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## **The Interparental Relationship: Meta-Analytic Associations With Children's Maladjustment and Responses to Interparental Conflict**

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# The Interparental Relationship: Meta-Analytic Associations With Children's Maladjustment and Responses to Interparental Conflict

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The aim of the current meta-analysis was to aggregate concurrent and longitudinal empirical research on associations between the interparental relationship and both children's maladjustment (i.e., externalizing and internalizing symptoms) and children's responses to interparental conflict (i.e., emotional, behavioral, cognitive, and physiological). Based on major theoretical frameworks, we distinguished between six dimensions of the interparental relationship: relationship quality, conflict frequency, hostile, disengaged, and unconstructive forms of conflict, and child-related conflict. A final selection of 169 studies for child maladjustment and 61 studies for child responses to conflict were included. The findings revealed by the expansive and fine-grained approach of this meta-analysis support and challenge theoretical hypotheses about the relative predictive value of dimensions of the interparental relationship for children's functioning. Although hostility was specifically more strongly associated with children's externalizing behavior and emotional responses to conflict, disengaged and unconstructive conflict behavior posed similar risks for the other domains of child functioning. In addition, relationship quality, conflict frequency, and child-related conflict warrant more attention in theoretical frameworks, as these dimensions posed similar risks to child functioning as the different forms of conflict. Moreover, most associations between the interparental relationship and child functioning endured over time. Also, developmental and gender differences appeared to depend on the specific forms of interparental conflict and the domain of child functioning. In sum, the results support the growing consensus that prevention and intervention programs aimed at children's mental health could benefit from an alternative or additional focus on the interparental relationship.

## Public Significance Statement

This meta-analysis pooled findings from previous research on associations between different aspects of the interparental relationship and children's maladjustment (i.e., externalizing and internalizing problems) and responses to interparental conflict (i.e., emotional, behavioral, and physiological reactivity, and cognitive appraisals of the interparental subsystem). The findings highlight the importance of both the general quality of the relationship between parents as well as five aspects of interparental conflicts (i.e., conflict frequency, the level of hostile, disengaged and unconstructive conflict behavior, and the amount of child-related conflicts) as robust predictors of children's maladjustment, concurrently *and* over time. Moreover, the findings confirm that children's emotional and behavioral reactivity to interparental conflicts, and their cognitive appraisals of the interparental subsystem, are fruitful directions for understanding why interparental conflict leads to maladjustment in children.

**Keywords:** child adjustment, child responses to conflict, interparental relationship, longitudinal, meta-analysis

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The importance of the interparental relationship for child development is long recognized (Belsky, 1984; Emery & O'Leary, 1984; Goldberg & Easterbrooks, 1984; Kelly, 2000; Minuchin, 1974). Since the meta-analytic integration of Buehler and colleagues in 1997, the field has developed in three ways. First, the amount of empirical research investigating conflict management strategies that do not involve aggressive or violent behaviors has increased. Second, empirical studies have increasingly employed longitudinal research designs to examine associations between the interparental relationship and *later* child adjustment. Third, the predominant focus on children's internalizing and externalizing symptoms as sequelae of interparental conflict has been more heavily complemented by the delineation of children's appraisals and reactivity to interparental conflict as risk processes that underlie their exposure to interparental conflict. These developments make this an excellent time for a meta-analytic integration to answer our main research question: Is the interparental relationship associated with children's adjustment problems and responses to interparental conflict, *concurrently and longitudinally*? We included two salient indicators of children's maladjustment: externalizing and internalizing behavior problems. In addition, we examined four categories of child responses, representing the full spectrum of possible responses to conflict (Rhoades, 2008): emotional responses, behavioral responses, cognitive appraisals, and physiological responses. We will first discuss the multidimensionality of the interparental relationship and hypotheses about the risk of the different dimensions of the interparental relationship for child development, drawing on major theoretical frameworks. Then we will explore empirical research on the associations between dimensions of the interparental relationship and the different domains of children's maladjustment and responses to conflict.

### The Multidimensionality of the Interparental Relationship

For a long time, the interparental relationship has predominantly been treated as a unidimensional construct often called *marital discord*. Over the past few decades, this unidimensional treatment has

increasingly been supplanted by empirical efforts to more precisely (a) distinguish relationship quality from interparental conflict and (b) parse specific dimensions of interparental conflict and their implications for children (Davies & Cummings, 1994; Grych & Fincham, 1990; Kerig, 1996). However, research has yet to quantitatively evaluate the added value of these empirical efforts toward greater precision. To address this gap, a key goal of the current meta-analysis is to use major theoretical models as a guide to distinguish between global relationship quality measures and specific dimensions of interparental conflict as predictors of children's functioning. Table 1 presents the definitions for relationship quality and the five conflict dimensions included in this study.

First, global relationship quality or adjustment is a multidimensional concept that has various definitions in the literature (for a full overview see Fincham & Rogge, 2010; Knapp & Lott, 2010). In the current meta-analysis, relationship quality is defined as an aggregate construct that reflects dyadic satisfaction, cohesion, affection, and consensus on matters of importance to dyadic functioning (in line with Spanier's (1976) definition; Table 1). Within family system models (Cox & Paley, 1997, 2003; Minuchin, 1974), the quality of the interparental relationship quality is hypothesized to be associated with children's adjustment based on the concept of interdependency between family members and subsystems. Children may react on disturbances and distress in the interparental subsystem by acting out (e.g., aggression or delinquent behavior) or by internalizing the stress (i.e., depressive or anxious behavior). However, a common assertion of emotional security theory (Davies & Cummings, 1994) and the cognitive-contextual framework (Grych & Fincham, 1990) is that relationship quality is less strongly associated with children's well-being than exposure to conflicts between parents. In the present article, we systematically test this assertion for different domains of child functioning.

In approaches designed to unpack the operative dimensions underlying global relationship quality, research has consistently identified five dimensions of interparental conflict (see Table 1). The *frequency* with which parents have conflicts or disagreements

Table 1  
*Definitions of Dimensions of the Interparental Relationship*

Dimension	Definition
Relationship quality	The global level of quality, adjustment or happiness of the interparental relationship, as reflected in the (a) dyadic satisfaction (i.e., feeling happy/satisfied with the relationship/partner), (b) dyadic cohesion (i.e., interacting, spending time together, shared interests), (c) expression of affect, and (d) consensus on a variety of topics that are important for relationships—across nonconflictual (but not explicitly excluding conflictual) contexts.
Frequency of conflicts	The frequency with which parents have disagreements or conflicts, which are not characterized as any specific form of conflict management or behavior.
Hostile behavior	The extent to which parental conflicts are characterized by relatively intense forms of anger that are expressed in nonverbal, verbal, or physically aggressive ways. Examples of nonverbally expressed anger are eye-rolling and feeling angry. Verbal aggression refers to raising voices, yelling, and criticizing, name-calling, undermining, insulting, or threatening the other. Examples of physical aggression are hitting, pushing, and shoving.
Disengaged behavior	The extent to which parental conflicts are characterized by detachment, withdrawal and dysphoria.
Constructive behavior	The extent to which parental conflicts are characterized by behaviors that generally facilitate progress towards a resolution or are reassuring of the relationship, such as calm discussing, problem solving, supporting the other, and showing affection.
Child-related conflict	The frequency with which parents disagree or argue about child-related topics (e.g., the child's behavior, child-rearing).

is conceptualized as a risk factor for children's heightened reactivity and adjustment problems in multiple theoretical frameworks (Crockenberg & Forgays, 1996; Davies & Cummings, 1994; Grych & Fincham, 1990). However, both the cognitive-contextual framework (Grych & Fincham, 1990) and emotional security theory (Davies & Cummings, 1994) propose that frequency of conflict is a relatively mild risk factor compared with the greater significance of how parents express or manage their disagreements. These specific ways of expressing conflict behaviors can be ordered conceptually by their intensity or level of threat to the children's well-being (Davies & Cummings, 1994; Grych & Fincham, 1990). At a broad level, the literature has distinguished between two destructive conflict strategies (i.e., hostile and disengaged interparental conflict) and a constructive conflict strategy.

*Hostile interparental conflict* refers to the extent to which interparental conflict is characterized by relatively intense forms of nonverbal and verbal expressions of anger that also encompass acts of physical violence (see Table 1). In both the cognitive-contextual framework and emotional security theory, hostility between parents is proposed to engender the greatest distress and risk for children (Davies, Martin, & Sturge-Apple, 2016; Davies & Cummings, 1994; Grych & Fincham, 1990). In its most intense form, hostile parental conflict shares conceptual overlap with the physical violence concept in intimate partner violence literature (i.e., Vu, Jouriles, McDonald, & Rosenfield, 2016). However, interpartner violence commonly is distinct in its inclusion of acts of sexual aggression, whereas hostile interparental conflict is distinct in its inclusion of expressions of intense anger that are not violent in form. There is empirical evidence linking the range of hostile conflict behaviors to children's adjustment problems (Harold & Sellers, 2018; Zemp, Milek, Cummings, Cina, & Bodenmann, 2016) and reactivity (Davies, Hentges, et al., 2016), and therefore we expect consistent, moderate associations between hostile interparental conflict and child outcomes. Some theories suggest milder forms of hostility expressed through verbal and nonverbal anger displays to be moderately distressing for children and have milder long-lasting effects relative to intense hostility expressed through violence (Davies & Cummings, 1994; Grych & Fincham, 1990). Because reviews have not differentiated between variations in the intensity of aggression, a test of the relative roles of different forms of hostility as predictors of child adjustment and responses to conflict will be part of the current study.

The second form of destructive behavior, *disengaged interparental conflict*, refers to disagreements between parents that are characterized by detachment, withdrawal, and a dysphoric mood (see Table 1). According to emotional security theory, disengaged forms of conflict increase children's risk for maladjustment (Davies & Cummings, 1994). However, questions remain about the magnitude of its risk. For example, the original emotional security theory posited that disengaged and hostile forms of interparental conflict are relatively similar in the strengths as predictors of children's coping responses to interparental conflict. Likewise, at the level of children's psychological outcomes (e.g., externalizing problems), some qualitative reviews have tentatively interpreted the existing findings as supporting the premise that interparental hostility and disengagement are comparable in the magnitude of their risk (e.g., Harold & Sellers, 2018; Zemp et al., 2016). However, according to the reformulation of emotional security theory (Davies & Martin, 2013), different forms of interparental

conflict are proposed to vary in their potency as predictors of children's responses to conflict that specifically reflect children's insecurity, fear, and vigilance. Thus, for these child responses specifically, interparental hostility is hypothesized to be the strongest predictor, followed by disengaged conflict as a more intermediate predictor, and, in turn, unconstructive conflict as a relatively weak to negligible predictor. However, studies on the relative roles of hostile and disengaged interparental conflict as predictors of children's signs of insecurity have produced inconsistent results (Davies, Martin, et al., 2016). Our meta-analysis was designed, in part, to directly examine the relative roles of interparental hostility and disengagement as predictors of children's reactivity to conflict and psychopathology. Based on theory and previous qualitative reviews, we hypothesized that risk posed by disengaged interparental conflict for children's psychopathology would be comparable with interparental hostility and evidence significant, but somewhat weaker, associations with children's negative or insecure responses to conflict.

*Constructive interparental conflict* is the extent to which parents handle their disagreements in ways that generally facilitate progress toward a resolution or strengthen their relationship (i.e., collaboration, cooperation, finding a resolution; Table 1). In the original emotional security theory, variations in constructive conflict are hypothesized to be equally predictive of children's adjustment relative to hostile and disengaged interparental conflicts (Davies & Cummings, 1994). However, disagreements still exist across theories. For example, although the reformulated emotional security theory shares the hypothesis that diminished displays of collaboration, affection, and support (i.e., *unconstructive* interparental conflict) may pose a similar risk to children's psychopathology as disengaged and hostile conflict, it may still be a negligible predictor of children's insecure responses to conflict. Insecure responses (i.e., specifically responses that reflect insecurity, fear, and vigilance) to conflict are proposed in the reformulated theory to reflect children's prioritization of defending against threat. In comparison with hostile and, to a lesser degree, disengaged conflicts, expressions of constructive conflict contain far less reliable signs of social threat to children's well-being. Consistent with theory, researchers have reported moderate associations linking more constructive interparental conflict with lower levels of adjustment problems (Harold & Sellers, 2018). In addition, consistent with the reformulated emotional security theory specifically, research findings indicate that the specific prospective relation between unconstructive conflict and children's emotional insecurity is negligible when destructive forms of interparental conflict are included as predictors (Davies, Hentges, et al., 2016). Thus, although moderate associations are expected between *unconstructive* interparental conflict and many forms of child reactivity and adjustment problems, smaller to nonsignificant findings may be expected for the specific association between *unconstructive* interparental conflict and children's insecurity.

The final dimension, *child-related conflict*, is distinctive in its focus on the topic of conflict (see Table 1). Child-related conflict refers to the extent with which parents have conflicts specifically about child-related topics such as the child's behavior or child rearing issues (e.g., quality of caregiving, division of responsibilities in parenting). This dimension of the interparental relationship corresponds with the disagreement or conflict dimension of the coparenting relationship, which is often similarly defined as the degree to which parents

disagree about parenting and child-related issues (i.e., Feinberg, 2003; Teubert & Piquart, 2010; Zemp, Johnson, & Bodenmann, 2018). However, child-related conflict is distinctive from more broadly defined coparenting conflict dimensions that additionally include undermining behavior between parents in their roles as caregivers (e.g., Teubert & Piquart, 2010) or the larger constructs of the coparenting relationship that comprise multiple dimensions including support, cohesion, division of parenting responsibilities, and triangulation, (e.g., Sbarra & Emery, 2008; Teubert & Piquart, 2010). Thus, although the dyadic nature of the interparental relationship can be distinguished from the triadic composition of the coparenting relationship (McHale & Sirotkin, 2019), disagreement over child-related issues is a central dimension of interparental conflict and coparenting quality. For example, according to emotional security theory (Davies & Cummings, 1994) and the cognitive-contextual framework (Grych & Fincham, 1990), conflicts about child-related issues may be especially distressing to children and a robust predictor of children's psychological outcomes. However, no theory has generated hypotheses on the relative importance of child-related conflict and other conflict dimensions in the prediction of children's functioning. Likewise, no review has systematically evaluated potential differences in risk between child-related conflict and other conflict dimensions. Therefore, we explored to what extent child-related conflict is differentially associated with child reactivity and adjustment problems.

### Domains of Child Functioning in the Context of the Interparental Relationship

Table 2 gives an overview of the domains of child functioning included in this study. Children's externalizing and internalizing are the two most studied indicators of children's maladjustment (Buehler et al., 1997). In addition to these two salient mental health outcomes, several theories have highlighted the importance of children's processing and appraisals of interparental conflict in explaining why exposure to conflict may increase their vulnerability to psychopathology. In the emotional security theory and cognitive-contextual framework, three domains of child responses are theorized to play a role in children's processing of interparental conflict: emotional responses, behavioral responses, and cognitive appraisals (Davies & Cummings, 1994; Grych & Fincham, 1990). Although these three domains are proposed to be complementary processes, research has supported their distinctive role in linking interparental conflict and child adjustment (see, e.g., Fosco & Grych, 2008). In addition, a recent body of research studied neurobiological (cortisol) and psychophysiological processes (vagal tone and skin conductance reactivity) as additional regulatory mechanisms that affect specific outcomes of interparental conflict (see e.g., El-Sheikh & Whitson, 2006). Now, we will illustrate the significance of these different response dimensions in prevailing theories and existing research.

### Child Adjustment

All major theoretical frameworks propose that disturbances and conflicts in the interparental relationship are related to higher levels of maladjustment in children (Cox & Paley, 2003; Crockenberg & Langrock, 2001; Davies & Cummings, 1994; Grych & Fincham, 1990). Children's externalizing and internalizing problems are two salient broad-band indicators of child maladjustment

(see Table 2). Both types of symptomatology, as broad syndromes or specific indicators (i.e., aggression, delinquency, anxiety, and depression), have been studied extensively in relation to the interparental relationship. Although studies have documented associations between conflict dimensions (e.g., mostly hostility and frequency) and higher levels of children's maladjustment (Buehler et al., 1997; Harold & Sellers, 2018), the relative roles of different forms of interparental conflict as predictors of children's maladjustment are poorly understood. Thus, our quantitative analysis and comparison of associations between multiple dimensions of interparental conflict and children's internalizing and externalizing symptoms is designed to address this gap.

### Emotional Responses

According to the emotional security theory (Davies & Cummings, 1994), children's emotional reactivity is the first component process of emotional insecurity. Conflicts between parents are hypothesized to trigger elevated levels of children's emotional distress and dysregulation. In the cognitive-contextual framework, children's affect is hypothesized to be involved in evaluating the significance of the conflict and guiding the child's subsequent behavior. A central role of children's emotional responses in linking interparental conflict with children's adjustment is also proposed by the specific emotions model (Crockenberg & Forgas, 1996). In testing these conceptualizations, research has examined relations among interparental relationship dimensions and indices of children's emotional reactivity including distress, fear, sadness, and anger (see Table 2). Although some of the empirical findings have documented significant associations between frequent, hostile, disengaged, *unconstructive* and child-related conflicts and higher levels of negative emotional responses in children (e.g., Crockenberg & Langrock, 2001; Davies, Sturge-Apple, Winter, Cummings, & Farrell, 2006; El-Sheikh, 2005; Du Rocher Schudlich, White, Fleischhauer, & Fitzgerald, 2011), other results have identified null or even opposite associations among these variables (El-Sheikh, 2005; Li, Cheung, & Cummings, 2016). Accordingly, our aim in the systematic quantitative integration of empirical research is to test the consistency of associations among the interparental relationship dimensions and children's emotional responses to conflict.

### Behavioral Responses

Within the emotional security theory, behavioral reactions to interparental conflict are conceptualized as a second class of processes that signify emotional insecurity (Cummings & Davies, 2002). Elevated levels of interparental conflict are hypothesized to undermine children's security and elicit greater efforts to regulate the threatening nature of the interparental conflicts through attempts to avoid or become involved in conflicts. Involvement in many cases, may take the form of greater behavioral dysregulation characterized by acting out, impulsivity, volatility, and emotional outbursts (see Table 2; Davies & Cummings, 1994; Warmuth, Cummings, & Davies, 2018). Within the cognitive-contextual framework, interparental conflict is hypothesized to affect children's problem-focused coping (e.g., intervening in the conflicts) and emotion-focused (e.g., avoidance) coping through children's emotional processing and cognitive appraisals of the conflict (Grych & Fincham, 1990). The literature examining associations between interparental conflict and children's behavioral responses



Table 2  
*Definitions of the Domains of Child Functioning*

Dimension	Definition	Subdimensions	Definition
Externalizing behavior	A grouping of behavior problems that are manifested in children's outward behavior and reflect the child negatively acting on the external environment, such as aggression and delinquency.	Aggression	Physical or verbal behaviors that harm or threaten to harm others, including children, adults, and animals.
		Delinquency	Diverse antisocial acts such as lying, cheating, stealing, and committing antisocial acts with bad companions.
Internalizing behavior	Behavior problems that more centrally affect the child's internal psychological environment, such as anxiety and depression.	Anxiety	Feelings of worry, nervousness, or unease about something.
		Depressive symptoms	Feelings of sadness, loss of energy and interest in activities, withdrawal from social interactions.
Emotional responses	Children's emotional reactivity in response to interparental conflict, in the form of anger, sadness, fear, or intense, prolonged, and dysregulated distress.		
Behavioral responses	Children's behavioral attempts to become involved in or avoid their parents' conflicts.	Involvement	Actively regulating exposure to conflict by directly intervening in the parents' conflict (e.g., trying to comfort them, try to solve the problem, try to distract them).
		Avoidance	Regulating exposure to conflict by actively withdrawing from the conflict (e.g., turning away, walking away).
		Behavioral dysregulation	A reflexive, automatic, and emotional reaction of acting out in disorganized, emotional outbursts.
Cognitive appraisals	Cognitive processing of the interparental conflict and appraisals of the potential implications for the child and family functioning.	Internal representations of interparental relations	Children's evaluation of the adverse consequences of interparental conflict for their own and their family's well-being.
		Threat	Appraisals of threat induced by the conflict, in particular beliefs that the conflict would escalate and that the child would be drawn into the conflict.
		Self-blame	Beliefs that the child is to blame for the conflict.
Physiological responses	Neurobiological and psychophysiological regulatory (stress) responses to interparental conflict.	Vagal	Both children's (lower) heart rate and (decreased) parasympathetic nervous system (PNS) reactivity in response to stressors.
		Skin conductance	Children's diminished electro-physiological measured sweat production (as a validated index of the sympathetic nervous system's activity).
		Cortisol	Children's (diminished) cortisol reactions to stressors.

has largely been limited to conflict dimensions of hostility, frequency, and constructiveness. Findings have indicated that conflict frequency and *unconstructive* conflicts between parents are consistently linked with higher levels of avoidance, involvement, and dysregulation (e.g., Cummings, Cheung, Koss, & Davies, 2014; McCoy, Cummings, & Davies, 2009). However, relations among negative conflict dimensions and behavioral responses are far from definitive. For example, hostile interparental conflict has been positively associated with children's greater behavioral responding in some studies (e.g., Ching & Wu, 2018; Tschann et al., 2002). However, other research has produced null findings or an opposite pattern of associations (e.g., Li et al., 2015). Thus, the present study was designed to provide a more definitive quantitative

analysis of the consistency of associations between the interparental relationship dimensions and children's behavioral responses.

### Cognitive Appraisals

Children's cognitive appraisals about the interparental subsystem are considered the third component process of emotional insecurity (Davies & Cummings, 1994). Exposure to destructive forms of interparental conflict are expected to generate children's internal representations or internal working models of conflict that are characterized by negative evaluations of the implications interparental conflicts has for their own and their family's welfare (see Table 2). Consistent with the emotional security theory,

research has shown that frequent, hostile, disengaged, and *unconstructive* interparental conflicts are linked with children's negative internal representations (Davies, Martin, et al. 2016). In addressing a related set of appraisals, the cognitive-contextual framework posits that children's evaluations of the conflict being threatening (i.e., perceived threat) and the extent to which they feel they are the cause of the conflict (i.e., self-blame) develop following exposure to elevated interparental conflict (Grych & Fincham, 1990). In supporting this theory, qualitative literature reviews have concluded that a lower relationship quality, and frequent, hostile, disengaged, and unconstructive forms of interparental conflict are associated with higher levels of children's appraisals of threat and self-blame (e.g., Harold & Sellers, 2018; Zemp et al., 2016). In building on this work, the current study is designed to examine and compare the relative strength of associations among the interparental dimensions and children's cognitive appraisals.

### Physiological Responses

As a final class of conflict reactivity dimensions, children's physiological responses (i.e., vagal tone, skin conductance, and cortisol) to conflict have been proposed to develop from prior experiences with interparental conflicts (Davies, Martin, et al. 2016; see Table 2). However, research examining this hypothesis has been relatively rare and predominantly focused on examining interparental hostility as a predictor. Moreover, the inconsistent results from the limited studies make it difficult to draw any firm conclusions about how children's physiological reactivity is related to interparental conflict. For example, some research has identified interparental hostility as a predictor of greater physiological reactivity (e.g., Fletcher, Buehler, Buchanan, & Weymouth, 2017), whereas other work has indicated that more conflict is associated with dampened physiological reactivity (e.g., Keller et al., 2015). Still other research has documented null associations among interparental conflict and indices of physiological research (e.g., McKernan & Lucas-Thompson, 2018). Thus, our aim is to document associations among the interparental conflict dimensions and physiological reactivity through our quantitative synthesis of the existing research studies.

### Summary

In conclusion, there is considerable variability in the amount of scientific attention devoted to the specific dimensions of interparental conflict and the specific domains of child functioning. Moreover, even when a specific dimension of interparental conflict or domain of child functioning has been examined more extensively in the literature, any single study is not designed to examine all dimensions of interparental conflict and child functioning. A collective analysis of all the studies is needed to address the nature and strength of relationships among the central properties of interparental conflict and the dimensions of children's functioning. Thus, the current meta-analysis is designed to provide a systematic test and comparison of the magnitude of associations among the six dimensions of the interparental relationship and children's maladjustment (i.e., internalizing and externalizing behavior) and reactivity (i.e., emotional responses, behavioral responses, cognitive appraisals, physiological responses).

## Moderators of Associations Between the Interparental Relationship and Child Functioning

### Time Lag

This is the first meta-analysis to examine whether the magnitude of the associations among the interparental relationship and *later* child adjustment and responses to interparental conflict intensifies, endures, or fades over time. Theories differ widely in accounts of how time lag may be related to the association between interparental relationship dimensions and children's functioning. According to the enduring effects models, earlier socialization experiences are instantiated in patterns of responding that are relatively intractable even after subsequent exposure to socialization contexts. Translated to the interparental conflict literature, it follows that the association between interparental conflict and children's functioning may remain relatively stable regardless of the amount of time that has elapsed between the assessments of the predictor and outcome (Fraley, Roisman, & Haltigan, 2013). Revisionist perspectives, on the contrary, assume that the effect of earlier experiences is continually superseded by more recent developmental experiences. Following this line of reasoning, associations between earlier experiences of the interparental relationship and later child outcomes can be expected to get progressively smaller as more time elapses and, ultimately, fade away (Fraley et al., 2013).

As a third possibility, sleeper or snowballing effects propose that previous experiences set in motion cascades of developmental processes that increasingly coalesce and intensify into patterns of functioning over time. These cascading developmental processes can encompass changes in children's adaptation to the environment (e.g., more negative appraisals, alterations in physiological functioning), changes to the socialization contexts themselves (e.g., interparental conflict may increase parenting difficulties), or both (Vu et al., 2016). Thus, in sleeper or snowballing models, the risk associated with family stressors progressively unfold and crystallize with time. The derivative hypothesis is that the relationship between interparental conflict and children's reactivity or maladjustment should increase or strengthen as the time between the assessment of the predictor and outcome increases. By integrating cross-sectional and longitudinal research, the current meta-analysis is designed to examine whether the magnitude of associations among dimensions of the interparental relationship and child outcomes increase, decrease, or remain similar over time.

### Child Age and Gender

Interparental relationship quality and conflict are generally expected to be related to the functioning of children across gender and age (Cox & Paley, 2003; Davies & Cummings, 1994; Grych & Fincham, 1990). Although some conceptualizations have proposed that there may be developmental and gender differences in children's vulnerability for interparental problems (see, e.g., Davies & Lindsay, 2001; 2004), qualitative reviews and a previous meta-analysis have not definitively identified moderating effects of developmental period or gender in the association between interparental conflict and children's psychological adjustment (Buehler et al., 1997; Davies, Martin, et al., 2016; Harold & Sellers, 2018; Zemp et al., 2016). However, these reviews also caution that it may be too early to completely discard the analysis of children's age and gender as moderators. In accord with this conclusion,

some researchers have proposed that the moderating effects of age and gender might be revealed with more fine-grained approaches that systematically distinguish between dimensions the interparental relationship and child functioning (Davies, Martin, et al., 2016). For example, developmental and gender differences may be more apparent in terms of children's specific responses to conflict than in terms of broadband adjustment problems. As a step toward addressing this issue, the current meta-analysis systematically examined whether children's age and gender moderated specific associations between the six dimensions of the interparental relationship and the six domains of child functioning.

### Family Characteristics

We also considered several contextual characteristics of the sample as moderators. First, because conceptual models have hypothesized that the socioeconomic status of the family (i.e., based on the household income, parent education and occupation) may modify the risk posed by interparental conflict (Davies, Martin, et al., 2016), we will examine it as a moderator of the associations among the interparental relationship dimensions and child functioning. Second, the magnitude of risk posed by interparental conflict has also been posited to vary as a function of race (McLoyd, Cauce, Takeuchi, & Wilson, 2000). However, research has yet to systematically test this hypothesis. Therefore, we will also examine whether associations among interparental relationship dimensions and children's functioning differ based on the percentage of White families in the sample. We will shed some light on whether the magnitude of associations between the interparental relationship and child functioning is genetically mediated (Harold, Leve, & Sellers, 2017), by comparing associations across three distinct samples based on the genetic overlap between parents and children: children with two biological parents, step-families with one biological parent, and adoptive families. Fourth, we will also examine the moderating role of family composition, that is, the percentage of two-parent households in the sample. Although the main effects of interparental relationship quality and conflict are more potent risk factors than family structure (for reviews, see Amato & Keith, 1991; Amato, Loomis, & Booth, 1995; Emery, 1982; Kelly, 2000), it may be informative to explore whether associations between interparental negativity and children's problem behavior depend on family composition. Finally, we also tested whether associations among the interparental relationship and child functioning were stronger among help-seeking than community samples of families.

### Study Characteristics

Knowing more about methodological factors and whether they moderate the associations between aspects of the interparental relationship and child adjustment would be useful for helping refine the measurement of interparental relations in future work. Therefore, we will examine whether the magnitude of the risk associated with interparental relationship dimensions varies as a function of the method of assessment (i.e., self-reported data vs. observational data), informant (i.e., mother, father, child, or others), and the use of prominent instruments (i.e., the Conflict Tactics Scale (CTS); Straus, 1979, the Conflicts and Problem-Solving Scales (CPS); Kerig, 1996, the Children's Perception of

Interparental Conflict Scale (CPIC); Grych, Seid, and Fincham, 1992, or the Security in the Interparental Subsystem Scale (SISS); Davies, Forman, Rasi, & Stevens, 2002. For example, prior meta-analyses indicated that studies using the CTS yielded larger effect sizes than studies using other measures (Kitzmann, Gaylord, Holt, & Kenny, 2003; Vu et al., 2016). Therefore, we examined whether this finding is replicated across multiple domains of child functioning. Finally, as a common type of method bias in the literature, we tested whether the relation between the interparental and child functioning variables differed depending on whether the data for the variables were collected from the same informant or different informants (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

### Present Aims and Hypotheses

Drawing on major theoretical frameworks (Crockenberg & Forgas, 1996; Davies & Cummings, 1994; Grych & Fincham, 1990), the aim of the current meta-analysis was to aggregate empirical research on associations between the interparental relationship and child functioning. The overall research question was: is the interparental relationship associated with children's adjustment problems and responses to interparental conflict, *concurrently and longitudinally*? Our meta-analysis was designed to build on previous quantitative reviews by (a) expanding the scope of interparental relationship dimensions as predictors of child functioning, (b) moving beyond the focus on internalizing and externalizing symptoms as sequelae of interparental conflict by also examining child responses to conflict as key outcomes, and (c) broadening the search for moderators based on the latest developments in the field (e.g., the increase in longitudinal studies allows for an analysis of the lag between interparental conflict and child functioning as a moderator). The more expansive meta-analysis within these targeted domains has the potential to advance several key substantive themes in the interparental conflict literature. First, it permits an analysis of the relative strength of interparental relationship quality and the five interparental conflict dimensions as predictors of children's functioning. Second, the meta-analytic findings can also address whether each interparental conflict dimension varies in its role as a predictor across the domains of child functioning. Third, we are able to test a key developmental question of whether the magnitude of associations among interparental conflict dimensions and the domains of child functioning intensifies, endures, or fades over time. Fourth, the fine-grained, dimensional analysis of associations between interparental conflict and child functioning may reveal specific patterns of moderation by age and gender that were not identified in more limited reviews of the literature. Fifth, our analysis of family, sample, and study characteristics may also provide new insights into sources of heterogeneity in associations between interparental conflict dimensions and child functioning.

### Method

To identify relevant studies for inclusion in the meta-analysis, two computerized searches in the databases Web of Science, PsycINFO, and Scopus were conducted (July 30, 2018): one for studies examining children's maladjustment and one for studies examining children's responses to interparental conflict. In both searches, studies were searched that (a) assessed both interparental relationship quality and a variety of dimensions of interparental



conflict (key words were *marital or interparental, and relationship or support or discord or quality or satisfaction or conflict or stress or communication or positive affect or negative affect or instability*), and (b) assessed children younger than 18 years old (key words were *adolescen\* or infan\* or child\* or kid or kids or toddler\* or teen\* or boy\* or girl\* or youth\**). Then, in the first search we searched for studies assessing children's externalizing and internalizing problem behavior (key words were *problem behavior\* or adjustment or internalizing or externalizing or anxiety or depress\* or aggress\* or delinq\* or hyperactive or substance\*use*), whereas in the second search, studies were searched assessing emotional, behavioral, cognitive and physiological child responses to interparental conflict (key word were *emotional\* react\* or emotional\* respons or, negative affect or sadn\* or fear\* or anger or emotional security or emotional insecurity or behav\* react\* or involvement or avoid\* or self-blame or threat or perceived threat or negative representation\* or physiological respons\* or emotional security theory or cognitive-contextual framework*; \* indicates that any permutations of the word stem were retrieved). In addition to peer-reviewed journals, our search also included other relevant and assessable journals and dissertations.

The initial searches yielded, respectively, 12,854 and 630 hits (see Figures 1 and 2 for the PRISMA flow diagrams). To be included in the meta-analysis, studies had to meet eight criteria: (1) Studies reported a quantitative, empirical study (i.e., review articles were excluded); (b) Studies examined interparental relationship quality and/or one of the dimensions of interparental conflict as described in

Table 1; (c) Studies assessed child adjustment problems in the domain of externalizing and internalizing problems, and/or emotional, behavioral, cognitive, or physiological responses to interparental problems. Studies examining child adjustment problems in other domains, such as physical health or academic functioning, or a combination of externalizing and internalizing problems were excluded; (d) Studies reported—or provided upon request—a concurrent or prospective, zero-order correlation (or beta-coefficient) between the interparental relationship and (later) child adjustment problems or child responses to the interparental relationship; (e) Studies had to concern infants, children or adolescents (0–18 years); (f) Studies had to report about statically independent samples. When multiple studies reported on the same sample, we selected the study which provided the most extensive information, or which resembled the aims of the meta-analysis the most. When multiple studies reported on the same sample but on different markers of the interparental relationship or problem behavior, used different informants or instruments, or reported about different time intervals, these additional effect sizes were selected for inclusion (i.e., taking into account the multilevel structure of the data); (g) Studies investigated families consisting of children who either lived with both parents, or (in the case of divorce) were living or being raised by both their mother and their father (for at least one year). In addition to biological parents, studies examining families involving stepparents or adoptive parents were also included. Studies of women and children living in shelters or living elsewhere because of an abusive partner were excluded, because these children are not raised by both parents; (h) Experimental or intervention studies, in which

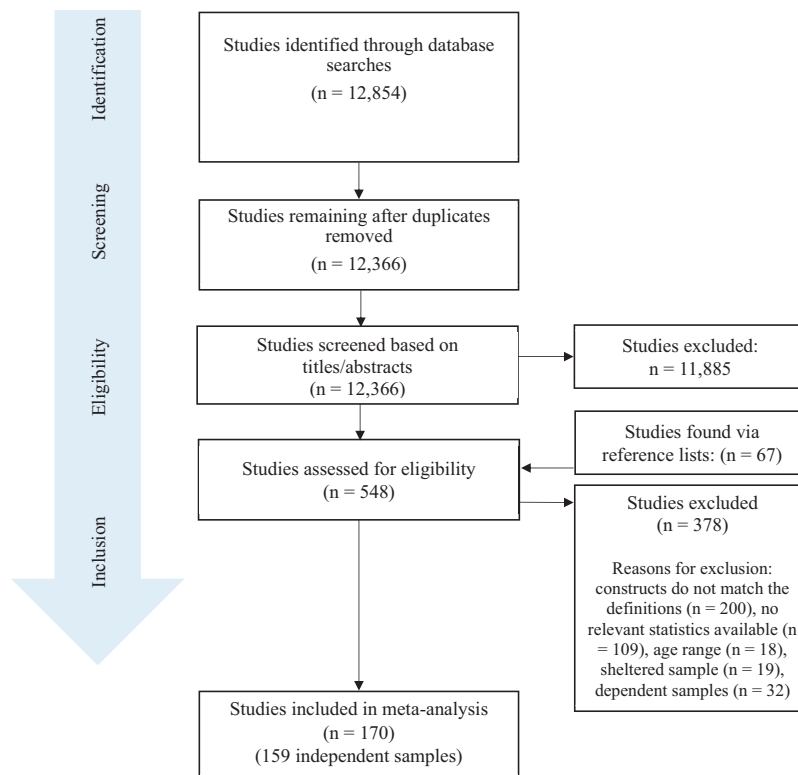


Figure 1. PRISMA flow diagram for the first search of studies examining children's externalizing and internalizing symptoms in relation to the interparental relationship. See the online article for the color version of this figure.

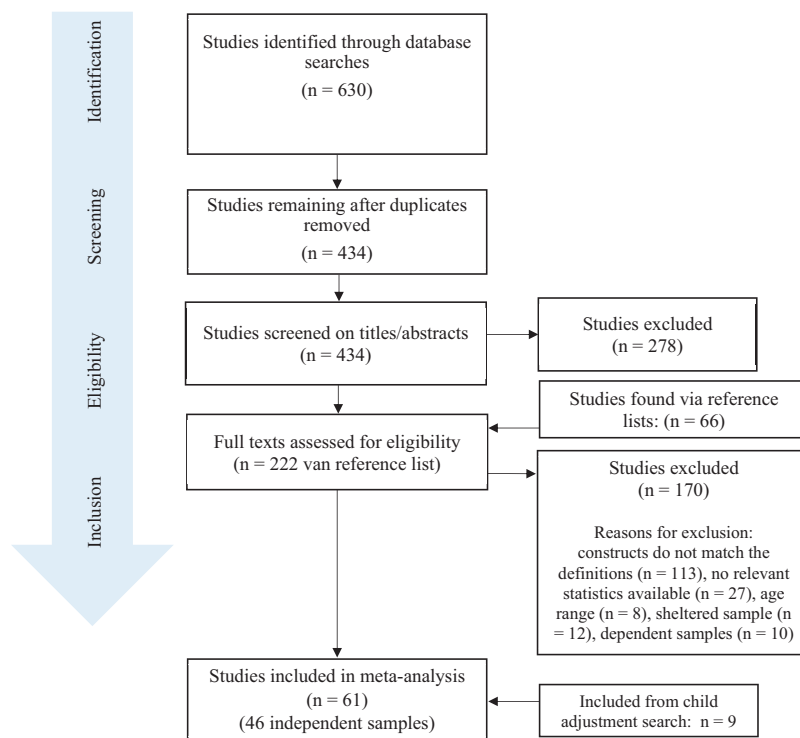


Figure 2. PRISMA flow diagram for the second search of studies examining children's reactivity and appraisals in relation to the interparental relationship. See the online article for the color version of this figure.

families were subject to a manipulation or treatment, were included in case they provided correlations between the interparental relationship and child problem behavior before the manipulation or treatment took place.

The closer examination of the titles and abstracts of studies resulted in 481 studies for child adjustment problems and 156 studies for child responses that could possibly meet the inclusion criteria. Among these were studies that examined the higher order construct of emotional security, which we decided to include as well. Full texts of these studies were retrieved and inspected for eligibility. In a next step, the reference lists of the retrieved articles, as well as all relevant meta-analyses and literature reviews, were examined to identify additional relevant studies for inclusion. This process yielded 67 studies for child adjustment problems and 66 studies for child responses. This resulted in a total of 548 studies for child adjustment and 222 studies for child responses that were inspected for eligibility.

Of these studies, 379 studies and 170 studies, respectively, did not meet the inclusion criteria (Figures 1 and 2). Authors of dissertations and publications that met all inclusion criteria, except for the Criterion 4 (i.e., studies reported a concurrent or prospective, zero-order correlation (or beta-coefficient) between the interparental relationship and (later) child adjustment problems or child responses to the interparental relationship), were contacted with the request to provide the necessary statistical values (i.e., 159 authors). Three attempts were made to contact nonresponsive authors in efforts to obtain this information. Twenty-two authors responded with the necessary information (19 for child adjustment and three for child responses). Additionally, nine studies included in the search for child adjustment could be

included for child responses as well. This resulted in a final group of 169 studies for child adjustment and 61 studies for child responses that were included in the current meta-analyses. These studies reported about 159 independent samples for child adjustment and 46 independent samples for child responses. See Tables 3 and 4 for an overview of the included studies.

### Study Coding

Each study was coded using a detailed coding system abstracting sample, design, measurement, and publication characteristics summarized in Table 5. The coding system for dimensions of the interparental relationship was developed by two study authors (names masked; Table 1). Thirteen percent of the articles were coded by two different coders to determine reliability. Reliability was calculated after completion of coding with .70 as the cutoff for adequate reliability, indicated by Cohen's  $\kappa$  for nominal and ICC scores for continuous variables. Adequate agreement was found between the coders on variables, and, discrepancies between coders were discussed until complete consensus was reached.

### Data Analysis

**Effect size calculations.** The Pearson correlation coefficient,  $r$ , was the metric used in the current study. Most studies reported Pearson's correlations ( $r$ ) or standardized regression coefficients ( $\beta$ ). In the latter case, we used the formula  $r = \beta + .05\lambda$  to convert the  $\beta$  to  $r$  ( $\lambda$  equals 1 when  $\beta$  is positive and 0 when  $\beta$  is negative; Peterson & Brown, 2005). Before pooling effect sizes, correlations for rela-

**Table 3**  
*Characteristics of the Studies Included in the Meta-Analysis for Children's Externalizing and Internalizing Problems*

Study	Sample	Country	N <sub>ob</sub>	N <sub>ES</sub>	Interparental relationship			Children's adjustment problems			Family type	Family comp.	
					Dimension	Informant	Instrument	Domain	Informant	Instrument			Child age (months)
1. Ablow et al., 2009		USA	93	4	Q, F	SR: C	other	E, I	SR: Peer	other	67.2	12	100
2. Benzie, Harrison, & Magill-Evans, 1998		Canada	80	4	O	SR: M, F	other	E	SR: M, F	other	12.0	36	100
3. Benzie, Harrison, & Magill-Evans, 2004		Canada	62	4	Q	SR: M, F	other	E	SR: M, F	other	88.8	72	95.2
4. Bergman, Cummings, & Davies, 2014		USA	248	8	H	SR: M, F	CPS	E, I, Anx, Depr	SR: C, Par	ASEBA, other	165.8	0	Mix
5. Bornovalova et al., 2014	Study 1	USA	604	8	Q, F	SR: M, F	other	E	SR: C&M	other	178.3	0	Adop
6. Bradford, Vaughn, & Barber, 2008	Study 2	USA	458	8	Q, F	SR: M, F	other	E	SR: C&M	other	180.7	0	Bio
7. Brand & Clingempeel, 1987		USA	641	2	H	SR: C	other	Del, Depr	SR: C	ASEBA, other	181.2	0	Mix
8. Brestlend et al., 2016		USA	31	16	Q	SR: M, F	other	I, Agg	SR: M, F	other	137.5	0	Step
9. Brock & Kochanska, 2015		USA	180	4	H	SR: C	other	E, I	SR: C, Par	ASEBA	66.0	0, 12, 30, 54	Bio
10. Brock & Kochanska, 2015 <sup>a</sup>		USA	89	8	Q	SR: M, F	other	I	SR: M, F	other	37.0	96	Bio
11. Brock et al., 2017	The Knox County Site	USA	62	1	C	SR: Par	other	I	SR: Par	other	54.0	12, 42	Bio
12. Buehler et al., 1998	The Ogeen Site Family Life Project (FLP)	USA	91	6	Q	SR: M, F	other	E, I	SR: C, M, F	ASEBA	148.8	0	100
13. Buehler & Welsh, 2009 <sup>b</sup>	FLP	USA	337	2	F	SR: C	other	E, I	SR: C	ASEBA	146.9	0, 36	100
14. Buehler et al., 2007 <sup>b</sup>		USA	416	8	H	O	other	E, I, Del, Depr	SR: C	ASEBA, other	142.3	0, 24	100
15. Buist, Deković, & Gerris, 2011		USA	563	4	F, H	SR: C	other	E, I	SR: C, T	ASEBA, other	142.3	0, 12	100
16. Burman, John, & Margolin, 1987		NL	416	15	H	O, SR: M, F	other	E, I, Depr	SR: C, T	ASEBA, other	174.0	0, 12	100
17. Camacho, Ehrensaft, & Cohen, 2012		USA	280	4	H	SR: Par	other	E, I	SR: C	ASEBA	112.5	0	100
18. Camisasca, Miragoli, & Di Blasio, 2016		USA	56	48	Q, H, D	SR: M, F, Par	other, CTS	E, I	SR: M, F	ASEBA	157.2	24	100
19. Chang, Lansford, Schwartz, & Farver, 2004		USA	129	4	H	SR: Par	CTS	I	SR: Par	ASEBA	110.4	0	100
20. Chen & Johnston, 2012		Italy	358	6	H	SR: Par&C	other	E, I	SR: Par	ASEBA	130.7	0, 6	100
21. Chung et al., 2009		HK	158	2	Q	SR: M	other	Agg	SR: CI	other	44.5	0, 36	70.1
22. Cohn et al., 2013		Canada	160	4	Q, CR	SR: Par	other	E, I	SR: Par	ASEBA	178.3	0	100
23. Connolly & Vance, 2010		USA	415	2	F	SR: C	other	I	SR: C	other	103.1	0	100
24. Cowan, Cowan, Cohn, & Pearson, 1996		USA	121	2	C	SR: M	CPS	E, I	SR: M	ASEBA	123.1	0	100
25. Criss et al., 2002		Australia	411	2	Q	SR: Par	other	Agg	SR: Par, T	ASEBA	42.0	24	100
26. Crockenberg & Langrock, 2001		USA	455	1	H	O, SR: M, F	CTS	E, Depr	SR: T	other	60.0	18	100
27. Cui, Conger, & Lorenz, 2005 <sup>c</sup>	Iowa Youth and Families Project (IYFP)	USA	164	16	H, D	SR: M, F	other	E, I	SR: M	ASEBA	72.0	0	100
28. Cui, Dornellan, & Conger, 2007 <sup>c</sup>	IYFP	USA	424	40	Q, H	SR: Par	other	Agg, Del, Anx, Depr	SR: C	other	163.3	0, 12, 24, 48	95.6
29. Cummings, Davies, & Simpson, 1994		USA	451	6	CR	SR: Par&C	other	Del, Depr	SR: C	other	151.3	0, 12, 24	98
30. Cummings, Wilson, & Shamir, 2003		USA	51	4	H	SR: M	CTS	E, I	SR: M	ASEBA	0	0	100
		USA	36	4	H	SR: Par	CTS	E, I	SR: Par	ASEBA	0	0	100
		USA	36	4	H	SR: Par	CTS	E, I	SR: Par	ASEBA	0	0	100

(table continues)

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Table 3 (continued)

Study	Sample	Country	N <sub>ob</sub>	N <sub>ES</sub>	Interparental relationship			Children's adjustment problems			Family comp.			
					Dimension	Procedure: Informant	Instrument	Domain	Procedure: Informant	Instrument		Child age (months)	Time lag	Family type
31. Cummings, George, McCoy, & Davies, 2012 <sup>d</sup>	Me & My Family	USA	194	18	F, H	O, SR: Par	CPS,	Agg, Del, Anx, Depr	SR: C, Par	ASEBA	72.0	79	Mix	81.4
32. Cummings, Cheung, Koss, & Davies, 2014	1	USA	235	8	F	SR: M, F	CPS	E, I	SR: M, F	ASEBA	72.0	0	Mix	
33. Dadds & Powell, 1991	2	Australia	194	8	Q, CR	SR: M	other	E, Anx	SR: M	other	58.2	0		
34. Dadds, Atkinson, Turner, Blums, & Lendich, 1999	1	Australia	53	3	Q, CR	SR: M	other	E, Anx	SR: M	other	63.0	0		
2	Australia	95	3	H, C, D	SR: C	other	other	Depr	SR: C	other	147.0	0		100
3	Australia	65	2	H, D	SR: C	other	other	I	SR: C	ASEBA	144.0	0		100
4	Australia	112	4	C, D	SR: C	other	other	E, I	SR: C	ASEBA	147.0	0		100
35. David, Steele, Forehand, & Armistead, 1996		USA	63	1	D	SR: C	other	Depr	SR: C	other	147.0	0		100
36. Davies & Lindsay, 2004		USA	134	8	Q	SR: M	other	Agg, Anx	SR: M, T	other	158.4	0, 12	Bio/100	
37. Davies, Dumenici, & Windle, 1999		USA	172	2	H	SR: M	CPS	E, I	SR: M	ASEBA	150.8	0		
38. Davies, Sturge-Apple, Cicchetti, & Cummings, 2007 <sup>d</sup>		USA	506	4	Q	SR: M	other	Del, Depr	SR: C	other	184.8	0	Bio	100
39. Davies, Martin, & Cicchetti, 2012	Me & My Family	USA	178	8	H	O, SR: Par	other	E, I	SR: M, F	ASEBA	72.0	0	Bio	100
40. Davies et al., 2012 <sup>c</sup>	1 <sup>e</sup>	USA	201	30	F, H, C	SR: M	CPS	E, I	SR: M	ASEBA	26.0	0, 12, 24		
	2	USA	250	16	F, H, C	SR: Par	CPS, other	E, I	SR: C, Par	ASEBA	151.2	0		84.0
	3	USA	201	3	H	SR: M	CTS, CPS, other	E	SR: M	ASEBA	26.0	0, 12		
41. Davies et al., 2016 <sup>a</sup>	1 <sup>f</sup>	USA	243	8	C, D	Mix: Par&O	other	E	SR: Par&T	other	55.2	0, 24	Mix	100
	Me & My Family <sup>a</sup>	USA	263	8	C, D	Mix: Par&O	other	E, Del	SR: M, T	ASEBA, other	151.4	0, 24	Mix	100
42. Davies et al., 2018 <sup>f</sup>		USA	243	9	H	O, SR: Par	other	E	SR: T	other	55.2	0, 12, 24	Bio	97.0
43. DeVito & Hopkins, 2001		USA	60	1	Q	SR: M	other	E	SR: M	ASEBA	40.70	0	Bio	88.0
44. Donenberg & Baker, 1993	1	USA	64	4	Q	SR: Par	other	E, I	SR: Par, T	ASEBA	57.4	0		0
45. Dunn et al., 2005	2	UK	99	4	F	SR: C	other	E, I	SR: M	ASEBA		0	Bio	100
	3	UK	52	2	F	SR: C	other	E, I	SR: M	ASEBA		0	Step	100
46. Du Rocher Schudlich & Cummings, 2003		UK	56	2	F	SR: C	other	E, I	SR: M	ASEBA	126.8	0	Step	100
47. Eiden, Molnar, Colder, Edwards, & Leonard, 2009		USA	267	52	H, D, C	O	other	I, Anx, Depr	SR: C, M, F	ASEBA, other		0		100
48. Elam, Sandler, Wolchik, & Tein, 2016		USA	166	6	H	SR: Par	other	Anx	SR: C, Par	ASEBA	12.0	96	Bio	100
49. Elam, Chassin, Eisenberg, & Spinrad, 2017		USA	227	2	H	SR: C	other	E, I	SR: C&M	other	129.1	0		0
50. El-Sheikh & Flanagan, 2001		USA	276	8	Q	SR: M, F	other	Agg, Del	SR: M, F	ASEBA	75.2	0	Mix	100
51. El-Sheikh, 2005		USA	216	4	H	SR: Par&C	other	E, I	SR: M, T	ASEBA	114.0	0	Mix	100
52. El-Sheikh, Cummings, Kourou, Elmoro-Staton, & Buckhall, 2008 <sup>b</sup>		USA	180	4	H	SR: Par	CTS	E, I	SR: Par	other	116.8	0	Bio	100
53. El-Sheikh et al., 2011 <sup>b</sup>		USA	250	2	H	SR: M, F	other	E	SR: Par	other	98.8	0	Mix	100
54. El-Sheikh, Kelley, Erath, & Dyer, 2013		USA	260	3	H	SR: Par&C	other	Del	SR: Par	other	98.8	0, 12, 24	Mix	100
55. Erath & Bierman, 2006	PHDCN	USA	244	6	CC	SR: Par&C	other	Anx, Depr	SR: C	other	98.8	0, 12, 24	Mix	100
56. Fagan & Wright, 2011 <sup>e</sup>		USA	360	4	F, H	SR: M	CTS, other	E	SR: M, T	ASEBA	162.4	0	Step	100
57. Feinberg et al., 2007		USA	1315	2	H	SR: Par	CTS	Del	SR: C	other	160.8	0, 36	Step	100
			1032	16	Q, F	SR: M, F	other	E, Depr	Mix: C&Par&O	other	160.8	0, 36	Step	100

(table continues)



Table 3 (continued)

Study	Sample	Country	N <sub>ob</sub>	N <sub>ES</sub>	Interparental relationship			Children's adjustment problems			Family type	Family comp.	
					Dimension	Informant	Instrument	Domain	Informant	Instrument			Child age (months)
58. Fletcher, Buehler, Buchanan, & Weymouth, 2017	PROSPER	USA	68	2	H	SR: C	other	Depr	SR: C	other	0	63.0	
59. Fosco & Feinberg, 2015 <sup>a</sup>		USA	768	4	H	SR: Par	other	E, Anx	SR: C, C&Par	ASEBA, other	0, 31	Mix	100
60. Fosco & Feinberg, 2018 <sup>a</sup>	PROSPER	USA	685	6	H	SR: Par	other	Del	SR: C	other	6, 18, 30	Mix	91.0
61. Fosco & Grych, 2008		USA	150	4	H	SR: Par	CPS	E, I	SR: C, Par	ASEBA	0	Mix	100
62. Franck & Buehler, 2007 <sup>b</sup>	FLP	USA	416	22	H	O, SR: M, F	other	E, I	SR: C, M, F, T	ASEBA	0	Mix	100
63. Frazier, 2001	PHDCN	USA	498	14	H	SR: M	other	Agg, Anx	SR: C, M, T	ASEBA	36, 84,		71.0
64. Frosch & Mangelsdorf, 2001		USA	78	8	Q, H	O	other	E, Agg	O, SR: M, F, T	ASEBA, other	108, 0		100
65. Gach, Ip, Sameroff, & Olson, 2018	PHDCN	USA	235	4	H	SR: M	CPS	E	SR: M, F, T	ASEBA	0, 84,	Mix	89.0
66. Gardner et al., 2012		USA	1419	2	H	SR: Par	CTS	I	SR: C	ASEBA	0, 36		
67. Gerard, Krishnakumar, & Buehler, 2006	PHDCN	USA	551	8	F, H	SR: Par	other	E, I	SR: Par	ASEBA	0, 60	Mix	100
68. Goldberg & Carlson, 2014		USA	773	2	Q	SR: Par	other	E, I	SR: M	ASEBA	24	Bio	100
69. Gonzales, Pitts, Hill, & Roosa, 2000	PHDCN	USA	97	12	F, H, C	SR: C	other	Del, Depr	SR: C, M	ASEBA, other	0, 12, 80	Mix	100
70. Gonzales et al., 2006		UK	119	2	F	SR: C	other	Del, Depr	SR: M	ASEBA	0	Bio	71.0
71. Grych, Harold, & Miles, 2003	IYFP	India	245	16	H	SR: M	CTS	E, I	SR: M	ASEBA	0	Mix	100
72. Gulati & Dutta, 2008		Australia	816	1	Q	SR: M	other	Depr	SR: C	other	0	Bio	76.8
73. Hammen, Brennan, & Shih, 2004	IYFP	USA	380	16	F	SR: C	other	E, Del, Anx,	SR: C	other	0, 12	Bio	100
74. Harold et al., 1997 <sup>c</sup>		UK	181	6	H	SR: Par	other	Depr	SR: C, Mix	ASEBA, other	12	Bio	100
75. Harold, Shelton, Goeke-Morey, & Cummings, 2004	Welsh Family Study	USA	55	4	F	SR: M	other	E, Agg, Anx, Depr	SR: M	ASEBA	0	Mix	100
76. Harrist & Ainslie, 1998	IYFP	USA	207	2	D	SR: M	other	Agg	SR: T	other	0	84.5	
77. Hart, Nelson, Robinson, Olsen, & McNeilly-Choque, 1998		Russia	161	32	H, C, D	SR: M, F	CPS	Del	SR: Par	other	0, 12, 24, 36		
78. Harvey, Metcalfe, Herbert, & Fanton, 2011	IYFP	USA	1,125	2	H	SR: M	CTS	Agg	SR: M	ASEBA	0	Mix	100
79. Holmes, Voith, & Gromoske, 2015		USA	350	4	H	SR: C	other	Del, Depr	SR: C	ASEBA, other	0, 48		
80. Hou, Kim, & Wang, 2016	IYFP	USA	129	12	H, CR	SR: M	CTS, other	E, I	SR: M, F	ASEBA	0, 18, 36	100	
81. Ingoldsby, Shaw, Owens, & Winslow, 1999		USA	67	8	Q, H	SR: Par	CTS, other	E, I	SR: Par	ASEBA	0	Bio	100
82. Jaycox & Repetti, 1993	IYFP	Canada	71	20	H	SR: M	CTS	I, Agg	SR: M, T, Peer	ASEBA, other	0	Mix	100
83. Jenkins, 2000		UK	119	24	H, CR	SR: M, F	other	E, I	SR: C, M, F	other	0	Step	100
84. Jenkins & Smith, 1991	IYFP	Canada	121	2	H	SR: M	other	Agg	SR: M	other	144		
85. Jenkins, Shapka, & Sorenson, 2006		USA	30	2	H	SR: M	CTS	E, I	SR: M	ASEBA	0	Bio	0
86. Johnson & Lieberman, 2007	IYFP	USA	119	4	Q	SR: M, F	other	Depr	SR: C	other	0, 12	100	
87. Jones, Beach, & Forehand, 2001		USA	119	4	Q	SR: M, F	other	Depr	SR: C	other	0, 12	100	

(table continues)

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Table 3 (continued)

Study	Sample	Country	N <sub>ob</sub>	N <sub>ES</sub>	Interparental relationship			Children's adjustment problems			Family type	Family comp.	
					Dimension	Procedure: Informant	Instrument	Domain	Procedure: Informant	Instrument			Child age (months)
88. Jouriles, Baring, & O'Leary, 1987		USA	45	8	H	SR: M	CTS	Agg, Del, Anx, Depr	SR: C, M	other	101.4	0	35.0
89. Jouriles, Bourg, & Farris, 1991	1	USA	200	2	F, CR	SR: M	other	E	SR: M	other	38.8	0	100
90. Jouriles et al., 1991	2	USA	87	2	CR	SR: M	other	E, I	SR: M	ASEBA	61.2	0	100
91. Jouriles, Norwood, McDonald, Vincent, & Mahoney, 1996		USA	1107	6	F	SR: Par	other	Del	SR: C, Par	other	106.8	0, 60	100
92. Jouriles & McDonald, 2015		USA	55	2	H	SR: Par	CTS	E	SR: Par	other	109.4	0	100
		USA	107	4	H	SR: M	CTS	E, I, Depr	SR: C, M	ASEBA, other	102.0	0	Mix
93. Katz & Low, 2004		USA	130	4	H	SR: Par	CTS	Agg, Del, Anx, Depr	SR: M	ASEBA	60.5	0	100
94. Keller, Cummings, Davies, & Mitchell, 2008 <sup>a</sup>	Me & My Family	USA	215	8	H	SR: Par	CPS	Agg, Del, Anx, Depr	SR: Par	ASEBA		12	100
95. Kempton, Thomas, & Forehand, 1989		USA	48	12	H, C	SR: M, F	CTS, other	E, Anx	SR: T	ASEBA	157.0	0	100
96. Kerig, 1996		Canada	114	72	F, H, C, D	SR: M, F	CPS	E, I, Anx, Depr	SR: C, M, F	ASEBA, other	103.5	0	100
97. Kerig, 1998		Canada	106	4	H	SR: Par	CPS	E, I, Anx	SR: C, Par	ASEBA, other	110.2	0	100
98. Kjøbli & Hagen, 2009		Norway	136	1	F	SR: Par	other	Agg	SR: Par	other	99.1	0	Mix
99. Knous-Westfall, Ehrensaft, MacDonell, & Cohen, 2012		USA	330	4	H	SR: Par	CTS	E, I	SR: Par	ASEBA	153.6	42	
100. Kouros, Merrilees, & Cummings, 2008		USA	297	24	H, C	O, SR: M, F	CTS	Agg, Del, Anx, Depr	SR: C, M	ASEBA, other	133.7	0, 24	100
101. Lancaster, Prior, & Adler, 1989		Australia	100	2	Q	SR: M	other	Agg, Anx	SR: M	other	45.0	0	98.0
102. Lee, Wesbecher, Lee, & Lee, 2015		South Korea	335	6	F, H, C	SR: C	other	I, Agg	SR: C	ASEBA	126.0	0	
103. Leidy, Parke, Cladis, Coltrane, & Duffy, 2009		USA	106	2	Q	O, SR: CI	other	E, I	SR: Par	ASEBA	129.6	12	100
104. Li, Putallaz, & Su, 2011		China	671	4	H	SR: Par	CPS	Agg	SR: Peer	other	124.7	0	96.3
105. Li, Zhou, & Hou, 2015		USA	230	2	F	SR: Par	other	E, I	SR: Par	ASEBA	84.8	0	100
106. Lin et al., 2017 <sup>a</sup>		China	256	4	Q, F	SR: Par	other	Depr	SR: C	ASEBA	114.7	0	
107. Lindahl & Malik, 1999		USA	113	2	CR	SR: M, F	other	E	SR: M, F	ASEBA	106.8	0	100
108. Lindahl, Malik, Kaczynski, & Simons, 2004		USA	237	8	H	O		E, I	SR: Par	ASEBA	114.1	0	100
109. Lohman et al., 2013		USA	392	4	H	Mix: Par&O		E, Del	SR: C	other	168.0	0	100
110. Lucas-Thompson, Lunkenheimer, & Dumitrescu, 2017		USA	54	8	H, C	O		E, I	SR: C, Par	ASEBA, other	153.6	0	100
111. Maliken & Fainsilber Katz, 2013		USA	74	2	H	SR: Par	CTS	E, I	SR: C	ASEBA	188.5	135	
112. Marchand & Hock, 2003		USA	51	3	H, D	SR: M, F	other	I	SR: M, T	ASEBA	72.0	0	
113. Marchand, Schedler, & Wagstaff, 2004		USA	64	8	H, C	SR: M, F	other	E, I	SR: M	ASEBA	92.0	0	
114. Marcus, Lindahl, & Malik, 2001		USA	115	4	H	SR: Par	CTS	Agg	SR: Par, T	ASEBA	118.2	0	
115. Margolin & Baucom, 2014		USA	93	1	H	SR: Par	CTS	E	SR: C&Par	ASEBA	182.4	30	
116. Mark & Pike, 2017		UK	80	16	Q, F	SR: M	other	E, I	SR: M	other	144.6	0	79.4

(table continues)

Table 3 (continued)

Study	Sample	Country	N <sub>ob</sub>	N <sub>ES</sub>	Interparental relationship			Children's adjustment problems				Family type	Family comp.	
					Dimension	Procedure: Informant	Instrument	Domain	Procedure: Informant	Instrument	Child age (months)			Time lag
117. McDonald & Grych, 2006		USA	179	4	H	SR: M	CTS	E, I	SR: C, M	ASEBA, other	96.4	0		84.0
118. McGee, Wolfe, & Wilson, 1997		Canada	160	8	H	SR: C	other	E, I	SR: C, M	ASEBA	165.6	0		100
119. McNaughton Reyes et al., 2015		USA	1965	8	H	SR: C	other	Agg, Depr	SR: C	other	168.0	0, 7		100
120. Meyer et al., 2000		USA	464	4	Q	SR: M	other	E	SR: C&Par	other	144.0	0	Bio	100
121. Miller-Graff, Cummings, & Bergman, 2016		USA	225	4	H, C	O		E, I	SR: M	ASEBA	158.9	0	Mix	100
122. Minze, McDonald, Rosentraub, & Jouriles, 2010		USA	57	1	H	SR: M	other	E	SR: M	ASEBA	56.5	0	Mix	97.0
123. Mosmann, Costa, Silva, & Luz, 2018		Brazil	166	8	F, H	SR: Par	other	Agg, Del, Anx, Depr	SR: Par	ASEBA	135.6	0	Mix	100
124. Nicolotti et al., 2003		USA	89	8	H	SR: Par, C	CTS, other	E, I, Anx, Depr	SR: C, Par	ASEBA, other	119.0	0	Mix	100
125. O'Brien, Bahadur, Gee, Balto, & Erber, 1997		USA	43	10	H	SR: M, C	CTS	E, I, Depr	SR: C, M, T	ASEBA, other	121.8	0	Mix	100
126. O'Donnell, Moreau, Cardemil, & Pollastri, 2010		USA	88	2	H	SR: C	other	Depr	SR: C	other	128.9	0, 12		100
127. O'Leary & Vidair, 2005		USA	203	32	Q, CR	SR: M, F	other	E, I	SR: M, F	ASEBA	66.0	0	Bio	100
128. Papp, Mark Cummings, & Schermerhorn, 2004		USA	295	6	Q	SR: Par	other	E, I	SR: M, F, Par	ASEBA	133.7	0	100	100
129. Peisch et al., 2016		USA	120	12	H	SR: M, F, C	other	E, I	SR: C, M	ASEBA	159.0	0	Step	57.3
130. Peleg-Popko & Dar, 2001		Israel	108	2	Q	SR: M	other	Anx	SR: C, M	other	69.1	0	Bio	100
131. Pendry, Carr, Papp, & Antles, 2013		USA	74	8	Q, H, C	SR: M, F, Par	CTS, other	E, I	SR: M, F, Par	ASEBA	69.1	0	100	100
132. Peris & Emery, 2005		USA	6416	2	Q	SR: Par	other	E, I	SR: C	other	181.2	0	Bio	97.7
133. Ponnnet, Wouters, Goedemé, & Mortelmans, 2016		Belgium	340	6	H	SR: M, F	CPS	E	SR: C, M, F	ASEBA	170.9	0		100
134. Prinz, Myers, Holden, Tarnowski, & Roberts, 1983		USA	23	6	H SR:	SR: M	CTS	Agg, Del	SR: M, T	other	8.80	0	Adop	100
135. Rhoades et al., 2011	Early Growth and Dev. Study	USA	340	1	H	Par	other	Agg	SR: Par	other	8.80	9		100
136. Rogers & Holmbeck, 1997		USA	80	2	H	SR: C	CTS	E, Depr	SR: C	ASEBA, other	144.0	0	Mix	100
137. Salafia, Gondoli, & Grundy, 2008		USA	136	8	F	SR: M	Other	Agg, Del, Anx, Depr	SR: C, M	ASEBA, other	127.8	12	Bio	100
138. Salari, Wells, & Sarkadi, 2014		Sweden	475	4	Q, CR	SR: M, F	other	E	SR: M, F	other	189.0	0	Bio	91.0
139. Schermerhorn et al., 2011		USA	1725	18	Q, F, CR	SR: M, F, Par	other	E, I	SR: C	ASEBA	189.0	0		100
140. Schlomer, Fosco, Cleveland, Vandenberg, & Feinberg, 2015		USA	452	4	Q, F, H	SR: Par, C	other	I	SR: C	ASEBA	135.6	18	Mix	100
141. Schoppe-Sullivan et al., 2007		USA	246	20	Q, H	SR: M, F	CTS, other	E, Depr	SR: C, M, F	ASEBA, other	133.3	12	Mix	100
142. Shelton & Harold, 2008	Welsh Family Study	UK	352	6	H	SR: Par	other	E, Agg, Anx, Depr	SR: C, T	ASEBA, other	140.0	24	Bio	100
143. Shigeto, Mangelsdorf, & Brown, 2014		USA	65	2	Q	SR: M, F	other	E	O	other	12.5	23		0
144. Stegel & Han, 2018		China	2282	2	F	SR: Par	other	E, I	SR: Par	other	12.5	0		0

(table continues)

Table 3 (continued)

Study	Sample	Country	N <sub>ob</sub>	N <sub>ES</sub>	Interparental relationship			Children's adjustment problems			Family comp.	Family type		
					Dimension	Procedure: Informant	Instrument	Domain	Procedure: Informant	Instrument			Child age (months)	Time lag
145. Siffert & Schwarz, 2011		Swiss	192	24	H, D	SR: M	other	Agg, Del, Anx, Depr	SR: C, M	other	127.4	0	Bio	100
146. Simons, Lin, & Gordon, 1998		USA	113	1	H	SR: Par	other	Del	SR: C	other		0		100
147. Spence, Nijman, Bor, O'Callaghan, & Williams, 2002		Australia	4529	3	Q	SR: M	other	I, Anx	SR: C, M	ASEBA	60.0	0, 108		
148. Stevens, Vollebregt, Pels, & Crijnen, 2005		NL	415	3	F, CR	SR: Par	other	E	SR: C, Par	ASEBA	168.0	0		100
149. Stover et al. (2012)		USA	308	1	H	SR: Par	other	Agg	SR: M, F	ASEBA	27.00	0	Adop	100
150. Stover et al., 2016		USA	336	8	H	SR: M, F	other	Agg	SR: M, F	ASEBA	18.0	36, 54	Adop	100
151. Stroud, Meyers, Wilson, & Durbin, 2015		USA	149	4	Q	SR: Par	other	E, I	SR: Par	ASEBA	54.43	0	Bio	100
152. Sturge-Apple et al., 2006 <sup>d</sup>	Me & My Family	USA	210	42	H, D	O	other	E, I	SR: M, F, T	ASEBA	72.0	12, 24	Bio	100
153. Stutzman et al., 2011		USA	1539	2	H	SR: C	other	Agg, Depr	SR: C	other	193.9	0	Mix	63.5
154. Tang, Lin, Chi, Zhou, & Hou, 2017		China	249	4	Q, F	SR: Par	other	E	SR: Par	other	115.1	0		
155. Tein et al., 2018		USA	830	2	F	SR: Par	other	E, I	SR: Par	ASEBA	99.7	0		0
156. Towe-Goodman et al., 2011		USA	636	4	H	SR: M	CTS	Del	SR: M	other	15.5	21, 29	Step	94.0
157. Trapolini, McMahon, & Ungerer, 2007		Australia	80	1	Q	SR: Par	other	E	SR: Par&T	other	50.8	0	Bio	87.0
158. Tschann et al., 2002		USA	150	4	F, H, CR	SR: Par, Par & C	other	Del	SR: C	other	163.2	6	Bio	100
159. Tu, Erath, & El-Sheikh, 2016 <sup>b</sup>	Family Stress Study	USA	242	2	H	SR: M	CTS	Anx, Depr	SR: C	other	98.8	0	Mix	100
160. Underwood, Beron, Gentsch, Galperin, & Risser, 2008		USA	281	16	H	SR: M, F	CPS	Agg	SR: T	other		0, 12		69.4
161. Unger, Brown, Tressell, & McLeod, 2000		USA	107	4	F, CR	SR: Par&C	other	Depr	SR: C	other	186.0	12, 24	Bio	69.2
162. Van Eldik et al., 2017		Belgium	368	6	Q	SR: M, F	other	E	SR: M, F	ASEBA	92.0	0, 72, 96		100
163. Vannatta, Ramsey, Noll, & Gerhardt, 2010		USA	40	6	Q	SR: M, F	other	E, I, Depr	SR: C, Par	ASEBA, other	148.8	0		
164. Vrijmoeth et al., 2012		Belgium	101	2	Q	SR: Par	other	E, Anx	SR: Par	other	174.0	0		96.5
165. Whitson & El-Sheikh, 2003		USA	63	4	H	SR: M, C	CTS, CPS	E, I	M	ASEBA		0		
166. Wright et al., 2013 <sup>e</sup>	PHDCN	USA	1655	2	H	Par	CTS	Del	C	other	167.3	36		
167. Zurling et al., 2013		USA	132	4	H	M&C	other	E, I	C&M	other	82.8	0, 12	Step	79.5
168. Zemp, Milek, Cummings, Cina, & Bodenmann, 2016		Swiss	100	2	Q	M, F	other	E	M, F	other	79.0	0	Bio	100
169. Zemp, Johnson, & Bodenmann, 2018		Germany	529	8	H, D	M, F	other	E, I	C	other	120.0	0, 12, 24, 36, 48	Bio	96.3

Note. Superscripts identify dependent samples. N<sub>ob</sub> = number of participants in a study, N<sub>ES</sub> = number of effect sizes provided by a study. Family type: Bio = two biological parents; Adop = adoptive families; Step = stepfamilies; Mix = mix of biological, adoptive and stepparents in the sample. Family comp. = family composition; defined by the percentage of two-parent families in the sample. Interparental relationship dimensions: Q = relationship quality; F = conflict frequency; H = hostility; D = disengagement; C = constructive conflict; CR = child-related conflict. Child problem behavior dimensions: E = externalizing broad; I = internalizing broad; Agg = aggression; Del = delinquency; Anx = anxiety; Depr = depressive symptoms. Procedure: SR = self-report (questionnaire); O = observations. Informants: M = mother-report; F = father-report; Par = mix both parents; C = child-report; T = teacher-report; Peer = peer-report. A comma identifies multiple informants, a '&' identified combinations of informants. Instruments: CPS = the Conflict Tactics Scale; CTS = the Conflict Tactics Scale; SISS = the Security in the Interparental Subsystem Scale; PHDCN = project on human development in Chicago neighborhoods.



Table 4  
*Characteristics of the Studies Included in the Meta-Analysis for Children's Responses to Interparental Conflict*

Study	Sample	Country	N <sub>ob</sub>	N <sub>ES</sub>	Interparental relationship			Children's responses			Family type	Family comp.	
					Dimension	Procedure: Informant	Instrument	Domain	Procedure: Informant	Instrument			Child age (months)
1. Ablow, Measelle, Cowan, & Cowan, 2009		USA	96	6	Q, F	SR: C	Other	Emo, Beh, Cogn	I: C	SIS	67.20	12	100
2. Buehler, Lange, & Franck, 2007 <sup>b</sup>		USA	416	15	H	SR: M, F	Other	Emo, Beh, Cogn	SR: C	CPIC, SIS	142.32	0, 12	100
3. Ching & Wu, 2018		Hong Kong	214	20	H, C, D	SR: C	CPS	Emo, Beh, Cogn	SR: C	SIS	198.24	0	
4. Coe, Davies, & Sturge-Apple, 2017 <sup>d</sup>		USA	243	1	H	O		Cogn	I: C		55.20	0	Mix
5. Crockenberg & Langrock, 2001		USA	110	12	H	SR: M, F	Other	Emo	I: C		72	0	Bio
6. Cummings et al., 1994		USA	51	4	H	SR: M	CTS	Cogn	SR: C	CPIC	999	0	100
7. Cummings et al., 2012 <sup>a</sup>	Me & My Family	USA	194	12	F, H	SR: Par	CPS	Emo, Beh	SR: Par	SIS	72	24	
8. Cummings et al., 2014 <sup>a</sup>	Me & My Family	USA	188	6	F	SR: M, F	CPS	Emo, Beh, Cogn	SR: C	SIS	153	12	Mix
9. Davies et al., 2006 <sup>a</sup>	Me & My Family	USA	223	48	H, D	O		Emo, Beh, Cogn	O, I: C		72	0, 12	Bio
10. Davies et al., 2007 <sup>a</sup>	Me & My Family	USA	178	4	H	O		Phys	O		72	0	Bio
11. Davies et al., 2012		USA	250	9	F, H, C	SR: Par	CPS	Emo, Beh, Cogn	SR: C	SIS	151.20	0	84.0
12. Davies, Hentges, et al., 2016	Me & My Family <sup>a</sup>	USA	263	6	C	Mix: Par& O		Emo, Beh, Cogn	C	SIS	151.4	0, 12	Mix
13. Davies, Martin, Coe, et al., 2016 <sup>b</sup>	2 <sup>d</sup>	USA	243	4	H	Mix: Par& O		Emo, Beh	O		55.2	0	Mix
14. Du Rocher Schudlich et al., 2007	Me & My Family	USA	232	10	H, D	Mix: Par& O		Sec	Mix: I&SR: C	SIS, other	84.0	0, 12, 72, 84, 96	Bio
15. Du Rocher Schudlich et al., 2011		USA	262	3	H, C, D	O		Sec	I: C		126.8	0	100
16. El-Sheikh, Keller, & Erath, 2007		USA	74	18	H, C, D	O	other	Emo	O		10.1	0	100
17. El-Sheikh et al., 2011 <sup>f</sup>		USA	157	2	H	SR: Par	CTS	Phys	O		111.7	24	100
18. El-Sheikh et al., 2008 <sup>f</sup>		USA	260	2	H	SR: Par& C	other	Phys	O		98.76	0	Mix
19. El-Sheikh, 2005		USA	250	2	H	SR: Par	other	Sec	SR: Par& C	SIS	116	0	Mix
20. El-Sheikh, Himmant, & Erath, 2015		USA	89	14	H	SR: Par	CTS	Emo, Phys	O, I: C		116	0	Bio
21. El-Sheikh & Harger, 2001		USA	160	1	H	SR: Par	CTS	Phys	O		113.20	0	Mix
22. Fletcher et al., 2017		USA	88	7	H	SR: C	CTS	Cogn, Phys	SR: C	CPIC	119	0	100
23. Fosco & Feinberg, 2015 <sup>b</sup>	PROSPER	USA	65	6	H	SR: C	other	Phys	O		999	0	63.0
24. Fosco & Feinberg, 2018 <sup>b</sup>		USA	768	3	H	SR: Par	other	Cogn	SR: C	CPIC	135.6	0, 7, 20	Mix
25. Fosco & Grych, 2008	PROSPER	USA	737	2	H	SR: Par	other	Cogn	SR: C	CPIC	135.6	0, 6	Mix
26. Grych et al., 2003		USA	150	3	H	SR: Par	CPS	Emo, Cogn	SR: C, Par& C	CPIC	120	0	100
27. Harold et al., 2004 <sup>e</sup>		UK	298	24	CF, H, C	SR: C	other	Cogn	SR: C	CPIC	140.0	0, 12	100
28. Jouriles & McDonald, 2015		UK	181	6	H	SR: Par	other	Emo, Beh, Cogn	I: C		139.8	0	Bio
		USA	107	1	H	SR: M	CTS	Cogn	SR: C	CPIC	102	0	Mix

(table continues)

Table 4 (continued)

Study	Sample	Country	N <sub>ob</sub>	N <sub>ES</sub>	Interparental relationship				Children's responses				Family type	Family comp.
					Dimension	Informant	Instrument	Domain	Procedure: Informant	Instrument	Child age (months)	Time lag		
29. Keller et al., 2015		USA	69	4	H	SR: Par	CTS	Emo, Beh, Phys	SR: C, O	SIS	99.60	0	Bio	100
30. Kelley et al., 2016		USA	90	2	H	SR: Par	CTS	Emo	SR: C	SIS	132.96	0		100
31. Kelly & El-Sheikh, 2013		USA	176	2	H	SR: Par	CTS	Sec	SR: C	SIS	104.2	0, 24	Mix	100
32. Kerig, 1998			106	16	Q, F, H	SR: Par	CPS, other	Cogn	SR: C	CPIC	110.0	0		100
33. Kopystynska, Paschall, Barnett, & Curran, 2017	Me & My Family	USA	3722	4	H, C	SR: M, F	other	Emo	SR: Par	SIS	36	0	Bio	50
34. Koss et al., 2013 <sup>a</sup>		USA	193	1	H, CR	O, SR: M	other	Emo, Beh, Cogn, Phys	SR: C, O	CPIC, SIS, other	78.8	0	Bio	
35. Kouros et al., 2008		USA	297	12	H, C	SR: M, F	CTS	Emo, Beh	SR: C, Par	SIS	133.70	24		100
36. Li, Cheung, & Cummings, 2016		China	315	40	H	SR: Par	CPS	Emo, Beh, Cogn	SR: C	SIS	159.60	18		100
37. Lucas-Thompson, 2012		USA	42	4	H	O		Phys	O	CPIC	210.0	0	Bio	100
38. Lucas-Thompson et al., 2016 <sup>c</sup>		USA	153	6	H	O		Cogn, Phys	SR: C	CPIC	155.0	0	Mix	100
39. Lucas-Thompson et al., 2017 <sup>c</sup>		USA	105	2	C	O		Phys	SR: C	CPIC	153.6	0	Mix	100
40. McCoy, Cummings, & Davies, 2009 <sup>a</sup>	Me & My Family	USA	224	8	C	SR: Par	CPS	Emo, Beh	SR: M, F	SIS	72	12	Bio	100
41. McDonald & Grych, 2006		USA	179	2	H	SR: M	CTS	Cogn	SR: C	CPIC	96.4	0		84.0
42. McKernan & Lucas-Thompson, 2018 <sup>c</sup>		USA	153	2	H	O		Phys	O		155.0	0	Mix	100
43. Miller-Graff et al., 2016		USA	225	2	H, C	O		Sec	SR: C	SIS	158.9	0	Mix	100
44. Philbrook, Erath, Hinman, & El-Sheikh, 2018		USA	252	2	H	SR: Par & C	CTS	Phys	O		189.5	0		100
45. Porter & Dyer, 2017		USA	101	4	Q	SR: M	other	Phys	O		6	0, 6		
46. Schacht, Cummings, & Davies, 2009 <sup>a</sup>	Me & My Family	USA	227	3	H	SR: Par	CPS	Emo, Beh	SR: Par	SIS	72	12		100
47. Schermerhorn, Cummings, & Davies, 2005		USA	115	4	CF	SR: M, F	CPS	Emo, Beh	I: C		74	0		100
48. Schlomer et al., 2015 <sup>b</sup>	PROSPER	USA	452	4	Q, CF, H	SR: Par, C	other	Cogn	SR: C	CPIC	999	6	Mix	100
49. Shelton & Harold, 2008 <sup>c</sup>		UK	252	4	H	SR: Par	other	Beh, Cogn	SR: C	CPIC, SIS	140.0	12, 24	Bio	100
50. Siffert & Schwarz, 2011 <sup>g</sup>		SUI	192	8	H, D	SR: M	other	Cogn	SR: C	CPIC	127.4	0	Bio	100
51. Siffert, Schwarz, & Stutz, 2012 <sup>g</sup>		SUI	176	14	CF, H, C, D	SR: Par, C	other	Cogn	SR: C	CPIC	127	12	Bio	100
52. Sturge-Apple, Davies, Winter, Cummings, & Schermerhorn, 2008 <sup>a</sup>	Me & My Family	USA	229	9	H, D, C	O		Cogn	I: C		72	0		100
53. Sturge-Apple, Davies, Cicchetti, & Manning, 2012		USA	201	4	H	SR: M	CTS	Phys	O		25.40	0		100

(table continues)

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Table 4 (continued)

Study	Sample	Country	$N_{ob}$	$N_{ES}$	Interparental relationship				Children's responses				Family type	Family comp.
					Dimension	Procedure: Informant	Instrument	Domain	Procedure: Informant	Instrument	Child age (months)	Time lag		
54. Suh et al., 2016		USA	759	20	O, H, C	SR: Par	other	Sec	SR: C	CPIC	155.40	0, 18	Mix	100
55. Tschann et al., 2002		USA	150	4	CF, H, CR	SR: Par, Par&C	other	Beh	SR: Par&C	other	163.2	6	Bio	100
56. Warmuth, Cummings, & Davies, 2018 <sup>a</sup>	Me & My Family	USA	235	1	CF, H	SR: Par	CPS	Beh	SR: Par	SIS	72	12	Bio	100
57. Whitson & El-Sheikh, 2003		USA	122	2	H	SR: M, C	CTS, CPS	Phys	O		999	0		96.5
58. Xin, Chi, & Yu, 2009		China	549	6	CF, H, C	SR: C	other	Cogn	SR: C	CPIC	208.53	0		100
59. Zemp, Bodenmann, & Mark Cummings, 2014		SUI	28	1	H	SR: C	other	Phys	O		139.70	0	Bio	100
60. Zemp et al., 2016		SUI	43	12	H, C	O		Cogn	SR: C	CPIC, SIS	127.20	0	Bio	100
61. Zhou & Buehler, 2017 <sup>b</sup>		USA	416	2	H	O		Beh	SR: C	CPIC/SIS	142.32	0,12		100

*Note.* Superscripts identify dependent samples.  $N_{ob}$  = number of participants in a study;  $N_{ES}$  = number of effect sizes provided by a study. Family type: Bio = two biological parents; Adop = adoptive families; Step = stepfamilies; Mix = mix of biological, adoptive and stepparents in the sample. Family comp. = family composition, defined by the percentage of two-parent families in the sample. Interparental relationship dimensions: Q = relationship quality; F = conflict frequency; H = hostility; D = disengagement; C = constructive conflict; CR = child-related conflict. Child Responses to conflict: Emo = emotional responses; Beh = behavioral responses; Cogn = cognitions; Phys = physiological; Sec = emotional security. Procedure: SR = self-report (questionnaire); O = observations; I = interview. Informants: M = mother-report; F = father-report; Par = mix both parents; C = child-report; T = teacher-report; Peer = peer-report. A comma identifies multiple informants, a '&' identified combinations of informants. Instruments: CPS = the Conflict Tactics Scale; CTS = the Conflicts and Problem-Solving Scales; CPIC = the Children's Perception of Interparental Conflict Scale; SISS = the Security in the Interparental Subsystem Scale.

tionship quality and constructive interparental conflict were reversely coded, so that are scaled along the same metric whereby higher levels reflect greater discord. Next, correlations were transformed using Fisher's Z transformation (Rosenthal, 1991), and pooled Zs were reconverted to  $r$  for reporting.

**Meta-analytic integration.** Several studies provided multiple effect sizes and therefore the assumption of independence underlying meta-analytic strategies was violated. Traditional meta-analytic approaches have either averaged these multiple effect sizes, selected one ES for each study, ignored the dependency, or used a "shifting unit of analysis" approach (Cheung, 2014; Van den Noortgate, López-López, Marín-Martínez, & Sánchez-Meca, 2015). However, all these methods have considerable shortcomings that bias meta-analytic results (Becker, 2000; Cheung & Chan, 2014; Gleser & Olkin, 1994). In contrast, multilevel models can be used to accurately handle the dependency in meta-analytic data. Three-level meta-analyses are an extension of the traditional two-level random-effects model in which the dependency among multiple effect sizes from the same study is modeled by adding an intermediate level (Cheung, 2014; Van den Noortgate et al., 2015). In this study, a three-level meta-analysis was conducted in R statistical software Version 3.4.1. using the metafor package (Viechtbauer, 2010). This analysis modeled the sample variance for each individual ES at level 1 according to Cheung's formula (2013), the variance between effect sizes within studies at level 2, and between studies at level 3 (see Assink & Wibbelink, 2016; Wibbelink & Assink, 2015). We used the sample as the unit of analyses defining the second level, meaning that samples had to be independently recruited and described in the method section. Based on that requirement, the dependency in the data occurred because studies reported effect sizes (a) for several dimensions of the interparental relationship or children's problem behavior, (b) derived from different measures or multiple informants, and (c) for boys and girls separately, or a combination of these types of dependencies.

This three-level model was used to estimate seven overall models for each child outcome: externalizing problem behavior, internalizing problem behavior, emotional responses, behavioral responses, cognitive appraisals, physiological responses, and emotional insecurity. Next, similarly to traditional mixed-effects models, when significant variance was found at the second and third level three-level mixed effects models were subsequently fitted by including characteristics that could explain this variance (see Table 5). We followed the instructions of Van den Noortgate and colleagues (2015) for examining categorical and continuous moderators. Continuous moderators were added to the overall model and an omnibus chi-square test showed if the regressions coefficient was statistically different from zero. A continuous moderator was examined when at least three independent samples provided information. Categorical moderators were examined by adding dummy variables to the overall model for the categories. An omnibus chi-square test showed whether the regression coefficients for all categories were statistically equal to each other. Post hoc  $t$  tests show which categories were statistically different from each other. This model was repeated with different reference categories, to statistically compare all categories to each other (in the case of more than two categories). Categorical moderators were examined when each cell was represented by at least three independent samples.

Table 5  
Overview of Key Variables Coded for Each Study

Variables	Codes and definitions
ID sample	ID to identify similar samples
Sample size	n
Child age	Child age when the IPR was assessed, in months
Child gender	Percentage of male children in the sample
Child first born	Percentage of eldest children in the sample
Family structure	Percentage of two-parent (cohabiting or married) families in the sample
Genetic link parents and children	0 = adoptive or foster parents (85% of sample or more) 1 = mixed 2 = two biological parents (85% of sample or more) 4 = stepfamilies (1 biological parents, 1 stepparent)
Sibling studies	0 = no siblings in study 1 = siblings in study (50% of sample) 2 = dizygotic twins 3 = monozygotic twins
Socio-economic status	1 = low 2 = middle-class or mixed samples 3 = high
Family ethnicity	Percentage of Caucasian families in the sample
Clinical	0 = nonclinical / community population 1 = clinical / help-seeking population 2 = mixed population
IPR and Child Outcome assessment method	1 = self-reported questionnaire 2 = observational or interview data coded by independent rater 3 = mix of self-reported questionnaire and coded data
IPR measure	1 = CTS 2 = CPS 3 = other
Child adjustment measure	1 = ASEBA 2 = other
Child responses measure	1 = CPIC 2 = SISS 3 = other
IPR informant	1 = mother 2 = father 3 = both parents 4 = child 5 = parents and child 6 = other combination of multiple informants
Child outcome informant	1 = child 2 = mother 3 = father 4 = both parents 5 = teacher 6 = peers 7 = combination of multiple informants
Common rater	0 = none 1 = partial 2 = absolute
Time lag	For longitudinal studies, the time elapsed between the assessment of the interparental relationship and (later) child outcomes in months

*Note.* IPR = the interparental relationship; CPS = the Conflict Tactics Scale; CTS = the Conflicts and Problem-Solving Scales; ASEBA = The Achenbach System of Empirically Based Assessment; CPIC = the Children's Perception of Interparental Conflict Scale; SISS = the Security in the Interparental Subsystem Scale.

## Publication Bias

To minimize possible publication bias, we first of all made efforts to include gray literature like unpublished dissertations in our meta-analysis, in addition to published articles (i.e., the file drawer problem). Then, to evaluate the extent to which null results from unpublished studies might have influenced our findings we followed the approach in other multilevel meta-analyses (see, e.g., Vu et al., 2016). First, we performed Egger's regression test (Egger, Smith, Schneider,

& Minder, 1997). In the context of the multilevel structure of our data, we conducted Egger's test by adding the estimate's standard error as a moderator to the three-level overall model in R (i.e., the alternative for the *regtest* function in the metaphor package in R; Viechtbauer, 2010). Additionally, we calculated Rosenthal's fail-safe *N*, which provides an estimate of the number of unpublished studies with nonsignificant results necessary to make an average effect size nonsignificant (Rosenthal, 1979). We will rely on the combination of



these two tests to evaluate the extent to which our findings seem subject to publication bias.

## Results

Table 6 lists the means, standard deviations, and ranges of all continuous coded variables, and Table 7 presents the number of studies and effect sizes included in this meta-analysis. All numbers are presented separately for the child outcomes.

### The Interparental Relationship and Externalizing Behavior

One hundred forty-two independent samples were included in which associations between the interparental relationship and children's externalizing problem behavior were examined (see Table 7). These samples contained a total of 47,832 participants and 779 effect sizes. The overall weighted effect size for the association between the interparental relationship and externalizing problems was  $r = .17$ , 95% CI [.15, .19],  $p < .0001$ . The effect sizes varied significantly within ( $\sigma^2 = .005$ ,  $\chi^2[2] = 220.25$ ,  $p < .0001$ ), and between studies ( $\sigma^2 = .006$ ,  $\chi^2[2] = 124.99$ ,  $p < .0001$ ). Of the total variance, 34.2% was attributable to differences between effect sizes within studies, and 39.3% to differences between studies. Thirty-two samples examined children's aggression and 26 samples examined delinquency separately. Specific weighted aggregated effect sizes for these two types of externalizing behavior were statistically different from zero ( $p < .0001$ ) and were statistically similar,  $F(2, 776) = 2.94$ ,  $p = .053$ .

**Dimensions of the interparental relationship.** Weighted effect sizes for all six dimensions of the interparental relationship with children's externalizing problems were compared (all  $k > 2$ ; see Table 7). All weighted average effect sizes were significantly different from zero, and most were of small-moderate strength (see Table 8). The omnibus test showed that the overall effect size differed significantly across the dimensions of the interparental relationship,  $F(5, 773) = 8.00$ ,  $p < .0001$ . The weighted effect size for relationship quality was statistically similar to those for hostile, disengaged, and constructive interparental conflict, but weaker

than those for conflict frequency and child-related conflict. Comparing the conflict dimensions, the weighted effect size for child-related conflict with externalizing behavior was statistically stronger than the effect sizes for the other interparental conflict dimensions. Additionally, the effect sizes for conflict frequency and hostile interparental conflict were statistically stronger than the effect size for constructive interparental conflict. For hostile interparental conflict, in addition, stronger associations were found for the combination verbal/physical aggression ( $r = .21$ , 95% CI [.18, .24],  $p < .0001$ ,  $k = 34$ ) and physical aggression only ( $r = .19$ , 95% CI [.16, .22],  $p < .0001$ ,  $k = 30$ ), relative to nonverbal/verbal aggression ( $r = .12$ , 95% CI [.07, .17],  $p < .0001$ ,  $k = 5$ ) and verbal aggression only ( $r = .16$ , 95% CI [.13, .19],  $p < .0001$ ,  $k = 28$ ),  $F(5, 380) = 6.39$ ,  $p < .0001$ . Egger's test was not significant for all interparental relationship dimensions in relation to externalizing behavior ( $F$  tests all:  $ps > .06$ ), except for hostile interparental conflict,  $F(1, 384) = 4.85$ ,  $p = .028$ . A fail-safe  $N$  was obtained of 30,727 studies for relationship quality, 18,304 studies for frequency, 2,799 studies for disengaged interparental conflict, 2,671 for constructive interparental conflict, 5,981 for child-related conflict, and, 221,161 studies for hostile interparental conflict. Together, these analyses suggest that the meta-analytic results for externalizing symptoms are robust, and unlikely to be significantly changed by unpublished null results.

**Time lag.** One hundred twenty-two independent samples examined concurrent associations, and 46 samples examined longitudinal associations between the interparental relationship and children's externalizing behavior. For all dimensions of the interparental relationship, the weighted effect size for concurrent correlations was statistically similar to the weighted effect size for longitudinal associations (all  $F$  tests  $ps > .190$ ). Within the longitudinal data, only the weighted effect size of disengaged interparental conflict and externalizing behavior was moderated by the time lag,  $F(1, 28) = 10.11$ ,  $p = .004$ . The effect size was stronger when more time elapsed ( $b = .01$ , i.e., in months).

**Developmental and gender differences.** None of the weighted average effect sizes for dimensions of the interparental relationship and externalizing behavior depended on child age. Regarding child

Table 6  
*Descriptives of Continuous Variables Across Types of Child Adjustment and Responses to the Interparental Relationship*

Variable	Externalizing	Internalizing	Emotional	Behavioral	Cognitive	Physiological	Emotional insecurity
Child age							
<i>M</i> ( <i>SD</i> )	108.4 (47.7)	115.2 (40.0)	88.9 (48.8)	123.2 (44.5)	132.7 (33.0)	106.3 (62.5)	129.5 (32.1)
Range	7.2–204.5	12.0–204.5	10.1–198.2	55.2–198.2	55.2–208.5	6.0–210.0	84.0–158.9
Child gender							
<i>M</i> ( <i>SD</i> )	52.0 (28.1)	51.9 (28.9)	47.5 (21.8)	48.1 (3.2)	49.18 (15.3)	47.6 (28.4)	47.4 (2.1)
Range	0–100	0–100	0–100	43.5–58.0	0–100	0–100	44.3–52.0
Two-parent families, %							
<i>M</i> ( <i>SD</i> )	95.4 (12.5)	96.1 (12.5)	97.9 (9.4)	99.3 (3.4)	99.4 (2.9)	94.2 (13.3)	100 (0)
Range	0–100	0–100	50–100	84–100	84–100	63–100	100
Ethnicity							
<i>M</i> ( <i>SD</i> )	70.8 (30.2)	76.9 (27.1)	70.2 (26.6)	55.2 (37.9)	67.6 (34.9)	67.3 (19.0)	63.3 (13.7)
Range	0–100	0–100	0–100	0–100	0–100	25–94	50.8–86.0
Time lag							
<i>M</i> ( <i>SD</i> )	29.2 (23.9)	29.9 (26.0)	15.2 (4.7)	16.7 (5.7)	13.0 (3.4)	15.0 (10.4)	38.5 (32.3)
Range	5–144	7–135	12–24	6–24	6–20	6–24	12–96
Publication year	1983–2018	1987–2018	2001–2018	2002–2018	1994–2018	2001–2018	2007–2016

Table 7  
*Number of Studies and Effect Sizes Across Types of Child Outcomes*

Outcome	$N_{ES} (k)$						
	Externalizing	Internalizing	Emotional	Behavioral	Cognitive	Physiological	Emotional insecurity
Total	779 (142)	703 (116)	130 (17)	92 (12)	180 (20)	45 (15)	39 (6)
Dimension IPR							
Quality	148 (42)	116 (34)	1 (1)	1 (1)	7 (3)	4 (1)	6 (1)
Frequency	88 (32)	87 (27)	6 (4)	10 (5)	21 (8)	—	—
Hostile	386 (88)	338 (74)	81 (15)	61 (10)	104 (19)	40 (14)	23 (5)
Disengaged	62 (10)	62 (12)	23 (3)	6 (2)	26 (3)	—	6 (2)
Constructive	59 (17)	70 (17)	18 (6)	11 (4)	31 (8)	—	4 (3)
Child-related	36 (15)	30 (11)	1 (1)	3 (2)	1 (1)	1 (1)	—
Time lag							
Cross-sectional	505	488	85	31	111	41	20
Longitudinal	274	215	45	61	69	4	19
Genetic							
Adoptive/foster	18	—	—	—	—	—	—
Biological parents	231	219	69	27	71	13	10
Stepfamilies	31	25	—	—	—	—	—
Mixed	113	103	6	6	21	7	26
Sibling studies							
No sibs	710	660	130	92	174	39	39
Siblings	36	24	—	—	6	6	—
Dizygotic twin	2	—	—	—	—	—	—
Monozygotic twin	2	—	—	—	—	—	—
SES							
Low	106	60	9	6	3	6	—
Middle/mixed	519	531	111	66	113	30	17
High	44	30	—	—	24	8	—
Clinical							
Community	683	621	128	92	180	45	39
Help-seeking	62	35	2	—	—	—	—
Mixed	34	47	—	—	—	—	—
IPR method							
Self-report	688	588	68	64	135	33	24
Lab: observation	70	114	58	24	43	12	5
Mixed	21	1	4	4	2	—	10
Child method							
Self-report	767	695	47	76	159	—	32
Lab: observation	4	—	34	10	—	—	—
Lab: interview	—	—	49	6	21	—	3
Mixed	8	8	—	—	—	—	4
IPR instrument							
CTS	116	101	19	6	9	16	2
CPS	130	98	22	41	42	1	—
Other quest.	442	389	27	17	86	16	22
Child instrument							
ASEBA	433	404	—	—	—	—	—
Non-ASEBA	338	291	—	—	—	—	—
CPIC	—	—	—	—	117	—	20
SISS	—	—	46	68	42	—	12
Other quest	—	—	1	8	21	—	7
IPR informant							
Mother	291	230	15	8	23	10	—
Father	138	108	14	6	7	—	—
Parents	159	126	33	37	55	5	24
Child	85	104	6	10	50	14	—
Combi	37	21	4	7	2	4	10
Child outcome informant							
Child	180	307	80	54	180	—	37
Mother	236	193	2	2	—	—	—
Father	88	83	2	2	—	—	—
Parents	121	74	11	20	—	—	—
Teacher	95	35	—	—	—	—	—
Peers	9	—	—	—	—	—	—
Combination	47	11	1	2	—	—	2

(table continues)

Table 7 (continued)

Outcome	$N_{ES} (k)$						
	Externalizing	Internalizing	Emotional	Behavioral	Cognitive	Physiological	Emotional insecurity
Common rater							
None	396	379	47	37	83		32
Partial	51	26	6	22	—		—
Absolute	332	298	11	7	54		2

Note.  $N_{ES}$  = number of effect sizes;  $k$  = number of independent samples; IPR = interparental relationship; CPS = the Conflict Tactics Scale; CTS = the Conflicts and Problem-Solving Scales; ASEBA = The Achenbach System of Empirically Based Assessment; CPIC = the Children's Perception of Interparental Conflict Scale; SISS = the Security in the Interparental Subsystem Scale.

gender, the association between *unconstructive* interparental conflict and externalizing problems was moderated by the percentage of boys in the sample,  $F(1, 57) = 6.08, p = .017, b = -.001$ . Three independent samples examined associations for boys and girls separately, whereas 13 samples examined mixed samples. A comparison showed significant differences across these samples,  $F(2, 56) = 3.72, p = .030$ . Associations were statistically smaller for boys ( $r = -.04, 95\% \text{ CI} [-.19, .12], p = .656$ ) than for girls ( $r = .08, 95\% \text{ CI} [-.09, .23], p = .358$ ), but none of the associations remained significant. The effect sizes for mixed gender groups was significant ( $r = .11, 95\% \text{ CI} [.04, .18], p = .003$ ), but was not statistically different from the effect sizes for boys and girls. No other association with externalizing behavior was moderated by gender.

**Family and study characteristics.** None of the family characteristics (see Table 5) moderated associations between the dimensions of the interparental relationship and externalizing behavior (all  $F$  tests:  $ps > .05$ ). Some associations did depend on the specific methods used in the study. First, the association between

hostile interparental conflict and externalizing behavior depended on the measurement procedure,  $F(2, 383) = 6.36, p = .002$ , and was stronger when the interparental hostility was reported via a questionnaire ( $r = .18, 95\% \text{ CI} [.16, .20], p < .0001, k = .83$ ) than through observational ratings by independent coders ( $r = .11, 95\% \text{ CI} [.07, .16], p < .0001, k = 7$ ). Second, associations of conflict frequency,  $F(4, 77) = 4.83, p = .002$ , and hostile interparental conflict,  $F(5, 371) = 9.80, p < .0001$ , with externalizing behavior depended on the informant of child behavior. For conflict frequency, associations were significantly stronger when externalizing behavior was reported by both parents ( $r = .20, 95\% \text{ CI} [.16, .24], p < .0001, k = 11$ ), compared with children ( $r = .14, 95\% \text{ CI} [.10, .19], p < .0001, k = 11$ ) or teacher reports ( $r = .02, 95\% \text{ CI} [-.06, .10], p = .622, k = 3$ ). Intermediate associations were found for multiinformants ( $r = .13, 95\% \text{ CI} [.05, .21], p = .003, k = 3$ ) or mother-report only ( $r = .18, 95\% \text{ CI} [.13, .23], p < .0001, k = 11$ ). For hostile conflict, the weighted effect size was strongest when externalizing behavior was reported by multiinformants ( $r = .32, 95\% \text{ CI} [.25, .38], p < .0001, k = 5$ ). Intermediate

Table 8

*Weighted Average Effect Sizes for Dimensions of the Interparental Relationship and Domains of Child Functioning*

Measure	Externalizing	Internalizing	Emotional	Behavioral	Cognitions	Physiological	Emotional insecurity
Relationship quality							
$r$	.15 <sup>d</sup>	.12 <sup>a</sup>			.12 <sup>a</sup>		
Range	.12-.18	.09-.15			.02-.22		
$p$	<.0001	<.0001			.016		
Conflict frequency							
$r$	.18 <sup>b,d</sup>	.18 <sup>b</sup>	.23 <sup>a</sup>	.17	.25 <sup>b</sup>		
Range	.16-.21	.15-.20	.12-.33	.08-.26	.19-.31		
$p$	<.0001	<.0001	<.0001	<.001	<.0001		
Hostile conflict							
$r$	.17 <sup>a,b,d</sup>	.14 <sup>a,c</sup>	.14 <sup>a</sup>	.14	.20 <sup>a</sup>	.05	.21
Range	.15-.19	.12-.16	.08-.20	.06-.21	.15-.24	-.01 to .10	.04-.36
$p$	<.0001	<.0001	<.0001	<.001	<.0001	.073	.016
Disengaged conflict							
$r$	.16 <sup>a,b,d</sup>	.16 <sup>b,c,d</sup>	.09		.17 <sup>a</sup>		
Range	.12-.19	.13-.20	.02-.16		.10-.23		
$p$	<.0001	<.0001	.019		<.0001		
Unconstructive conflict							
$r$	.12 <sup>a</sup>	.13 <sup>a,d</sup>	.17 <sup>a</sup>	.13	.20 <sup>a,b</sup>		.12
Range	.09-.16	.10-.16	.10-.24	.04-.22	.14-.25		-.06 to .29
$p$	<.0001	<.0001	<.0001	.006	<.0001		.171
Child-related conflict							
$r$	.27	.19 <sup>b,c</sup>					
Range	.23-.31	.14-.23					
$p$	<.0001	<.0001					

Note. Superscripts indicate effect sizes that are statistically similar. Empty cells are indicative of  $k$  being too small ( $< 3$ ) to calculate an effect size.

associations were found for reports by both parents ( $r = .22$ , 95% CI [.18, .25],  $p < .0001$ ,  $k = 24$ ), only mothers ( $r = .19$ , 95% CI [.16, .22],  $p < .0001$ ,  $k = 39$ ), or only fathers ( $r = .18$ , 95% CI [.14, .21],  $p < .0001$ ,  $k = 12$ ), which were stronger than when externalizing was reported by children ( $r = .14$ , 95% CI [.11, .17],  $p < .0001$ ,  $k = 32$ ) or teachers only ( $r = .12$ , 95% CI [.09, .16],  $p < .0001$ ,  $k = 17$ ). Third, effect sizes of relationship quality, conflict frequency, hostile interparental conflict, and child-related conflict were statistically stronger for common raters ( $r$ s ranging between .19 and .32, all  $p$ s  $< .0001$ ) than different ( $r$ s ranging between .08 and .19, all  $p$ s  $< .0001$ ) or partially common raters ( $r$ s ranging between .10 and .33, all  $p$ s  $< .001$ ; all  $F$  tests:  $p$ s  $< .05$ ). This was not the case for disengaged,  $F(2, 59) = 0.79$ ,  $p = .461$ , and constructive interparental conflict,  $F(2, 56) = 0.16$ ,  $p = .852$ .

### The Interparental Relationship and Internalizing Behavior

One hundred sixteen independent samples examined associations between the interparental relationship and internalizing behavior problems (see Table 7). These samples contained a total of 42,205 participants and 703 effect sizes. The overall weighted effect size including all studies for the association between the interparental relationship and children's internalizing behavior was  $r = .14$ , 95% CI [.12, .16],  $p < .0001$ . The effect sizes varied significantly within ( $\sigma^2 = .004$ ,  $\chi^2[2] = 117.69$ ,  $p < .0001$ ), and between studies ( $\sigma^2 = .007$ ,  $\chi^2[2] = 130.44$ ,  $p < .0001$ ). Of the total variance, 27.2% was attributable to differences between effect sizes within studies, and 44.6% to differences between studies. Twenty-seven independent samples examined children's anxiety and 39 independent samples examined depressive symptoms separately. Specific weighted aggregated effect sizes for these forms of internalizing behavior were all statistically different from zero ( $p < .0001$ ) and were not different from each other,  $F(2, 700) = 1.04$ ,  $p = .355$ .

**Dimensions of the interparental relationship.** Weighted effect sizes for all six dimensions of the interparental relationship were compared (all  $k > 2$ ; see Table 7). Each of the specific weighted aggregate effect sizes for these dimensions was statistically different from zero and small (see Table 8). The omnibus test showed statistical differences for the weighted effect sizes for the six dimensions of the interparental relationship,  $F(5, 697) = 4.06$ ,  $p = .001$ . Relationship quality was associated less strongly with internalizing behavior than conflict frequency, disengaged interparental conflict and child-related conflict, but was associated similarly with internalizing behavior as hostile and constructive interparental conflict. Comparing the conflict dimensions, conflict frequency was more strongly associated with internalizing behavior than hostile and constructive interparental conflict. Child-related conflict was associated more strongly with internalizing problems than constructive interparental conflict was. Weighted average effect sizes were similar for nonverbal, verbal, and physical forms of hostile interparental conflict,  $F(5, 332) = 0.52$ ,  $p = .762$ . Weighted effect sizes for none of the dimensions of the interparental relationship were subject to publication bias (all Egger's tests:  $p$ s  $> .10$ ). A fail-safe  $N$  was obtained of 10,232 studies for relationship quality, 14,365 studies for frequency, 92,179 studies for hostile interparental conflict, 1,825 studies for disengaged interparental conflict, 2,005 for constructive interpa-

rental conflict, and 1,648 for child-related conflict. Together, these analyses suggest that the meta-analytic results for internalizing symptoms are robust, and unlikely to be significantly changed by unpublished null results.

**Time lag.** One hundred two independent samples examined concurrent associations and 32 samples examined longitudinal associations between the interparental relationship dimensions and children's internalizing behavior. The weighted effect sizes for concurrent and longitudinal associations across all six dimensions of the interparental relationship were statistically similar (all  $F$  tests:  $p$ s  $> .162$ ). Within the longitudinal data, only the effect size of conflict frequency with internalizing behavior was moderated by the time lag,  $F(1, 26) = 7.15$ ,  $p = .013$ . The effect size became weaker as more time elapsed between the two measurements ( $b = -.002$ , i.e., in months).

**Developmental and gender differences.** None of the weighted average effect sizes for dimensions of the interparental relationship and internalizing behavior depended on child age (all  $F$  tests:  $p$ s  $> .05$ ). Regarding child gender, the association between hostile interparental conflict and internalizing problems was moderated by the percentage of boys in the sample ( $F(1, 319) = 4.88$ ,  $p = .028$ ,  $b = -.001$ ). Seventeen independent samples examined associations for boys and 16 examined girls separately, whereas 57 samples examined mixed samples. A comparison showed that the weighted effect size for hostile interparental conflict and internalizing behavior was stronger for girls ( $r = .21$ , 95% CI [.16, .27],  $p < .0001$ ) than for boys ( $r = .17$ , 95% CI [.01, .22],  $p < .0001$ ). The weighted effect sizes of the other dimensions of the interparental relationship in relation to internalizing behavior were statistically similar for boys and girls.

**Family and study characteristics.** Two moderation effects for family characteristics were found. First, the effect size of relationship quality and internalizing behavior depended on the percentage of two-parent families,  $F(1, 87) = 5.00$ ,  $p = .028$ . The association became stronger when a larger percentage of the sample consisted of two-parent families ( $b = .006$ ). Second, the effect size of conflict frequency and internalizing behavior depended on the genetic overlap between parents and children. In samples with families with two biological parents ( $r = .21$ , 95% CI [.17, .25],  $p < .0001$ ,  $k = 5$ ), the effect size was statistically stronger than in samples with mixed families (less than 85% two biological parents,  $r = .09$ , 95% CI [.03, .14],  $p = .004$ ,  $k = 4$ ).

For study characteristics, first, several associations depended on the informant. For disengaged interparental conflict, the strength of effect sizes varied as a function of the informant of interparental disengagement,  $F(3, 38) = 3.37$ ,  $p = .024$ . Associations were smaller when fathers reported the disengaged conflict ( $r = -.01$ , 95% CI [-.14, .12],  $p = .916$ ,  $k = 3$ ) than when mothers ( $r = .20$ , 95% CI [.11, .29],  $p < .001$ ,  $k = 5$ ) or children did ( $r = .33$ , 95% CI [.02, .51],  $p = .004$ ,  $k = 4$ ). The effect size of hostile interparental conflict with internalizing depended on the informant of interparental hostility,  $F(5, 267) = 2.76$ ,  $p = .019$ . Associations were specifically stronger when a combination of both parents and the child reported on the hostile interparental conflict ( $r = .24$ , 95% CI [.16, .32],  $p < .0001$ ,  $k = 3$ ), compared with when only mothers ( $r = .12$ , 95% CI [.08, .15],  $p < .0001$ ,  $k = 27$ ) or fathers ( $r = .14$ , 95% CI [.10, .18],  $p < .0001$ ,  $k = 13$ ) reported on the conflict behavior. The strength of the effect size of hostile interparental conflict also varied based on the informant of child



behavior,  $F(5, 332) = 3.20, p = .008$ . Results indicated that relations were consistently stronger when both parents reported the internalizing behavior ( $r = .19, 95\% \text{ CI } [.16, .23], p < .0001, k = 20$ ) than when other informants did ( $r$ s ranging between .11 and .24, all  $p$ s  $< .002$ ). Second, the effect sizes of conflict frequency,  $F(1, 81) = 7.50, p = .008$ , and constructive interparental conflict,  $F(1, 68) = 11.66, p = .001$ , depended on the instrument used to assess internalizing behavior. The effect sizes were weaker when internalizing behavior was assessed with the ASEBA ( $r = .15, 95\% \text{ CI } [.10, .19], p < .0001, k = 18$ , and  $r = .08, 95\% \text{ CI } [-.01, .16], p = .072, k = 14$ , respectively) compared with other questionnaires ( $r = .23, 95\% \text{ CI } [.18, .28], p < .0001, k = 11$ , and  $r = .15, 95\% \text{ CI } [.07, .24], p = .001, k = 8$ , respectively). Third, the weighted effect sizes of relationship quality, hostile interparental conflict, disengaged interparental conflict, and child-related conflict were statistically stronger when the same informants reported on both the conflict and child functioning variables ( $r$ s ranging between .14 and .24, all  $p$ s  $< .001$ ) relative to when different reporters were used for each variable ( $r$ s ranging between .06 and .14, all  $p$ s  $< .004$ ; all  $F$  tests:  $p$ s  $< .028$ ). However, common rater failed to moderate associations for conflict frequency,  $F(2, 84) = 2.86, p = .063$ , and constructive interparental conflict,  $F(1, 68) = < .01, p = .981$ .

### The Interparental Relationship and Emotional Responses

Seventeen independent samples were included that examined associations between the interparental relationship and children's emotional responses (see Table 7). These samples contained a total of 6,556 participants and 138 effect sizes. The overall weighted aggregated effect size including all studies for the association between the interparental relationship and child emotional responses was  $.16 [.10, .20], p < .0001$ . The effect sizes varied significantly within ( $\sigma^2 = .005, \chi^2[2] = 229.76, p < .0001$ ), and between studies ( $\sigma^2 = .009, \chi^2[2] = 33.62, p < .0001$ ). Of the total variance, 30.3% was attributable to differences between effect sizes within studies, and 48.7% to differences between studies.

**Dimensions of the interparental relationship.** Weighted effect sizes for conflict frequency, hostile, disengaged and constructive interparental conflict with children's emotional responses were compared (all  $k > 2$ ; see Table 7). Each of the specific weighted aggregate effect sizes for these dimensions was statistically different from zero and small (see Table 8). Differences between the effect sizes across the dimensions were found,  $F(3, 132) = 3.49, p = .018$ , showing that the effect sizes of conflict frequency and hostile and constructive interparental conflict were stronger than the effect size for disengaged interparental conflict. Weighted average effect sized were similar for nonverbal, verbal, and physical forms of hostile interparental conflict,  $F(2, 82) = 1.92, p = .153$ . Egger's test was not significant for all the associations (all  $F$  tests:  $p$ s  $> .65$ ) except for hostile interparental conflict and its association with children's' emotional responses,  $F(1, 83) = 5.29, p = .024$ . Fail-safe  $N$  calculations were 65 studies for frequency, 9,056 studies for hostile interparental conflict, 65 studies for disengaged interparental conflict, and 1,048 for constructive interparental conflict. Together, these analyses suggest that the meta-analytic results for emotional responses are robust

and unlikely to be changed significantly by unpublished null results.

Moderators were only examined for studies measuring hostile interparental conflict in relation to emotional responses due to insufficient sample sizes for the other dimensions.

**Time lag.** Thirteen independent samples studies examined concurrent associations between hostile interparental conflict and child behavioral responses and four examined longitudinal associations. The weighted effect sizes for concurrent and longitudinal associations were statistically similar,  $F(1, 83) = 0.61, p = .435$ , and within the longitudinal data, the effect size was not moderated by the time elapsed between the measurement of hostile interparental conflict and later emotional responses,  $F(1, 26) = .05, p = .828$ .

**Developmental and gender differences.** The weighted effect size for hostile interparental conflict and emotional responses was not moderated by children's age,  $F(1, 83) = 0.15, p = .793$ . The weighted effect size was moderated by the percentage of boys in the sample ( $F(1, 83) = 7.64, p = .007, b = -0.002$ ), indicating that the effect size is weaker when there are more boys in the sample.

**Family and study characteristics.** The weighted effect size for hostile interparental conflict and emotional responses did not depend on any family or study characteristics (i.e., self-reported vs. observed hostile conflict and emotional responses, measures of hostile interparental conflict, or the informant of predictor and outcome; see Table 5).

### The Interparental Relationship and Behavioral Responses

Twelve independent samples were included that examined associations between the interparental relationship and children's behavioral responses (see Table 7). These samples contained a total of 2,540 participants and 84 effect sizes. The overall weighted aggregated effect size including all studies for the associations between the interparental relationship and child behavioral responses was  $r = .15 [.07, .22], p < .001$ . The effect sizes varied significantly within ( $\sigma^2 = .003, \chi^2[2] = 10.38, p = .001$ ), and between studies ( $\sigma^2 = .014, \chi^2[2] = 54.64, p < .0001$ ). Of the total variance, 13.1% was attributable to differences between effect sizes within studies, and 65.5% to differences between studies. Seven independent samples examined avoidance and 10 samples examined involvement. Specific weighted effect sizes for these behavioral responses were both statistically different from zero ( $p$ s  $< .001$ ) and similar to each other,  $F(1, 76) = 0.06, p = .811$ .

**Dimensions of the interparental relationship.** Weighted effect sizes for conflict frequency, hostile and constructive interparental conflict with child behavioral responses were compared (all  $k > 2$ ) and were statistically similar,  $F(2, 75) = 0.63, p = .535$  (Table 7 and 8). Weighted average effect sized were similar for nonverbal, verbal, and physical forms of hostile interparental conflict,  $F(2, 54) = 1.43, p = .248$ . Weighted effect sizes for all the dimensions of the interparental relationship indicated that they were not subject to publication bias (all Eggers tests:  $p$ s  $> .72$ ). Likewise, fail-safe  $N$  calculations were 149 studies for frequency, 3,417 studies for hostile interparental conflict, and 250 for constructive interparental conflict. Collectively, these analyses show that the meta-analytic results for behavioral responses are robust

and unlikely to be changed significantly by unpublished null results.

In the next sections, moderators were only examined for studies measuring hostile interparental conflict in relation to behavioral responses due to insufficient sample sizes for the other dimensions.

**Time lag.** Six studies examined concurrent associations between hostile interparental conflict and child behavioral responses, and six independent samples examined longitudinal associations. The weighted effect sizes for concurrent and longitudinal associations were statistically similar,  $F(1, 55) = 0.10, p = .754$ . Within the longitudinal data, effect sizes were not moderated by the time lag,  $F(1, 39) = 2.87, p = .098$ .

**Developmental and gender differences, family and study characteristics.** The weighted effect size for hostile interparental conflict and behavioral responses was not moderated by children's age,  $F(1, 55) = 0.94, p = .338$ , the percentage of boys in the sample,  $F(1, 55) = 1.03, p = .315$ , or any of the family or study characteristics (all  $F$  tests:  $ps > .05$ ).

### The Interparental Relationship and Cognitive Appraisals

Twenty independent samples were included that examined associations among the interparental relationship dimensions and children's cognitive appraisals (see Table 7). These samples contained a total of 4,593 participants and 180 effect sizes. The overall weighted aggregate effect size including all studies for the association between the interparental relationship and children's appraisals was  $r = .19, 95\% \text{ CI } [.15, .23], p < .0001$ . The effect sizes varied significantly within ( $\sigma^2 = .004, \chi^2(2) = 52.97, p < .0001$ ), and between studies ( $\sigma^2 = .007, \chi^2(2) = 81.12, p < .0001$ ). Of the total variance, 24.6% was attributable to differences between effect sizes within studies, and 44.8% to differences between studies. Eighteen independent samples examined threat, 14 examined self-blame, and five examined internal representations. Specific weighted aggregated effect sizes for these three cognitive appraisals were all statistically different from zero ( $p < .0001$ ). Associations were stronger for threat ( $r = .22, 95\% \text{ CI } [.17, .27]$ ) and internal representations ( $r = .23, 95\% \text{ CI } [.17, .28]$ ) in comparison with self-blame ( $r = .15, 95\% \text{ CI } [.10, .19]$ ),  $F(2, 177) = 16.80, p < .0001$ .

**Dimensions of the interparental relationship.** Weighted effect sizes for relationship quality, conflict frequency, and hostile, disengaged, and constructive forms of interparental conflict with children's cognitive appraisals were compared (all  $k > 2$ ; see Table 7). Each of the specific weighted aggregate effect sizes for these dimensions was statistically different from zero and small (see Table 8). Conflict frequency was associated more strongly with children's appraisals than relationship quality and the three conflict behaviors,  $F(4, 174) = 2.69, p = .03$ . Weighted effect sizes for the other dimensions were statistically similar. Weighted average effect sizes were similar for nonverbal, verbal, and physical forms of hostile interparental conflict,  $F(5, 98) = 1.13, p = .352$ . Egger's regression test was not significant for any of the dimensions of the interparental relationship (all  $ps > .08$ ). A fail-safe  $N$  was robust for all dimensions, yielding 74 studies for relationship quality, 2,373 studies for frequency, 29,100 studies for hostile interparental conflict, 331 studies for disengaged interparental conflict, and 2,465 for constructive interparental conflict.

Thus, both sets of analyses showed that the meta-analytic results for cognitive appraisals were unlikely to be changed by unpublished null results.

**Time lag.** For all of associations between the dimensions of the interparental relationship and children's cognitive appraisals associations were statistically similar concurrently and longitudinally (all  $F$  tests:  $ps > .05$ ). Within the longitudinal data, only samples examining hostile interparental conflict had significant heterogeneity in the time lag; however, time lag failed to moderate the association between interparental hostility and cognitive appraisals,  $F(1, 41) = 1.63, p = .209$ .

**Developmental and gender differences.** The weighted aggregated effect sizes for disengaged,  $F(1, 14) = 6.35, p = .025, b = .002$  (i.e., age in months) and constructive interparental conflict,  $F(1, 29) = 4.89, p = .035, b = .002$  (i.e., age in months) were moderated by children's age. Increases in child age were associated with stronger associations between disengaged and unconstructive conflict and children's cognitive appraisals. The estimated correlation between disengaged interparental conflict and child cognitive appraisals was .05 at an average child age of 6 years, .19 at age 11 years, and .32 at age 16 years. For constructive interparental conflict, the estimated correlation with child cognitive appraisals was .10 at an average child age of 6 years, .20 at age 11 years, and .30 at age 16 years. None of the associations were moderated by child gender (all  $F$  tests:  $p > .05$ ), meaning that associations between the specific dimensions of conflict and children's cognitive appraisals were similar for boys and girls.

**Family and study characteristics.** The association between disengaged conflict and cognitive appraisals was stronger in samples with lower percentages of White families,  $F(1, 14) = 24.06, p < .001, b = -.003$ . However, this effect was attributable to one study reporting remarkably stronger associations in a sample of Chinese adolescents in Hong Kong, and the effect was no longer significant when this sample was dropped from the analysis,  $F(1, 12) = 1.97, p = .185$ . No other moderation effects of family characteristics were found (all  $F$  tests:  $ps > .05$ ). Overall, effect sizes did not depend on whether child cognitive appraisals were assessed with the CPIC or SIS (all  $F$  tests:  $ps > .05$ ). Furthermore, when testable because of sufficient samples sizes, associations did not depend on the method, instruments, informants used to assess interparental conflict (all  $ps > .05$ ).

### The Interparental Relationship and Physiological Responses

Fifteen independent samples were included that examined associations between the interparental relationship and children's physiological responses (see Table 7). These samples contained a total of 2,113 participants and 45 effect sizes. The overall weighted effect size including all studies for the associations among the interparental relationship dimensions and physiological responses was ( $r = .05, 95\% \text{ CI } [.01, .10], p = .017$ ). The effect sizes varied significantly within ( $\sigma^2 = .011, \chi^2[2] = 15.41, p < .0001$ ), but not between studies ( $\sigma^2 = .00, \chi^2[2] = 0.0, p = 1.00$ ). Of the total variance, 54.4% was attributable to differences between effect sizes within studies.

Nine samples examined vagal responses, six samples examined cortisol, and seven samples examined skin conductance separately. Only the weighted effect size for vagal responses was statistically

different from zero ( $r = .09$ , 95% CI [.03, 0.16],  $p = .009$ ), but statistically similar to the weighted effect sizes for cortisol ( $r = .05$ , 95% CI [-.03, .12],  $p = .188$ ) and skin conductance ( $r = -.01$ , 95% CI [-.10, .08],  $p = .878$ ),  $F(2, 42) = 1.580$ ,  $p = .218$ . Egger's test for the weighted effect size of the interparental relationship with physiological responses was not significant,  $F(1, 43) = 0.85$ ,  $p = .363$ , and a fail-safe  $N$  of 185 studies was obtained. Thus, the meta-analytic results for physiological responses are robust and unlikely to be significantly changed by unpublished null results.

Fourteen independent samples examined hostile interparental conflict in relation to children's physiological responses. The overall weighted aggregated effect size of hostile interparental conflict was not different from zero ( $r = .05$ , 95% CI [-.01, .10],  $p = .073$ ).

### The Interparental Relationship and Emotional Insecurity

Six independent samples were included that examined associations between the interparental relationship and children's emotional insecurity (see Table 7). These samples contained a total of 1,537 participants and 39 effect sizes. The overall weighted aggregated effect size including all studies for the associations between the interparental relationship and child emotional insecurity was  $r = .19$ , 95% CI [.03, .34],  $p = .018$ . The effect sizes varied significantly within ( $\sigma^2 = .006$ ,  $\chi^2[2] = 28.88$ ,  $p < .0001$ ), and between studies ( $\sigma^2 = .033$ ,  $\chi^2[2] = 18.15$ ,  $p < .0001$ ). Of the total variance, 13.8% was attributable to differences between effect sizes within studies, and 78.5% to differences between studies.

**Dimensions of the interparental relationship.** Six independent samples examined hostile interparental conflict and three samples examined constructive interparental conflict in relation to children's emotional insecurity (see Table 7). The weighted effect size for hostile interparental conflict was statistically different from zero, and statistically stronger than the effect size for constructive interparental conflict,  $F(1, 25) = 5.91$ ,  $p = .023$ ; see Table 8. Egger's regression test was not significant for any of the

interparental relationship dimensions (all  $ps > .85$ ). Fail-safe  $N$  calculations were 2,318 studies for hostile interparental conflict, and 11 for constructive interparental conflict. Together, these analyses show that the meta-analytic results for children's insecurity are robust and unlikely to be changed by unpublished null results.

In the next sections, moderators were only examined for studies measuring hostile interparental conflict in relation to emotional insecurity, owing to insufficient sample sizes for the other dimensions.

**Time lag.** Six independent samples examined concurrent associations between hostile interparental conflict and child emotional insecurity and four samples examined longitudinal associations. The weighted effect sizes for concurrent and longitudinal associations were statistically similar,  $F(1, 21) = 0.35$ ,  $p = .562$ . For the longitudinal data, effect sizes were also not moderated by the time lag,  $F(1, 9) = 2.95$ ,  $p = .120$ .

**Developmental and gender differences, family and study characteristics.** The weighted effect size was not moderated by children's age,  $F(1, 21) = 0.11$ ,  $p = .744$ , child gender,  $F(1, 21) = 0.04$ ,  $p = .848$ , or by any family characteristics (all  $F$  tests:  $ps > .05$ ). There was not enough variation across the studies to examine any study characteristics.

### Differences in Effect Sizes Across Domains of Child Functioning

To answer the question whether specific dimensions of the interparental relationship are more strongly associated with some domains of child functioning than other domains, we statistically compared the weighted aggregated effect sizes when there were three or more independent samples (see Table 7). All weighted effect sizes are presented in Table 8. For relationship quality, associations with externalizing, internalizing and children's cognitive appraisals were statistically similar,  $F(2, 280) = 1.69$ ,  $p = .187$ . Differences were found for conflict frequency,  $F(4, 207) = 10.07$ ,  $p < .0001$  and for hostile conflict behavior,  $F(6, 1026) = 11.35$ ,  $p < .0001$  (see Figure 3). Conflict frequency was

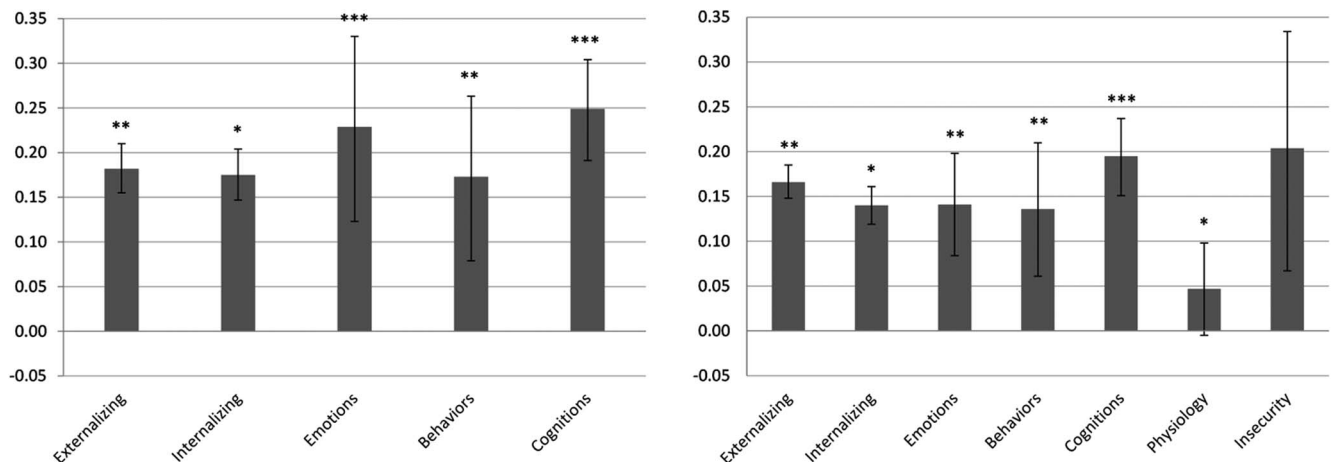


Figure 3. Weighted average effect sizes for Conflict Frequency (left pane) and Hostile Interparental Conflict (right pane) for the different domains of Child Functioning. The moderator test identified differences in the strength of effect size: \* weakest effect size, \*\* intermediate effect sizes, and \*\*\* strongest effect size.

more strongly associated with children's cognitive appraisals and emotional responses than with externalizing symptoms and behavioral responses. The relation between conflict frequency and internalizing symptoms was the weakest of all child domains. Hostile conflict was more strongly associated with children's cognitive appraisals than all other domain of child outcomes except for emotional insecurity. In addition, similar intermediate associations were found between hostile conflict and children's emotional responses, behavioral responses, and externalizing behavior. Statistically weaker associations were found between hostile conflict and children's internalizing behavior and physiological responses. Associations were statistically similar across the domains of child functioning for both disengaged,  $F(5, 169) = 0.71, p = .619$ , and constructive interpersonal conflict,  $F(5, 187) = 1.87, p = .102$ . Finally, child-related conflict was more strongly associated with externalizing behavior than with internalizing behavior,  $F(1, 64) = 8.26, p = .006$ .

### Discussion

This meta-analysis quantified the past decades of empirical research on the developmental implications of the interparental relationship by examining whether associations between interparental relationship characteristics and children's functioning varied as a function of (a) the nature of the interparental relationship dimension (e.g., relationship quality, conflict dimensions), (b) the specific domain of child functioning, (c) the time elapsed between interparental and child functioning assessments, (d) child age and gender, and (e) several study and family characteristics. Results of our meta-analytic efforts to parse interparental and child functioning dimensions indicated that many of the effect sizes varied as a function of the specific properties of the interparental relationship and the domain of child adjustment. Most associations between the interparental relationship and child functioning *endured* over time. In some cases, age and gender differences also depended on the specific form of interparental conflict and domain of child functioning.

#### Are Some Dimensions of the Interparental Relationship More Strongly Associated With Child Functioning Than Others?

Contrary to the assumption underlying process-oriented models of interparental conflict (Davies & Cummings, 1994; Grych & Fincham, 1990), there was no consistent evidence supporting the notion that interparental relationship quality was more weakly associated with children's maladjustment and cognitive appraisals than dimensions of interparental conflict. Rather, our findings suggest that children growing up in the context of a low relationship quality between parents (i.e., low dyadic satisfaction, cohesion, affection, and consensus on important matters) are at similar risk for developing externalizing and internalizing problems and negative cognitive appraisals about interparental relations as children exposed to different forms of interparental conflict (i.e., hostile, disengaged, and unconstructive conflict). Only child-related conflict and more frequent conflicts posed a greater risk for the domains of child functioning, than relationship quality. These findings run counter to the common assertion in the theories such as the cognitive-contextual framework and emotional security the-

ory that conflict management strategies pose a larger risk than overall relationship quality (Davies & Cummings, 1994; Grych & Fincham, 1990).

If conceptual models of interparental conflict are unable to explain *why* the global quality of the interparental relationship poses a risk that is comparable to interparental conflict, it may be useful to draw on other family process theories in interpreting these findings. According to family system models (Cox & Paley, 1997, 2003; Minuchin, 1974), the interparental relationship is the cornerstone of the family and the functioning of parent-child subsystems that are critical to the socialization of children. Thus, it is possible that parental distress and negativity resulting from poor quality interparental relationships may spillover to undermine parent-child and coparenting relationships (Camisasca, Miragoli, Di Blasio, & Feinberg, 2019). Likewise, global interparental relationship quality may pose a risk for children through its association with disrupted family boundaries. For example, boundary dissolution in the form of children's triangulation or parentification may result from poor interparental relationships (Nuttall & Valentino, 2017) and, in turn, provide templates for pathogenic ways of understanding, expressing, and responding to emotions (see, e.g., Stroud, Meyers, Wilson, & Durbin, 2015). Future research should also investigate whether exposure to repeated, every day positive and negative interaction patterns between parents may also affect child development by increasing children's reactivity to conflict or broader family stressors across different domains (e.g., emotional, behavioral, cognitive, physiological).

Additionally, the pattern of results was unresponsive of the theoretical proposition that frequency of conflict is a relatively mild risk factor, compared with the greater significance of the ways parents manage their conflicts (Davies & Cummings, 1994; Grych & Fincham, 1990). Conflict frequency was the only dimension that evidenced consistently stronger associations with child outcomes than relationship quality. Furthermore, compared with the different forms of conflict (i.e., hostile, disengaged, and unconstructive interparental conflict) conflict frequency was either similarly (i.e., with externalizing problems, and emotional and behavioral responses) or more strongly (i.e., with internalizing problems and cognitive appraisals) associated with child functioning. The importance of conflict frequency might be explained by an underlying *sensitization* process whereby repeated exposure to interparental conflict progressively intensifies children's reactivity in the face of subsequent conflicts (Davies, Martin, et al., 2016; Goeke-Morey, Papp, & Cummings, 2013). In greater accord with theories of interparental conflict (Davies & Cummings, 1994; Grych & Fincham, 1990), an alternative interpretation is that conflict frequency is a product of children's collective exposure to a wide array of destructive and unconstructive conflict dimensions. That is, accumulating unresolved issues resulting from hostility, withdrawal, and poor cooperation and problem-solving may generate more recurring, frequent, and repetitive conflicts (see also Gottman, 2014). Thus, associations among conflict frequency and children's difficulties may reflect the underlying operation of hostile, disengaged and unconstructive conflicts as risk factors.

Consistent with theoretical expectations that many forms of interparental conflict are likely to be associated with children's psychopathology (Davies & Cummings, 1994; Grych & Fincham, 1990), our additional findings showed that hostile, disengaged, and unconstructive interparental conflict evidenced similar associa-



tions with children's internalizing symptoms. However, at the same time, the meta-analyses yielded more specific associations in the prediction of externalizing problems. Hostile interparental conflict specifically posed a larger risk for children's externalizing behavior than unconstructive interparental conflict. More nuanced follow up analyses indicated that verbal (e.g., raising voice, undermining or criticizing the other) and physical (i.e., violence) forms of hostility between parents were more strongly related to externalizing symptoms than nonverbal forms of anger. Our findings on the potency of verbal (i.e., psychological) and physical aggression risk factors are generally consistent with an earlier meta-analysis on the role of intimate partner violence as a robust correlate and precursor of children's psychological problems (Vu et al., 2016). The stronger link between parents' aggressive acts and children's acting-out behavior might be specifically explained by a process in which children internalize parents' behavior schemes and use them as (implicit) guides for processing and coping with challenging interpersonal situations (Davies, Martin, et al., 2016). Alternatively, this link might be explained by emotion contagion processes in which the displays of anger and aggression of parents' hostile conflict generate similar responses in children (Morris, Cui, Criss, & Simmons, 2018; Morris, Silk, Steinberg, Myers, & Robinson, 2007). Consistent with social learning theory, children may be emulating or modeling the more antagonistic behaviors their parents display in their hostile ways of handling conflicts (Morris et al., 2007).

However, it is also important to note that our analysis of the relative strength of the interparental conflict dimensions as predictors of children's psychopathology indicates that conflicts that are frequent, disengaged, and unconstructive also pose a risk for children. Thus, clinicians should be aware that many forms of interparental difficulties may underpin children's mental health problems. At a mechanistic level, it is also important to consider how and why disengaged and unconstructive conflict may increase children's vulnerability to psychopathology. These associations could also reflect underlying mediators that are not addressed in this study. For example, disengaged and positive parenting (e.g., see Hosokawa & Katsura, 2017; McCoy, George, Cummings, & Davies, 2013), or the emotional or behavioral qualities of other subsystems in the family (Cummings, Goeke-Morey, & Papp, 2003; Kitzmann, 2000; Low, Overall, Cross, & Henderson, 2019), may account for some of the associations among disengaged and unconstructive interparental conflict and children's psychopathology. For example, prior studies have provided support for the notion that interparental disengagement is carried over into disengaged parenting practices, particularly for fathers (i.e., fathering vulnerability hypothesis; e.g., Klausli & Tresch Owen, 2011; Sturge-Apple, Davies, & Cummings, 2006; Trumbell, Hibel, Mercado, & Posada, 2018).

Regarding the associations among the different forms of conflict and children's responses to conflict, our findings provide broad support for the original emotional insecurity theory and cognitive-contextual framework (Davies & Cummings, 1994; Grych & Fincham, 1990). First, all forms of interparental conflict (i.e., hostile, disengaged, and unconstructive) predicted children's negative cognitive appraisals. Moreover, although interparental problems were significantly associated with all three types of cognitive appraisals, effect sizes for perceived threat and internal representations were of greater magnitude than for self-blame. Thus, the results support

the role of internal representations in emotional security theory and perceived threat in the cognitive-contextual framework as key domains of reactivity following exposure to interparental discord. Second, the forms of interparental conflict with sufficient cell sizes for the analyses (i.e., hostile and unconstructive conflict) were significantly associated with children's heightened behavioral reactivity. These results provide additional support for premise in emotional security theory that greater exposure to hostile and uncooperative interparental interactions increases children's avoidance and involvement in interparental problems (Davies & Cummings, 1994).

Although the various forms of interparental conflict generally posed a similar risk for children's cognitive and behavioral reactivity to conflict, differences in effect sizes were evident for hostile and disengaged conflict in their associations with children's emotional responses (i.e., distress, fear, sadness, anger). In particular, hostile interparental conflict was more strongly associated with children's emotional responses to conflict than interparental disengagement. To the extent that the emotional reactivity assessments captured fear and vigilance, the results would be consistent with the reformulated emotional security hypothesis and its premise that interparental hostility contains more salient threat cues that specifically increase children's fear, insecurity and vigilance (Davies & Martin, 2013). By the same token, if emotional responses are largely reflected in angry forms of reactivity, it is plausible that emotion contagion may be operating such that exposure to hostility between parents begets greater anger in children (e.g., Morris et al., 2007). Thus, distinguishing between specific forms of emotional reactivity (e.g., fear, anger, sadness) in future research may help to elucidate the processes linking interparental hostility with children's emotional responses.

Meta-analytic findings on children's emotional security (i.e., the higher order construct) also have important implications for testing differing hypotheses on the roles of hostile, disengaged, and constructive conflicts as predictors. Consistent with the reformulated theory, hostile interparental conflict posed a larger risk than unconstructive interparental conflict for the higher order construct of emotional insecurity. However, sample sizes for the relation between unconstructive conflict and insecurity were limited and more research is needed before we can draw firm conclusions on operative risk processes. Likewise, sample sizes were insufficient for analyzing associations between disengaged interparental conflict and children's insecurity. Therefore, more published studies are required to provide a meta-analytic test of the reformulated emotional security theory proposal that disengaged conflict is both (a) a weaker predictor of insecurity relative to hostile interparental conflict and (b) a stronger predictor of insecurity relative to unconstructive conflict.

Regarding the risk of child-related conflict, our study was the first to meta-analytically test the significance of this dimension relative to other aspects of the interparental relationship. The results showed that child-related conflict was more strongly associated with externalizing behavior than any of the other dimensions of the interparental relationship. For internalizing problems, child-related conflict showed associations of similar strength as conflict frequency, hostile and disengaged conflict but stronger effect sizes than relationship quality and unconstructive interparental conflict. Therefore, these results provide support for the high potency of risk child-related conflict poses for children that is hypothesized by emotional security theory (Davies & Cummings,

1994) and the cognitive-contextual framework (Grych & Fincham, 1990). Because child-related conflict also reflects a dimension of the coparenting relationship (see, e.g., Feinberg, 2003; Teubert & Pinquart, 2010; Zemp et al., 2018), coparenting conceptualizations may offer explanations for our findings. For example, Feinberg's (2003) ecological model conceptualizes coparenting as the critical process through which family spillover processes take place. Within this model coparenting conflict is theorized to be more proximal and thus can be expected to be more tightly linked to child adjustment than other aspects of the interparental relationship. Additionally, the effect of coparenting conflict on children might be larger because it is more strongly linked with other coparenting difficulties (e.g., triangulation, undermining) or disrupted parenting practices (e.g., parent unresponsiveness) that cumulative increase children's vulnerability to psychopathology.

Our findings indicating that child-related conflict is a particularly potent correlate of externalizing symptoms are also consistent with findings in the coparenting literature. For example, the results of a previous meta-analysis indicated that coparenting conflict was a particularly strong correlate of children's externalizing symptoms, compared with other dimensions of coparenting (Teubert & Pinquart, 2010). Based on the tripartite model of emotion regulation (Morris et al., 2007), it is possible that children may acquire more oppositional behaviors through the modeling of parental expressions of anger and antagonism during child rearing disagreements. An alternative explanation of the relatively pronounced association between child-related conflict and externalizing symptoms is that it reflects a reciprocal process between interparental and child functioning. As part of this bidirectionality, children's disruptive behavior problems may be particularly likely to place strain on the ability of caregivers to coordinate cooperating and give rise to increases in conflicts about children's behavior and child rearing issues (see, e.g., Cui, Conger, & Lorenz, 2005, 2007; Van Eldik et al., 2017; Zemp et al., 2018). Although transactional effects may be operating, our findings showing that the prospective and concurrent associations between child-related conflict and externalizing symptoms were comparable in magnitude reduces the possibility that the association is solely explained by child-driven effects of externalizing symptoms on later child-related conflict.

In building on our results, it is important to consider important next steps for advancing the field. Although our meta-analysis documented all six dimensions of the interparental relationship as correlates of children's psychological difficulties, it does not rule out the possibility that the risk associated with many of the relationship dimensions may be attributable, in part, to the risk posed by the other interparental relationship dimensions. The interparental relationship dimensions commonly share some empirical overlap and do not occur in isolation from each other. Thus, an important first direction for future research is to understand the distinct nature of relations between interparental and child functioning in multivariate frameworks that contain multiple interparental relationship properties as simultaneous predictors. For example, findings from several studies have shown that hostile interparental conflict uniquely predicts children's subsequent emotional insecurity over time even after inclusion of the negligible or modest roles of unconstructive and disengaged conflicts as simultaneous predictors (Davies, Martin, & Cicchetti, 2012; Davies, Hentges et al., 2016). At the level of children's outcomes, another

recent study showed that constructive conflict was uniquely related to lower levels of internalizing symptoms after controlling for interparental hostility, whereas interparental hostility evidenced unique associations with externalizing problems (Zhou & Buehler, 2019).

Second, some theoretical models posit that interparental relationship dimensions may increase children's risk for developing problems through other family characteristics. For example, some conceptualizations propose that the coparenting plays a more proximal role as a mediator of associations between forms of interparental adversity and children's adjustment (Feinberg, 2003). Findings from studies lend support to the mediating role of child-related conflict in associations between forms of interparental discord and children's psychological problems (Baril, Crouter, & McHale, 2007; Marchand-Reilly & Yaure, 2019). However, some findings fail to support the role of coparenting conflict as a mediator or yield complex findings that vary based on level of analysis (Stroud et al., 2015; Zemp et al., 2018). For example, within-family analyses conducted by Zemp and colleagues (2018) indicated that children exposed to greater than average coparenting conflicts within their families exhibited reductions, rather than increases, in their externalizing problems over time.

Third, the interplay between interparental relationship dimensions may assume a multiplicative form in predicting children's functioning. For example, Zhou and Buehler (2019) found that cooperative interparental conflict served as a protective factor in reducing the association between interparental hostility and children's internalizing symptoms. Instead of multiplicative processes, the ratio of positive and negative interactions in the interparental relationship may be particularly predictive of child adjustment (see Gottman, 1993). One recent study by Zemp and colleagues (2019) found that children of parents using low levels of positivity and high levels of negativity, obtaining a ratio in which negativity exceeded positivity, reported higher levels of internalizing problems across time compared with children with parents showing a pattern that represents more positivity than negativity (i.e., independently of their absolute level of positive and negative interactions). The parent's ratio of positivity and negativity was not predictive of externalizing problems, which were only predicted by the absolute level of negativity (Zemp et al., 2019). Together, the interaction and the ratio perspectives might help understand whether relationship quality and positive interparental interactions, or warmth and cohesion in the wider family climate, function as resilience factors in the family and inform family interventions aiming to reduce the impact of interparental conflict.

Yet, one other fruitful direction for future research is documenting the form of the relation (e.g., linear, curvilinear) between dimensions of the interparental relationship and children's adjustment and reactivity to conflict. Some theoretical models challenge the linear character of associations between stressors in the family and child adjustment (Davies, Sturge-Apple, Cicchetti, & Cummings, 2007). For example, based on the challenge model (see Davies & Sturge-Apple, 2007; Repetti & Robles, 2016), one could expect modest levels of interparental stress and conflict to be optimal for children's coping and adjustment, whereas low and high levels of stress form the greatest risk. Understanding at what level dimensions of the interparental relationship form a risk for children's development would be very informative for prevention



and intervention programs targeting child adjustment via interparental dynamics.

### Are Dimensions of the Interparental Relationship More Strongly Associated With Some Domains of Child Functioning Than Others?

Only conflict frequency and hostile interparental conflict varied in their role as a predictor across the domains of child functioning. Disengaged and constructive interparental conflict, and relationship quality, however, were similarly associated with all different domains of child functioning. For conflict frequency and hostile conflict, the strongest and most consistent associations were found with children's cognitive appraisals and emotional responses, followed in magnitude by children's behavioral responses and externalizing behavior. Findings produced relatively smaller, but still consistent, associations between conflict frequency and hostile conflict and internalizing symptoms. These findings highlight the importance of children's short-term response processes (i.e., emotional, behavioral, cognitive) as domains of functioning that are more sensitive to exposure to frequent and hostile interparental conflict. This is consistent with process-oriented models that propose that there may be a mediational cascade, whereby interparental conflict may be more weakly—or indirectly—related to children's adjustment problems through its associations with children's responses processes. This is further substantiated by the meta-analytic results of Rhoades (2008), supporting the second link in the cascade between children's response processes and externalizing and internalizing symptoms. The particular robust findings for emotional and cognitive processes are also consistent with processes proposed within emotional security theory and the cognitive contextual framework (Davies & Cummings, 1994; Grych & Fincham, 1990).

Our findings also indicated that associations between interparental relationship characteristics and children's physiological functioning were inconsistent. However, caution should be exercised in drawing any conclusions on physiological responses based on several considerations. First, owing to the limited number of physiological studies in the literature, the meta-analytic associations were based on aggregations of different physiological processes that have distinct functions. For example, as part of the parasympathetic nervous system, vagal tone plays an important role in shifting resources toward restorative, homeostatic functioning and, through its withdrawal, permits more efficient organization of arousal, attention, and engagement in stressful contexts (Davies, Martin, et al., 2016; El-Sheikh & Erath, 2011; Porges, 2007). Conversely, cortisol is a product of the hypothalamic-pituitary-adrenal axis and mobilizes energy (e.g., glucose) and modulates processing and memory of emotionally significant events in stressful contexts (Koss & Gunnar, 2018; Margolin, Ramos, Timmons, Miller, & Han, 2016).

Second, although our meta-analysis focused on indices of physiological reactivity, interparental conflict may also have implications for children's diurnal or general physiological functioning. Third, the linear associations explored in this meta-analysis may be masking curvilinear relations among interparental conflict characteristics and children's physiological functioning (e.g., Davies et al., 2007; Kuhlman, Repetti, Reynolds, & Robles, 2018; Lucas-Thompson, Lunkenheimer, & Dumittrache, 2017). Finally, the in-

consistency in the results may reflect that many physiological processes may serve as moderators rather than products of interparental functioning. For example, biological sensitivity to context theory proposes that heightened cortisol reactivity and decreased vagal tone in response to stress may serve as plasticity factors that heightened children's sensitivity to both positive and adverse environments in a for better or for worse manner (Belsky & Pluess, 2009; McKernan & Lucas-Thompson, 2018; Obradović, Bush, Stamperdahl, Adler, & Boyce, 2010). Thus, more research is needed to more precisely delineate the operation of specific, well-defined physiological processes in associations between interparental and child functioning.

Overall, the findings highlight children's emotional responses and cognitive appraisals and (to a lesser degree) behavioral responses, as fruitful directions for continued research on understanding why the interparental relationship increases children's vulnerability to mental health problems across time. This quantification of the empirical research reveals some important gaps in the empirical field that limit our current knowledge about the specificity of these explanatory mechanisms. We were not able to test hypotheses about differential patterns of associations for all domains consistently. Given that both the cognitive-contextual framework and emotional security theory posit that child-related conflict increase children's responsivity to conflict in some domains (e.g., self-blame), it is for example surprising to find that there is little in the way of research on relations between child-related conflict and children's conflict reactivity. Striking is also the absence of research on physiological responses in relation to other dimensions of the interparental relationship than hostile interparental conflict.

### The Moderating Role of the Time Lag

The majority of associations between interparental quality and conflict and child functioning were comparable in strength regardless of the time that elapsed between the assessments. This finding is generally consistent with enduring effects models (Fraley et al., 2013). Together with a meta-analysis that found support for enduring or even increasing risk of intimate partner violence in predicting children's maladjustment over time (Vu et al., 2016), our results highlight the importance of the interparental relationship for long-term developmental outcomes of children. This supports the relevance of early interventions focusing on the interparental relationship to prevent children's mental health problems from developing and escalating (e.g., Feinberg et al., 2016; Miller-Graff, Cummings, & Bergman, 2016). Moreover, clinicians should address both histories of interparental interactions and the concurrent interparental context as potential sources of children's mental health problems.

From the perspective of enduring effect models (Fraley et al., 2013), the long-term effects might indicate that earlier exposure to the different forms of problems in the interparental relationship continues to anchor children's maladjustment and responses to conflict over time because these experiences are translated into relatively stable patterns of processing and responding to subsequent environmental experiences and stressors. Alternatively, the result is also not inconsistent with the idea of a snowballing effect, where the earlier experiences of interparental conflict may set in motion a chain of internal or external events, which mediate the

effect of interparental conflict on later child outcomes (see Vu et al., 2016). However, although our findings are generally supportive of the enduring effects model, it is also important to caution that they do not provide definitive or direct tests of its assumptions. For example, support for enduring effects models requires demonstrating that earlier experiences with interparental conflict uniquely predicts later children's functioning even after controlling for their early functioning and their exposure to interparental conflict during the time lag between the assessments. Therefore, because alternative explanations cannot be ruled out, our findings do not definitively favor enduring effects models or revisionist models. For example, given the relatively high temporal stability of interparental conflict, it is possible that our documented relations among early exposure to interparental discord and later children's problems may be mediated by their contemporaneous experiences with interparental conflict (Fraley et al., 2013). Because this possibility is more consistent with revisionist models, more longitudinal research is needed to rigorously test the assumptions of the enduring effects and help clarify the developmental processes that give rise to these long-term effects (Fraley et al., 2013).

Indicative of a different type of process, the association between disengaged interparental conflict and children's externalizing symptoms intensified as more time elapsed between the assessments. Consistent with the concept of sleeper effects, the risk posed by disengaged interparental conflict for children's externalizing symptoms may take some time to develop. Detached and withdrawn displays of interparental conflict may evoke less immediate acting-out behavior in children because they are a less direct threat risk (Davies, Martin, et al., 2016). However, as our findings indicate, over time children may develop mental health problems characterized by acting-out behavior, in reaction to this form of interparental conflict. Alternatively, or additionally, this process may be further shaped by the context of experiences that occur after disengaged interactions (e.g., children's cognitive appraisals) in line with a snowballing effect (Vu et al., 2016).

In contrast to the findings for disengaged conflict, the moderating role of time lag for conflict frequency reflected that the association between conflict frequency and internalizing symptoms became progressively *weaker* as more time elapsed between the assessments. Although our analysis provides no direct test of this model, this result fits the pattern of findings hypothesized by revisionist perspectives (Fraley et al., 2013). Accordingly, it might be explained by a process in which more recent experiences may supersede the effects of earlier experiences of frequent interparental conflict on internalizing symptoms. Because evidence for longitudinal effects of the interparental relationship (and other familial experiences) is only just accumulating and systematically tested, future research should aim to elucidate specific underlying developmental processes that could also explain why the risk associated with conflict frequency for children's internalizing symptoms diminishes significantly over time.

### Developmental and Gender Differences

The fine-grained analysis of whether age and gender moderated associations between specific interparental relationship characteristics and domains of child functioning revealed some interesting patterns. Regarding age, the associations for disengaged and con-

structive conflict and children's cognitive appraisals (i.e., perceived threat, self-blame, and negative internal representations of the interparental relationship) were stronger in samples with older children. This is in line with developmental proposals that adolescents are more aware of the subtle interparental difficulties and the potential consequences for their and their family's security than younger children as they experience increases in their social-cognitive skills and social-affective processing (e.g., increased empathy; Crone & Dahl, 2012; Cummings, Ballard, El-Sheikh, & Lake, 1991; Davies, Myers, Cummings, & Heindel, 1999). Consistent with this explanation, our results showed that disengaged and constructive interparental conflict evidenced comparable links with emotional and behavioral reactions across age, whereas they are *only* associated with children's cognitive appraisals from middle childhood onward. No specific ages were found to be more vulnerable for other dimensions of the interparental relationship or for developing problems in other domains of functioning.

Regarding gender, interparental hostility was more strongly associated with emotional reactivity to conflict (i.e., fear, sadness, anger, distress) and internalizing symptoms for girls than boys. These findings are consistent with developmental models of gender socialization. According to these models, girls experience pressure to conform to communal gender roles that are manifested in greater interpersonal connectedness and concern for the welfare of others. Because girls are posited to place relatively more importance on relationship qualities than boys through this socialization process, they are hypothesized to exhibit greater sensitivity to interparental difficulties (Davies & Lindsay, 2001; Davies, Martin, et al., 2016). In addition, girls' heightened vulnerability to develop psychological problems is specifically reflected in emotional reactivity and internalizing symptoms (i.e., anxiety and depressive symptoms). The domain specificity of these findings may further reflect that the operation of gender role processes whereby girls are socialized to express their difficulties in less disruptive and more vulnerable ways (Davies & Lindsay, 2004; Emery, 1982; Zahn-Waxler, 1993). Overall, this meta-analysis reveals that boys and girls might cope *emotionally* in different ways in the specific context of hostile interparental conflict. Thus, future research should study the social and physiological processes that underpin these moderating effects (Davies, Martin, et al., 2016).

### Family Characteristics

None of the family characteristics was a consistent moderator of associations between the six dimensions of the interparental relationship and child functioning. However, two moderating effects were found for specific associations. First, the strength of the associations between relationship quality and children's internalizing behavior was stronger when a larger percentage of the sample consisted of two-parent families. Children in two-parent families might be more strongly affected by a low quality in the interparental relationship for two reasons. These children may be more directly exposed to the relationship dynamics between their parents by virtue of greater contact that comes with living in the same home. Alternatively, or additionally, children in two-parent families may have greater emotional stakes in the interparental relationship and interpret the interparental difficulties as reflecting a higher likelihood of family dissolution.

Second, the effect size of conflict frequency and internalizing behavior was stronger when children were exposed to interparental conflict taking place between their two biological parents than their step- or adoptive parents. When interpreted in the context of behavior genetics research, it is possible that genetic processes may be mediating, in part, the association between conflict frequency and children's internalizing behavior (see, e.g., Harden et al., 2007; Harold et al., 2017). However, why genetic processes may be specifically salient in mediating associations between conflict frequency and internalizing symptoms is not clear. Although speculative at this early stage, it is possible that parental genetic predispositions to experience internalizing symptoms are not only genetically transmitted to children but are also manifested in greater interparental conflicts. Consistent with this explanation, internalizing symptoms are highly heritable (Loechner et al., 2018; Plant, Pariente, Sharp, & Pawlby, 2015). Likewise, parental internalizing symptoms also predict more frequent interparental conflicts (Davila, Bradbury, Cohan, & Tochluk, 1997; Goodman, 2007). Consistent with the operation of environmental processes, it is also possible that the stronger association between conflict frequency and internalizing symptoms for children with two biological parents may be the product of their longer histories of exposure to their parents' relationship. Future research is needed to disentangle the possible genetic and environmental mechanisms that account for this finding (e.g., Nikolas, Klump, & Burt, 2013).

### Study Characteristics

In general, associations between the interparental dimensions and children's functioning did not consistently depend on whether data were derived from different methods (e.g., questionnaires, observations), different informants, or more established measures (i.e., the CPS, CTS, CPIC, or SISS). However, not surprisingly, most associations for children's externalizing and internalizing problem behavior were stronger when information about the interparental relationship and child's behavior was collected from the same informant. This finding suggests that relying on the same source for information on the two variables generates inflated estimates of the associations between the interparental relationship and children's problem behavior. However, in all cases, obtaining information from different informants still yielded significant associations, suggesting that associations were not due to common method variance only. However, future research would benefit from using multiinformant and multimethod approaches to rule out common method variance.

### Limitations

Consideration of the limitations of our study is also warranted in comprehensively interpreting and qualifying the findings. First, many empirical studies examining associations among interparental relationship and child functioning were excluded from our meta-analysis because their interparental relationship assessments did not align with the definitions of the six dimensions of the interparental relationship in this study (see Figures 1 and 2). Beyond being a study limitation, this actually highlights a larger problem of the highly variable and inconsistent use of terminology to characterize interparental and child functioning. In reflecting the jingle-jangle fallacy (Marsh, 1994), different conceptual constructs

are commonly used to describe the same or highly similar operational definitions in assessments. Likewise, researchers often use similar conceptual constructs or terms to describe very different assessments or operational definitions. Because conceptual confusion is considered one of the largest barriers of scientific progress (Clark & Watson, 1995), the field would benefit from increasing the fidelity or correspondence between conceptual definitions and assessment procedures. The current study may provide a foundation for this next step by providing a clear framework for defining the multidimensional interparental relationship.

Second, almost three-quarters of our data consisted of samples from the United States and an even larger percentage of the samples were from Western, educated, industrialized, rich and democratic countries. Given that research has shown that cognitive and social processes vary across populations (Henrich, Heine, & Norenzayan, 2010), caution should be exercised in generalizing the findings to other cultures. Finally, although longitudinal data overcomes some of the problems of cross-sectional research in identifying temporal ordering and directionality among variables, unmeasured third variables may still be operating in prospective research. Therefore, to further advance an understanding of the etiology in models of interparental discord, it is important that future research increasingly supplement longitudinal designs with experimental (e.g., intervention studies) approaches (see, e.g., Solmeyer, Feinberg, Coffman, & Jones, 2014).

### Conclusion

In summary, the current meta-analyses revealed new insights in the link between the interparental relationship and child functioning. First, our analysis of the relative strength of interparental relationship dimensions as predictors of children's functioning helps advancing theories in several ways. Specifically, theoretical propositions about the significance of how parents express or manage their disagreements are supported; however, two other findings run counter common assertions in theories such as the cognitive-contextual framework and emotional security theory. General relationship quality was an unexpectedly strong predictor of child functioning and, accordingly, theories should address this concept as a viable risk factor in addition to characteristics of conflict. Also contrary to the theoretical expectations, conflict frequency evidenced a great robustness as a predictor of the domains of child functioning. In addition, although theories do highlight child-related conflicts as risk factors, little research has directly tested the theoretical proposition that children's cognitive, behavioral, and emotional reactivity may be altered by experiences with child-related conflict and, in turn, increase their vulnerability to psychological problems.

Second, as the first quantitative synthesis of research on the interparental relationship and children's responses to conflict, the findings confirm that studying children's cognitive appraisals of the interparental subsystem and emotional reactivity, and (to a lesser degree) behavioral responses to conflict, are fruitful directions for understanding why interparental conflict leads to maladjustment in children that should be continued. Inconsistencies regarding the role of physiological responses highlight the need to parse specific forms of physiological activity and reactivity (e.g., PNS, HPA) in ways that might further increase precision in mediational tests, while also recognizing that many of these physio-



logical processes may moderate the risk associated with interparental conflict or reflect more complex curvilinear relationships with interparental relationship dimensions.

Third, our analysis of longitudinal associations between the interparental relationship and later child functioning revealed that the effects of most dimensions of the interparental relationship on different domains of child functioning *endured* over time. Fourth, this study showed that the identification of developmental and gender differences as moderators may benefit from a more fine-grained analysis of associations among specific interparental conflict characteristics and forms of child functioning. For example, girls' greater vulnerability to interparental conflict relative to boys was specifically manifested in associations among hostile interparental conflict and their emotional reactivity and internalizing symptoms. Fifth, although sample and study characteristics accounted for very little heterogeneity in the associations, the moderating role of study characteristics did underscore the importance of using multiinformant and multimethod approaches to maximize the validity of future empirical results. In sum, this meta-analysis provides a clear indication that the association of the multiple dimensions of the interparental relationship and both children's maladjustment and emotional, behavioral, and cognitive responses to conflict are robust, both concurrently and over time. Our results are in line with the growing consensus that prevention and intervention programs aimed at improving children's mental health could benefit from an alternative or additional focus on the interparental relationship (Cowan & Cowan, 2014; Feinberg et al., 2016; Miller-Graff et al., 2016; Zemp et al., 2016).

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