially during the last trimester of pregnancy ($n=241$ couples), when their second child was 1 month ($n=225$), 4 months ($n=217$), 8 months ($n=211$), and 12 months ($n=203$) of age. The sample is primarily middle-income and well-educated. Parents were recruited from the Midwestern US using advertisements in healthcare clinics, hospitals, and print media. Families were eligible if: the pregnancy was medically uncomplicated, the older child was a typically developing one- to five-year-old, the second child's biological father lived in the household, and both parents agreed to participate. All couples in the study were married. Demographic information is presented in Table 1. Longitudinal study attrition was greater for families with lower parental education, $\chi^2=8.48$, $df=3$, $p=.037$. There were no other differences in attrition.

Procedures

This study uses data collected at the 1-, 4-, and 8-month visits through joint couple interviews conducted in the homes and questionnaires completed by mothers and fathers separately. Parents were informed about confidentiality, completed an informed consent and were paid for participation. The study was approved by the university's IRB.

Measures

Crying Patterns Questionnaire (CPQ; St. James-Roberts & Halil, 1991)—The *Infant Soothing* section of the CPQ asks whether and how often parents use various soothing techniques (e.g., rocking, swaddling) and was administered to both parents during an in-home couple interview when infants were 1, 4, and 8 months of age. Adequate validity has been previously demonstrated (Wolke, Meyer, & Gray, 1994). Items include an anchored scale reflecting frequency of use: (0) do not use, (1) use occasionally during the week, (2) use about once each day, (3) use repeatedly every day. A *Total Soothing* composite was created by summing all scores individually for each parent. Each technique was dichotomized (used vs. not used) and the percentage of use was calculated at each time point (see Table 2).

Parents also indicated whether they were (a) bothered or upset by their infant's crying, (b) believed it affected the time/energy they had for other tasks, and (c) believed it affected the way they felt about being a parent, using 4-point Likert scales ranging from (1) "never" to (4) "often." An *Upset by Crying* composite was created by summing items for each parent.

Parental Cognitions Scale (PCS; Boivin et al., 2005)—The *PCS Parental Self-Efficacy* subscale assesses parenting self-efficacy in caring for the infant (e.g., "I am very good at calming my baby when he/she is upset/fussy/crying") and was completed at 4 and 8 months of infant age. Adequate validity has been previously demonstrated (Boivin et al., 2005). This subscale is comprised of 6 items answered on an 11-point-Likert scale, from (1)

“not at all what I feel” to (11) “exactly what I feel.” *Cronbach’s Alphas* were .85 at both time points for fathers and .76 and .72 at the 4 and 8 month time periods, respectively, for mothers.

Childcare Checklist (Ehrenberg, Gearing-Smll, Hunter, & Small, 2001)—The *Childcare Checklist* assesses parental responsibility for infant care (e.g., diapering, feeding, soothing). At 1, 4, and 8 months, parents jointly reported who was typically responsible for infant soothing or whether they shared the responsibility, using a 5-point scale ranging from (1) mostly wife, (3) shared equally, (5) mostly husband. A dichotomous variable was created by combining the couples for whom the mother took primary responsibility (scores of 1 or 2; frequencies for the 1, 4, and 8 month times were, $n=149$, $n=141$, and $n=121$, respectively) and couples who shared the responsibility equally (scores of 3; frequencies were $n=75$, $n=74$, and $n=84$, respectively). Very few couples reported that the father took primary responsibility (frequencies were $n=1$, $n=2$, and $n=3$, respectively, at 1, 4, and 8 months) so these couples were dropped from further consideration.

RESULTS¹

1. Frequency and Types of Soothing Behaviors Used by Mothers and Fathers with Their Infants

Proportions of Parental Use of Each Technique—Each soothing technique was dichotomized by parent and time to indicate whether the parent used that technique at all, and then aggregated yielding an average percentage of use for mothers and fathers at each time point (see Table 2). *McNemar chi-square* compared the average percentage of use for each soothing technique to determine if there were significant sex differences. Analyses revealed that mothers used the majority of the techniques more frequently than fathers. Cuddling/Rocking and Carrying in Arms were used equally by both parents, and Prescribed Medicine was used infrequently by both parents.

Number of Soothing Techniques in the Repertoire of Mothers and Fathers—The number of different techniques each parent used at each time point was calculated by summing the dichotomized use variable. These analyses were employed to determine *how many different soothing techniques* each parent used. A paired-samples t-test compared the mean number of techniques used by each parent. At each time point mothers used more strategies than fathers. At 1-month mothers used an average of 8.4 techniques compared to 6.6 used by fathers, $t(224)=16.0$, $p<.001$. At 4 months, mothers used an average of 7.8 techniques and fathers used an average of 5.8, $t(216)=18.0$, $p<.001$. At 8 months, mothers used an average of 6.8 techniques and fathers used an average of 5.4, $t(207)=12.7$, $p<.001$, (see Figure 1). Across data collection points, mothers used an average of 7.7 techniques and fathers used an average of 5.9. Both mothers and fathers used fewer techniques over the time.

¹Analyses not reported in this paper found that fathers did not increase their reported time in caring for the first child after the birth of the second child.

2. Differential Trajectories of Soothing Technique Use for Mothers and Fathers across Early Development

To investigate developmental trajectories in the *frequency of daily use* of each soothing technique, repeated measures ANOVAs with both parent (mother, father) and time (1, 4, 8 months) as repeated measures and soothing technique frequency of use (e.g., once a day, several times a day) as the dependent variable were run for each soothing technique using the *Bonferroni* correction (see Table 3). Parent effects indicated that mothers tended to use soothing techniques more often than fathers and time effects were identified suggesting that the daily frequency of use of most techniques decreased over time (e.g., parents spend less time engaged in soothing as the infant matures).

Significant Parent by Time interactions were found for 6 soothing behaviors. Post-hoc comparisons were conducted and results are reported in Table 3 and depicted in Figures 2–7. Fathers demonstrated a more pronounced reduction in cuddling/rocking over time (means at 1, 4 and 8 months: 2.74, 2.41, 2.22) compared with mothers (means at 1, 4 and 8 months: 2.94, 2.75, 2.60). Both parents used carrying in arms at similar high rates at the 1 month time point (mother=2.89, father=2.86); however, fathers' use dropped off steeply at 4 and again at 8 months (means at: 4m=2.67, 8m=2.46), relative to mothers (means at: 4m=2.85, 8m=2.70). Mothers showed a decrease in feeding to soothe over time (means at 1, 4 and 8 months: 2.00, 1.59, 1.46) whereas fathers' use increased at the 8 month time point (means at 1, 4 and 8 months: .67, .57, .73). At 1 and 4 months, mothers used swaddling at a greater frequency (means at 1 and 4 months: 1.61, .49) than fathers (means at 1 and 4 months: 1.37, .41), whereas at 8 months frequencies approached zero for both parents (mother=.17, father=.15). Both parents reported a decrease in baby sling use over time; the curve was relatively flat for fathers (means at 1, 4 and 8 months: .52, .37, .18), and steep for mothers (means at 1, 4 and 8 months: 1.22, .90, .49). Both parents decreased the use of taking their infant into their own bed from 1 to 4 months. However, from 4 to 8 months mothers continued to decrease and fathers increased somewhat in frequency (mother means at 1, 4 and 8 months: 1.50, 1.15, 1.04; father means: 1.0, .68, .73).

3. Parental Sharing of Soothing Responsibilities and Associations with Feelings of Parenting Self-Efficacy and Reactions to Infant Crying

Parental Sharing of Soothing—At 1 and 4 months of infant age, 34% of couples reported that they shared the responsibility of soothing; at 8 months the number increased to 41%. Parents were divided into *sharing* and *mostly-mother* groups at each of the three time points, and these groupings were used in the analyses that followed.

Feelings of Parental Self-Efficacy—At 4 and 8 months, one-way ANOVA analyses tested soothing group (*sharing* versus *mostly-mother*) differences on feelings of parenting self-efficacy. When fathers shared equally in soothing they felt more efficacious as parents at 4 months, $F(1, 198)=22.30, p<.001$; (means: *sharing*=8.65; *mostly-mother*=7.67), and 8 months, $F(1, 191)=13.75, p<.001$; (means: *sharing*=8.74; *mostly-mother*=8.00). There was no main effect for mothers. Mothers felt equally efficacious in parenting whether they shared responsibility with the father or not.

Upset by Infant Crying—At each time point, one-way ANOVA analyses tested the soothing group (*sharing* versus *mostly-mother*) differences in the degree to which parents were upset by infant crying. At 1 and 4 months, there were no significant group effects for either parent. In addition, there was no significant effect for fathers at 8 months. However, by 8 months, mothers, $F(1, 203)=4.48, p<.05$, reported feeling less upset in response to infant crying if mothers and fathers shared soothing (means: sharing=7.14, mostly-mother=7.88).

DISCUSSION

Despite the importance of daily soothing to infant regulatory processes and the development of the parent-infant relationship, the majority of soothing studies have been conducted with mothers following single-event stressors such as immunizations (Jahromi & Stifter, 2007; Lewis & Ramsay, 1999), and therefore, do not inform an understanding of daily soothing behaviors by mothers or fathers, or the ways in which the use of various techniques may manifest differently as the infant matures. The current study is the first to report the longitudinal expression of daily soothing techniques in both parents across early postpartum infant development. The sample consisted of experienced parents in the Midwestern US who had prior parenting experience with their first child. These parents may experience increased family stress as they strive to meet the needs of their first child while caring for an infant whose crying will typically increase over the first couple of postnatal months (Barr, 1990). During this period the childcare needs in the family double, providing a contextual press for both parents to engage in the daily care of their children.

Frequency of Use of Developmental Course of Individual Soothing Techniques

Research has consistently demonstrated that mothers engage in childcare more frequently than fathers, even when both parents are employed (Bianchi, 2011). Further, mothers are more likely to take postpartum leave and care for the infant full-time. Infant crying, however, tends to peak during the evening (Barr, 1990), when fathers are likely to be home. Thus, the study of infant soothing offers a means of gaining insight into early parenting engagement on the part of both parents.

In the parenting of older children, fathers interact in more physically active ways compared to mothers (Paquette, 2004). We predicted, therefore, that fathers would prefer active soothing strategies. Findings, however, demonstrated that the two most frequent behaviors for both parents were *Cuddling/Rocking* (low-activity) and *Carrying in Arms* (high-activity) (Table 2). Fathers did not engage more frequently in active strategies. Instead, the broader finding was that most soothing strategies were used less by fathers than by mothers and that fathers had fewer soothing strategies within their repertoires. As with any potentially stressful event, diversity of approaches and flexibility in use are critical to effective responding. Different soothing techniques may be more or less effective for individual infants and during different developmental periods. Thus, it is important that parents have a range of soothing techniques in their repertoire to enable them to flexibly adapt to the individual and changing needs of their infant.

Parental frustration can arise, for example, when a soothing technique that has been effective previously with an infant becomes ineffective. If parents have a wider repertoire of strategies available and if they can flexibly adapt their strategies as the infant matures, they may be less upset and frustrated in response to infant crying. The current study revealed important differences in the developmental course of several soothing techniques that informs our understanding of the ways in which mothers and fathers may approach soothing differently depending on the age of the baby. *Cuddling/Rocking*, for example, decreased more sharply from 4 to 8 months for fathers than for mothers. Providing extra feedings or drinks and taking the infant into their own bed, in contrast, increased for fathers from four to eight months and decreased for mothers. Although future research is necessary to replicate these findings, it may be that parents undergo an important shift between four to eight months of infant age, when mothers may be weaning the baby, leaving fathers with increased opportunities to use feeding and co-sleeping as soothing strategies. As described below with regard to extra feedings and consistent with public health movements that discourage co-sleeping, however, this trend may not be ideal and this developmental shift may provide an opportune time for pediatric health care providers to educate both parents about other kinds of soothing techniques and to highlight the importance of father participation in soothing for the development of the father-infant relationship.

Soothing, Parenting Self-Efficacy and Reactions to Infant Crying

Prior work conducted with mothers has demonstrated that multiparas report higher levels of parenting self-efficacy when compared with primiparas (Bryanton, Gagnon, Hatem, & Johnston, 2008). Less is known, however, about fathers. In this study, approximately one-third of couples shared the responsibility of soothing their infant and fathers in these couples reported higher levels of parenting self-efficacy at 4 and 8 months postpartum. Mothers felt equally efficacious whether or not they shared infant soothing with the father. These results suggest that shared parenting confers benefits for both the mother-infant and the father-infant relationships; by 8 months of infant age, mothers in sharing couples reported feeling less upset by their infant's crying, and fathers felt more confident and competent in their abilities to soothe and care for the infant. Thus, maternal coping capacities in response to infant crying may be improved when fathers are more involved. When parents feel inefficacious in their soothing attempts, they frequently seek advice from healthcare professionals (Barr, 1998), offering providers a unique opportunity to play a central role in supporting early parent-infant relationships (Shah, Muzik, & Rosenblum, 2011). Clinicians who successfully encourage fathers to participate in soothing and support fathers in developing a broad repertoire of soothing strategies may, in one stroke, improve two foundational early relationships in the life of that infant.

Research investigating other health outcomes that are associated with soothing are also germane to the current work. Preliminary research has identified a link between the use of food as a means of soothing and the risk of childhood obesity (Hughes, Shewchuk, Baskin, Nicklas, & Qu, 2008; Stifter, Anzman-Frasca, Birch, & Voegtline, 2011). Thus, reducing reliance on food as a means of soothing may have the additional effect of reducing childhood obesity risk. Recent studies have suggested that parents of infants and toddlers who felt less efficacious in parenting used food as a soothing strategy more frequently,

leading to increased child weight gain (Stifter et al., 2011). Similarly, parents of preschool children, who were characterized as “indulgent” in their feeding styles, had children with higher body mass indices (Hughes et al., 2008). In the current study, fathers (and not mothers) increased the use of providing extra feedings to soothe their upset infant over the course of early development. This increase may be due, in part, to maternal weaning from breastfeeding which allows fathers to take a more active role in infant feeding. The transition during which breastfeeding is phased out provides an ideal time for pediatric health care providers to offer guidance about a wide range of soothing strategies to preempt a reliance on feeding as a dominant strategy. In conjunction with prior work on child obesity, the current study suggests that healthcare intervention to improve fathers’ soothing efficacy may be an important strategy for childhood obesity prevention.

Supporting parents, in particular fathers, with soothing is also of clinical importance because persistent infant crying can be a risk factor for *abusive head trauma* (Barr, 2012). This risk may increase when parents feel helpless to resolve the crying and their sense of competence is eroded. Conversely, a greater sense of parenting self-efficacy on the part of fathers is associated with reduced risk for paternal perpetration of child maltreatment (Dubowitz et al., 2000). Health care providers can play an important role in prevention by supporting fathers’ acquisition of a range of infant soothing techniques.

Limitations

The current study has some notable limitations. The sample is primarily well-educated and European-American and, thus, the results cannot be generalized to other racial groups and less-educated populations. The soothing data reported here were parent-reported. Although more ecologically valid than a brief observation of soothing behaviors at one moment in time, these data are also subject to reporter bias. Parents were asked, however, about a wide range of potential soothing behaviors, the vast majority of which could be considered “positive,” thereby reducing the social desirability press for the endorsement of any one behavior. We also attempted to minimize reporter bias by interviewing each parent in the presence of the other so that responses were jointly endorsed by both parents. In addition, in contrast to measures of infant crying (Barr, Paterson, MacMartin, Lehtonen, & Young, 2005), “objective” measures of soothing behavior have not been developed. The current study offers the first assessment of parental use of soothing strategies across early infant development in both mothers and fathers. Future research should extend these findings by developing prospective methods of assessment.

This study did not include measurements of infant temperament or reactivity. These factors may have influenced the duration and frequency with which each soothing technique was used. Although there were very few infants in our study who met criteria for *Wessel’s colic* (Zeskind & Barr, 1997), there were significant inter-individual differences in crying frequency and duration which were likely influenced by temperamental characteristics. The focus of this study, however, was to investigate which techniques were used by mothers and fathers on a daily basis. Relations of soothing behaviors with individual infant crying levels was beyond the scope of this study.

Relatedly, the current study could not determine whether the soothing behaviors used were successful in calming the infant. Individual infants, however, respond uniquely to specific soothing techniques; what works well to comfort one may not work well for others. Thus, while we are not able to rank strategies by overall level of success, the larger point is that the development of a broad repertoire of soothing techniques is likely to lead to higher levels of parental success in soothing, in general.

Summary & Conclusion

This is the first study to examine the longitudinal trajectories of daily soothing behaviors in mothers and fathers across early infancy. Fathers remain underrepresented in most parenting research, when available, data on father involvement is typically measured by maternal report. This study used fathers' own reports of their parenting behaviors and experiences. Results suggested that fathers have fewer soothing techniques in their repertoire and may therefore benefit from guidance to increase their knowledge of soothing techniques. An expanded repertoire may inspire increased confidence on the part of fathers to engage in soothing, and, importantly, may offer options to fathers who find their infant difficult to soothe. In addition, father's feelings of parenting self-efficacy were higher for fathers who shared in the responsibility of soothing their infants, and these benefits enhanced the mother-infant relationship by decreasing negative feelings in response to infant crying. Clinicians are encouraged to engage parents in developing a broad range of soothing techniques. Encouraging and supporting fathers in soothing their infants provides an opportunity for pediatric health care providers to establish a positive parent-infant relationship early in the trajectory of parenthood. This will allow providers to be an accessible resource to both parents throughout the childrearing years, yielding improved health and developmental outcomes for children.

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FIGURE 1.
Number of Soothing Techniques Used at Each Time by Each Parent

FIGURE 2.
Cuddling/Rocking Interaction by Time and Parent

FIGURE 3.
Carrying in Arms Interaction by Time and Parent

FIGURE 4.
Providing Extra Feedings Interaction by Time and Parent

FIGURE 5.
Swaddling Interaction by Time and Parent

FIGURE 6.
Use of Baby Sling Interaction by Time and Parent

FIGURE 7.
Taking into own Bed Interaction by Time and Parent

TABLE 1

Sample Demographics at the Prenatal Interview

	Range (min – max)	Mean	Standard Deviation
Firstborn's age (in months)	57 (10–67)	29.92	10.16
Mother's age (in years)	23 (19–42)	31.60	4.22
Father's age (in years)	30 (23–53)	33.20	4.78
Years of marriage	19.42 (.58–20)	5.77	2.74
Mother's Education:	<i>N</i>	<i>%</i>	
High School degree/Some college	39	16.2%	
Bachelor's degree	91	37.8%	
Professional degree	111	46.1%	
Father's Education:	<i>N</i>	<i>%</i>	
Less than High School degree	1	0.4%	
High School degree/Some college	49	20.3%	
Bachelor's degree	90	37.3%	
Professional degree	101	41.9%	
Mother's Race/Ethnicity:	<i>N</i>	<i>%</i>	
European American	207	85.9%	
African American	13	5.4%	
Asian/Asian American	7	2.9%	
Hispanic	9	3.7%	
Other	5	2.1%	
Father's Race/Ethnicity:	<i>N</i>	<i>%</i>	
European American	208	86.3%	
African American	12	5.0%	
Asian/Asian American	9	3.7%	
Hispanic	7	2.9%	
Other	5	2.1%	
Family Income:	<i>N</i>	<i>%</i>	
< 20,000	4	1.7%	
20,000–59,999	67	27.8%	
60,000–99,999	91	37.8%	
>100,000	79	32.8%	

TABLE 2
Percentage of Mothers and Fathers That Report Use of Each Soothing Technique and Significant Differences

Soothing Type	one month <i>n</i> =225			four months <i>n</i> =217			eight months <i>n</i> =211					
	Mother	Father	χ^2	<i>P</i>	Mother	Father	χ^2	<i>P</i>	Mother	Father	χ^2	<i>P</i>
Cuddle/Rock	100.0	99.1	0	ns	100.0	97.7	1.50	ns	99.5	96.6	3.13	ns
Carry in Arms	99.6	100.0	0	ns	100.0	99.5	0.50	ns	98.6	99.0	0	ns
Extra Feedings	86.7	38.2	103.22	<.001	78.8	32.7	96.09	<.001	80.8	50.0	50.89	<.001
Rock in Cradle	85.3	74.2	15.57	<.001	77.9	66.8	13.92	<.001	68.3	53.4	19.15	<.001
Pacifier	78.2	77.8	0	ns	94.5	54.8	66.90	<.001	42.8	42.3	0	ns
Singing	76.9	60.0	18.50	<.001	83.4	64.5	25.40	<.001	81.7	61.1	27.14	<.001
Swaddling	72.4	62.2	13.83	<.001	24.9	21.2	3.06	ns	8.7	8.2	0	ns
Taking in Own Bed	71.1	46.7	43.52	<.001	55.8	36.4	36.54	<.001	53.4	38.5	27.27	<.001
Baby Sling	64.4	30.2	67.95	<.001	53.0	23.0	50.57	<.001	28.8	12.0	22.67	<.001
Music	58.7	45.8	15.37	<.001	65.4	52.5	15.85	<.001	62.0	46.2	20.90	<.001
Non-Rx Medicine	23.1	15.6	15.06	<.001	21.7	11.5	16.96	<.001	31.7	21.6	14.82	<.001
Car Rides	11.1	7.6	4.08	<.05	10.1	6.5	3.50	ns	6.7	5.3	0.51	ns
Herbal Remedies	6.2	3.1	5.14	<.05	6.0	3.2	3.13	ns	8.7	1.4	11.53	<.01
Rx Medicine	4.0	3.1	0.50	ns	7.8	6.9	0.50	ns	10.6	8.2	3.20	ns

TABLE 3

Means and Effect Sizes for Parental Soothing Across Time Figures

Variable	PARENT				TIME						
	Mother $\bar{x}$	Father $\bar{x}$	F	p	η_p^2	1 month $\bar{x}$ (n=225)	4 month $\bar{x}$ (n=217)	8 month $\bar{x}$ (n=211)	F	p	η_p^2
Cuddle/Rock	2.76	2.46	94.14	<.001	.32	2.84	2.58	2.41	46.15 ^{abc}	<.001	.31
Carry in Arms	2.81	2.67	29.56	<.001	.13	2.88	2.76	2.58	21.85 ^{abc}	<.001	.18
Extra Feedings	1.68	0.65	258.96	<.001	.56	1.34	1.08	1.09	9.42 ^{ac}	<.001	.09
Rock in Cradle	1.67	1.19	101.78	<.001	.33	1.69	1.50	1.11	28.76 ^{bc}	<.001	.22
Pacifier	1.57	1.49	2.49	ns	ns	1.94	1.50	1.15	34.15 ^{abc}	<.05	.25
Singing	1.50	1.06	48.36	<.001	.19	1.20	1.35	1.28	4.03	ns	ns
Swaddling	0.76	0.64	18.96	<.001	.09	1.49	0.45	0.16	119.43 ^{abc}	<.001	.54
Taking in Own Bed	1.23	0.80	88.28	<.001	.30	1.25	0.92	0.89	12.80 ^{ac}	<.001	.11
Baby Sling	0.87	0.36	106.94	<.001	.34	0.87	0.64	0.34	46.18 ^{abc}	<.001	.31
Music	1.15	0.83	64.97	<.001	.24	0.93	1.06	0.99	1.53	ns	ns
Non-Rx Medicine	0.37	0.22	42.26	<.001	.17	0.34	0.21	0.34	5.17 ^{ac}	<.001	.05
Car Rides	0.12	0.08	8.77	<.001	.04	0.15	0.10	0.06	3.16	ns	ns
Herbal Remedies	0.09	0.03	14.68	<.001	.07	.06	.05	.07	0.51	ns	ns
Rx Medicine	0.18	0.15	7.62	<.001	.04	0.10	0.18	0.22	3.09	ns	Ns

^a significant difference between 1 and 4 months^b significant difference between 4 and 8 months^c significant difference between 1 and 8 months η_p^2 = partial eta squared, effect size