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**QUALITY OF COPARENTING AND INFANT-MOTHER ATTACHMENT: THE
MEDIATING ROLE OF MATERNAL EMOTIONAL AVAILABILITY**

A Thesis in

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by

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ABSTRACT

Increasing attention has been paid to the influence of family contextual factors in predicting infant attachment security. However, little is known about the influence of coparenting quality on attachment. The goal of the present study was to examine the associations between parental perceptions of coparenting quality, quality of mothering, and infant-mother attachment. Parental reports of positive and negative coparenting quality, maternal emotional availability, and infant-mother attachment were assessed in 167 infants and their parents at 1, 3, 6, 9, and 12 months. Direct and indirect effects were assessed within a structural equation modeling framework to examine: (a) direct effects of mother-reported coparenting on infant-mother attachment, (b) indirect effects of mother-reported coparenting on infant-mother attachment through the quality of mothering, and (c) indirect effects of father-reported coparenting on infant-mother attachment through the quality of mothering. Results revealed that there was an indirect, but not direct, association between mother-reported coparenting quality across the first year of life and infant-mother attachment at one year through maternal emotional availability across the first year. However, father-reported coparenting was not indirectly related to infant-mother attachment. Post hoc analyses revealed that mothers' perceptions of coparenting at 1 month were indirectly linked to attachment at one year through maternal emotional availability across the first year. Findings highlight the importance of coparenting quality, especially in the early postpartum, in organizing quality of parenting and infant attachment.

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Chapter 1

Introduction

Parenting quality has been well-established as the central pathway in predicting quality of child-parent attachment (Bowlby, 1969/1982). Sensitive, responsive parenting predicts secure attachment relationships, while insensitive, inconsistent, and unresponsive parenting is predictive of insecure attachments (Ainsworth et al., 1978; De Wolff & van IJzendoorn, 1997). Although individual parenting quality is the single most significant predictor of attachment, family systems theory (Cox & Paley, 1997) and ecological theory (Belsky, 1980) highlight the importance of looking at the whole family system when examining children's functioning as an outcome. Indeed, family contextual factors such as marital functioning, household chaos, social support, and life stress can impact parenting quality significantly (Elder et al., 1984; Whitesell et al., 2015), which, in turn, influences the child's attachment quality to the caregiver. The current paper focuses on one specific aspect of the family context, the coparenting relationship, as a predictor of attachment quality. Coparenting differs from other familial influences on attachment in that coparenting integrates individual parent-child relationships with couple relationships and, thus, one might expect coparenting to impact attachment quality directly as well as indirectly through its impact on individual parent-child interactions.

Coparenting

Coparenting can be defined as the shared act of childrearing between two or more individuals (Feinberg, 2003). It is important to distinguish coparenting from couple or marital relationships, as the two are fundamentally separate constructs despite sharing similarities and often occurring in the presence of the other (McHale, 1995). Couple relationships typically occur between two romantically-involved individuals who share and influence feelings, needs, and behaviors (Reis & Shaver, 1988), while coparenting exists solely in the context of childrearing and, thus, can involve

any two or more individuals who share parenting responsibilities, such as a parent and a grandparent and divorced or separated couples (McHale et al., 2003). Although marital adjustment and coparenting adjustment are conceptually and empirically linked (Le et al., 2016; Le et al., 2019), parents who are experiencing marital distress do not necessarily show negative coparenting quality, nor do parents who display negative coparenting behaviors necessarily have distressed relationships (Cowan & Mchale, 1996).

Prior research has documented that both marital adjustment and coparenting adjustment predict child socioemotional outcomes (e.g., Farr & Patterson, 2013; Han et al., 2017; Schoppe-Sullivan et al., 2007). Increasing attention is being paid, however, to the singular impact of coparenting on child adjustment in light of theory and empirical evidence that child outcomes are especially sensitive to coparenting quality (Belsky et al., 1996; Jones et al., 2018).

Not only is coparenting a strong predictor of children's functioning, but it is also strongly linked with parenting quality (Jia & Schoppe-Sullivan, 2011; Teti et al., 2017). Individuals who are in a mutually supportive coparenting relationship, both emotionally and physically, are more likely to have more competent, sensitive, and involved parent-child relationships than those individuals in coparenting relationships that lack support (Caldera & Lindsey, 2006; Margolin et al., 2001). Predictably, parents who engage in high conflict behaviors against each other are more likely to present negative parenting behaviors as well (Martin et al., 2017). This link between coparenting quality and parent-child relationships is often supported by the spillover hypothesis in the literature (Almeida et al., 1999; Krishnakumar & Buehler, 2000; Martin et al., 2017), which suggests that positive and negative emotions or experiences that occur in one relationship may "spill over" and affect another relationship within the family system.

The coparenting relationship is an important component of the larger family context, given that it is predictive of both the parenting quality and many aspects of children's well-being. It is thus

of interest that very little research has been done on the relationship between coparenting and an important indicator of child adjustment, child-caregiver attachment.

Attachment

Child-caregiver attachment relationships are universal, central characteristics in human individuals that start in infancy and continue to evolve throughout the lifespan (Bowlby, 1969/1982). Attachment, as manifested behaviorally, is highest in both intensity and frequency during infancy (Roisman & Groh, 2013). As individuals move out of infancy, attachment relationships become increasingly representational. These representations of attachment relationships to primary caregivers form primitive cognitive maps termed by Bowlby and others as the internal working model, which organizes and shapes individual behavior toward attachment figures in the moment as well as in childhood, adolescence, and adulthood (Roisman & Groh, 2013). Attachment theory identifies the quality of parent-child interactions as a central determinant of the quality of children's attachment to caregivers. This quality of attachment is linked to other types of adjustment, specifically behavioral problems and competencies (Granot & Mayseless, 2001). Indeed, significant associations between insecure infant-mother attachment quality and later behavioral problems have been repeatedly documented (Greenberg et al., 1993; Groh et al., 2017).

Emotional Availability as an Index of Parenting Quality

The present study draws from emotional availability theory (Biringen et al., 2014; Sorce & Emde, 1981) to assess individual parent-child relationship quality. Emotional availability (EA) is defined as the affective interaction between a parent and the child, with an emphasis on the supportive attitude and ability of the parent to effectively read, interpret, and respond to the child's emotional cues (or lack of emotional cues) (Biringen et al., 2014; Mahler et al., 1975). Not only does this framework focus on the positive interchange between members of the dyad but also dyadic conflicts

and how the dyad successfully resolves dyssynchronous interactions (Biringen et al., 2014). Thus, EA effectively captures the overall quality and emotional exchanges in parent-child interactions and not just acts or practices of parenting that emphasize the physical presence of the parent (Sorce & Emde, 1981). EA as a construct was derived from attachment theory, which underscores the importance of caregiver's sensitivity in establishing a secure attachment relationship between the child and caregiver (Bowlby, 1969/1982; Biringen et al., 2014). The caregiver's appropriate and prompt responses to the infant's signals create an environment that supports autonomy and secure exploration for the child and promote the development of secure attachment (Mahler et al., 1975). EA was thus used as an index of parenting quality in this study and as a predictor, along with coparenting, of infant-mother attachment. Indeed, many studies have found associations between EA and child-caregiver attachment, especially among infants (e.g., Cassibba et al., 2012; Kim et al., 2017). The present study used the four subdimensions of parent emotional availability - sensitivity, structuring, non-intrusiveness, and non-hostility- to assess quality of mothering at infants' bedtime.

Coparenting, Parenting, and Attachment in the Literature

There is reason to hypothesize that coparenting quality could have a direct, unmediated effect on infant attachment quality because coparenting takes into account direct interactions that take place between coparenting team members and the child. However, because of prior work indicating that coparenting is a significant predictor of parenting quality, there is also reason to hypothesize that coparenting's impact on attachment could be indirect and mediated by the quality of individual parent-infant interactions.

To date, only three studies have attempted to look at the direct and indirect effects of coparenting quality on attachment quality. Caldera and Lindsey's (2006) study was the first to examine this relationship. They found that competitive, but not cooperative, coparenting was associated with both infant-mother and infant-father attachment. Mediation by parenting quality

(responsive and restrictive mothering) of the link between coparenting and infant attachment was not formally tested, however, using currently accepted tests of mediation (Preacher & Hayes, 2004; Shrout & Bolger, 2002). Another study (Brown et al., 2010) expanded on Caldera and Lindsey's study and found that a supportive coparenting relationship was associated with more secure infant-father but not infant-mother attachment. They only looked at the direct link from coparenting to attachment, however, and did not explore indirect linkages. Similarly, another study (Pudaisainee-Kapri & Razza, 2015) reported significant associations between supportive coparenting during infancy and child-mother attachment relationship during toddlerhood. However, like Caldera and Lindsey (2006), father engagement as a mediator of this relationship was not formally tested using currently accepted tests of mediation.

The Current Study

Much of previous literature has looked at the independent associations between coparenting and parenting, and between parenting and attachment, but substantially less work has examined the links between coparenting and infant attachment. From coparenting theory (Feinberg, 2003) and prior empirical work (Brown et al., 2010; Caldera & Lindsey, 2006; Pudaisainee-Kapri & Razza, 2015), it is argued that coparenting may impact infant attachment security in one of two ways: directly and indirectly. Coparenting may have a direct effect on attachment independent of the parent-infant relationship (Brown et al., 2010; Caldera & Lindsey, 2006; Davies & Cummings, 1994; Pudaisainee-Kapri & Razza, 2015). Children are prone to heightened emotional distress and increased fear of attachment figures during interparental conflict, which can directly impact the child's attachment relationship with the parent (Davies & Cummings, 1994). Similarly, children may develop their internal working models of attachment relationships by learning from direct observations of their parents' relationships (Talbot & McHale, 2003) and by how well/poorly their parents interact as a team with the child. However, coparenting may also impact attachment indirectly, via a mediated

pathway in which coparenting quality influences quality of individual parenting with the infant that, in turn, impacts quality of the infants' attachment to that parent (Caldera & Lindsey, 2006; Pudasainee-Kapri & Razza, 2015). Indeed, previous literature has found strong associations between coparenting and parent-infant relationships, and between parent-infant relationships and attachment, and thus this mediated pathway will also be examined.

Although the present study is not the first to explore direct and indirect linkages between coparenting quality and infant attachment, it adds to the existing literature in several ways. To begin, the present study made use of naturalistic observation in assessing quality of parenting and infant attachment security. Using naturalistic observation arguably reduces concerns relating to social desirability that may accompany more structured observations. We used an observer-reported version of the Attachment Q-Set (AQS; Waters et al., 1995) to measure infant attachment security, which differs from the previous studies reported above that used either the Strange Situation procedure or a mother-reported version of the AQS. By using trained observers who were blind to assessments of mothers' EA to implement and score the AQS, we provided an objective, continuous measurement of attachment that was not potentially contaminated by maternal bias (from a mother-reported AQS security score) and that was not limited by categorical attachment classifications typical of Strange Situation scoring.

Furthermore, an additional unique aspect of this study was that parenting was observed in the context of the infants' bedtime. From recent works on bedtime interactions and infant sleep, the quality of parent-child interaction at bedtime may impact infant sleep quality, and infant sleep quality, in turn, may impact infant functioning during daytime hours (Jenni & Dahl, 2008; Teti et al., 2010). Bedtime interaction occurs at a particular period of the day when infants may be tired and perhaps more prone to distress than at other points during the day. Thus, infants at bedtime may need extra care and sensitivity from parents, compared to other times of the day, as parents prepare their infant for her/his longest infant-parent separation of the day (Philbrook & Teti, 2016; Teti et al., 2010).

The present study will focus exclusively on an infant sample because the nature and quality of infants' environments are almost exclusively shaped and organized by parents, perhaps more so than at any other time in the child's life (Belsky et al., 1996). The aim of this study was to assess direct vs indirect (mediated) linkages between mother's and father's reports of coparenting quality and infant-mother attachment, as displayed by Figure 1. In previous studies, family systems and attachment theorists have found significant associations between a couple's coparenting quality and individual parenting quality, between parenting and attachment, and between coparenting and attachment. To explore these links with a more holistic view of the couple's coparenting relationship, both mothers' and fathers' reports of coparenting quality were included in the current study. We had theoretical reasons to link directly and indirectly mother's perceptions of coparenting quality to infant-mother attachment, as well as father's perceptions of coparenting to infant-mother attachment, indirectly through mother's parenting quality. Less clear were expectations regarding the role of fathers' reports of coparenting quality in predictions of infant-mother attachment, but we reasoned that fathers' perceptions of the coparenting relationship could potentially "spill over" and impact quality of mothering, and, in turn, infant-mother attachment. Thus, the following hypotheses were tested in the present study:

1. If coparenting uniquely predicts infant attachment security, mother's reports of positive coparenting in the infant's first year would be positively predictive, and negative coparenting inversely predictive of infant-mother attachment security by 12 months, independent of the quality of mothering.
2. If coparenting's link with infant attachment security is indirect, mother-reported coparenting would be expected to predict infant-mother attachment via its direct, primary association with the quality of maternal behavior with the infant.
3. Finally, because family systemic influences are thought to impact individual quality of parenting, it was of interest to determine if fathers' coparenting across the infants' first

year indirectly predicted infant-mother attachment via its direct predictive association with quality of mothering. This hypothesis is consistent with spillover hypothesis, which posits that emotions and stressors experienced in one relationship have a tendency to “spill over” into other relationships, for better or worse.

Chapter 2

Method

Participants

This study used data from Project SIESTA (Study of Infants' Emergent Sleep Trajectories; R01 HD052809), a NIH-funded study looking at infant sleep, development, and parenting across the first two years of life. 167 families were recruited from two hospitals in central Pennsylvania. All participating parents were at least 18 years of age and fluent in English. At recruitment, mothers ranged in age from 18 to 43, with a mean age of 29.43 ($SD = 5.27$). The majority (97.0%) of the mothers at recruitment were married or living with a partner, and almost all (98.2%, 0.6% missing) had completed a high school degree or more, with 68.2% (0.6% missing) having completed an Associate degree or higher. Over half (61.7%, 0.6% missing) were employed. Of the 167 mothers, 138 (82.6%) were White, 6 (3.6%) were Black, 6 (3.6%) Asian, 9 (5.4%) Hispanic/Latinx, 6 (3.6%) Other, and 2 (1.2%) did not report. Over half (53%) of the infants were female and 37% were firstborns.

Fathers had a mean age of 32.10 ($SD = 5.87$), ranging from 21 to 49 years of age. Similar to the mothers, the majority of fathers reported that they were married or living with a partner (92.2%, 7.2% missing), completed at least a high school degree (90.4%, 7.8% missing) or at least an associate's degree (62.8%, 7.8% missing), and were employed (88.0%, 7.2% missing). Ethnicity breakdown of the fathers were as follows: 127 (76.0%) White, 5 (3.0%) Black, 6 (3.6%) Asian, 7 (4.2%) Hispanic/Latinx, 6 (3.6%) Other, and 16 (9.6%) missing data. Demographic information was collected at recruitment, when the infants were 1 month old.

Of the 167 families from recruitment, 126 families remaining at 12 months with complete data on mother- and father-reported coparenting were included in the present study. The final sample did not differ from the original in terms of sociodemographic and study variables such as

employment, education, race, number of children, emotional availability, and Attachment-Q scores. However, unsurprisingly, mothers in the present sample (100%) were more likely to be married or cohabitating in comparison to the mothers in the larger sample (96%).

Procedure

Participants in the larger study were visited in their homes when the infants were approximately 1, 3, 6, 9, 12, 18, and 24 months of age. The present study focused on data collected throughout the first year. Mothers filled out demographic information as well as questionnaires regarding their perceptions of the coparenting relationship. When infants were 1, 3, 6, 9, and 12 months, video cameras were set up in the infants' sleeping areas for one night to record parenting around bedtime. A Bosch Divar XF Digital Versatile Recorder (Model #DHR-0800B-150A) was used to store all video recordings, Infrared Color CCD night-vision security cameras by ARM Electronics (Model #C420BCVFIR) and Channel Vision microphones (Model #CV-5104MIC) were used to capture video and audio data, and an Audiovox D9000 portable DVD player (Model #A-299-1040) was used to view the recorded videos. About 2-4 video cameras and audio were set up in the participants' homes in areas where bedtime interactions and infant's sleep typically took place, with at least 1 being above the baby's crib. Parents were instructed to turn on the cameras about 1 hour before the bedtime interactions began and to turn off the cameras when the infant awoke the next morning. Bedtime interactions among the mothers, fathers, and infants were recorded and later scored for emotional availability. When infants were 12 months of age, trained research personnel blind to other project data visited the home for 1.5-to-2 hours to assess quality of attachment between infants and mothers.

Measures

Coparenting Quality (1, 3, 6, 9, and 12 months)

Mothers' and fathers' perceptions of the coparenting relationship in daily life were used as a reported measure of coparenting in the present study. At all time points, both parents filled out the Coparenting Relationship Scales (CRS; Feinberg et al., 2012), which consists of 47 items that measure the parent's perceptions of how well the couple work together to coparent their child. The first 39 items of the CRS instruct parents to rate from a scale of 0 to 7 (0= Not Applicable; 7= Very True of Us) that best describes how well the parents work together as parents (i.e., "My partner asks my opinion on issues related to parenting"). The last 8 items ask the parents to rate on a scale of 1 to 7 (1= Never; 7= Very Often) on how often the parents do the listed activities (i.e., "Yell at each other within earshot of the baby") when all three (mom, dad, and infant) are physically together. Positive (agreement, closeness, support, endorsement, and division of labor) and negative (exposure to conflict and undermining) dimensions were each combined to create a composite score for positive and negative coparenting. Internal consistency of both the positive and negative coparenting dimensions were adequate at all time points across the year for both mothers (α s ranged from .87 to .93 for positive coparenting and .70 to .82 for negative coparenting across assessments) and for fathers (α s ranged from .81 to .92 for positive coparenting and .77 to .84 for negative coparenting across assessments). Because both mothers' and fathers' perceptions of both positive and negative coparenting quality were found to be highly stable across time points (mothers r s = .75 - .87, p < .001; fathers r s = .57 - .84, p < .001), we created summary scores averaging reports of positive coparenting across the first year and negative coparenting across the first year.

Maternal Emotional Availability (1, 3, 6, 9, and 12 months)

Video-recorded home observations were used to observe maternal emotional availability during infants' bedtime, which were scored by a different coder who was blind to attachment assessments. Emotional availability was scored using the Emotional Availability Scales (EAS), which rates sensitivity (the parent's ability to respond promptly, appropriately, and contingently to the

infant's signals), structuring (the parent's ability to create a soothing and organized bedtime in order to scaffold the infant into sleep), absence of intrusiveness (the parent's ability to let infant act and explore without parent's interruption or interference), and absence of hostility (the parent's ability to not show anger, irritation, or frustration toward the infant), which constitute the four subdimensions of parental EA (Biringen et al., 1998). The standardized z-scores from all four subdimensions were combined to create composite EA scores for all time points. Based on 8 randomly selected videos from when the infants were 1 month old, 8 from 3 months, 9 from 6 months, 9 from 9 months, and 8 from 12 months, intraclass correlations (interrater reliability) of composite maternal EA was 0.98 and ranged from .80 to 1.00 across all time points. Similar to the coparenting variables, EA was highly stable across the infant ages ($r = .25 - .61, p < .05$) and thus we created an average EA score for each family by averaging the composite scores across the first year of infant's life. Although both mothers' and fathers' emotional availability at bedtime were observed and coded in the larger study, the present study only included EA from mothers. Because fathers spent less time with infants during bedtime in comparison to the mothers, we had very limited observational data on father's EA ($N = 7$) by the time infants were 12 months old.

Infant Attachment Security (12 months)

Infant attachment security to the mother was assessed using the Attachment Q-sort (Waters et al., 1995) when the infant was 12 months old. A trained coder observed mother-infant interaction in the participants' homes for 1.5 to 2 hours and then used the 90 cards in the AQS card set to sort the infant's characteristics into nine categories from "very much unlike the child" to "very much like the child." Some example items from the AQS include "Child easily becomes angry at mother" and "Child readily lets new adults hold or share things he has, if they ask to." Security scores ranged from -.38 to .75 with a mean of .39 ($SD = .23$). The interrater reliability from the trained coders on 142 observations was .95.

Analytic Strategy

To test the hypothesized model that mothers' and fathers' perceptions of coparenting quality would be associated with infant attachment quality both directly as well as indirectly through the quality of mother's emotional availability, we used a structural equation modeling framework using the lavaan package in R (Rosseel, 2012). Models were run separately for positive coparenting and negative coparenting. In both models, mothers' and fathers' perceptions of coparenting were allowed to covary. Bias-corrected bootstrapped confidence intervals with 10,000 iterations were used to examine indirect effects in order to increase power and account for the non-normal distribution of our data to obtain more accurate estimates (Preacher & Hayes, 2004; Shrout & Bolger, 2002). Missingness of data in the present study ranged from 4.2% to 24.6%, with fathers' reports of coparenting being the largest. Maximum likelihood (ML) estimation strategy was used to adjust for the missing data.

Chapter 3

Results

Preliminary Analyses

Sample descriptive statistics and correlations among the study variables are presented in Table 1. All positive and negative coparenting variables, as well as mothers' emotional availability across the first year, were significantly intercorrelated ($r_s = .20 - .89, p_s < .05$). In addition, infant-mother attachment at 12 months was significantly correlated with mother-reported positive coparenting across the first year ($r = .20, p = .024$), father-reported negative coparenting across the first year ($r = -.19, p = .042$), and maternal emotional availability across the first year ($r = .33, p < .001$). All significant correlations were in the expected directions.

Hypothesis 1: Direct Effects of Mother-Reported Coparenting on Attachment

Figure 2a and Figure 2b display the summary of our hypothesized models with the individual path coefficients. As displayed by path c' in Figure 2a, there was no significant direct effect of mother-reported positive coparenting quality on infant-mother attachment security, $\beta = .071, p = .421$. Path c' in Figure 2b shows that the direct association between mother-reported negative coparenting and attachment was also not significant, $\beta = .027, p = .777$. This suggests that how a mother perceives the couple's coparenting quality to be during the first year of infants' life does not directly predict the security of her infant's attachment at 12 months.

Hypothesis 2: Mediation by Maternal Emotional Availability of the Associations Between Mother-Reported Coparenting and Infant-Mother Attachment

Our second hypothesis focused on whether maternal emotional availability mediated the associations between mother-reported coparenting and infant-mother attachment. As shown in Figure 2a, path a1, the relation between mothers' reports of positive coparenting and maternal emotional availability at bedtime was marginally significant, $\beta = .315, p = .052$. Path b was significant, $\beta = .328, p < .001$, such that mothers' greater bedtime emotional availability across the first year of the infant's life was linked to more secure infant-mother attachment at 12 months. Table 2 exhibits the standardized estimates, standard error, and the 95% bias-corrected bootstrap confidence intervals of the indirect links between coparenting and infant-mother attachment through maternal emotional availability. An indirect effect is considered statistically significant when the bootstrapped confidence intervals do not include zero (Shrout & Bolger, 2002). The indirect association from mothers' positive coparenting to attachment through maternal emotional availability in our model did not include the zero in the confidence intervals, 95% CI [.009, .261], indicating a significant indirect link between mothers' positive coparenting and attachment. This suggests that mothers who regarded the coparenting relationship as highly positive across the year were more likely to be emotionally available to their infants at bedtime across the first year, which was, in turn, associated with more securely attached infants at 12 months.

Figure 2b displays the path coefficients from the analysis using negative coparenting as the predictor variable. Mothers' perceptions of negative coparenting quality were significantly linked with maternal emotional availability, $\beta = -.496, p < .001$ (path a1), such that when mothers reported the couple's coparenting quality to be highly negative across the first year, those mothers were less likely to be emotionally available to their infants at bedtime across the first year. Path b, the link between emotional availability and attachment, was also significant, $\beta = .354, p < .001$. Similar to the results of the mediation analyses for positive coparenting, maternal emotional availability significantly mediated the relation between mother-reported negative coparenting and infant-mother attachment, 95% CI [-.364, -.072] (Table 2), supporting our hypothesis. This suggests that mothers

who perceived the couple's coparenting quality to be highly negative throughout the infant's first year were less likely to be emotionally available to their infants across the first year, which, in turn, was linked to less secure infant to mother attachment when the infant was 12 months old.

Hypothesis 3: Mediation by Maternal Emotional Availability on the Associations between Father-Reported Coparenting and Infant-Mother Attachment

Path coefficients of the analyses using father-report coparenting are also presented in Figure 2a and Figure 2b. Although we found significant correlations between father-reported coparenting and mother's emotional availability in the preliminary analyses, the path from fathers' reports of coparenting to maternal emotional availability was not significant for either positive or negative coparenting ($\beta = -.007, p = .960$; $\beta = .060, p = .670$, respectively). The bootstrapped estimates for the indirect effects of fathers' coparenting to infant-mother attachment are also presented in Table 2. Analyses confirmed that the mediated associations between fathers' perceptions of coparenting and infant-mother attachment were not significant for positive (95% CI [-.087, .090]) or negative coparenting (95% CI [-.087, .124]).

Post Hoc Analysis Testing the Direct and Indirect Effects of 1-month Coparenting on Attachment

Because we found a significant indirect link between mother-reported coparenting across the first year and infant-mother attachment by mother's emotional availability, we conducted follow-up analyses to explore whether we would observe the same pattern of findings if we used mothers' reports of coparenting at 1-month postpartum. If such was the case, that would justify efforts to intervene to promote coparenting quality early in the postpartum. Figure 3a and Figure 3b display the path coefficients of the post hoc analyses using mother-reported positive and negative coparenting, respectively, at 1-month postpartum. Paths a were significant for both positive ($\beta = .250, p = .028$)

and negative ($\beta = -.321, p < .001$) coparenting, such that higher mother-reported positive coparenting and lower mother-reported negative coparenting at 1 month were associated with higher maternal emotional availability across the first year. Paths b were also significant for both positive ($\beta = .308, p = .002$) and negative ($\beta = .350, p < .001$) coparenting, such that mothers who were more emotionally available throughout the first year of the infant's life were more likely to have infants who were securely attached to them at 12 months. There were no significant direct paths, but the indirect paths were statistically significant for both positive (95% CI [.018, .191]) and negative (95% CI [-.236, -.040]) coparenting, as displayed in Table 2. These results indicate that high quality coparenting early in the infant's life is indirectly linked to secure attachment when the infant is one year old.

Chapter 4

Discussion

The current study explored relations between positive and negative coparenting quality, maternal emotional availability, and infant-mother attachment security, making use of both mothers' and fathers' reports of coparenting quality. As expected from attachment and emotional availability theory (Bowlby, 1969/1982; Biringen et al., 2014; Kim et al., 2017), mothers' emotional availability was significantly associated with infants' attachment to the mother. The association between mothers' reports of coparenting across the first year and mothers' emotional availability towards the infant was more robust for negative than for positive coparenting. This difference in the findings between positive and negative coparenting suggests that mothers are particularly susceptible to the influence of negative coparenting. That is, when mothers are feeling undermined by and in conflict with their partners, they are less able to provide quality parenting to their infants. This phenomenon is most widely recognized in positive-negative asymmetry theory (Baumeister et al., 2001), which posits that bad events will have greater impact on individual functioning than good events, which theoretically helps ensure survival of a species. As discussed earlier, this finding is also consistent with the idea of relationship spillover. In the present context, relationship spillover would be evidenced when problems experienced in the couple relationship negatively impact the parent's quality of parenting with a child (Almeida et al., 1999; Krishnakumar & Buehler, 2000). Interestingly, fathers' reports of positive and negative coparenting were not associated with mothers' emotional availability, suggesting that when examining coparenting links with quality of mothering, mothers', but not fathers' perceptions of coparenting, is the more salient predictor.

Interestingly, we found no direct relation between mother-reported coparenting and attachment, which was not consistent with previous findings in the literature (Brown et al., 2010; Caldera & Lindsey, 2006; Pudasainee-Kapri & Razza, 2015). Reasons for the discrepancies between the present study and earlier works are unclear but may be due to measurement differences in

assessing coparenting and attachment. For example, Pudasainee-Kapri and Razza (2015) found significant associations between mother-reported supportive coparenting at age one and mother-reported attachment at age three, relying on mothers' perceptions for both measures, raising the possibility that these linkages are attributable to shared method variance. In addition, our study used an aggregated score of coparenting from the infant's first year of life, comprised of scores from 1, 3, 6, 9, and 12 months, whereas the three previous studies did not measure coparenting quality across multiple time points. Lastly, Caldera and Lindsey's (2006) study was cross-sectional, and Brown et al. (2010) used coparenting quality at one specific time point (when the infant was 3.5 months old) to predict attachment quality at one year. Thus, differences in the timing and method of measurement may serve as explanations for the inconsistent findings across studies, but more research is needed to explore these linkages.

Although we did not find a direct relation between mother-reported coparenting and attachment, we did find an indirect relation through emotional availability. This finding is again supported by the concept of spillover, but, in this case, parenting quality served a mediating role between coparenting and attachment (Buehler & Gerald, 2002). This significant mediated relation is consistent with both attachment theory (Bowlby, 1969/1982) and family systems theory (Cox & Paley, 1997), both of which posit that family contextual factors impact individual parenting, which can then directly impact infant attachment.

Contrary to our hypothesis, fathers' reports of coparenting did not relate to mothers' observed parenting or indirectly to infant-mother attachment. It appears that fathers' perceptions of mothers as a coparenting partners are less relevant in influencing quality of mothering and infant-mother attachment than mothers' perceptions of fathers as coparents. This should in no way detract from the potential utility of obtaining fathers' perceptions of the coparenting relationship. It may be the case that fathers' coparenting perceptions are more directly linked with quality of fathering and infant-father attachments, which were not examined in the present study. It is perhaps reasonable to assume

that how you feel about your partner as a coparent and source of support may more directly impact your own feelings of well-being and competence in the parenting role than how your partner feels about you. To our knowledge, this is the first study to examine the relative roles of mothers' and fathers' individual perceptions of coparenting in predicting maternal parenting and infant-mother attachment. More work is needed to clarify the relative roles of each in understanding child and family functioning.

Post Hoc Results

Because we found a significant indirect link from mother's reports of coparenting across the first year to infant's attachment quality at 12 months, we were curious as to whether we would also find links from coparenting quality in the early postpartum to infant attachment at one year of age. Results highlighted the importance of early family formation in organizing family processes across the first year (Feinberg & Kan, 2008). Parents' positive and negative coparenting quality when infants were as young as one-month predicted mothers' parenting quality throughout the first year of infant's life, which, in turn, predicted infant-mother attachment at one year. These results suggest that family processes occurring during the first month of infants' life may potentially set the foundation for later family functioning and that studying these early processes may be especially important for identifying families at risk. Indeed, these results support the general premise that intervention efforts to improve coparenting quality should begin earlier than later, and perhaps as soon as possible after birth (Cowan & Cowan, 2000), or even prenatally (Feinberg & Kan, 2008). The transition to parenthood is marked with significant life changes for the couple and adjustments to new roles and responsibilities as parents. Because the couple is already undergoing substantial changes, the early months of an infant's life may be a particularly useful time to intervene. Furthermore, a coparenting-based intervention may be of particular interest to couples because the infant becomes the focal point of the family during this period. Despite the new joy of parenthood that the infant brings, it is well-known that couples

typically face declines in their marital satisfaction during the first year of the infant's life (Cowan & Cowan, 2000; Lawrence et al., 2008). These declines may have deleterious effects on infant outcomes, parental outcomes, and family-level processes such as coparenting quality. The present findings thus support prior work and the general premise that processes underway during the early transition to parenthood may be stage-setting events for quality of individual and family functioning at later points in family development and argue for the need to intervene earlier rather than later in the transition to parenthood.

Strengths, Limitations, and Future Directions

The current study contributes to the study of coparenting, parenting, and early infant attachment in several ways. To begin, tests of mediation followed the now widely accepted bootstrapping method and guidelines as outlined by Preacher and Hayes (2004) and Shrout and Bolger (2002). Furthermore, the present study relied on naturalistic home observations to measure both emotional availability and quality of attachment rather than structured observations of parenting and parental reports of attachment, which increases the ecological validity of the findings. In addition, the present study used separate teams of trained observers, blind to each other's assessments, to measure mothers' emotional availability and infant-mother attachment, thus eliminating shared method variance. It should be also noted that the present study attempted to minimize shared method variance by using three separate methods of measurement (self-report, observer ratings of video-recorded parenting, and live Q-sort evaluations of infant attachment behavior to mother).

The present study also had several limitations, however. To begin, the study sample consisted primarily of rural, White, lower-to-middle class families, and thus questions can be raised about how well the present findings can be generalized. Second, whereas coparenting can occur between any two individuals who share the responsibility of childrearing, the present data was limited to coparenting

between two, different-sex birth parents. It is also possible there were more individuals involved in the childrearing (such as grandparents) in the homes of our participants that were not accounted for in our study. Third, we did not have data on infant-father attachment, and we had limited data on fathers' emotional availability because fathers typically spent very little time, relative to mothers, in putting the infants to bed. Thus, we could only examine infant-mother attachment as an outcome. Lastly, the present study only used parents' self-reports of their coparenting quality. Including an unbiased, observational measure of coparenting would provide a more comprehensive understanding of the relationships between coparenting quality, quality of mothering, and attachment security.

Despite these limitations, we believe the present study emphasizes that the coparenting quality, an important index of the health of the family system, plays an important role in organizing quality of parenting and infant-parent attachment and stresses the importance of examining coparenting quality very early in the transition to parenthood. It is our hope that future work continues to articulate the organizational roles of coparenting quality in predictions of individual parent-child functioning.

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Appendix A

Figure 1

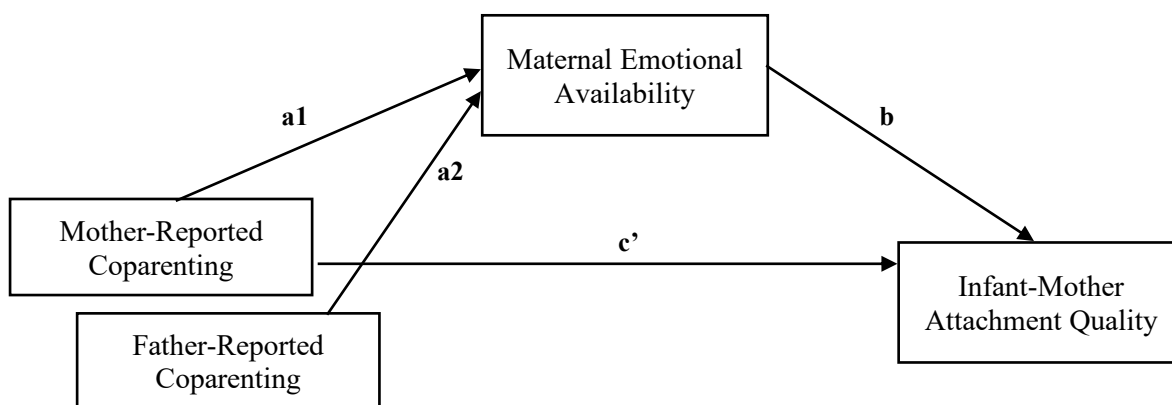
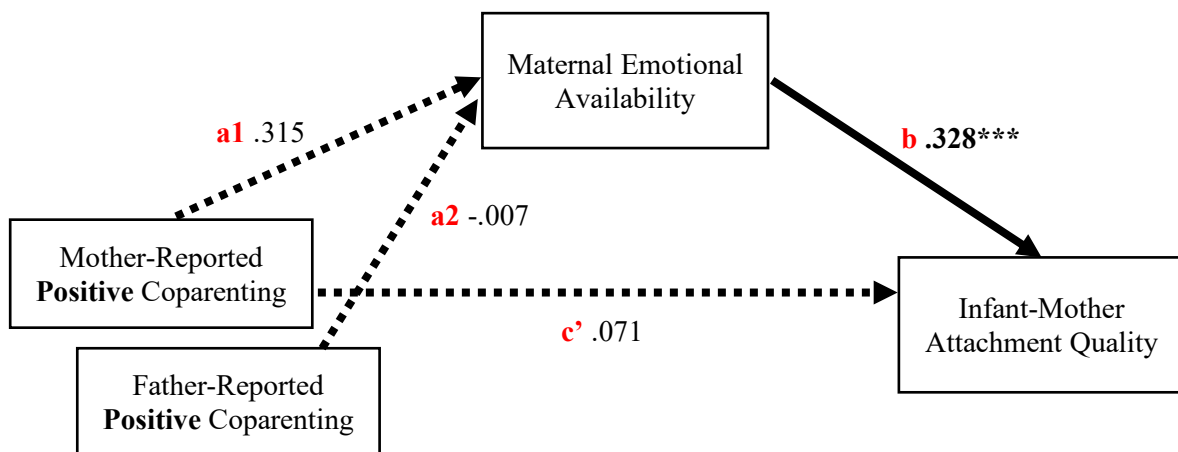
Conceptual model

Figure 2a

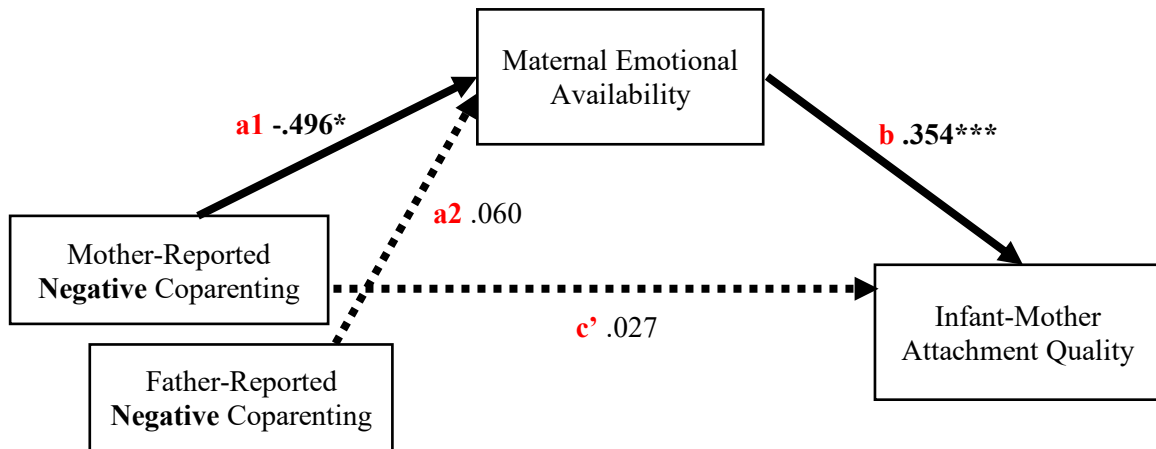
Hypothesized pathways linking positive coparenting across the first year, bedtime emotional availability across the first year, and infant-mother attachment security at 12 months



Note. Significant paths are noted with solid lines, non-significant with dotted lines. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 2b

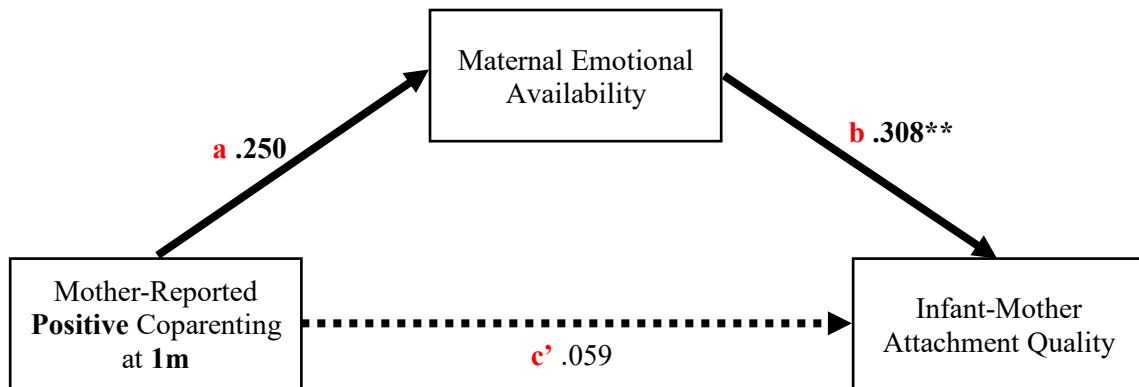
Hypothesized pathways linking negative coparenting across the first year, bedtime emotional availability across the first year, and infant-mother attachment security at 12 months



Note. Significant paths are noted with solid lines, non-significant with dotted lines. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 3a

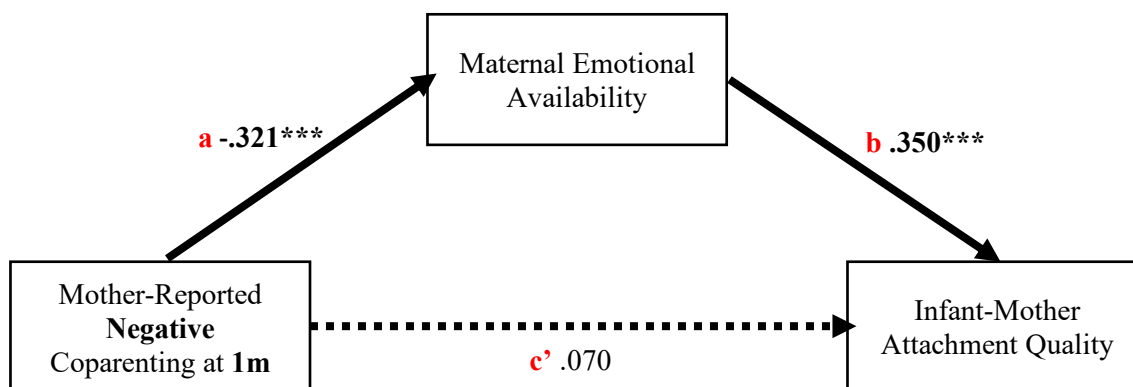
Post hoc analysis linking mother's positive coparenting at 1 month, bedtime emotional availability across the first year, and infant-mother attachment security at 12 months



Note. Significant paths are noted with solid lines, non-significant with dotted lines. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 3b

Post hoc analysis linking mother's negative coparenting at 1 month, bedtime emotional availability across the first year, and infant-mother attachment security at 12 months



Note. Significant paths are noted with solid lines, non-significant with dotted lines. * $p < .05$. ** $p < .01$. *** $p < .001$.

Appendix B

Table 1

Summary of Means, Standard Deviations, and Correlations among Study Variables

	1	2	3	4	5	6	7	8
Mother's reports of coparenting:								
1. Positive coparenting (1m)	1.00							
2. Negative coparenting (1m)	-.44*	1.00						
3. Positive coparenting (1-12m sum variable)	.89*	-.47*	1.00					
4. Negative coparenting (1-12m sum variable)	-.60*	.81*	-.68*	1.00				
Father's reports of coparenting:								
5. Positive coparenting (1-12m sum variable)	.55*	-.36*	.65*	-.49*	1.00			
6. Negative coparenting (1-12m sum variable)	-.49*	.50*	-.55*	.65*	-.78*	1.00		
7. Mother's EA (1-12m)	.27*	-.34*	.23*	-.33*	.20*	-.22*	1.00	
8. Infant-mother attachment (12m)	.15	-.05	.20*	-.12	.18	-.19*	.33*	1.00
<i>M</i>	143.66	17.76	718.12	86.85	749.99	87.56	-0.18	0.39
<i>SD</i>	22.13	6.08	94.85	26.98	68.05	29.98	12.73	0.23
<i>N</i>	160	160	142	142	126	127	138	142

Note. * $p < .05$. *M* = mean. *SD* = standard deviation.

Table 2*Indirect Effects from the Bootstrap Analysis Model*

IV	Mediator	DV	est	SE	95% CI
Mother's Positive coparenting (1-12m)	Maternal EA	Infant-mother attachment	.103	.061	.009, .261
Mother's Negative coparenting (1-12m)	Maternal EA	Infant-mother attachment	-.176	.070	-.364, -.072
Father's Positive coparenting (1-12m)	Maternal EA	Infant-mother attachment	-.002	.044	-.087, .090
Father's Negative coparenting (1-12m)	Maternal EA	Infant-mother attachment	.021	.053	-.087, .124
Mother's Positive coparenting (1m)	Maternal EA	Infant-mother attachment	.077	.042	.018, .191
Mother's Negative coparenting (1m)	Maternal EA	Infant-mother attachment	-.112	.048	-.236, -.040

Note. IV = independent variable. DV = dependent variable. est = standardized estimates. SE = standard error. CI = confidence intervals. EA = emotional availability.