

## **Interparental conflict and infants' behavior problems: The mediating role of maternal sensitivity**

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### **Abstract:**

Although the negative effect of interparental conflict on child behavior problems has been well established, few studies have examined this association during infancy. This study examined the associations between mother-reported interparental conflict and young children's behavior problems over the first 2 years of their lives in a sample of 212 mothers and infants. Two aspects of maternal sensitivity, sensitivity during distressing and nondistressing contexts, were examined as possible mediators between interparental conflict and infants' behavior problems. Results indicated that interparental conflict was associated directly with infants' externalizing problems over time but was associated indirectly with infants' internalizing problems over time via compromised maternal sensitivity within distressing contexts but not through maternal sensitivity within nondistressing contexts. No significant child gender differences were found. Such findings add to a limited body of research suggesting that the early interparental relationship context is relevant for infant adjustment. The salient mediating role of maternal sensitivity within distressing contexts provides important theoretical and practical insights for future studies.

**Keywords:** infancy | interparental conflict | maternal sensitivity | distressing contexts | behavior problems

### **Article:**

Interparental conflict has been consistently identified as one of the more salient family risk factors for the development of internalizing and externalizing problems among school-age children (Cummings & Davies, 2010). However, little is known about the impact of interparental conflict on infant development. Research on interparental conflict and infant development is important because (a) interparental conflicts surrounding issues of child rearing, work–family balance, and labor division tend to become particularly frequent and intense during the transition to parenthood (e.g., Belsky & Rovine, 1990); (b) a few studies have demonstrated that children as young as infants can feel and indeed be influenced by the tension and hostility in interparental conflicts (e.g., du Rocher Schudlich, White, Fleischhauer, & Fitzgerald, 2011); and (c) children's internalizing and externalizing problems occurring as early as infancy are serious public health issues and have been identified as important precursors to their later psychosocial adjustment

(e.g., Lorber, Del Vecchio, & Slep, 2014). Thus, it seems possible that the seeds of children's later behavior problems might be sown by the interparental conflict that they have been exposed to during the early years of their lives.

In addition to the direct effects, elucidating the mechanisms through which interparental conflict influences young children's adjustment during their first year of life constitutes another promising direction. Among numerous potential mediators, maternal sensitivity in infancy could be among the more important because (a) parenting processes have been corroborated as a key mechanism linking interparental conflict and older children's developmental outcomes (Davies & Cummings, 1998; Grych & Fincham, 2001; Lindsey, Caldera, & Tankersley, 2009) and (b) maternal sensitivity has been consistently associated with infants' social-emotional well-being (Leerkes, Blankson, & O'Brien, 2009). Furthermore, prior research has also highlighted the necessity and importance of investigating the differential effects of maternal sensitivity within distressing and nondistressing contexts on children's developmental outcomes (Leerkes, Weaver, & O'Brien, 2012; McElwain & Booth-LaForce, 2006). Thus, in the present study, we also examined whether maternal sensitivity within distressing and nondistressing contexts plays a distinctive role in explaining the association between interparental conflict and infants' well-being, which is likely to provide increased specificity that can benefit the development of more targeted and effective early intervention and prevention programs.

### **Interparental Conflict and Children's Behavior Problems**

That psychopathology originates as early as infancy, which spans the period from birth to 36 months (Briggs-Gowan, Carter, Irwin, Wachtel, & Cicchetti, 2004), has reached increasing consensus (Cicchetti, 2010). Indicators of internalizing problems for infants include cognitive and emotional vulnerabilities such as decreased interest in play, social withdrawal, anxiety, separation from mother insecurity, somatic complaints, and frequent expressions of fear and sadness (Briggs-Gowan et al., 2004). Indicators of externalizing problems for infants include defiance, physical aggression, high activity level, and impulsivity (Lorber et al., 2014). Research has shown that between approximately 10% and 15% of infants experience acute social-emotional and behavioral difficulties (Carter, Briggs-Gowan, & Davis, 2004). Moreover, internalizing and externalizing problems during infancy may set in motion processes that likely lead to maladjustment in later childhood, adolescence, and even adulthood (Campbell, Shaw, & Gilliom, 2000). Child development researchers have devoted great efforts to identifying family contextual factors that may contribute to these problems for decades, and one of the more consistent findings is that interparental conflict plays a crucial role in shaping children's developmental trajectories, even after controlling for other confounding family risk factors such as parental depression (Cummings & Davies, 2010; Davies, Martin, & Cicchetti, 2012).

In their emotional security theory, Cummings and Davies (2010) have drawn on attachment theory and postulated that preserving a sense of protection, safety, and security is among the more salient and important goals in the hierarchy of human goals. Interparental conflict is a salient family stressor that can undermine infants' sense of security across multiple family subsystems, which collectively may account for their internalizing and externalizing problems (Harold, Shelton, Goeke-Morey, & Cummings, 2004). Recently, Davies and colleagues proposed a reformulated version of emotional security theory (EST-R; Davies & Martin, 2014; Davies &

Sturge-Apple, 2007) to provide depth and precision in delineating the developmental sequelae of interparental conflict. The EST-R proposes that “children’s concerns about security in the face of interparental conflict are largely organized by the social defense system” (SDS; Davies & Martin, 2014, p. 243). SDS refers to a behavioral system that helps identify social signals indicative of potential threat and organize behavioral strategies to neutralize interpersonal threat. Infants’ individual differences in utilizing the SDS system to defuse threat may have distinct repercussions for their mental health (Davies, Martin, Sturge-Apple, Ripple, & Cicchetti, 2016). Infants may engage in the display of heightened distress and fear and become hypervigilant to threat in the context of interparental conflict, which may increase their susceptibility to internalizing symptoms and externalizing problems (Davies & Martin, 2013). Infants may also engage in coercion and aggression toward caregivers to directly neutralize the interparental threat, which may ultimately lead to tendencies to exhibit a repertoire of externalizing problems (Davies & Sturge-Apple, 2007). Finally, infants may adopt demobilizing strategies in response to interparental conflict (e.g., sadness, freezing, fatigue) to reduce their salience as targets of hostility from caregivers, which may pose a disproportionate risk for internalizing symptoms (Sloman, Farvolden, Gilbert, & Price, 2006). Overall, interparental conflict may be associated with infants’ development of internalizing and externalizing problems over time via undermined emotional security.

The direct effect of interparental conflict can occur as early as infancy, given this is a key time in which the child’s sense of trust in self and other (i.e., working model) is developing (Bowlby, 1988). Interparental conflict constitutes a significant strain and is emotionally arousing for infants (Cummings, Zahn-Waxler, & Radke-Yarrow, 1981). Infants are sensitive to their primary caregiver’s emotions and can match their own emotions to their parents’ as young as 6 weeks old (Saarni, Campos, Camras, & Witherington, 2006). Around 2–3 months of age, infants begin to take turns within vocal interactions with parents, demonstrating responsiveness to their parents’ behavior (Crockenberg & Leerkes, 2006). Infants look to their parents in affectively arousing situations; and research has shown that infants take cues from their parents’ responses and regulate their emotions accordingly (Gottman, Driver, & Tabares, 2002). It is probable that parental difficulties in their interactions with their partners exert impacts on infants because infants are constantly observing and learning from their parents’ emotional and social interactions.

In addition to the theoretical evidence, a slim body of research on the association between interparental conflict and infants’ behavior problems has generally lent support to this perspective. Early laboratory studies by Cummings and his colleagues revealed that infants showed signs of distress and anger and showed increased levels of aggression within their peer interactions after witnessing angry interactions between two adults (Cummings, Ballard, El-Sheikh, & Lake, 1991; Cummings, Iannotti, & Zahn-Waxler, 1985). Although Cummings et al.’s (1991, 1985) laboratory studies provided valuable evidence for the potential risk of interparental conflict on infants’ behavior problems, conflict was presented to children by experimenters in the lab, and thus it is uncertain whether these results generalize to interparental conflict at home. To address this gap, a recent observational study found that infants displayed distress in response to their own parents’ conflictual interactions (Goeke-Morey, Cummings, & Papp, 2007). Additionally, in a population-based study, caregivers’ conflict about parenting at 12 months was associated with higher levels of internalizing problems concurrently (Bayer, Hiscock,

Ukoumunne, Price, & Wake, 2008). In other studies, exposure to violent behaviors between caregivers was related to infants' externalizing problems (DeJonghe, von Eye, Bogat, & Levendosky, 2011; Levendosky, Leahy, Bogat, Davidson, & von Eye, 2006). Overall, the literature on the effect of interparental conflict on infants' adjustment has been limited to immediate and concurrent outcome measures. To better understand the impact of interparental conflict during infancy, this study examines interparental conflict during infants' first year in relation to infant behavior problems over time (i.e., assessed at age 2).

### **The Mediating Effects of Maternal Sensitivity**

Parenting has long been identified as an important linking mechanism that explains how interparental conflict leads to child behavior problems (Emery, 1982). During infancy, the quality of parenting is often captured by the core parenting construct of sensitivity (McElwain & Booth-LaForce, 2006). Sensitive caregiving refers to the mother's ability to notice, understand, and respond consistently and appropriately to an infant's cues, in a manner that prioritizes her infant's needs (Ainsworth & Bell, 1970).

From a family systems perspective, the mediating process of maternal sensitivity has been operationalized by the concept of "spillover" of negativity from the interparental relationship to the parent-child relationships (Davies & Cummings, 1998; Lindsey et al., 2009). The spillover hypothesis is based on the premise that the negative emotions, affect, and mood generated in the interparental relationship transfer to parenting behaviors (Erel & Burman, 1995; Krishnakumar & Buehler, 2000). Interparental conflict requires excessive energy and generates emotions that make parents less emotionally available to their children. This spillover process results in insensitive parenting practices, such as poor monitoring, more inconsistent and harsh discipline, and less parental involvement and support, which could lead to child maladjustment, according to socialization models of parenting (Stolz, Barber, & Olsen, 2005). Notably, the scapegoating hypothesis posits that caregivers who do not constructively interact with their partners often resort to blaming their children and/or overly controlling their children's behaviors (Bradford & Barber, 2005). These unresponsive, intrusive, and overprotective parenting behaviors may collectively dispose children to behavior problems.

### **Maternal Sensitivity During Distressing Versus Nondistressing Contexts**

Theoretical and empirical work on maternal sensitivity has begun to differentiate the construct of maternal sensitivity during infancy by attending to the context to which the mother is responding (Leerkes, 2010). Drawing from a domain specificity perspective, Leerkes and colleagues (2012) proposed that sensitivity during distressing and nondistressing contexts should be treated as distinct constructs. Sensitivity during distressing contexts refers to the sensitivity with which mothers respond in emotionally arousing contexts that are likely to elicit fear, sadness, anger, or nondifferentiated distress and thus serves comfort and protection socialization goals; sensitivity during nondistressing contexts refers to the sensitivity with which they respond to their infants in contexts that are unlikely to elicit distress and serves reciprocity and learning socialization goals (Grusec & Davidov, 2010; Leerkes et al., 2012).

The distinctness of sensitivity within distressing and nondistressing contexts suggests that they may have different origins and may be related to different domains of child adjustment. Prior research has found that sociodemographic risk factors were associated more strongly with sensitivity within nondistressing than distressing contexts, whereas mothers' emotional and cognitive reactions to distress were more relevant for sensitivity within distressing rather than nondistressing contexts (Leerkes et al., 2012). Interparental conflict constitutes a salient stressor for mothers, and thus they may not be able to read their infant's aversive cues (e.g., crying) due to negative affect and greater focus on self, which may be more likely to weaken sensitivity within distressing contexts, given that mothers in a conflictual relationship are more likely to prioritize their own needs over infant needs (Lindsey et al., 2009). Infant nondistress (e.g., smiling, laughing) is not generally aversive or demanding, so conflict spillover may not be as influential on maternal sensitivity within nondistressing contexts as it is for sensitivity within distressing contexts. Thus, it is expected that interparental conflict would be associated negatively with maternal sensitivity within distressing contexts but not within nondistressing contexts or the association would be stronger for sensitivity within distressing contexts than for sensitivity within nondistressing contexts.

Compared to sensitivity within nondistressing contexts, sensitivity within distressing contexts may have particular implications for infants' early socioemotional development. Sensitive responses involving distress are more likely to foster self-regulation skills and openness to express and disclose negative emotions and ultimately to promote social competence and reduce problem behaviors (Leerkes et al., 2009). Recent empirical evidence has supported this proposition, such that for infants at 6 months of age, maternal sensitivity during distressing tasks rather than during a free-play task was associated with infant attachment security, social competence, and fewer problem behaviors (Leerkes, 2011; Leerkes et al., 2009; McElwain & Booth-LaForce, 2006). In light of previous theoretical and empirical evidence with regard to the salient and unique role of sensitivity within distressing versus nondistressing contexts during infancy, we expected that maternal sensitivity within distressing contexts would serve as a unique linking mechanism that explains why interparental conflict leads to infants' behavior problems over time.

## **The Current Research**

We examined the associations between interparental conflict and infants' behavior problems and also whether maternal sensitivity could explain why such associations may occur, with a key distinction between maternal sensitivity within distressing versus nondistressing contexts. We predicted that infants would display more emotional and behavioral problems over time when exposed to more interparental conflict during the first year of life and that maternal sensitivity within distressing contexts rather than within nondistressing contexts would be a unique mediator that explains why interparental conflict poses risk for infants' adjustment outcomes. To strengthen the causal inference by addressing the temporal sequence, we measured interparental conflict twice and aggregated the results during infants' first year, observed maternal sensitivity when infants were 2 years of age, and made infant behavior problems at 2 years the focal outcome, treating infant behavior problems at 1 year as a baseline control (Maxwell, Cole, & Mitchell, 2011). To rule out the possibility of infants' behavioral problems serving as mediators linking interparental conflict and maternal sensitivity, we also examined an alternative mediation

model. Family income-to-needs ratio, maternal age, race, educational levels, marital status, and child gender were controlled, given their potential confounding with maternal sensitivity and infant behavior problems (Leerkes, 2011; Leerkes et al., 2009; McElwain & Booth-LaForce, 2006). Interparental conflict during the prenatal period was also controlled for, considering that mothers involved in conflict contexts may have elevated cortisol levels due to stress and arousal, which may affect infant adjustment over time (Marcus et al., 2011). This reduces the concern that observed associations between postnatal interparental conflict and infant outcomes are an artifact of fetal programming. In addition, infant negative emotionality at 6 months reported by mothers was controlled to partition out its contribution to infant behavior problems and reduce mothers' perception bias in reporting infant outcomes at 2 years (Crockenberg & Leerkes, 2006). Given that research on interparental conflict with older children has yielded contradictory child gender moderating effects (Davies & Lindsay, 2004; Simon & Furman, 2010), we examined infant gender as a possible moderator.

## **Method**

### **Participants**

Participants in the current study were 259 primiparous mothers (128 European American, 123 African American, 8 multiracial) and their infants from the southeastern United States. Mothers ranged in age from 18 to 44 years ( $M = 25.05$ ,  $SD = 5.41$ ) at recruitment. Twenty-seven percent had a high school diploma or less, 27% had attended but not completed college, and 46% had a 4-year college degree. The majority (71%) of mothers were married or living with their child's father, 11% were dating but not living with their child's father, and 18% were single and not living with the child's father. Annual family income ranged from less than \$2,000 to over \$100,000; median income was \$35,000. Of the initial 259 participants, 212 mothers provided data on infants' behavior problems at age 2 and were included in the analytic sample. The primary reasons for missing data were inability to locate or contact mothers, moving from the area, or being too busy. All participating infants were full term; 51% were female. Initial participants who did not provide data on infant behavioral problems (due to attrition) were older and more educated than were mothers who did provide data, but they did not differ on family income-to-needs ratio, marital status, prenatal interparental conflict, infant affect, infant gender and ethnicity, interparental conflict, and maternal sensitivity. This study's protocol was approved by the Institutional Review Board at the study's home institution.

### **Procedures**

Expectant mothers were recruited at childbirth classes offered in the local hospital and public health department; breastfeeding classes offered through the Special Supplemental Nutrition Program for Women, Infants and Children; obstetric practices; and word of mouth. During the prenatal period, mothers were mailed a variety of questionnaires, including measures of demographics and interparental conflict, that they completed and returned when they visited the campus for an interview. Mothers were also mailed questionnaires, including measures of interparental conflict (when infants were 6 months and 1 year old), infant temperament (6 months), and infant behavioral problems (1 year and 2 years). Mothers and infants visited our laboratory for a videotaped observation of mother-infant interaction when infants were 2 years

old ( $M = 27.32$  months,  $SD = 2.52$ ). Mothers received \$50 and a gift at the completion of the prenatal and 6 months phases, \$100 after the 1 year phase, and \$125 after the 2 years phase.

During the 2 years visit, mothers and infants participated in a 7-min free play interaction with age-appropriate toys after a transition period and then engaged in three distress-eliciting tasks. Before starting the free-play interaction, mothers and infants had electrodes placed on their chests to measure their heart rate and Velcro strips placed on mothers' fingers to measure skin conductance (*transition period*). The first task was a *toy clean-up*, designed to elicit frustration. After the free-play period, the experimenter brought in two large storage containers and instructed mothers to get their child to clean up all of the toys in any way they wanted, but they had to involve their child. The task ended when 5 min was over or when all of the toys were in the containers ( $M = 4.30$  min,  $SD = 1.03$  min). The second task, was the *attractive toy in a locked box*, designed to elicit frustration. Children selected one of two attractive toys, and after being allowed to play with it for a moment, the experimenter locked it in a clear container and gave the child a set of keys, with the instruction that they could play with the toy when they opened the box. The correct key was not on the key ring. For 4 min, the experimenter prompted the child to use the keys to open the box. The third task was the *spider approach*, which is designed to elicit fear. The experimenter placed a stuffed spider attached to a remote control car immediately inside the door to the observation room and then left the room. For 20 s, the spider remained still near the door. Then the spider repeatedly approached to within 2 feet of the child, retreated from the child, and paused until 3.5 min had passed. During the last 30 s, the experimenter returned to the room and asked the child to touch the motionless spider three times in a neutral voice. During the first minute of the latter two tasks, the mother was instructed to remain uninvolved unless she wanted to end the activity. Then the experimenter signaled the mother that she could interact as desired for the remaining 3 min.

## Measures

### Interparental conflict at prenatal, 6 months, 1 year, and 2 years

Mothers reported on their conflict or negativity with partners using the five-item conflict subscale of the Romantic Relationship Questionnaire (RRQ; Braiker & Kelley, 1979). Participants indicated how much each item applied to their relationship on a 9-point scale with differing responses for each item. The conflict scale has been found to be an important correlate of relationship quality and related to children's emotional adjustment during infancy (Belsky, Youngblade, Rovine, & Volling, 1991). In previous research utilizing the RRQ with samples of married couples undergoing the transition to parenthood, internal consistency reliability levels have been demonstrated to range from .61 to .90 across prenatal and postnatal assessments (Belsky, Lang, & Rovine, 1985). The RRQ has also previously been demonstrated to detect change in marital functioning across the transition to parenthood (Belsky et al., 1985). In this sample,  $\alpha = .81$ , for the prenatal period, .83 for 6 months, .84 for 1 year, and .84 for 2 years. Interparental conflict at 6 months and 1 year correlated positively ( $r = .61, p < .05$ ) and were averaged to represent the level of conflict between caregivers during the first year.

### Maternal sensitivity within distressing and nondistressing contexts at 2 years

Maternal behavior at 2 years was rated by trained raters separately for each task using Ainsworth's 9-point Sensitivity/Insensitivity scale, ranging from 1 (*highly insensitive*) to 9 (*highly sensitive*; Ainsworth, Bell, & Stayton, 1974). The focus of this scale is the extent to which the mother reads and responds to her infant's cues and demonstrates an awareness of the infant's state by adjusting her own behavior. The Ainsworth et al. (1974) scale is considered a gold-standard measure of the sensitivity construct in developmental psychology and has a rich history of use in prior work investigating relations between maternal sensitivity and other attachment constructs (e.g., infant attachment security; e.g., Beijersbergen, Juffer, Bakermans-Kranenburg, & van IJzendoorn, 2012). Twenty percent of the current sample was double-coded for interrater reliability. Across the interactive segments, intraclass correlations (ICCs) ranged from .83 to .92 (mean ICC = .87). The sensitivity within nondistressing contexts composite ( $\alpha = .76$ ) was computed as the average of the sensitivity ratings for the free-play and transition tasks. The sensitivity within distressing contexts composite ( $\alpha = .77$ ) was computed as the average of the sensitivity ratings for the three emotion-eliciting tasks.

### **Infant behavior problems at 1 year and 2 years**

Mothers reported on 31 items from the Brief Infant Toddler Social Emotional Assessment (Briggs-Gowan et al., 2004) that assessed infant problem behaviors. These items were intended to tap externalizing, internalizing, and general social-emotional dysregulation (e.g., sleep problems) symptomatology. All items were scored on a 3-point scale ranging from 0 (*Not True/Rarely*) to 2 (*Very True/Often*). Following revised scoring suggestions by Briggs-Gowan et al. (2013), we averaged 14 items reflecting internalizing problems and seven items reflecting externalizing problems. In prior research, these subscales have shown convergent validity with the internalizing and externalizing subscales of the Child Behavior Checklist (Briggs-Gowan et al., 2013). In this sample, Cronbach's  $\alpha$ s = .73 and .70 for internalizing problems at 1 and 2 years, respectively;  $\alpha$ s = .70 and .59 for externalizing problems at 1 and 2 years, respectively.

### **Control variables**

Mothers reported their age, educational level (ranging from 1 = *some high school* to 7 = *graduate degree*), family income, marital status, and race (0 = African American, 1 = European American) during the prenatal phase and child sex (1 = male, 2 = female) postnatally. Infant temperament was assessed at 6 months with a widely used parent-report measure, the Infant Behavior Questionnaire—Revised Very Short Form (Gartstein & Rothbart, 2003). Mothers completed the negative affect subscale (12 items). Items were rated on a 7-point scale ranging from 1 (*Never*) to 7 (*Always*). Internal consistency was .74.

### **Results**

Descriptive statistics and intercorrelations among variables are presented in Table 1. The zero-order correlations were consistent with expectations. Interparental conflict was associated positively with infants' internalizing and externalizing problems at both 1 year and 2 years. Interparental conflict was associated negatively with maternal sensitivity within distressing and nondistressing contexts. Maternal sensitivity was associated negatively with infants' behavior problems at both 1 year and 2 years. Consistent with prior research (Leerkes et al.,



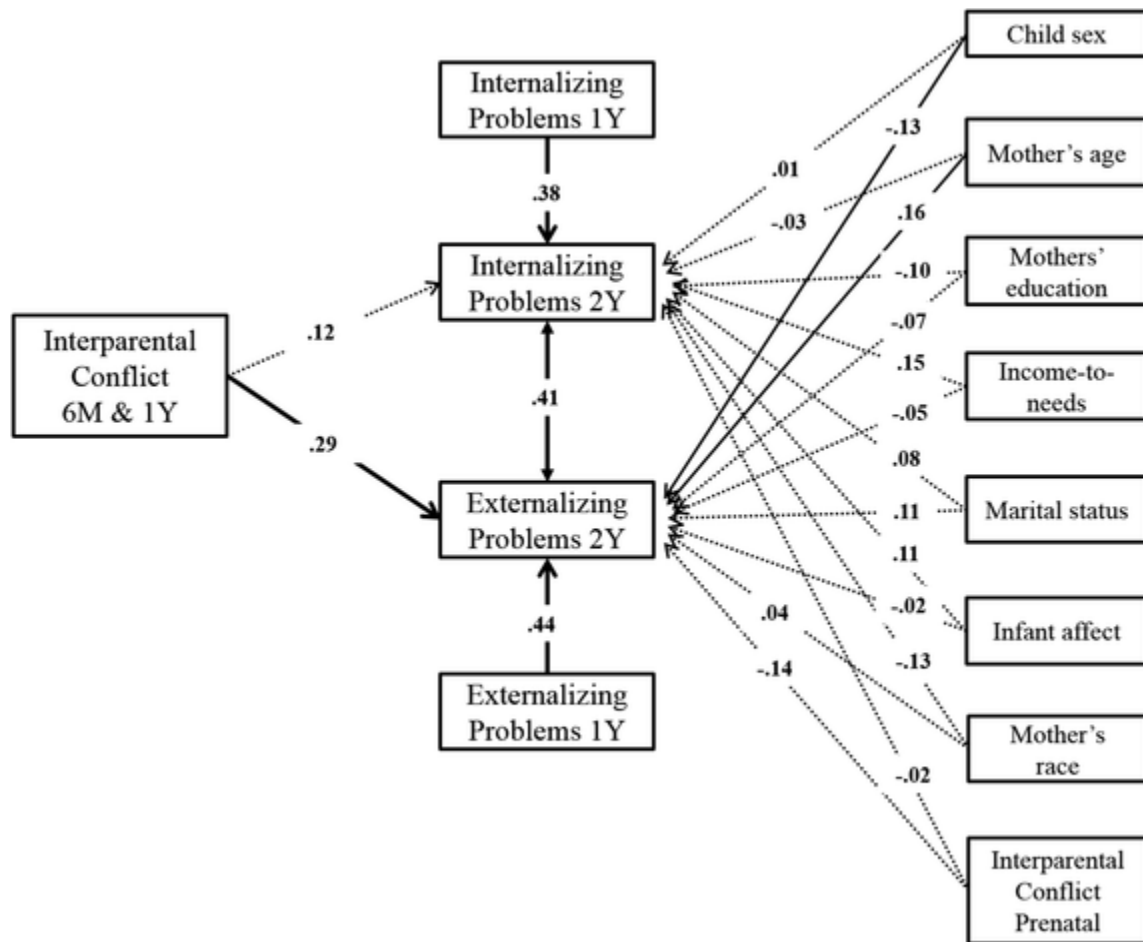
2009; McElwain & Booth-LaForce, 2006), although maternal sensitivity within distressing contexts correlated highly with maternal sensitivity within nondistressing contexts (i.e.,  $r = .78$ ), the unique portion of variance (40%) in sensitivity within distressing contexts may be particularly important for infant adjustment.

Table 1  
Means, Standard Deviations, and Zero-Order Bivariate Correlations Among Demographics, Interparental Conflict, Sensitivity, and Infant Adjustment

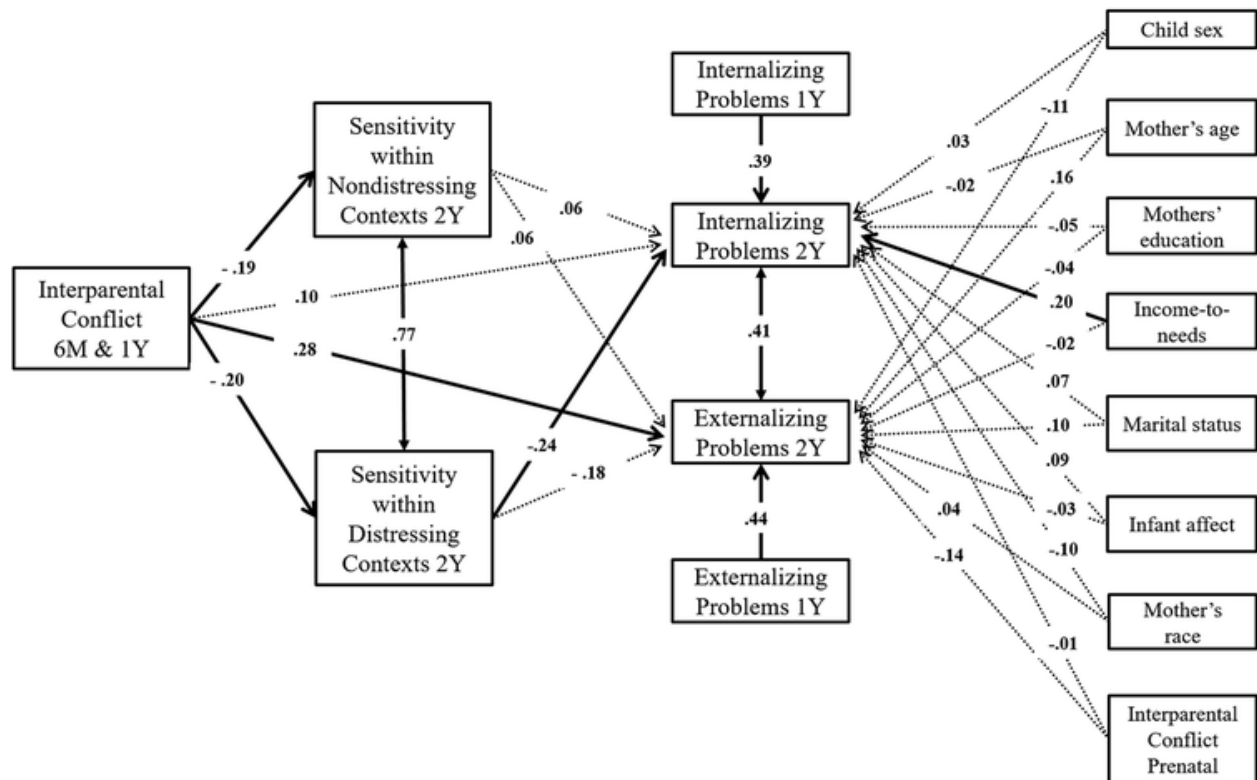
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Race (European American = 1)															
2. Child sex (male = 1)	-.02														
3. Maternal age	.35	.004													
4. Maternal education	.33	-.06	.68												
5. Income-to-needs ratio	.46	-.001	.47	.55											
6. Marital status	-.60	.06	-.52	-.62	-.45										
7. Infant negative affect	-.29	.08	-.22	-.21	-.23	.19									
8. Interparental conflict: prenatal	-.21	.04	-.12	-.07	-.05	.21	.15								
9. Interparental conflict: 6M & 1Y	-.18	.02	-.20	-.16	-.11	.08	.11	.60							
10. Sensitivity: nondistressing 2Y	.44	.03	.51	.50	.43	-.48	-.18	-.16	-.17						
11. Sensitivity: distress 2Y	.44	.08	.46	.54	.49	-.49	-.22	-.14	-.19	.78					
12. Internalizing: 1Y	-.27	.10	-.20	-.23	-.23	.26	.31	.19	.24	-.32	-.23				
13. Externalizing: 1Y	-.24	-.02	-.22	-.29	-.17	.32	.19	.18	.23	-.30	-.27	.54			
14. Internalizing: 2Y	-.29	.08	-.22	-.26	-.13	.31	.28	.16	.19	-.32	-.34	.48	.39		
15. Externalizing: 2Y	-.15	-.13	-.08	-.20	-.14	.21	.07	.09	.27	-.20	-.26	.29	.53	.50	
<i>M</i>	49.4	48.6	25.05	3.81	2.94	3.16	3.93	4.28	4.26	6.31	5.94	.31	.34	.30	.36
<i>SD</i>			5.41	1.79	2.09	2.06	.57	1.54	1.46	1.48	1.65	.24	.31	.22	.29

Note. *n* ranges from 173 to 212. *n* represents the number of participants for each pair of zero-order correlation given missing data for some variables. The means for race and sex reflect percentages. Italics indicates data are significant at  $p < .05$ . Prenatal = prenatal phase; 6M = 6 months; 1Y = 1 year; 2Y = 2 years.

Hypotheses were examined by conducting path analysis with Mplus Version 7.4 (Muthén & Muthén, 1998–2012). Missing data were handled in the primary analyses via full information maximum likelihood, which takes all available data ( $N = 212$ ) into account. Two path models were examined. In the first path model (see Figure 1), interparental conflict at 6 months and 1 year was specified as an exogenous variable that predicted infant behavior problems at 2 years, with internalizing and externalizing symptoms at 1 year as controls. Examination of the simple direct effects of interparental conflict on infant behavioral problems is warranted given limited prior efforts to examine these associations in infancy using a longitudinal design. In the second path model (see Figure 2), maternal sensitivity within distressing and nondistressing contexts at age 2 were added as mediators. A bootstrap approach was implemented. It is one of the valid and powerful methods for testing mediating effects because it uses a resampling strategy to calculate indirect effects with no assumption about the shape of sampling distribution of the coefficients (Preacher, Rucker, & Hayes, 2007). Race, infant gender, maternal age, education, income-to-needs ratio, marital status, infant affect, and prenatal interparental conflict were specified as exogenous control variables linked to infant behavior problems. Then infant gender differences were examined using multigroup analyses by comparing a model with all paths constrained to equality (after paths involving gender were removed) with a model that had all paths freely estimated across boys and girls using a Wald test.



**Figure 1.** Associations between interparental conflict and problem behaviors during infancy. Values are standardized coefficients. Solid lines indicate relations that are significant at  $p < .05$ ; dotted lines indicate those not significant at  $p > .05$ . Infant gender differences for associations between interparental conflict and internalizing and externalizing problems were not significant. 6M = 6 months; 1Y = 1 year; 2Y = 2 years.



**Figure 2.** The mediating effects of maternal sensitivity within nondistressing and distressing contexts in the associations between interparental conflict and problem behaviors during infancy. Values are standardized coefficients. Solid lines indicate relations that are significant at  $p < .05$ ; dotted lines indicate those not significant at  $p > .05$ . Infant gender differences for associations among interparental conflict, sensitivity within distressing and nondistressing contexts, and internalizing and externalizing problems were not significant. 6M = 6 months; 1Y = 1 year; 2Y = 2 years.

### Direct Effects Model

The path model demonstrated good fit to the data,  $\chi^2(2) = 4.40, p > .05$ , comparative fit index (CFI) = .987, root-mean-square error of approximation (RMSEA) = .068, standardized root-mean-square residual (SRMR) = .012. Standardized coefficients for the structural paths are presented in Figure 1. Consistent with prediction, interparental conflict during the first year was associated with externalizing problems at age 2 after controlling for stability from age 1. Interparental conflict, however, was not associated with internalizing problems. Multigroup analyses were conducted to examine child gender differences. The change in chi-square across these two models was nonsignificant,  $\Delta\chi^2(2) = 2.7, p > .05$ , for models that examined child gender differences. These findings indicate that path coefficients did not differ across child genders.

### Mediating Effects Model

The mediated path model demonstrated good fit to the data,  $\chi^2(4) = 5.32, p > .05$ , CFI = .997, RMSEA = .036, SRMR = .013. Standardized coefficients for the structural paths are presented

in Figure 2. Interparental conflict during the first year was associated negatively with maternal sensitivity within both distressing and nondistressing contexts at year 2. Consistent with prediction, maternal sensitivity within distressing but not within nondistressing contexts was associated with internalizing problems. The indirect effect of interparental conflict on internalizing problems via maternal sensitivity within distressing was significant ( $\beta = .05$ , 95% confidence interval [CI: .01, .13]). The indirect effect of interparental conflict on internalizing problems over time via maternal sensitivity within nondistressing contexts was not significant ( $\beta = -.01$ , 95% CI [-.07, .02]). Maternal sensitivity within neither distressing nor nondistressing contexts was associated with externalizing problems, but the direct effect of interparental conflict on higher externalizing problems remained significant. The unique mediating effect of sensitivity within distressing contexts supports the distinctness of maternal sensitivity during distressing and nondistressing contexts. Multigroup analyses were conducted to examine whether the structural paths varied across child genders. The change in chi-square across these two models was nonsignificant,  $\Delta\chi^2(6) = 5.63$ ,  $p > .05$ . These findings indicate that path coefficients did not differ across child genders.

An alternative mediating model was examined such that interparental conflict was specified as an exogenous variable that predicted maternal sensitivity within distressing and nondistressing contexts, and infant internalizing and externalizing symptoms at 2 years were specified as mediators. Although the model fit was good,  $\chi^2(4) = 9.00$ ,  $p > .05$ , CFI = .990, RMSEA = .069, SRMR = .010, interparental conflict was not associated with infants' internalizing or externalizing problems or with maternal sensitivity within distressing or nondistressing contexts. This model did not support the alternative hypothesis that infants' behavior problems would mediate the association between interparental conflict and maternal sensitivity.

## Discussion

Interparental conflict is a salient risk factor in young children's lives, and its implications for children's adjustment have been extensively studied. This study contributes to the larger body of research by extending the examination of the specific processes that account for these effects to early infancy. In particular, this investigation distinguishes between maternal sensitivity within distressing and nondistressing contexts when examining the indirect effects of maternal sensitivity in the association between interparental conflict and infants' behavioral problems.

The first goal of this article was to examine the direct association between interparental conflict and infants' behavior problems over time. A direct association between interparental conflict during first year and infants' externalizing problems at 2 years controlling for externalizing problems at 1 year was observed. This finding lends support to theories that propose a direct mechanism linking exposure to interparental conflict and deleterious outcomes. Interparental discord may impair infants' emotional security about the interparental, parent-child, and overall family relationship and thus lead to acting out behaviors (Cummings & Davies, 2010). In support of the EST-R, infants' vigilance to threat and heightened activation of the social defense system may predispose them to tendencies to exhibit a repertoire of externalizing problems (Davies & Sturge-Apple, 2007). This finding is also consistent with the broader body of literature that suggests interparental conflict poses risk for children's socioemotional functioning. This provides additional evidence that infants are acute observers of their parents' marital interaction.

Young children learn how to understand and express emotions by internalizing the way in which their parents respond to their own emotions. Alternatively, externalizing problems in young children from conflictual families may reflect genetic predispositions (Radke-Yarrow, Nottelmann, Martinez, Fox, & Belmont, 1992). Infants' proneness to anger has been demonstrated to include moderate heritable variance (e.g., Deater-Deckard, Petrill, & Thompson, 2007), and thus both mothers and their infants may be inclined to engage in aggression due to their shared genetic predispositions. However, that the observed association between interparental conflict and infant externalizing was apparent after controlling for infant temperament suggests mechanisms beyond genetic transmission play a role.

In addition, infants may have been primed by repeated exposures to intense marital conflict between the caregivers to experience future negative emotions (Graham, Fisher, & Pfeifer, 2013). Over time, infants from conflictual families may engage in more disruptive forms of anger release as they become more upset, which develops into aggression and noncompliance over time. The modeling and coaching impact of interparental conflict may be extremely salient during early infancy, given that caregivers may assume infants are not able to understand and learn from them and thus may not attempt to shield them from being exposed to conflict.

Maternal sensitivity did not mediate the association between interparental conflict and infants' externalizing problems, which supports the view that the link between interparental conflict and externalizing problems might be explained by children's direct observation and learning from the conflict. That the direct effect was not mediated by maternal sensitivity is in contrast to findings of a prior study in which a significant mediating effect of maternal parenting between interparental violence and infants' concurrent externalizing problems was observed (Levendosky et al., 2006). Perhaps the linking mechanisms for interparental conflict versus violence in relation to aggression and noncompliance during infancy are different. Future studies are warranted to examine alternative explanatory mechanisms for the modeling and coaching effects of interparental conflict on infants' externalizing problems, such as physical tension and the quality of parents' touch as well as compromised physiological regulation (du Rocher et al., 2011). For instance, exposure to interparental conflict may sensitize infants' developing regulatory systems, leading to increased activation of physiological regulation ultimately resulting in burnout and diminished regulatory abilities, which characterizes disruptive behaviors (Moore, 2009). Alternatively, other aspects of parenting not observed in the current study, such as harsh discipline or controlling behavior, may be linking mechanisms.

Interparental conflict during the first child-rearing year was not related directly with infants' internalizing problems. The EST-R posits that some infants' displays of negative emotions in the context of conflictual contexts (e.g., distress and fear), as well as demobilizing strategies (e.g., sadness, freezing, fatigue), may pose a disproportionate risk for internalizing symptoms (Sloman et al., 2006). Future studies may directly observe infants' responses to caregivers' conflict to see whether the dysregulated profile of responses leads to internalizing problems over time. Alternatively, infants may exhibit internalizing problems in the context of violence rather than conflict or hostility, given that violent interactions could be more emotion arousing for infants.

Interparental conflict, however, was associated indirectly with infants' internalizing problems via maternal sensitivity within distressing but not within nondistressing contexts. Notably,

interparental conflict was associated with sensitivity within both distressing and nondistressing contexts, suggesting the spillover process may be pervasive (Lindsey et al., 2009). In addition to the limited attention and energy due to frequent conflict with partners, negative partner dynamics may also lead to mothers' heightened stress reactivity (e.g., stress hormone), which influences functioning in brain regions involved in emotional and cognitive processing, creating a negative bias in attending and responding to infant behavioral cues (Sturge-Apple, Davies, Cicchetti, & Cummings, 2009). Thus, the impaired social cognition resulting from interparental conflict may undermine maternal sensitivity within both distressing and nondistressing contexts.

That maternal sensitivity within distressing but not within nondistressing contexts was associated with internalizing problems over time is consistent with a domain specificity perspective and results of prior studies (e.g., Leerkes et al., 2009). Given biological systems critical for the development of effective emotion regulation develop rapidly during infancy, mothers' scaffolding of self-soothing by providing security objects for crying infants, for instance, may help them learn to self-regulate and to perceive the expression and sharing of negative emotions as acceptable rather than problematic (Leerkes et al., 2012). In contrast, infants may learn from mothers' unavailability and/or be upset with their displays of negativity to suppress their expression of distress, demonstrating overregulated, flat or withdrawn affect instead (Gunnar & Fisher, 2006). Sensitivity during nondistressing contexts, however, frequently focuses on object and social stimulation (Grusec & Davidov, 2010). Given that contexts involving neutral and positive emotions are not as salient as are contexts involving negative emotions for the infant, mothers' responses within nondistressing context are less likely to have implications for emotional development (Leerkes et al., 2009). Future prevention and intervention to reduce the negative impact of interparental conflict may particularly target mothers' sensitivity within distressing contexts. Given that infants' emotion regulation capacities develop rapidly during infancy and are linked closely with behavioral problems, additional studies are needed to incorporate infants' emotional regulation capacities to better understand the influence of interparental conflict on infants' internalizing and externalizing problems (Crockenberg, Leerkes, & Lekka 2007; du Rocher et al., 2011).

Although this is one of the first studies to demonstrate longitudinal associations between interparental conflict and infant adjustment, the study is not without limitations. The present investigation is limited to the sole focus on maternal report of conflict and infant behavior problems, which may inflate associations via shared method variance. That mother-reported infant temperament was controlled reduces this concern somewhat, by controlling for mothers' negative perception bias. Additionally, infants' exposure to caregiver conflict was not measured and might be more relevant for infant adjustment. That maternal sensitivity and infant behavior problems were assessed at the same time undermines the causal inference, although an alternative mediating model was examined and ruled out. To address these issues in future research, infant adjustment should be assessed using multi-informant (mother and father reports) and multimethod (e.g., direct observation of child behavior) approaches, and interparental conflict, maternal sensitivity and infant adjustment should be assessed in temporal order. Moreover, prior research has demonstrated that interparental conflict may be associated with children's development across multiple domains, including but not limited to internalizing and externalizing problems (Cummings & Davies, 2010). Thus, future infant studies are warranted to

extend the examination of the impact of interparental conflict on other cognitive, behavioral, and social outcomes as well as the linking mechanisms.

Despite the limitations, the overall pattern of findings is consistent with the emotional security hypothesis, such that interparental conflict is associated directly with infants' externalizing problems and related indirectly with infants' internalizing problems via the quality of maternal behavior (Cummings & Davies, 2010). The findings also make a unique contribution to understanding the implications of interparental conflict during early infancy, given the prominent incidence of conflict and the infants' high plasticity during this period (Belsky & Rovine, 1990; Gunnar & Fisher, 2006). The significant association of interparental conflict with internalizing problems over time indirectly through maternal sensitivity within distressing contexts highlights the importance of considering interparental relationships in conjunction with quality of parent-child relationships to better understand infant development.

Results from this study provide some insights for future intervention efforts designed to limit the negative consequences of interparental conflict on young children's developmental outcomes. First, the direct association between interparental conflict and infants' externalizing problems highlights the importance of disseminating to clinicians, the community, and new parents the significance of reducing the intensity of interparental conflict (du Rocher et al., 2011). Parents should also be aware that interparental conflict could be stressful for infants and may sensitize them to future conflict and teach them to express themselves and behave in an aggressive manner. Second, the results of the mediating effect of maternal sensitivity in the association between interparental conflict and infants' internalizing problems over time suggest the importance of educating parents about the spillover of negativity from the marital relationship to the parent-child relationship (Lindsey et al., 2009) and the particular importance of responding promptly, consistently, and sensitively when their infants are distressed. Clinical interventions aiming to improve infant mental health may be particularly effective if they focus on parent training during potentially distressing contexts, such as mealtime, separations, reunions, and disciplinary scenarios. Moreover, the combinations of marital and parenting components in interventions may protect infants in conflictual families from the development of both externalizing and internalizing problems.

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