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Coparenting and Children's Temperament Predict Firstborns' Cooperation in the Care of an Infant Sibling

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Abstract

This study examined how coparenting and firstborn children's temperament predicted children's cooperative behavior in response to maternal requests for assistance in the care of a 1-month-old infant sibling. Children's cooperative responding was observed during a diaper change session for 216 firstborns (ages 13 to 70 months; $M = 32$). Parents also completed questionnaires assessing coparenting and children's temperament. Results suggested that coparenting quality moderated the association between children's temperament (i.e., soothability) and children's cooperation as revealed in a *temperament x cooperative coparenting x undermining coparenting* interaction. Specifically, low soothability predicted low levels of children's cooperation in families with high undermining and low cooperative coparenting, over and above the effects of child age, gender, and mothers' education. Findings further our understanding of how temperamental characteristics and coparenting quality conjointly predict individual differences in firstborn children's positive adjustment across the transition to siblinghood.

Keywords

birth of a sibling; cooperation; coparenting; temperament

Many young children experience the transition to siblinghood as a baby sibling comes into the family. Although some children show signs of distress at the birth of a sibling, they are also inherently interested in their newborn siblings and often assist in their care (Dunn & Kendrick, 1982; Gottlieb & Mendelson, 1990). Parents report being concerned about the firstborns' acceptance of the new arrival (Dunn & Kendrick, 1982) and often attempt to promote sharing and cooperation between siblings (Kramer, 2010). Indeed, firstborn children's cooperation in the months immediately following the birth may reflect their initial acceptance of the baby sibling (Murphy, 1993). For instance, children who had shown early interest in and affection toward the newborn sibling and who had offered to help frequently 1 month after the birth displayed more friendly approaches toward the sibling at 14 months. Further, children whose mothers talked about the infant as a person and discussed the infant's needs in the first weeks after the birth engaged in more friendly sibling interactions a year later (Dunn & Kendrick, 1982). Some have argued that the prominent focus on sibling

rivalry has overshadowed the fact that young children are often positively engaged with their siblings in shared activities and joint play early in childhood (Kramer, 2010) and respond in prosocial ways (i.e., comforting, helping, sharing, cooperating) toward their siblings (e.g., Garner, Jones, & Palmer, 1994). Therefore, the primary aim of the current report was to examine firstborn children's cooperative stance in responding to maternal requests for help with infant care, in this case, a diaper change, when the infants were 1 month old. Further, we examined whether children's cooperative behavior in the diaper change would predict sibling relationship quality later in the year. Throughout the paper, we refer to the firstborns as children and the infants as siblings.

Most children become older siblings when they are between 2 and 3 years of age (Baydar, Greek, & Brooks-Gunn, 1997), a significant period for the development of children's self-regulation and emerging internalization (Kochanska & Aksan, 1995; Volling, 2012). Children varying in temperament may react differently to the transition to siblinghood and respond differently to their infant siblings. For instance, children with difficult temperaments were more likely to protest their mothers' involvement with their siblings 14 months after the birth. Children with difficult temperaments are often low on soothability and high on negative emotionality or anger, which have also been negatively associated with children's caregiving responses toward an infant sibling (Dunn & Kendrick, 1982; Volling, Herrera & Poris, 2004). Soothability (i.e., the rate of recovery from peak distress, excitement, or general arousal) may very well reflect early self-regulation (Dennis, 2006) and may play an important role, in addition to negative reactivity, in children's cooperation to maternal requests for help. In fact, studies have found that children who are easily overwhelmed with unregulated negative affect are less likely to help or cooperate with others (e.g., Laible, Carlo, Murphy, Augustine, & Roesch, 2014).

In addition to children's temperamental characteristics, how well mothers and fathers support each other in parenting was important for children's adjustment after the birth of a sibling (Kolak & Volling, 2013). Cooperative coparenting describes parents' warmth and assistance of one another in their parenting efforts, whereas undermining coparenting is characterized by parents' invalidation of each other's efforts, disagreement with, and interruption of the other parent (Belsky, Putnam, & Crnic, 1996). Coparenting behaviors are moderately stable over time (Feinberg, Brown, & Kan, 2012), even across the transition surrounding the birth of a second child (Szabó, Dubas, & van Aken, 2012), and cooperative coparenting may be particularly important for understanding children's cooperative behavior toward their mothers and infant siblings. In fact, cooperative coparenting has been related to better moral regulation among toddlers (Groenendyk & Volling, 2007) and fewer externalizing behavior problems in preschool-age children (Schoppe-Sullivan, Weldon, Cook, Davis, & Buckley, 2009). Although many studies have examined cooperative and undermining coparenting separately and found that they show different child and family level correlates (e.g., Laxman et al., 2013), most have not examined the interaction between the two. A recent study by Kolak and Volling (2013), however, found that cooperative coparenting moderated the effect of undermining coparenting in predicting children's externalizing problems after the birth of a sibling. Specifically, cooperative coparenting was a protective factor for negatively reactive children in families where parents engaged in high levels of undermining coparenting; children showed increases in externalizing behaviors

after the birth of a sibling only when their parents engaged in high undermining coparenting and low cooperative coparenting. These prior results led us to hypothesize that a similar situation might exist in the current study examining children's cooperative behavior after the sibling's birth. We hypothesized that children may be less cooperative in families where parents engaged in both high levels of undermining coparenting and low levels of cooperative coparenting, and this may be particularly problematic for difficult-to-soothe children.

The present study examined whether coparenting practices and children's temperament predicted individual differences in children's cooperation in the care of their 1-month-old infant sibling. Given earlier findings that emotionally reactive and easily distressed children engage in less sibling caregiving, we hypothesized that less soothable and more anger prone children would be less cooperative in helping their mothers with infant care. We also expected this negative association between difficult temperamental characteristics and cooperation would be more pronounced when parents engaged in negative (i.e. low cooperative and high undermining) coparenting.

Method

Participants

Participants were 241 families, including mothers, fathers, infant siblings, and firstborn children (Children's ages 13 to 70 months at 1 month after the infant's birth; $M = 32.3$, $SD = 10.3$). Families were primarily European American (85.9% of mothers; 86.3% of fathers) with 14.1% of mothers and 13.7% of fathers representing other racial and ethnic minorities. Most families earned \$60,000 – \$99,999, with the majority of mothers and fathers having a Bachelor's degree or higher. Of these, 216 families (100 boys, 116 girls) completed the Diaper Change task at 1 month—the source of information for children's cooperation—resulting in 25 missing cases at 1 month. The result of Little's (1988) Chi-Square Test of MCAR, $\chi^2(103) = 104.56$, $p = .44$, revealed that the data were missing completely at random, and thus we used listwise deletion (Allison, 2002). Families who completed the Diaper Change task at 1-month had higher levels of education for fathers, $\chi^2(3) = 9.06$, $p < .05$, but did not differ on other demographic information from the recruited sample of 241.

Procedures

Data for this report are from a longitudinal investigation of changes in family relationship functioning and firstborn children's adjustment after the birth of a second child (see Kolak & Volling, 2013 for details about recruitment). The study consisted of five time points: prenatal (last trimester of the mother's pregnancy) and 1, 4, 8, and 12 months following the sibling's birth. For the current study, information was obtained from mothers' and fathers' questionnaires on children's temperament and coparenting quality prenatally, and mothers and children participated in a diaper change session to assess children's cooperation at 1 month.

Measures

Children's cooperation—During the 1-month home visit, children were observed with their mothers during a diaper change task. Mothers were instructed to have children assist in changing the infant sibling's diaper. The task started with the mother's first request to the child, and ended when the diaper change was completed; average length was 3 minutes and 15 seconds ($SD = 66$ seconds). All sessions were video-recorded. We developed the diaper change task for the current study because (1) we wanted a task to assess children's cooperation in their infant sibling's care; (2) no standardized task currently exists to do so after a sibling's birth; (3) most studies look at children's problem behaviors; (4) feeding situations often produce distress and jealousy (Dunn & Kendrick, 1982); and (5) we wanted to keep the 1-month home visit as short as possible given that families were in a period of transition and we did not want to place additional stresses or burden on families that could contribute to attrition. We acknowledge that the diaper change session is short, but it is consistent with other home- and lab-based observational tasks lasting 3 to 4 minutes to assess early sibling interactions and caregiving (e.g., Garner et al., 1994; Howe & Ross, 1990; Volling et al., 2004).

The coding system was designed specifically for this study and measured children's *cooperation* by noting whether or not they complied with maternal requests for assistance (e.g., "Come help me change the diaper," "Can you bring that wipe?"), within 5 seconds. Cooperative behaviors could include any behavior indicating the child was willing to help or follow the mother's directive (e.g., moving toward the area, nodding, completing the requested behavior). We also included two additional coding categories, noting different types of noncompliance to maternal requests (see Kochanska & Aksan, 1995). *Passive noncompliance* was coded when children did not respond to the request within 5 seconds and ignored the directive (e.g., standing nearby, but not moving; watching, then running away). *Refusal* was coded when there was some sign of overt resistance to the parent (e.g., saying "no"; shaking head) or physical signs of resistance (e.g., stomping feet, whining). Maternal requests and the children's responses to each request were coded every time they occurred. Inter-rater reliability was calculated using 22% ($n = 48$) of cases using Cohen's kappa, $\kappa = .76$. The number of maternal requests ranged from 1 to 64 ($M = 14.25$, $SD = 9.06$). Because refusal occurred too infrequently, it was dropped from further consideration. Proportion scores were created by dividing the number of cooperative and passive noncompliance behaviors by the total number of maternal requests. An overall cooperation score was calculated by subtracting the passive noncompliance behavior proportion score from the cooperative behavior proportion score.

Because of the novelty of the diaper change session, we examined its predictive validity by conducting correlations between children's observed cooperation at 1 month and parent reports of sibling relationship quality at 4, 8 and 12 months. If cooperation in the diaper change sets the stage for positive sibling relationships, then it should predict sibling relationship quality in the year that follows. Sibling relationship measures included maternal and paternal reports of *positive involvement* (7 items, $\alpha = .85-.86$ for mothers, $\alpha = .84-.85$ for fathers), *conflict* (5 items, $\alpha = .73-.76$ for mothers, $\alpha = .72-.79$ for fathers), and *avoidance* (3 items, $\alpha = .52-.67$ for mothers, $\alpha = .56-.68$ for fathers) of the Sibling

Relationships in Early Childhood Scale (Volling & Elins, 1998) and the sibling *rivalry* subscale (6 items, $\alpha = .60-.66$ for mothers, $\alpha = .58-.72$ for fathers) of the Sibling Inventory of Behavior (Hetherington & Clingempeel, 1992). Children's cooperative behavior in the diaper change was positively correlated with father-reported sibling positive involvement, $r = .15, p < .05$, and negatively correlated with mother-reported sibling conflict, $r = -.17, p < .05$ and father-reported sibling rivalry, $r = -.17, p < .05$, at 8 months. We acknowledge that significant correlations are not abundant and that future research is needed to replicate these findings, but they provide the first empirical support that children's initial cooperation in the diaper change task is related to the quality of the emerging sibling relationship as reported by mothers and fathers.

Temperament—Children's temperament was assessed prenatally using two scales of the Child Behavior Questionnaire (CBQ; Rothbart, Ahadi, & Hershey, 1994): *soothability* (13 items, $\alpha = .77$ for mothers, $\alpha = .75$ for fathers) - the rate of recovery from peak distress, excitement, or general arousal (e.g., "If upset, cheers up quickly when s/he thinks about something else"), and *anger* (13 items, $\alpha = .77$ for mothers, $\alpha = .73$ for fathers) - the amount of negative affect related to goal blocking (e.g., "Has temper tantrums when s/he doesn't get what s/he wants"). Parents rated their children's behaviors on a 7-point Likert scale ranging from 1 (*extremely untrue*) to 7 (*extremely true*). The *soothability* and *anger* scales were chosen because they best represented the distress regulation and negative reactivity aspects of temperament (see Rothbart & Bates, 2006). Mothers' and fathers' reports were significantly correlated, $r = .48 - .65, ps < .01$, and averaged.

Coparenting—Both mothers and fathers completed the Coparenting Questionnaire (Margolin, Gordis, & John, 2001) prenatally. The questionnaire included 14 items rated on a 5-point scale (1 = *never*; 5 = *always*) to assess *Cooperative coparenting* (5 items, $\alpha = .78$ for mothers, $\alpha = .69$ for fathers; e.g., "My spouse says nice things to me about our child"), *Triangulation* (4 items, $\alpha = .52$ for mothers, $\alpha = .64$ for fathers; e.g., "My spouse tries to get our child to take sides when we argue"), and *Conflict* (5 items, $\alpha = .74$ for mothers and fathers; e.g., "My spouse argues with me about our child"). *Triangulation* and *Conflict* were correlated ($r = .37, p < .01$ for mothers, $r = .41, p < .01$ for fathers), and were averaged to create a composite of *Undermining coparenting*. The correlations between mothers' and fathers' *Cooperative* ($r = .35, p < .01$) and *Undermining coparenting* ($r = .52, p < .01$) were significant and were averaged across parents to assess the dyadic nature of coparenting.

Results

Descriptive statistics and the correlations among variables are presented in Table 1. Hierarchical regression models were conducted to examine the joint contributions of temperament and coparenting measured at the prenatal time point to the prediction of children's cooperation at 1 month. Preliminary analyses revealed that children's age, $r = .28, p < .001$, gender (0 = girl, 1 = boy), $r = -.19, p < .01$, and mothers' education, $r = .15, p < .05$, were significantly correlated with children's cooperation. Each of these was entered as covariates in Step 1 of the regression model. Step 2 included temperament (anger, soothability), and cooperative and undermining coparenting. Two-way interactions between temperament and each of the coparenting dimensions, and the two-way interaction between

the two coparenting dimensions were entered in Step 3. Finally, three-way interactions among all focal variables (e.g., soothability x cooperative coparenting x undermining coparenting) were entered in Step 4. Significant interactions were plotted and probed to understand the nature of the interaction, using procedures described by Aiken and West (1991). The largest variance inflation factor (VIF) was 3.15, which indicates no problems of multicollinearity due to high correlations among predictors (Bowerman & O'Connell, 1990).

In the full model using both anger and soothability as indicators of temperament, anger had no significant direct effect on children's cooperation nor were there any significant interactions. Thus, we removed anger and ran a reduced model using only soothability. Table 2 shows the significant findings. The main effect of soothability and its two-way interaction with cooperative coparenting were significant, as was the three-way interaction among soothability, cooperative coparenting, and undermining coparenting. The three-way interaction was decomposed in line with recommendations by Aiken and West (1991) and simple slopes are shown in Figure 1 at low (-1 SD) and high ($+1$ SD) levels of children's soothability. The slope of the line representing high levels of undermining coparenting and low levels of cooperative coparenting was significantly different from zero, whereas the slopes of the other three lines were not. That is, children's low soothability was related to low levels of cooperation in the diaper change task in families in which parents were high in undermining coparenting and low on cooperative coparenting.

Discussion

The present study contributes to our understanding of children's positive adjustment to the birth of a sibling by focusing on their cooperation with their mothers in the infant sibling's care. The results supported our hypothesis that variation in children's temperament would predict individual differences in children's cooperation shortly after the sibling's birth. Specifically, we found that children's soothability played an important role in how cooperative they were with their mothers, and children's temperament interacted with coparenting quality to predict children's cooperation. We found that children's soothability positively predicted their cooperation in families characterized by low cooperative and high undermining coparenting environments, over and above the influence of child gender, age, and mothers' education. Children's anger did not predict children's cooperation or moderate the effect of coparenting, suggesting that children's abilities to soothe themselves and regulate emotions played a more prominent role in determining cooperative behaviors in the current study than children's negative reactivity and emotion expressions.

Children's ability to sooth themselves was particularly important for their cooperation in family environments characterized by negative coparenting. By examining two dimensions of coparenting separately, we were able to further discover that it was only under the high undermining and low cooperative coparenting situation that children's low soothability predicted low levels of cooperation. These findings might reflect several family processes that future research may need to address. First, a coparental relationship low on cooperation and high on undermining may create an antagonistic and insecure family climate that may exacerbate the stress of the transition for children with poor temperamental regulation (Karreman van Tuijl, van Aken, & Dekovi, 2008; Volling, 2012). Second, low levels of

cooperative coparenting in the present study may also indicate the father is uninvolved in the family, which would include time spent with the firstborn (Jia & Schoppe-Sullivan, 2011). Some have suggested that the father's involvement may protect children after the birth of a sibling by providing the necessary support to compensate for the declining maternal attention and caregiving now being directed to the newborn sibling (Gottlieb & Mendelson, 1990). Finally, undermining and low cooperation between parents no doubt provides poor models for children's prosocial and cooperative behaviors.

The study had several methodological strengths. First, temperament and coparenting were assessed by both mother and father reports, which can reduce the bias of single reporters and concerns about shared method variance. Second, children's cooperative behaviors were observed during a routine diaper change at home, providing an ecologically valid assessment of children's early cooperation in the presence of an infant sibling. Although used for the first time in the current study, we did find preliminary support for the utility of the diaper change task as a means of assessing young children's interest in and cooperation with their infant sibling that forecasted later sibling relationship quality; more cooperative children were more positively involved and engaged in less sibling rivalry and conflict later in the year following the birth. Because the diaper change sessions were relatively short, however, future studies would benefit from longer periods of repeated observations.

Despite these strengths, there are some limitations to this study. Participants were predominantly middle-class European American parents, and only included two-parent families because of our interest in fathers. Future research will need to enroll more diverse populations with respect to race and ethnicity, SES, and family structure. Also, we focused on parent-reported coparenting before the sibling's birth, but longitudinal investigations exploring the changes in coparenting using multiple measures (e.g., observation) and its impact on children's development are still needed.

When families undergo a transition such as the birth of a second child, children's uncooperativeness can add to parenting stress after the sibling's birth. Moreover, children's initial rejection of the sibling may lead to antagonistic sibling interactions later on. This study provided empirical support for the joint contributions of children's temperamental characteristics and coparental relations before the birth in predicting children's initial cooperation with their mothers in the care of their 1-month-old sibling. Intervention efforts designed to enhance cooperative coparenting may be particularly beneficial for children who are not easily soothed when distressed.

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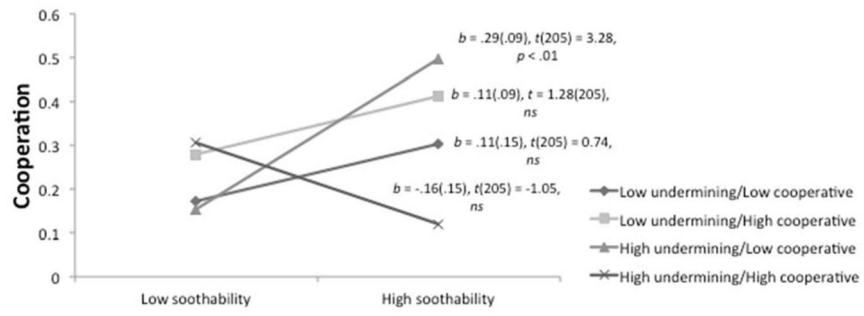


Figure 1. Children’s soothability, cooperative coparenting, and undermining coparenting at the prenatal time point interact to predict children’s cooperation at 1 month.

Table 1

Descriptive Statistics and Intercorrelations among Coparenting, Child Temperament, and Cooperation (N = 216)

Variables	1	2	3	4	5
1 Soothability (prenatal)	–				
2 Anger (prenatal)	-.49**	–			
3 Cooperative Coparenting (prenatal)	.20**	-.10	–		
4 Undermining Coparenting (prenatal)	-.33**	.19**	-.55**	–	
5 Child Cooperation (1 month)	.10	-.09	.04	-.03	–
<i>M</i>	4.97	4.21	4.23	1.50	.29
<i>SD</i>	.59	.64	.48	.33	.46

* $p < .05$.** $p < .01$.

Table 2

Regression Testing Coparenting as a Moderator of the Association between Children's Soothability and Cooperation

Predictors (Prenatal)	Cooperation (1 month)	
	B(SE)	β
Step 1	$R^2 = .12^{***}$	
Age	.01(.003)	.25 ^{***}
Gender	-.14(.06)	-.15 [*]
Mother's education	.09(.04)	.15 [*]
Step 2	$R^2 = .03^*$	
Soothability	.14(.05)	.18 ^{**}
Cooperative coparenting	.02(.07)	.02
Undermining coparenting	.00(.11)	.00
Step 3	$R^2 = .03$	
Soothability x Cooperative	-.27(.14)	-.16 [*]
Soothability x Undermining	-.02(.20)	-.01
Cooperative x Undermining	-.28(.15)	-.14
Step 4	$R^2 = .02^*$	
Soothability x Cooperative x Undermining	-.71(.33)	-.19 [*]
Final model: adjusted $R^2 = .16$, $F(10, 205) = 4.98^{***}$		

Note. Gender 0 = girl, 1 = boy

* $p < .05$.

** $p < .01$.

*** $p < .001$.