

Annual Research Review: Interparental conflict and youth psychopathology: an evidence review and practice focused update

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The quality of the interparental relationship is recognized as an important influence on child and adolescent psychopathology. Historically, clinically oriented research on this topic has focused on the impacts of parental divorce and domestic violence as primary interparental relationship influences on child outcomes, to the relative neglect of dimensional or qualitative features of the couple/interparental relationship for youth (child and adolescent) psychopathology. Recent research has highlighted that children are affected by attributes of interparental conflict, specifically how parents express and manage conflicts in their relationship, across a continuum of expressed severity and negativity – ranging from silence to violence. Furthermore, new evidence highlights that children's emotional, behavioral, social, academic outcomes, and future interpersonal relationships are adversely affected by conflict between parents/carers whether adults are living together or not (i.e. married or separated), or where children are or are not genetically related to their rearing parents (e.g. adoption). We review evidence and present an integrated theoretical model, highlighting how children are affected by interparental conflict and what this evidence base means for effective intervention and prevention program development, as well as the development of possible cost-benefit models. Additionally, we review policy implications of this research and highlight some very recent examples of UK-based policy focusing on addressing the interparental relationship and its impact on youth psychopathology. **Keywords:** Interparental conflict; parent-child interaction; child development; mental health; intervention.

Introduction

Children living in households marked by high levels of interparental conflict are at risk for serious mental health problems and future psychiatric disorder (Holmes, 2013). Evidence has progressed from early research highlighting the adverse impacts of verbal and physical domestic violence on children's mental health (Osofsky, 2003) to recognizing that children can be affected by conflict between parents (and carers) where levels of discord do not necessarily involve physical or verbal violence, but nonetheless constitutes chronic environmental adversity that places children's mental health and future development at risk (Harold, Leve, & Sellers, 2017). Such is the evidence that interparental conflict adversely affects mental health outcomes for youth (children and adolescents), that the diagnostic condition 'child affected by parental relationship distress (CAPRD)' was introduced into the DSM-5, noting that children may react to *parental intimate partner distress, parental intimate partner violence, acrimonious divorce, and/or unfair disparagement of one parent by another*, by evidencing heightened behavioral, cognitive, affective, or physical symptoms as a result of exposure to parental relationship distress (Bernet, Wamboldt, & Narrow, 2016).

The objective of this review was to comprehensively summarize research that underpins practice-

and policy-focused developments in this area, and to provide an up-to-date evidence base for practitioners working with children at risk of poor mental health outcomes (psychopathology) as a result of living with or experiencing high levels of interparental conflict. Highlighting how the interparental relationship influences child and adolescent mental health offers significant opportunity for the early identification of children at risk and the targeting of effective interventions aimed at improving outcomes for children, while also potentially interrupting cascading processes that may promote and sustain destructive intergenerational cycles of interparental conflict and adverse youth outcomes. A synopsis of past evidence linking interparental conflict to poor child outcomes is provided that (a) locates contemporary evidence relative to a focus on domestic violence and parental divorce in examining interparental *relationship* impacts on children, (b) addresses substantive challenges to evidence highlighting associations between family process influences (e.g. interparental conflict, poor parenting practices) and child psychopathology, and (c) introduces an integrative theoretical model that synthesizes the very latest research in this area and that aims to profile how children's emotional, behavioral, social, academic development, and future interpersonal relationship behavior is adversely affected by experiencing ongoing conflict between parents/carers that is frequent, intense, and poorly resolved. This model brings together the very latest research from the complementary fields of

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developmental psychopathology, quantitative behavioral genetics, family systems theory, and prevention science, with the core objective of improving understanding of the mechanisms that explain how children are adversely affected by interparental conflict, offering a framework through which effective intervention and prevention programs may be developed to allow front-line practitioners working with parents and children experiencing high levels of interparental conflict to more efficaciously target services. Furthermore, the review (d) provides an up-to-date overview of intervention programs targeting the interparental relationship–child outcomes association, and (e) provides examples of recent policy applications and future opportunities utilizing research presented throughout this review.

Locating the study of the interparental relationship–youth psychopathology link within a historical context

Research on the role of the interparental relationship and the impact of interparental conflict on children has a long and established history (Cowan & Cowan, 2002; Davies & Cummings, 1994; Grych & Fincham, 1990; Harold & Conger, 1997; Harold et al., 2017; Rhoades, 2008). From as far back as the 1930s, it has been recognized that discord between parents has a potentially debilitating effect on children's mental health and development (Towle, 1931), with evidence from cross-sectional (Grych, Fincham, Jouriles, & McDonald, 2000), longitudinal (Harold, Shelton, Goeke-Morey, & Cummings, 2004), and experimental (Cummings & Davies, 2002) studies indicating that children who witness conflict between parents that is frequent, intense, and poorly resolved are at elevated risk for a host of negative developmental outcomes including increased anxiety, depressive symptoms, aggression, antisocial behavior, poor academic attainment, substance misuse, criminality, and suicidality in the extreme (Asarnow, Carlson, & Guthrie, 1987; Bernet et al., 2016).

Historically, research examining the role of the interparental *relationship* as an index of family sourced influences on youth psychopathology and related developmental outcomes has predominantly focused on parental divorce (Amato, 2000) and domestic violence (McTavish, MacGregor, Wathen, & MacMillan, 2016). Similar to the outcomes listed for interparental conflict, parental divorce is associated with a range of poor outcomes for children and adolescents including reduced psychosocial well-being (e.g. internalizing, externalizing problems), poor social relationships (e.g. peers), lower cognitive skills, risk of dropping out of school, increased risk of psychiatric disorder, suicide attempts, and substance misuse (e.g. Amato, 2000; Roustit et al.,

2011; Vezzetti, 2016). Indeed, in bridging the child and adolescent outcomes noted for interparental conflict and parental divorce, it is highlighted that conflict levels between parents before, during, and after the process of parental divorce may serve as a 'common denominator' to outcomes and may therefore explain more about children's adaptation to parental separation than the actual event of divorce per se (Harold & Murch, 2005). Building on this parental relationship-focused corpus of evidence, the impacts of domestic violence on children are also well established (Holt, Buckley, & Whelan, 2008). Children exposed to adult relational violence are at significant risk for multiple negative outcomes, including depression, aggression, conduct disorder, violence, substance misuse, academic failure, PTSD, and suicidality (e.g. McTavish et al., 2016; Rivett, Howarth, & Harold, 2006). Furthermore, evidence highlights poor outcomes for children who are direct victims of physical violence in the context of parental domestic abuse (Sousa et al., 2011), with studies also evidencing that children who *witness* interparental violence are at risk for negative outcomes even when they are not themselves the direct targets of such violence (Zarling et al., 2013). Indeed, it is increasingly recognized that the effects of interadult violence on children may extend beyond the singular definition/measurement of overt physical and verbal violence, to include conflicts between parents/carers that do not attain overt physical or verbal attributes (e.g. interparental/partner withdrawal, the silent treatment), but where children's emotional, behavioral, social, and extended outcomes (e.g. academic attainment) are also adversely affected (Rivett et al., 2006). While compelling scientific evidence has existed in this research domain for several decades (Grych & Fincham, 1990; Harold, Elam, Lewis, Rice, & Thapar, 2012; Rhoades, 2008), translation to intervention program development and clinical practice focusing on remediating interparental conflict effects on children has lagged behind (see Cowan & Cowan, 2002; Harold, Acquah, Chowdry, & Sellers, 2016).

In this evidence review, we aim to highlight and synthesize findings from international research studies examining the interparental conflict–youth psychopathology link, where the focus is on reviewing evidence and profiling a dimensional taxonomy of interparental conflict attributes across a violence continuum and associated outcomes for children and adolescents. The review also aims to summarize evidence pertaining to the mechanisms that may explain variation in children's psychopathological adaptation to interparental conflict and discord, with a view to better understanding the processes through which some children experience significant difficulties as a result of ongoing interparental conflict, while other children remain

relatively unaffected. Furthermore, we look to profile mechanisms underlying the interparental conflict–youth psychopathology link so as to inform future development and implementation of effective prevention and intervention program strategies in this area.

Advancing understanding of the interparental conflict–youth psychopathology link: moving from a categorical to a dimensional specification

As noted, interparental conflict is recognized as a potentially debilitating influence on children's mental health and development, with recent revisions to clinical diagnostic frameworks underscoring the now widely accepted evidence calling for greater clinical recognition of interparental conflict as a factor underlying poor mental health outcomes for youth of all ages (Bernet et al., 2016). Yet, conflict between parents must be understood as a natural and relatively normal part of family life, with effects on children being influenced more by the expressed intensity, duration, severity and content of conflict, and the extent of its resolution, rather than the simple occurrence of conflicts between parents/carers per se (see Grych & Fincham, 1990). Historically, consideration of the role of conflict *between* parents and its effects on children has tended to rely on a categorical definition of behavior. That is, interparental conflict has been considered a threat to children only if it is openly (verbally and/or physically) overt, acrimonious, or hostile in form and content (e.g. domestic violence; see Holt et al., 2008). Indeed, practitioners and policy makers have in the past regarded conflict between parents as a threat, not only to parents/partners but also to children, if, and only if, overt conflict behaviors attain such a level of severity that there is physical or emotional risk to the child or adult (Rivett et al., 2006). More recent research supports the proposal that practitioners and policy makers move away from considering conflict between parents as aversive if, and only if, behaviors attain a level of severity deemed physically and/or verbally violent, toward recognizing that rather than being viewed as a simple present or absent dichotomy, acrimonious behaviors between parents/carers that place children's mental health outcomes at risk exist across a continuum of expressed severity (e.g. low verbal-physical aggression/low verbal-behavioral warmth to overt verbal-physical aggression). Indeed, parents who are embroiled in a relationship that may be described as not only verbally and/or physically acrimonious but who are also emotionally withdrawn from each other to such an extent that the relationship is devoid of any warmth or affection, may also put

children at risk for long-term emotional and behavioral problems (Cummings & Davies, 2002).

The emerging picture from research suggests that the effect of interparental conflict on children depends both upon the manner in which it is expressed, managed, and resolved, as well as the extent to which children feel at fault for or threatened by their parents' relationship arguments (Harold, Aitken, & Shelton, 2007). Furthermore, distinguishing between constructive and destructive parental conflict management strategies may explain why differences exist in children's adaptive and maladaptive responses to interparental conflict. Destructive conflict behaviors such as violence, aggression, nonverbal conflict or 'the silent treatment', and conflicts about child-related matters are linked with increased distress or risk for psychological adjustment problems in children of all ages (Cummings & Davies, 2002), with recent evidence highlighting intergenerational transmission of exposure to interparental violence when children are as young as 2–5 years on intimate partner violence when these children reach their adult years (Narayan, Labella, Englund, Carlson, & Egeland, 2017). By contrast, constructive conflict expression and management such as mutually respectful, emotionally modulated conflicts, conflict resolutions, and explanations of unresolved conflicts are linked to lowered risk for child distress and increased potential for improved social competence and general well-being among children (Grych, Harold, & Miles, 2003). Resolution of conflict, in particular, has been shown to be an important factor in reducing the negative effects of interparental conflict on children (Shelton & Harold, 2008). For example, in a noteworthy early study by Cummings, Ballard, El-Sheikh, and Lake (1991), children exposed to a condition of unresolved conflict (continued fighting, silent treatment, etc.) evidenced heightened internalizing and externalizing problems relative to children exposed to partially resolved conflicts (changing topic or submission) who, in turn, responded more negatively than children exposed to resolved conflicts (apology, compromise). This finding emphasizes the importance of conflict management and the promotion of positive conflict management strategies at the level of the interparental relationship in intervention studies aimed at remediating the adverse effects of interparental conflict on children (Cowan & Cowan, 2002). With this prospective intervention objective in mind, we review the primary adjustment domains (outcomes) that research examining the interparental conflict–youth psychopathology link has highlighted, as a precursor to reviewing mechanisms that may explain why some children experience difficulties as a result of living with acrimonious interparental conflict, while other children remain relatively unaffected.

How children are affected by interparental conflict: a review of psychological adjustment domains

As noted above, research evidence highlights that when conflicts between parents/carers occur frequently, are expressed with intensity, concern topics related to the child, and are poorly resolved, children of all ages (birth to age 18+ years) are at elevated risk for poor mental health outcomes (Rhoades, 2008). The primary psychological adjustment domains that experimental, longitudinal, and intervention studies examining interparental conflict effects on children have highlighted include early sleep problems, externalizing problems, internalizing problems, academic problems, social and interpersonal problems, physical health problems, and future intimate partner and relationship quality. We briefly review evidence underpinning each of these areas with respect to clinical and practitioner interests.

Sleep problems

Early sleep patterns are critical in regulating neurobiological processes and future brain development (Dahl & El-Sheikh, 2007). Studies of clinical and nonclinical populations indicate that sleep problems (i.e. difficulty initiating or maintaining sleep) that emerge during early childhood tend to persist later in development (Gregory & Sadeh, 2016; Sadeh, Keinan, & Daon, 2004). Indeed, disturbances in child sleep patterns are believed to be a marker of the impact of family stress on neurobiological functioning (Sadeh et al., 2004). Interparental conflict has been shown to predict concurrent and subsequent child sleep problems. For example, Mannering et al. (2011) found that interparental conflict assessed when children were 9 months old predicted sleep disturbances at age 18 months. Kelly and El-Sheikh (2011) reported that interparental conflict predicted increases in child sleep disruptions over a 2-year period during middle childhood.

Externalizing problems

One of the most common outcomes for children who experience interparental conflict is an increase in externalizing problems, with multiple studies highlighting the role of interparental conflict as a factor underpinning elevated symptoms of aggression, conduct problems, and antisocial behavior across childhood and adolescence (Harold et al., 2012; Rhoades, 2008). While it is relatively common for very young children to exhibit features of externalizing problems marked by temper tantrums before the age of 3 years (Masten et al., 2005), persistent aggression that is developmentally inappropriate is associated with a range of long-term negative outcomes including academic failure (Campbell, Spieker, Burchinal, & Poe, 2006), substance misuse (van Lier, Vitaro,

Barker, Koot, & Tremblay, 2009), peer victimization (Harold et al., 2016), as well as elevated symptoms of depression and depressive disorder later in life (Natsuaki et al., 2014). Multiple research studies identify interparental conflict as a factor underpinning these and related outcome domains (e.g. future intimate partner violence; Narayan et al., 2017).

Internalizing problems

Internalizing problems are characterized by symptoms of withdrawal, inhibition, fearfulness and sadness, shyness, low self-esteem, anxiety, depression, and suicidality (Merikangas & Swanson, 2010). Consonant with evidence linked to externalizing problems, interparental conflict is associated with an increase in children's internalizing problems, with evidence utilizing experimental-, longitudinal-, and intervention-based research designs consistently showing that ongoing conflicts between parents and the associated emotional strain placed on children and adolescents puts youth at significant risk for internalizing type problems (e.g. anxiety, depression, low self-esteem, suicidality; see Asarnow et al., 1987; El-Sheikh, Keiley, Erath, & Dyer, 2013; Rhoades, 2008).

Academic problems

Interparental conflict has also been associated with deficits in children's academic performance. A recent study in this area noted that sleep difficulties explained the impact of interparental conflict on primary (elementary) school children's academic performance, with children from high conflict homes achieving lower scores on math, language, and verbal and nonverbal school ability scales, after controlling for a range of background risk factors (El-Sheikh, Buckhalt, Keller, Cummings, & Acebo, 2007). Negative perceptual/attributional processes engendered in children as a result of exposure to hostile and acrimonious interparental relations have also been associated with poor academic outcomes. Specifically, longitudinal data highlight the role of children's active representations of the interparental relationship (how they appraise and understand conflict between parents) in explaining poor attention problems (Davies, Woitach, Winter, & Cummings, 2008), as well as general emotional and classroom difficulties between the ages of 6 and 8 years (Sturge-Apple, Davies, Winter, Cummings, & Schermerhorn, 2008). Among adolescent children, longitudinal evidence from a UK sample shows that children who assign self-blaming attributions for their parents' interparental conflicts are more likely to have reduced academic attainment as assessed through standardized performance scores (English, Math, Science), even after controlling for early behavior problems and levels of poor parenting behavior (Harold et al., 2007).

Social and interpersonal relationship problems

Evidence indicates that interparental conflict can also impact a child's social and interpersonal skills, problem-solving abilities, and wider social competence (Feldman & Masalha, 2010). For example, interparental conflict is associated with increased parent-child conflict (Benson, Buehler, & Gerard, 2008), more hostile relationships with siblings (Stocker & Youngblade, 1999), elevated conflict with peers during primary and secondary school (Finger, Eiden, Edwards, Leonard, & Kachadourian, 2010), poor quality romantic relationships in adolescence (Cui & Fincham, 2010), as well as elevated rates of future relationship breakdown (Wolfinger, 2000) and intimate partner violence (Narayan, Englund, & Egeland, 2013).

Physical health problems

While most research examining the interparental conflict-youth psychopathology link has focused on mental health as a primary outcome domain, past research has also evidenced associations with physical health difficulties, including reduced physical growth (Montgomery, Bartley, & Wilkinson, 1997), fatigue (El-Sheikh, Harger, & Whitson, 2001), abdominal stress, and headaches (Stiles, 2002). Interparental conflict may also impact on risky behaviors in children linked to physical health outcomes such as smoking and substance misuse, and early sexual activity (Glendinning, Shucksmith, & Hendry, 1997; Repetti, Taylor, & Seeman, 2002).

Intergenerational transmission of psychopathology and relationship distress

The evidence reviewed so far indicates that interparental conflict represents a significant risk for poor early development (e.g. sleep problems), internalizing, externalizing, social, physical health, interpersonal, and academic outcomes. In addition, accumulating evidence suggests that these outcomes can converge and accumulate across childhood and adolescence, setting the stage for problems and patterns of relationship behaviors to be repeated and replicated across generations (Stein & Harold, 2015). Emerging evidence suggests that exposure to interparental conflict and violence in early life (particularly during toddlerhood and the preschool period) not only affects children's psychopathology during proximal and future developmental periods (e.g. adolescence, early adulthood) but may also set the stage for both the perpetration of relationship violence and greater likelihood to be a victim of partner violence during early romantic relationships (Narayan et al., 2013) and in later adulthood (up to ages 26–31 years; Narayan et al., 2017). This recent evidence builds on past research highlighting cross-

generational cycles of psychopathology specific to exposure to early familial and contextual risk (e.g. parent psychopathology, maltreatment/neglect, interparental conflict) on future (next generation) outcomes (see Stein & Harold, 2015).

Collectively, these outcome domains highlight the potential toxic role that frequent, intense, and poorly resolved conflicts between parents/carers play as a stress influence on child and adolescent psychopathology and future intergenerational transmission processes. Effective evidence-based early intervention and prevention program development and implementation are therefore essential if these destructive patterns and cycles are to be remediated within and across generations. As has been highlighted in past research (see Grych et al., 2003), an essential first step toward this objective is for researchers and practitioners to move away from asking *if* conflict, discord, and violence between parents/carers affects children (outcome-oriented perspectives) to examining the specific mechanisms through which children may be affected by interparental conflict by employing a process-oriented perspective that asks *why, when, and how* some but not all children are at risk for poor outcomes as a result of interparental conflict. Building on this proposal, a brief overview of relevant theoretical perspectives specifically directed toward explaining why interparental conflict may serve as a noxious influence on children's developmental psychopathology is provided.

Explaining how interparental conflict affects youth psychopathology: the importance of a process-oriented approach

Multiple theoretical perspectives exist to explain the mechanics underlying how early family processes and socialization experiences (e.g. interparental conflict, parenting processes, community, and wider contextual factors) affect poor outcomes for children, including psychodynamic, attachment, learning/social learning, ethological, ecological, family systems, and more recent ecological-contextual and developmental psychopathology perspectives (see Cicchetti & Cohen, 2006). Operating through several central elements common to these complementary theoretical perspectives (e.g. social learning, family systems, attachment, ecological-contextual), research specifically focusing on interparental conflict has highlighted three primary mechanisms aimed at explaining why some children exposed to acrimonious interparental conflict experience serious and long-term clinically significant outcomes, while other children experience little or no adverse effects. The first of these perspectives highlights the role of the parent-child relationship, the second emphasizes the importance of children's attributions for and emotional processing of interparental conflict, and the third highlights how the interparental

relationship adversely affects psychophysiological and neurobiological regulatory processes in children.

Interparental conflict and youth psychopathology – the role of parenting

The parent–child relationship has been consistently identified as a primary mechanism through which the effects of interparental conflict on children may be explained (Erel & Burman, 1995; Rhoades et al., 2012). Parents embroiled in a hostile and distressed couple relationship are typically more hostile and aggressive toward their children and less sensitive and emotionally responsive to their children's needs (Sherrill, Lochman, DeCoster, & Stromeier, 2017). The core underpinnings of research highlighting the role of parenting in mediating interparental conflict effects on child outcomes hypothesizes that the effects of conflict between parents occur indirectly through a 'spillover' of emotion from the couple relationship to the parent–child relationship, which in turn affects child outcomes (Harold et al., 2012). In support of this core proposal, there is a robust association between conflict at the level of the interparental relationship and levels of conflict in the parent–child relationship(s), with associated outcomes for children (specifically internalizing and externalizing problems; see Sherrill et al., 2017). An important caveat to past research in this area, however, is the predominant focus on the mother–child relationship to the relative neglect of the father–child relationship in explaining family system influences on children (a point we develop further at a later stage in this review). However, the role of fathers is increasingly recognized as an important influence on children's emotional, behavioral, social, and academic development (Gardner & Scott, 2015; Lamb & Lewis, 2013). In the context of intervention studies, Cowan and Cowan (2002) highlighted that fathers' engagement in family-focused interventions (including interparental and parenting programs) increases efficacy in relation to improved outcomes for children (e.g. Cowan, Cowan, Pruett, Pruett, & Gillette, 2014; Pruett, Pruett, Cowan, & Cowan, 2017). Notwithstanding this recent caveat to past evidence, the association between interparental conflict and negative parenting practices has a robust and long-standing evidence base (Erel & Burman, 1995; Stover et al., 2012). So robust indeed, that researchers in the 1990s suggested that the primary mechanism through which interparental conflict affects poor outcomes for children is through the parent–child relationship(s), and therefore it is at the site of parenting practices that the problem should be addressed (Fauber, Forehand, Thomas, & Wierson, 1990). A fundamental challenge exists to this hypothesis however; if conflict between parents only ever affected children via disruptions at the level of the parent–child relationship, children would be

adversely affected by conflict between parents irrespective of whether or not they actually witnessed or were aware of conflict occurring between their parents/carers (see Harold & Conger, 1997). Research evidence does not support this assertion.

Interparental conflict and youth psychopathology – the role of children's attributions and emotional processing

Research conducted over the past several decades has shown that overt interparental conflict to which children are exposed has a greater impact on distress levels than covert conflicts to which children are not exposed (Cummings & Davies, 2002; Harold et al., 2007; Nikolas, Klump, & Burt, 2012). This finding has led researchers to consider a second set of hypotheses that focus on the underlying cognitive (attributional) and emotional processes engendered in children who live in households marked by hostile interparental relations. Two primary theoretical perspectives have emerged that emphasize the importance of children's attributional processing and their sense of emotional security. Grych and Fincham (1990), in their cognitive-contextual framework, proposed that the impact of conflict on children depends on both how it is expressed and how children interpret its meaning, as well as their perceptions of its implications for their well-being. Grych and colleagues (Grych & Fincham 1990; Grych, Seid & Fincham, 1992; Grych et al., 2003) suggested that there are two stages of cognitive processing involved. The first of these, primary processing, is a stage where the child first becomes aware that conflict is occurring and experiences an initial level of arousal. They suggest that specific characteristics of the conflict episode, such as its frequency, intensity and resolution potential, as well as contextual factors such as the quality of the parent–child relationship(s), child temperament, child gender, and history of exposure to conflict influence this initial stage of appraisal. This primary stage of processing may then lead to a more elaborate secondary stage, during which the child attempts to understand why the conflict is occurring and what he or she should do in response. Secondary processing involves making sense of the cause of the conflict, ascribing responsibility and blame, as well as calculating how best to cope with the conflict (Grych et al., 2003). Children who view conflict as threatening or who feel unable to cope effectively experience more anxiety and helplessness. Children who blame themselves for parental disagreements or feel responsible for not helping to end them experience guilt, shame, and sadness.

Davies and Cummings (1994) offered a complementary perspective suggesting that a child's sense of 'emotional security' is threatened in the context of interparental conflict. Derived from attachment theory (see Waters & Cummings, 2000), these authors

proposed that the effects of destructive and badly managed conflict between parents are explained through disruptions to three conceptually related areas of children's emotional functioning. First, feelings of *emotional reactivity* may be affected such that children feel angry, sad, or scared in the context of conflict. Second, their *representations of family relationships* may be affected such that conflict between parents affects children's expectations that conflict will occur elsewhere in the family system (e.g. the parent–child relationship). Third, children may feel motivated to *regulate exposure to interparental conflict/emotion* so that they directly intervene in, or actively withdraw from, the immediate vicinity of the conflict. The impact of conflict on children is explained by the extent to which one or more of these aspects of emotional security is adversely affected and how well children can manage to regulate overall emotional disruption (see Cummings & Davies, 2010; Davies, Martin, Sturge-Apple, Ripple, & Cicchetti, 2016; Davies et al., 2002). More recently Davies and Martin (2013) reformulated Emotional Security Theory (EST) as a goal directed system to advance the objective of defending against social threats (e.g. interparental conflict) aimed at explaining variation in children's adaptation to multiple poor developmental outcomes. Initial evidence specific to this reformulation has recently been reported (Davies et al., 2016).

Combined with other complementary theoretical perspectives in this domain (see Buehler & Welsh, 2009), these models highlight the importance of considering the child's attributions and emotional processing in delineating how exposure to conflict between parents adversely affects psychopathology (Davies et al., 2002). In addition to this important work, a more recent body of evidence emphasizes the role of neurobiological and psychophysiological processes as additional regulatory mechanisms that affect specific outcomes in children as well as influencing children's emotional and cognitive processing of, and responses to, interparental conflict and wider family stress (e.g. hostile parenting practices). We review this evidence to provide an up-to-date and comprehensive profile of possible mechanisms that may underlie variation in youth psychopathology/adaptation in the context of hostile interparental relations.

Interparental conflict and youth psychopathology – the role of children's psychophysiological and neurobiological processing

While children's cognitive understanding and emotional processing of interparental conflict represent important gateways through which youth psychopathology outcomes may be explained, each represents a state of arousal that may be initially activated and that may further engage aberrant

stress responses, specifically neurobiological and psychophysiological regulatory responses that are in turn associated with poor child outcomes. The role of psychophysiological and neurobiological responses in linking interparental conflict and youth psychopathology is complex; however, responses relating to vagal tone, skin conductance, cortisol activation, and autonomic nervous system responses have all been implicated as mechanisms underlying children's adaptation to hostile interparental conflict (El-Sheikh et al., 2009).

Vagal tone/regulation

Vagal tone/regulation refers to how the body regulates the heart during stressful situations. Vagal withdrawal accelerates heart rate and may reflect physiological resources necessary to activate coping responses (Porges, 2007). Conversely, vagal augmentation decelerates heart rate in response to challenge and may reflect failure to engage with environmental demands, such as interparental conflict (Calkins & Dedmon, 2000). Evidence suggests that the association between interparental conflict and child adjustment is more pronounced in children with lower vagal tone (or vagal augmentation) compared to children with higher vagal tone (or vagal withdrawal; El-Sheikh et al., 2001; El-Sheikh & Erath, 2011).

Skin conductance level reactivity

Skin conductance level reactivity (SCLR) has been examined as a mediator/moderator of the association between family stress and child outcomes. In the context of interparental conflict, higher levels of SCLR are associated with adolescent boys' internalizing problems, as well as girls' externalizing, internalizing, and cognitive problems (El-Sheikh, 2005). Conversely, lower SCLR has been shown to serve as a protective factor in children exposed to high levels of interparental conflict, with one study finding that lower SCLR was associated with improved attention performance in adolescents (Zemp, Bodenmann, & Cummings, 2014).

Cortisol activation

Evidence suggests that exposure to interparental aggression is associated with higher average levels of cortisol in children following parental disputes (Davies, Sturge-Apple, Cicchetti, Manning, & Zale, 2009). Conversely, positive interparental relationship functioning has been associated with lower cortisol levels (Pendry & Adam, 2007). More recent research has suggested a curvilinear relationship between cortisol reactivity and interparental conflict: higher total cortisol and cortisol reactivity during a stress task in adulthood was observed among those reporting lower and higher frequencies of childhood

interparental conflict, whereas moderate levels of interparental conflict was associated with lower cortisol levels (Hagan, Roubinov, Mistler, & Luecken, 2014). This is consistent with a buffering effect suggesting that moderately stressful environments may promote adaptive physiological responses to later stressors. A range of factors may moderate child cortisol levels in the context of interparental conflict. Effects differ by age, with evidence suggesting that positive interparental relationship functioning is associated with greater reductions in cortisol levels for kindergarten-age children compared to adolescents (Pendry & Adam, 2007). Recent evidence also suggests differential cortisol responses depending on the context of disagreements, and child attributions for disagreements. For example, following exposure to parental disputes, child-rearing disagreements and attributions of threat were associated with children exhibiting a rising cortisol pattern which in turn was associated with emotional insecurity, internalizing, and externalizing problems, whereas destructive conflict was associated with flat cortisol patterns (Koss et al., 2013).

Autonomic nervous system (sympathetic and parasympathetic system responses)

A further important regulatory mechanism linked to children's adaptation to interparental conflict is through the autonomic nervous system (ANS). The ANS is composed of two systems that work together: the sympathetic nervous system (SNS) and the parasympathetic nervous systems (PNS). The sympathetic nervous system is responsible for regulating the body's reaction to stress or threat (e.g. accelerated heart rate and increased physiological arousal), while the parasympathetic nervous system is involved in calming the body (e.g. maintaining the body at rest, and reducing physiological arousal and heart rate). Respiratory sinus arrhythmia (RSA) is a measure of vagal tone (and PNS). Evidence suggests that coinhibition (low SCLR and low RSA) and coactivation (high SCLR and high RSA) are vulnerability factors for externalizing and internalizing problems in the context of interparental conflict (El-Sheikh & Erath, 2011). Conversely, reciprocal parasympathetic activation (low SCLR and high RSA) and reciprocal sympathetic activation (high SCLR and low RSA) operate as protective factors (El-Sheikh et al., 2013; Koss et al., 2013). While coinhibition (low SCLR and low RSA) has been identified as a vulnerability factor for internalizing problems in one study, this effect was found only for girls (El-Sheikh et al., 2013). Other studies have also identified gender differences in the context of maltreatment (Gordis, Feres, Olezeski, Rabkin, & Trickett, 2010). Findings are further complicated, with one study finding that, in response to a challenge, increasing RSA

(PNS) with decreasing SCLR (SNS) – usually considered an adaptive response – predicted elevated anxiety and depression symptoms in the context of interparental conflict in young children (Davies et al., 2009; El-Sheikh et al., 2013). This calm physiological response may suggest that children disengage from challenges, or fail to adapt to demands (a maladaptive response in the context of interparental conflict). Evidence suggests that the autonomic nervous system also interacts with cortisol in predicting child outcomes. For example, in mid-childhood (8–9 years), El-Sheikh, Erath, Buckhalt, Granger, and Mize (2008) identified interactions between SNS (SCLR) and cortisol in explaining variation in children's internalizing and externalizing problems. Specifically, in the context of interparental conflict, higher cortisol levels were associated with higher internalizing and externalizing problems in children with higher SNS activity, as compared to children with lower SNS activity (El-Sheikh et al., 2008).

Collectively, studies aimed at explaining the mechanisms (and theoretical underpinnings) that link interparental conflict and poor youth outcomes suggest that multiple family system [e.g. interparental, parent-child relationship(s)] and child-level (e.g. attributions, emotional security, neuropsychological/psychophysiological) processes operate to explain the adverse effects of interparental conflict on outcomes for children and adolescents. Specifically, interparental conflict may set the stage for disrupted parent-child relationships (family systems theory, Cox & Paley, 2003), while also generating negative cognitive and emotional processing of the possible causes and potential consequences of interparental conflict (social cognitive and attachment theory, Grych & Fincham, 1990; Davies & Cummings, 1994), via and through further activation of neurobiological and psychophysiological regulatory processes (developmental psychopathology models, El-Sheikh et al., 2008). Together, these processes place children's emotional, behavioral, social, academic, and future intergenerational-related development at risk. Substantively, these findings have important implications for practice and policy applications. However, before this conclusion can be confidently endorsed in relation to policy and practice recommendations, a substantive challenge relative to the practical efficacy of this evidence base must first be addressed. That is, what if associations between interparental conflict, parenting, and youth psychopathology are explained (mediated) by common genetic factors passed on from parents to their children, rather than representing environmentally sourced associations? We must consider and address this challenge relative to the evidence base presented in order to conclude that rearing environmental experiences marked by hostile interparental relations are salient influences on children's mental

health and development (an issue of substantive implication for intervention studies).

Interparental conflict and youth psychopathology: disentangling nature from nurture

A fundamental challenge to the hypothesis that interparental conflict serves as a stressor for children is that associations with youth outcomes (as well as underlying mediating processes, e.g. poor parenting practices, children's neurobiological and psychophysiological regulatory processes) may be explained by common genetic factors passed on from parents to their children (Harold et al., 2013; Rutter, 2006). This poses an interpretive challenge to past research in this area in that the vast majority of studies have been conducted with biologically (genetically) related parents and children. In studies that solely employ biologically related parents and children, associations between parent and child characteristics may result from shared genetic factors that simultaneously influence the trait in the parents (e.g. interparental conflict, harsh parenting practices) and the trait in the child (e.g. externalizing problems; Moffitt, 2005). Because these shared genetic factors may influence both the behaviors of the parent and the child, it is not possible to unambiguously disentangle and thus conclude that associations between family environmental factors and youth psychopathology are a result of shared genetic effects, family process/environmental influences, or both (gene–environment, G–E, interplay). The examination of G–E interplay using genetically sensitive research designs allows us to address this challenge to past evidence.

There are three forms of G–E interplay that have primary relevance to examining and interpreting associations between family process (environmental) variables such as interparental conflict and youth psychopathology. First, *passive gene–environment correlation* (passive r_{GE}) refers to the potential for the magnitude of associations between family environmental variables and youth psychopathology to be confounded by shared genes passed on from birth parents to their children (Jaffee & Price, 2007). Second, *evocative gene–environment correlation* (evocative r_{GE}) refers to the propensity for family process variables such as interparental conflict and parenting behaviors to represent responses to (and thus be influenced by) genetically informed attributes in the child (i.e. child-on-parent effects, Ge et al., 1996). Third, *gene–environment interaction* (GxE) refers to an individual's inherited propensity to adapt to specific family processes (environmental factors), such that positive versus negative environmental influences may moderate genetic effects on child outcomes (Leve et al., 2009; Reiss, Leve, & Neiderhiser, 2013). For the purpose of this review, there are two main forms of gene–

environment interaction that are important for practice, intervention and prevention science. The first is what is known as the 'diathesis–stress' model of GxE, where psychopathology results from inherited risk (diathesis) that occurs in the presence of, or as a result of, particular environmental risks (stressors) such as interparental conflict and/or poor parenting practices (see Leve, Harold, Ge, Neiderhiser, & Patterson, 2010; Leve, Kerr et al., 2010). The second form of GxE that has been more recently specified is 'differential susceptibility', whereby an individual is differentially sensitive or susceptible to high levels of both positive and negative rearing environments, whereby inherited risks increase susceptibility to the particular measure of the rearing environment assessed (e.g. interparental conflict), resulting in more positive outcomes in more positive environments (e.g. conflict resolution), and more negative outcomes from more adverse or negative environments (e.g. unresolved or intense conflicts (see Brody et al., 2013)). Recent studies examining GxE illustrate how specific rearing environments may have positive or negative effects for some children, potentially providing evidence for targeted interventions that are informed by biological risk, where the targets of the intervention are malleable aspects of the rearing environment (e.g. parents conflict management strategies) and where such targeted environmental attributes may interact with heritable traits to improve youth outcomes (see Leve, Harold, et al. 2010; Leve, Kerr et al., 2010).

Utilizing quantitative behavior genetic research designs in family process and child outcome research has substantively advanced knowledge in this area. Quantitative genetic research designs are particularly useful in allowing us to examine family processes (E) and youth psychopathology associations because they can partition and/or disentangle shared genetic (G) influences that may be common to both measurement domains (passive and evocative r_{GE}), while also allowing examination of possible interaction (GxE). We provide a brief overview of the different types of quantitative genetic research designs to help contextualize findings emanating from this review of research, and to serve as an *aide memoir* for practitioners working in this area in terms of contemporary approaches to examining family relationship influences on youth psychopathology and development. Recent advances in molecular genetic research have also substantively added to this body of evidence (see Thapar & Harold, 2014). However, we will focus on findings from traditional quantitative genetic research utilizing twin studies, extended family studies, adoption studies, and extended adoption studies where the focus has been on examining family process (environmental) influences on youth psychopathology, with an emphasis on the interparental and parent–child relationships.

In *twin studies*, it is assumed that monozygotic (from the same fertilized ovum) and dizygotic (from two separately fertilized ova) twin pairs share rearing environments (e.g. interparental conflict levels, parenting behavior) to the same extent, so a greater degree of concordance in monozygotic pairs compared to dizygotic pairs is attributed to genetic factors, relative to environmental influences. *Extended family studies* provide the opportunity to study associations between particular environmental exposures (e.g. interparental conflict, poor parenting) and behavior problems in children, with adjustment for familial factors and genetic relatedness among family members (D'Onofrio, Lahey, Turkheimer, & Lichtenstein, 2013). For example, full siblings share half of their genes and some intrauterine exposures; half-siblings share a quarter of their genes, and some intrauterine exposures only if both are genetically related to the mother. If correlations between sibling sets are stronger among siblings who are full siblings (vs. half or unrelated siblings), then genetic factors are assumed to be involved. One extension of this design is the Children of Twins (CoT) design. The CoT design makes use of adult twin pairs and their children, because when identical twins have children, those children are as genetically related to their parents' twin brother or sister as they are to their own parent. This unique feature of the CoT design offers an opportunity to distinguish whether transmission within families is because of genes, family process measures (environment), or both (see D'Onofrio et al., 2007). *Adoption studies* examine the resemblance between biologically related and unrelated relatives. Similarities between adopted children and their biological parents are assumed to be due to shared genes, whereas similarities between adopted children and their rearing parents are assumed to result from environmental influences unconfounded by shared genetic factors. *Extended adoption designs* (e.g. in vitro fertilization, IVF) are similar to a standard adoption design in concept (Harold et al., 2012). Specifically, children are genetically related or genetically unrelated to one or both of their rearing parents on the basis of the 'adoption' of gametes (sperm, eggs, embryos), which enables comparison of genetically unconfounded associations linking family process variables and youth outcomes. For example, by comparing the association between two variables (e.g. interparental conflict and child externalizing problems) across parents and children who are genetically related and genetically unrelated, it is possible to ascertain whether the magnitude of association between parent and child is primarily genetically explained, environmentally influenced, or a combination of the two. Studies utilizing these designs have allowed renewed insight into the role of family process factors such as interparental conflict and parent-child relationship quality relative to genetic factors and youth psychopathology.

Specific to the confound of passive *r*GE, Rhoades et al. (2011) used an adoption-at-birth study to examine the 'spillover' effect of interparental hostility on toddler anger through harsh parental discipline. Results from this study indicated an indirect effect from interparental hostility to subsequent toddler anger via parental harsh discipline (the spillover hypothesis). Importantly, because the adoptive parents in this study were genetically unrelated to the child, associations between interparental hostility, harsh parenting, and child anger were free from the confound of shared genetic factors, and thus represent genetically unconfounded family process (environmental) influences on child behavior. Studies examining the role of evocative *r*GE processes specific to the area of interparental conflict and youth child psychopathology (or vice versa) have also evidenced substantive insights relevant to practice and intervention program development in this area. In a study conducted by Fearon et al. (2015), also using an adoption design, findings suggested that genetic factors associated with birth mother externalizing psychopathology evoked negative reactions in adoptive mothers in the first year of life, but only when the adoptive family environment was characterized by interparental conflict and discord. Furthermore, maternal negativity mediated the effects of genetic risk on child adjustment at 27 months. These results underscore the importance of genetically influenced evocative processes in early development, and represent one of the very few studies in this area to examine evocative *r*GE processes specific to the interparental, parent-child relationships, and child outcome domain. Studies that examine gene-environment interaction processes (GxE) have also been illustrative regarding the role of the interparental and parent-child relationships and youth psychopathology. For example, several recent studies suggest that the effects of interparental conflict and poor parenting behavior on children's externalizing problems may be strongest among children at high genetic risk (Rhoades et al., 2011; Schermerhorn et al., 2012), and that children are differentially susceptible to certain types of family environments (interparental, parenting) as a function of their own genetic makeup (Hyde et al., 2016; Leve et al., 2009). Across these three areas of examination of gene-environment interplay (passive and evocative *r*GE, GxE), studies using twin, extended family, and IVF research designs have also highlighted the salience of the interparental and parent-child relationships for youth psychopathology (see D'Onofrio et al., 2007; Harden, Turkheimer, & Loehlin, 2007; Harold et al., 2011; Jaffee et al., 2002; Neiderhiser, Marceau, & Reiss, 2013). For example, using a twin design, Nikolas et al. (2012) have highlighted the role of children's cognitive appraisals (specific self-blaming attributions) as a factor underpinning interparental conflict effects on neurodevelopmental outcomes (ADHD), suggesting that children's (age 6-16 years) appraisals

of self-blame in relation to interparental conflict act as an important moderator of family environmental contributions to ADHD, even when genetic factors are statistically controlled (Nikolas et al., 2012).

Collectively, these findings endorse past research studies that do not employ genetically sensitive research designs but where associations between children's experience of interparental conflict and poor developmental outcomes are noted. At a practical level, we can have greater confidence in the role of hostile interparental relations and parenting practices as substantive influences on child outcomes, as evidence from these studies allows us to conclude that associations cannot be explained by shared (common) genetic makeup alone. Furthermore, this new generation of genetically informed research allows substantively greater confidence in advocating the practice-policy message that intervention and support programs targeting family environments marked by hostile interparental relations can lead to improved outcomes for children (including the potential remediation of intergenerational transmission cycles of negative relationship behaviors and poor outcomes). We bring this evidence base together in the next section.

Bringing the evidence together: introducing an integrated theoretical model

Building on the corpus of evidence reviewed herein, we present a new and integrated theoretical model that conveys the complex and multifaceted processes through which interparental conflict may confer long-term developmental risk to children and adolescents (see Figure 1). In this figure, interparental conflict is presented as an early risk factor that sets the stage for a cascade of processes (Leve & Cicchetti, 2016) through which elevated risk for youth psychopathology is conveyed. As noted, contemporary research models have moved beyond examining simple bivariate associations between specific risks and related outcomes, to examining the pathways and processes through which early risks transmit effects to children (Stein & Harold, 2015). We build on the evidence review presented to assemble an integrated and dynamic theoretical framework that organizes the interplay between family system processes (interparental conflict, parenting processes), and neurobiological/psychophysiological and cognitive/emotional processes linked to these specific family process variables, while also incorporating the potential role of genetic factors that may underlie pathways throughout this model in explaining long-term variation in children's mental health outcomes (youth psychopathology). Specifically, factors that mediate and moderate initial associations between interparental conflict and child outcomes are examined as mechanisms through which risk effects are conveyed, and thus offer potential targets for intervention to reduce or

ameliorate risk. An interpretive key (e.g. Paths A_1 , A_2 , etc.) is provided to help assist with the interpretation of pathways and mechanisms described. All pathways build from evidence presented throughout this review. For example, parental divorce and domestic violence are associated with poor outcomes for children (Paths B_1 and B_2). Interparental conflict, however, is recognized as a factor that affects children before, during, and after parental divorce (Path A_1), and that may explain differences in children's long-term adaptation to parental separation (Harold & Murch, 2005). Interparental conflict is also recognized as a multifaceted family process factor underpinning domestic violence impacts on children (Path A_2), where conflicts may or may not attain levels of overt verbal and/or physical violence. As reviewed, conflict between parents/carers is recognized as spanning constructive to destructive continua, with differential outcomes for children who witness frequent, intense, child-related, and poorly resolved interparental conflicts compared to children whose parents/carers express conflicts without animosity, concern topics unrelated to the child and are successfully resolved (Grych et al., 1992). Where children experience acrimonious interparental conflict, they are at risk for elevated psychopathology across infancy, childhood, and adolescence (0–18 years, Path A_4). Furthermore, underlying factors identified as mediating associations over time include negative maternal and paternal parenting (Path A_3), maladaptive neurobiological/psychophysiological regulatory processes (Path A_5), and children's attributional and emotional processing of interparental conflict (Path A_6).

Rather than represent independent pathways linked to single psychopathological outcomes (e.g. anxiety, depression, aggression, conduct problems, poor academic attainment, substance misuse, and other outcomes), these factors operate as a synergistic cascade in explaining transmission effects on multiple youth outcomes. For example, three complementary operating mechanisms are presented in Figure 1, each strongly supported by past evidence: (a) pathways that involve interrelated family systems (e.g. the spillover hypothesis), whereby interparental conflict may affect youth outcomes through disrupted parenting practices (Rhoades et al., 2011; Paths A_3+C_1); (b) pathways that represent children's cognitive and emotional processing of interparental conflict and associated outcomes, building on attributional and emotional security research evidence (Paths A_6 and E_2 ; Grych et al., 2003; Cummings & Davies, 2002); and (c) pathways that represent children's neurobiological and psychophysiological regulatory systems in the context of interparental conflict and associated psychopathology linked outcomes (Paths A_5+E_1 ; Van Goozen, Fairchild, Snoek, & Harold, 2007). Taken together, these three respective mechanisms represent two primary sets of theoretical processes involving (a) factors external

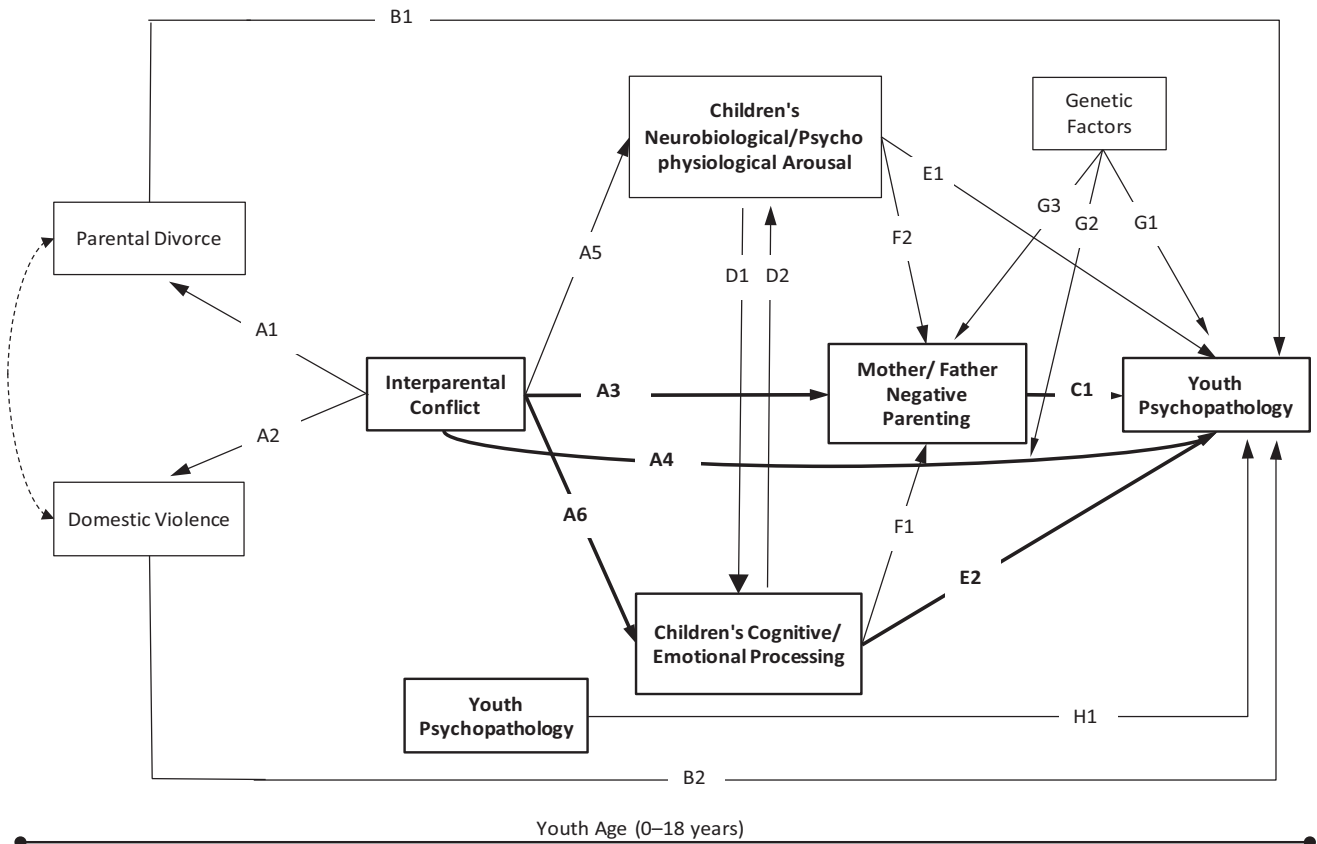


Figure 1 An integrated theoretical model

to the child (Paths A_3+C_1), and (b) factors internal to the child (Paths A_5+E_1 and Paths A_6+E_2). Rather than representing competing processes as has often been the case in past research in this area (family-centered vs. child-centered models), it is proposed that these processes operate synergistically. That is, interparental conflict may activate a synchronous set of processes whereby conflict disrupts maternal and paternal parenting practices which in turn affect youth outcomes, while also initiating underlying neurobiological/psychophysiological regulatory and cognitive/emotional processing systems that bidirectionally operate to affect youth appraisals of interparental and parent-child relationship quality and psychopathology outcomes (e.g. Paths $A_5+D_1+F_1+C_1$; Paths $A_6+D_2+F_2+C_1$; see Figure 1). As reviewed, past evidence suggests that genetic factors may also mediate and/or moderate the strength of associations. As specified in Figure 1, Path G_1 represents the direct role of genes (heritable traits) on youth psychopathology (Thapar & Harold, 2014), Path G_2 represents the possible interaction (GxE) between genetic risks and negative rearing experiences (e.g. interparental conflict), Path G_3 represents the potential for genetically influenced attributes in the child to evoke (evocative rGE) negative rearing experiences (e.g. negative parenting), with Paths G_3+G_1 simultaneously capturing the

potential confounding role of gene-environment correlation (passive rGE), where the association between negative parenting practices and youth psychopathology (as an example) is explained by common genetic factors passed on from parents to children and therefore common to both the environmental and outcome measures assessed (Jaffee & Price, 2007).

Collectively, the pathways and processes presented in Figure 1 offer an integrative theoretical framework that builds on the evidence reviewed, offering both testable hypotheses and potential targets for future intervention studies aimed at remediating the adverse effects of interparental conflict on youth psychopathology. Importantly, no theoretical model is exhaustive in considering all relevant (measured and unmeasured) factors that may underlie and/or influence associations. Indeed multiple additional factors may moderate the strength of associations presented within this framework. Profiling these additional factors has important implications for the efficacy of intervention programs aimed at remediating the adverse effects of interparental conflict on children, as an intervention will need to be responsive to such factors to be optimally effective. We review several of these moderating domains in order to comprehensively profile research evidence in this area.

Additional factors that may moderate how interparental conflict affects youth psychopathology

While the theoretical framework presented in Figure 1 represents a synthesis of evidence highlighting the cascading mechanisms through which interparental conflict places child and adolescent psychopathology at long-term risk, additional factors may moderate the strength of associations presented within this framework. Research has identified three main areas of moderating influence that have implications for the magnitude of associations linking interparental conflict and youth outcomes. These are (a) specific characteristics of the child (e.g. age, temperament), (b) characteristics of the family (e.g. parent gender), and (c) additional external family influences (e.g. peer affiliation).

Child age/developmental stage

While evidence suggests that children of all ages, from infancy to adolescence, are adversely affected by acrimonious interparental conflict, the specific mechanisms through which these effects occur may vary for younger and older children (see Rhoades, 2008). Very young children (<2 years) may not have developed the cognitive ability to generate and process thoughts or appraisals about the parental conflict that may be harmful (e.g. self-blaming attributions), yet evidence shows physiological arousal in the context of interparental conflict (El-Sheikh, 2005). Evidence also highlights specific brain region activation (using fMRI technology) during natural sleep among infants aged 6–12 years when exposed to verbal exchanges (tone of voice) as a function of past exposure to interparental conflict (Graham, Fisher, & Pfeifer, 2013). Coping efficacy is recognized as a potentially important factor in moderating interparental conflict effects on child outcomes, yet evidence suggests that young children in particular (age 1–5 years) are more limited by the types of coping strategies that they can employ (e.g. El-Sheikh & Cummings, 1995) with preschoolers being more likely to ascribe self-blame, threat, and fear of conflict (e.g. Jouriles, Spiller, Stephens, McDonald, & Swank, 2000). A complementary explanation is that younger children may have the ability to appraise events as they occur, but may stop thinking about or dwelling on the conflict once it has been resolved (Rhoades, 2008). Other evidence suggests that adolescents are more successful than younger children (age <9 years) at identifying cues to ascertain whether conflict has been resolved (Davies, Myers, & Cummings, 1996). Older children (>11 years) may also become more sensitive to parental conflicts, having been exposed to these conflicts for a greater period of time (Davies, Myers, Cummings, & Heindel, 1999).

Child gender

Evidence suggests that the effects of interparental conflict may be similarly damaging for boys and girls psychopathological outcomes, but that boys and girls may react differently to hostility and conflict between parents (Grych et al., 2003). Although boys and girls are both likely to see interparental conflict as a threat, boys are more likely to interpret interparental conflict as a threat to themselves, whereas girls are more likely to perceive interparental conflict as a threat to the harmony of family relationships (Grych et al., 2003). In addition, compared to boys, girls may be more likely to blame themselves for interparental conflicts, feel caught in the middle of conflicts, and feel the need to intervene (El-Sheikh & Reiter, 1996). Differences between boys and girls are also evident across different developmental periods. For example, interparental conflict may be a greater risk for girls during adolescence, whereas it is associated with risk for boys, especially externalizing problems, earlier in development (Davies & Lindsay, 2004).

Child temperament

Children with a difficult temperament (e.g. inclined to have negative mood, be more intense and less compliant) are thought to be more susceptible to the negative effects of interparental conflict (Hentges, Davies, & Cicchetti, 2015). Studies suggest that infants prone to irritability and negative emotionality who are from high conflict homes are more likely to develop behavioral problems compared to children with more positive temperaments (Pauli-Pott & Beckmann, 2007). Some traits are considered to be protective against the negative impacts of interparental conflict. Adolescents exposed to interparental conflict who had a more positive attitude toward life were less likely to develop internalizing problems compared to children who had a less positive attitude toward life (Buehler & Welsh, 2009). The ability to regulate emotions, behavior, and attention may also be protective against exposure to interparental conflict (Whitson & El-Sheikh, 2003).

Parent gender

Emerging evidence suggests that interparental conflict may differentially affect mothers and fathers through differential disruption at the level of the mother–child and father–child relationships (Lamb & Lewis, 2013). For example, the father–child relationship may be more at risk of negative impacts from interparental conflict than the mother–child relationship, with effects of interparental conflict more likely to negatively spillover into the father–child relationship (Harold et al., 2012). In contrast, mothers are more likely to be able to separate their roles as partner and mother, although they are at a greater

risk (compared to fathers) of overinvesting in the relationship with their child, compensating for difficulties in the couple relationship, and becoming intrusive with their children (Cummings & O'Reilly, 1997). Evidence also suggests that mothers and fathers may treat opposite sex children differently in the context of distressed interparental relations (Harold et al., 2004). Mothers may become more hostile toward their sons, with fathers becoming more withdrawn from their daughters (Kerig, Cowan, & Cowan, 1993; Kitzmann, 2000). Additionally, evidence suggests that children tend to identify with the same-sex parent and may therefore be more distressed by interparental conflict directed toward that parent (Davies, Lindsay, Grych, & Fincham, 2001). Evidence relating to children's responses to interparental conflict in the context of same-sex couples is very limited, representing an area of future research priority (see Schum, 2016).

Sibling relationships

Siblings are important for many aspects of development including social competence and emotional well-being (Dunn, 2002). Siblings within the same family can be exposed to varying levels of interparental conflict, and may also experience conflict differently (Richmond & Stocker, 2003). For example, older children and boys may be more likely to be exposed to overt conflict and physical conflict compared to younger siblings and girls (Grych et al., 2003). These differences in the level of exposure to interparental conflict between siblings are associated with differences in sibling outcomes (Richmond & Stocker, 2003). However, additional evidence suggests it may be the differences in characteristics of the child (see above section) rather than differences in exposure to conflict that may explain different outcomes among siblings (Jenkins, Simpson, Dunn, Rasbash, & O'Connor, 2005). Siblings can buffer children against the negative effects of exposure to interparental conflict (Gass, Jenkins, & Dunn, 2007). However, interparental conflict can also lead to strain on the sibling relationship, with research noting an association between interparental conflict and sibling conflict (Dunn, 2002). Mechanisms explaining the association between interparental conflict and increased sibling conflict include siblings redirecting anger between parents to themselves/another sibling, or siblings forming an alliance with one parent against the other (Cox, Paley, & Harter, 2001).

Ethnicity

A large volume of research examining the effects of interparental conflict on children has been conducted with families from mainly Caucasian or African American family backgrounds. Studies that

have employed samples with more diverse racial or ethnic backgrounds continue to find a consistent association between interparental conflict and child outcomes (Erath & Bierman, 2006; Shamir, Cummings, Davies, & Goeke-Morey, 2005). Associations between interparental conflict and child psychopathology have been observed among adolescents in Bangladesh, Bosnia, China, Columbia, Germany, India, Palestine, three different ethnic groups in South Africa, as well as the United States (e.g. Gonzales, Pitts, Hill, & Roosa, 2000; Shamir et al., 2005; Stutzman et al., 2011). Although some studies have identified that there may be differences in the strength of associations between interparental conflict, parenting, and child outcomes (Tschann, Flores, Pasch, & Marin, 1999), others have not found such differences (Erath & Bierman, 2006), with studies finding more similarities than differences across cultures and ethnicity in the impacts of interparental conflict on children (Stutzman et al., 2011).

Peer relations and wider social support

Interparental conflict can negatively impact child friendships, for example, via aggression or impaired social skills (Kinsfogel & Grych, 2004). There is evidence that social support, such as peer friendships or a relationship with a supportive adult outside the family, can protect children from the negative effects of interparental conflict (Gonzales et al., 2000). For example, a study of 5-year-old children followed up for 2 years found that peer support reduced the risk of children developing externalizing problems following exposure to family adversity, including interparental conflict. This association was consistent across child gender, ethnicity, temperament, and cognitive abilities (Stutzman et al., 2011). A positive relationship with an adult outside the home, such as a teacher or relative, was also protective against the psychological effects associated with exposure to interparental conflict (Tschann et al., 1999).

Across these various factors, one substantive conclusion may be derived – children of all ages who experience hostile interparental relations marked by frequent, intense, and poorly resolved interparental conflict are at elevated risk for multiple indices of psychopathology, and that these associations are either improved or made worse as a result of factors unique to the child, family and wider community. The theoretical framework presented in Figure 1 offers a schematic representation of primary processes and mechanisms through which interparental conflict affects youth outcomes, with a view to informing effective intervention program development; an area of relative underdevelopment compared to other areas of family relationship influences on children (e.g. parenting focused programs). As a penultimate step

Table 1 Synopsis of intervention evidence with programs targeting the interparental relationship in the context of (1): intact households (partners/couples); (2) Divorce; (3) Domestic violence

Intervention	Type of intervention	Intervention details	Sample size	Study design	Findings (including effect sizes where available)	Identified evidence base	Country of origin
1. Intact Households (partners/couples) Becoming a family Cowan and Cowan (2000)	Skills training	Weekly group sessions for parents during 3 months prior to & following birth of 1st child. <i>Prenatal</i>	66 (28 intervention & 38 nonintervention groups)	Random assignment to intervention group.	Positive effect on quality & stability of couple relationships for 3 years after birth. Helped maintain satisfaction (compared to normative decline). The intervention effect was estimated to be medium in both the intervention completer ($r_{\text{effect}} = .27$) and the intent-to-treat ($r_{\text{effect}} = .30$) analyses.	Schulz, Cowan, and Cowan (2006); Cowan and Cowan (1995); Cowan, Cowan, Heming, and Miller (1991)	United States
Family Foundations Feinberg and Kan (2008)	Skills training/psychoeducation	Eight group classes (6–10 couples per group). Four prenatal & four postnatal sessions with focus on enhancing coparenting relationship. Control group couples received a brochure about selecting quality child care. <i>Prenatal</i>	169 couples (89 intervention; 80 no-treatment control)	Random assignment to intervention group. Pre-postassessments. Posttest data collected at child age 6 months, and follow-up at 3 years.	Positive effects on coparent support (ES = .35–.54), parent–child relationship (ES = .34–.70), maternal anxiety & depression (ES = .38–.56). Children showed better adjustment (e.g. soothability/orienting; ES = .34–.35). Effects maintained at follow-up for coparenting (ES = .10–.51), parenting (ES = .34–.60), couple relationship (ES = .48–1.01).	Feinberg and Kan (2015); Soltmeyer, Feinberg, Coffman, and Jones (2014); Kan and Feinberg (2014); Brown, Goslin, and Feinberg (2012); Feinberg, Jones, Kan, and Goslin (2010)	United States
School children & their families Cowan et al. (2011)	Psychoeducation	Group preventive intervention for couples in the year before their oldest child makes transition to kindergarten. Two interventions, each 16 weeks with couples' groups: (a) focus on parenting issues or (b) additional focus on couple relationship and other family topics. <i>Child aged 7 years</i>	100 couples	Random assignment to (a) low-dose control (b) couples' group focusing on couple relations (c) couples' group focusing on parenting. Pre-postassessments.	Impacts on parent–child relationship & child adaptation to school. Couple relations group also had positive effects on couple interaction quality ($d = .25–.33$). 10-year positive effects on parents' marital satisfaction ($d = .33–.34$) & child adaptation ($d = .22$).	Cowan, Cowan, and Heming (2005); Cowan and Cowan (1995)	United States

(continued)

Table 1 (continued)

Intervention	Type of intervention	Intervention details	Sample size	Study design	Findings (including effect sizes where available)	Identified evidence base	Country of origin
2. Divorce Dads for Life (DfL) Cookston et al. (2007)	Skills training	Aim to improve father-child relationship, & fathers' parenting skills. Eight group sessions with fathers, each lasting 1 hr 45 min, & two 45-min sessions. Mother had primary custody of children. <i>For children aged 4-12 years.</i>	241 fathers (127 interventions; 87 control). Couples had divorced in past 4-10 months.	Random assignment to intervention or control group (receive self-help books). Pre-postassessments.	Latent growth analyses suggested that mothers & fathers reported less conflict after DfL (Mean slope = -1.25 & -1.83 respectively) compared to control condition (mean slope = -.11 & -.06). Also impacts on maternal coparenting (slope was .06 for control group & .15 for DfL). DfL did not impact of father reports of coparenting. Children had lower internalizing symptoms where fathers participated in DfL.	Cookston and Finlay (2006); Braver, Griffin, & Cookston, 2005; Braver and Griffin (2000)	United States
Collaborative Divorce Project (CDP) Pruet et al. (2005)	Skills training	Voluntary more intensive court-based program for families. <i>For children aged ≤6 years</i>	161 families	Random assignment to intervention or waitlist control group; pre-postassessments	Less parental distress & conflict; greater use of alternative dispute resolution (nonlitigation); more father involvement. Better child cognitive & behavioral functioning. Intervention had sig effect on maternal support of father ($\beta = .34$) at follow-up, reduction in negative father-child relationship ($\beta = -.14$). There was also an increased use of parenting plan ($\beta = .22$) & reduced legal system involvement ($\beta = -.29$).	Pruett, Cowan, Cowan, and Diamond (2009)	United States

(continued)

Table 1 (continued)

Intervention	Type of intervention	Intervention details	Sample size	Study design	Findings (including effect sizes where available)	Identified evidence base	Country of origin
3. Domestic violence 'En nu ik...!' (It's my turn now!) Overbeek et al. (2012)	Psychoeducation	Referred to program by police, social worker, women's shelter & youth (mental health) care. nine sessions of 90 mins. Parallel sessions for child & nonviolent custodial parent. <i>For children aged 6–12 years</i>	134 children exposed to interparental violence (IPV) & their parents	RCT: assigned to IPV-focused or community-based intervention. Assessed (baseline, posttest & follow-up) for posttraumatic stress.	Across both interventions, there was an increase in emotion differentiation ($d = .24-.27$); decrease in parenting stress ($d = .40-.57$). Decreases in posttraumatic stress (from 33.6% to 15.1% at follow-up). Decreases in children's internalizing & externalizing symptoms irrespective of group. Children improve over time after participating in either IPV-focused or community-based intervention. Specific factors in IPV-focused intervention may not carry additional benefits.	Overbeek, De Schipper, Willemen, Lamers-Winkelma, and Schuengel (2015)	Netherlands
Child Parent Psychotherapy (CPP) Lieberman et al. (2005)	Psychotherapy	CPP targets parent-child interactions and child free play. Weekly parent-child sessions, as well as individual sessions with parent if needed. Targets parent-child relationship and child maladaptive behaviors. Address: play; sensorimotor disorganization and disruption of biological rhythms; fearfulness; reckless, self-endangering, and accident-prone behavior; aggression; punitive and critical parenting; relationship with the perpetrator of the violence and/or absent father <i>For children aged 3–5 years</i>	39 girls & 36 boys & mother	RCT: assigned to CPP or case management as usual.	Efficacy of CPP within this population. Evidenced impacts on child behavior problems ($d = .24$), traumatic stress symptoms ($d = .63$). Trend toward impacts on mothers' PTSD symptoms & general distress ($d = .19-.50$). Evidence of improvements in child behaviors. Additional evidence suggests that, in other contexts (maternal depression) CPP can also improve marital satisfaction, suggesting potential benefits across the family system.	Lieberman, Ippen, and Van Horn (2006); Peltz, Rogge, Rogosch, Cicchetti, and Toth (2015); Cicchetti, Toth, and Rogosch (1999)	United States

to completing our review, we summarize evidence focusing on intervention programs targeting the interparental conflict-child adjustment link in the following sections.

Improving outcomes for children who experience acrimonious interparental conflict: a summary of program evidence

Consonant with past research evidence examining interparental relationship influences on children, intervention programs that target the interparental/couple relationship have historically focused on (a) domestic violence and (b) parental divorce (note: or traditional couple therapy without a specific focus on improving child-related outcomes). Where programs have specifically targeted family relationship influences on child outcomes (e.g. conduct problems), these have predominantly emphasized parenting practices (see Gardner & Scott, 2015). It is increasingly recognized, however, that addressing conflict at the level of the couple relationship may pay significant dividends in improving outcomes for children (Cowan & Cowan, 2002). We provide an overview of programs targeting the couple relationship where there is a focus on improving child outcomes. Specifically, we provide a summary of program evidence where the program focus targets (a) intact/cohabiting couples with children, (b) interparental/couple domestic violence, and (c) couples who have divorced or are in the process of separation. Programs are reviewed that (a) focus on the interparental/couple relationship directly or (b) focus on aspects of the parent-child relationships, but that also include a focus on the couple/interparental relationship, where child outcomes are also assessed/measured.

Two search engines (Pubmed and Scopus) were used to assess the evidence base for interventions relevant to the interparental relationship. Search terms were: (couple OR interparental OR parenting OR carer) AND (intervention OR prevention), with additional search terms specific to Divorce (divorce OR separation), Domestic Violence (domestic violence OR intimate partner violence). Searches were conducted for evidence published between January 1990 and February 2017. All identified papers were sorted for relevance (see Figure S1 for a PRISMA diagram example). Table 1 shows illustrative examples of intervention programs within each domain. Supplementary material (Table S1) provides details of other identified programs. Overall, evidence suggests that interventions that are couple focused, or include a couple component, have the capacity to reduce interparental conflict, improve communication and problem-solving, as well as increase coparenting (each of which are associated with child outcomes). These impacts are evident in the

context of relatively low-risk intact couples/households as well as in high-risk contexts (divorce/separation, domestic violence). Summary program details are provided for each of the primary areas reviewed.

Programs that focus on interparental conflict in intact (two-parent) households

Nine programs were considered that focused on interparental conflict in intact households (see text box), all of which originated in the United States. These programs spanned child age, from transition to parenthood (infants) to adolescence. Many of these programs aim to improve and strengthen couple relationships, and promote couple communication and conflict management strategies. Additional program targets included promotion of realistic partner expectations, sharing (parenting) responsibilities, and promoting sensitive parenting. Programs vary in length (duration) and intensity. Evidence was primarily underpinned by randomized controlled trial (RCT) data and indicated positive effects on couple relationships as well as parent-child relationships (Becoming a Family, Cowan & Cowan, 2000; Bringing baby home, Shapiro & Gottman, 2005; Happy couples happy kids (HCHK), Cummings, Faircloth, Mitchell, Cummings, & Schermerhorn, 2008), with additional positive effects for children also evidenced (Family Foundations, Feinberg & Kan, 2008; School children & their families, Cowan, Cowan, & Barry, 2011; Promoting fathers' engagement with children, Cowan, Cowan, Pruett, Pruett, & Wong, 2009; Promoting strong African Families (ProSAAF), Beach et al., 2014), with programs evidencing small to moderate effect sizes (where available). Three programs were also identified that had a parenting focus with a couple component (see Table S1 for details). One of these interventions was underpinned by evidence from RCTs (Enhanced Triple P, Sanders, Markie-Dadds, Tully, & Bor, 2000), and two were underpinned by evidence using pre-postdesign (Incredible Years, Hutchings, Bywater, Williams, Shakespeare, & Whittaker, 2009; cultural adaptation of Strong Foundations; Lewin et al., 2015). These interventions evidenced positive effects on parenting skills, parent sense of competence, and the parent-child relationship (Enhanced Triple P, Sanders et al., 2000; Incredible Years, Hutchings et al., 2009). However, the core theoretical focus of these programs remains centered on parenting skills. Overall, interventions targeting the interparental relationship (with or without a direct parenting focus) have been found to have a small but significant effect on couple communication, relationship satisfaction, as well as improved adult psychological well-being, with associated improved outcomes for child and adolescent psychopathology.

Programs that focus on interparental conflict in intact households

1. We considered nine programs that focused on interparental conflict in intact households (Becoming a Parent, Cowan & Cowan, 2000; Family Foundations, Feinberg & Kan, 2008; Bringing Baby Home, Shapiro & Gottman, 2005; Promoting Father's Engagement with Children, Cowan et al., 2009; School Children & their Families, Cowan et al., 2011; Promoting Strong African American Families (ProSAAF; Beach et al., 2014); Integrative Behavioral Couple Therapy (IBCT, Baucom, Baucom, & Christensen, 2015), Happy Couples Happy Kids, Cummings et al., 2008; Couple Relationship Education, Wilde & Doherty, 2013).
2. Programs considered impacts across different ages and stages of child development: Three focused on transition to parenthood (Becoming a Parent, Family Foundations, Bringing Baby Home), two programs focused on early childhood (Promoting Fathers Engagement with Children; School Children & their Families) with ProSAAF focusing on adolescence.
3. All programs originated in the United States.
4. One program took a skills training approach (Becoming a Family). Five took a psychoeducational approach (Bringing Baby Home; School Children & their Families, Promoting Fathers Engagement with Children/Parents as Partners, Happy Couples Happy Kids, Couple Relationship Education), and two took both a skills training and psychoeducational approach (Family Foundations, Promoting Strong African American Families). One took a cognitive behavioral therapy approach (Couple Therapy)
5. Evidence quality: Interventions are primarily underpinned by evidence from randomized control trials, or pre-postassessments.
6. International evidence indicates positive effects on couple relationship quality and satisfaction, as well as positive effects on communication, coparenting and parent-child relationships. Two programs also indicated improvements in parental depression (Family Foundations, Bringing Baby Home).
7. Positive effects were also evidenced for child outcomes where assessed. These programs indicated improvements in child adjustment (Family Foundations, School Children & their Families), reduced child behavior problems (Promoting Fathers Engagement with Children/Parents as Partners), and adolescent depression (ProSAAF).

Programs that focus on parental separation/divorce

As highlighted earlier in this review, evidence suggests that child adjustment is strongly related to the

level and type of interparental conflict experienced both before and after parent divorce, as well as the relationship quality the child has with each parent. Where children are made to feel 'caught in the middle' of parental conflict, children do less well, particularly when they blame themselves or feel responsible for parental disagreements (Harold & Murch, 2005). Several interventions have been developed for separated and divorced parents to improve outcomes for both parents and children. Four programs had a core focus on conflict within the interparental relationship (see text box), all of which originated from the United States. Evidence from RCTs indicated positive effects, reducing interparental conflict, as well as indicating improvements in child outcomes (Dads for Life, DfL, Cookston, Braver, Griffin, De Luse, & Miles, 2007; Collaborative Divorce Project, CDP, Pruett, Insabella, & Gustafson, 2005; Kids in Divorce & Separation, K.I.D.S., Shifflett & Cummings, 1999; Mentalization, Hertzmann et al., 2016) with small to moderate effect sizes (where possible to estimate). Three programs were also identified that had a parenting focus with a couple component in the context of divorce/separation (see Table S1 for details). These interventions were underpinned by evidence from RCTs (Parent Management Training Oregon, PMTO, Bullard et al., 2010; Family Transitions Triple P, FTTP, Stallman & Sanders, 2014; New Beginnings Program, NBP, Sigal, Wolchik, Tein, & Sandler, 2012) and indicated improvements in parenting skills (FTTP, Stallman & Sanders, 2014; NBP, Sigal et al., 2012) and parent-child relationship quality (NBP, Sigal et al., 2012) as well as improved child outcomes (PMTO, Bullard et al., 2010; FTTP, Stallman & Sanders, 2014; NBP, Sigal et al., 2012). Evidence suggests that reducing the levels of destructive conflict that the child is exposed to and keeping the child from being caught in the middle of parental conflicts are effective in promoting child adaptation following parental divorce. Effective components of intervention programs aimed at parents as they transition from intact to separated are: (a) educating parents about the impact of parenting and interparental conflict; (b) building motivation to strengthen the quality of parenting and not to undermine the other parent; and (c) skill-building which includes modeling and role play.

Programs that focus on parental separation/divorce

1. Four programs had a core focus on conflict within the interparental relationship (Dads for Life (DfL, Cookston et al., 2007); Collaborative Divorce Project (CDP, Pruett et al., 2005); Kids in Divorce & Separation (K.I.D.S., Shifflett & Cummings, 1999); Mentalization, Hertzmann et al., 2016).

2. All of these interventions originated from the United States, with 'Mentalization' also having UK evidence.
3. Two programs took a skills training approach (DfL, CDP). One took a psychoeducational approach (K.I.D.S).
4. All interventions were underpinned by evidence from RCTs, and pre-postassessment.
5. Evidence indicates positive effects, with interventions reducing interparental conflict and parental distress, and improving communication.
6. Evidence also indicates reductions in child emotional and behavioral problems in addition to improvements in cognitive functioning.

Programs that focus on interparental conflict/ domestic violence

Five programs had a core focus on conflict within the interparental relationship in the context of domestic violence (see text box), the majority of which again originated from the United States. Evidence was underpinned by RCTs or pre-postdesigns and indicated improvements in communication and conflict resolution skills (Strengthening Relationships, Toews & Yazedjian, 2010; Young Parenthood Program, YPP, Florsheim et al., 2012), and improvements in child adjustment (En nu ik...! It's my turn now, Overbeek, de Schipper, Lamers-Winkelmann, & Schuengel, 2012; Child Parent Psychotherapy, CPP, Lieberman, Van Horn, & Ippen, 2005) with small to moderate effects sizes (where possible to estimate). Seven programs were also identified that had a parenting focus with a couple component in the context of domestic violence (see Table S1 for details), the majority of which were also developed in the United States. Interventions were primarily underpinned by evidence from pre-postdesigns and indicated improvements in father's parenting and coparenting skills (Caring Dads, Scott & Crooks, 2007; Early Start, Fergusson, Grant, Horwood, & Ridder, 2005; Systematic Training for Effective Parenting, STEP, Fennell & Fishel, 1998; Fathers for Change, Stover, 2015), as well as reduced aggression and injury (Early Start, Fergusson et al., 2005; RETHINK, Fetsch, Schultz, & Wahler, 1999; Fathers for Change, Stover, 2015). Overall, where possible to estimate, effect sizes (on parenting and child outcomes) were small to medium (see examples below).

Programs that focus on domestic violence

1. Five programs had a core focus on conflict within the interparental relationship ['En nu ik...! It's my turn now...!', Overbeek et al., 2012; Strengthening Relationships, Toews & Yazedjian, 2010;

Young Parenthood Program (YPP, Florsheim et al., 2012); Couples Therapy for Intimate Partner violence, Karakurt, Whiting, Esch, Bolen, & Calabrese, 2016; Child Parent Psychotherapy (CPP, Lieberman et al., 2005)].

2. The majority of programs originated from the United States with one program originating from the Netherlands ('En nu ik...! It's my turn now...!').
3. One took a psychoeducational approach ('En nu ik...! It's my turn now...!'), one took a psychoeducation and skills training approach (Strengthening Relationships), with the remaining programs taking counseling approaches.
4. Evidence quality: three programs were underpinned by evidence from RCTs – ('En nu ik...! It's my turn now...!', Young Parenthood Program, CPP). Two programs were underpinned by evidence from pre-postdesigns (Strengthening Relationships, Couples Therapy for Intimate Partner violence).
5. Evidence indicates positive effects, with interventions demonstrating improved communication and conflict resolution skills (Strengthening Relationships), decreased parenting stress ('En nu ik...! It's my turn now...!'), as well as improved coparenting (YPP) and parent-child relationships (CPP). Couples therapy showed some reduction in perpetrator violence.
6. One program also evidenced reductions in child emotional and behavioral problems as well as posttraumatic stress symptoms ('En nu ik...! It's my turn now').

Caveats and potential limits of the intervention evidence reviewed

It is important to acknowledge several potential limitations of the review of intervention evidence presented. First, the programs listed derive from a rapid review of evidence-based programs. If a more comprehensive set of search terms and databases had been used, a larger set of interventions may have been identified. In addition, the review focused on peer-reviewed published literature and therefore there is the possibility of publication bias in locating program evidence (i.e. professional journals are more likely to accept studies that report significant effects over nonsignificant or weaker effects). Therefore, there may be evaluations that did not find positive results and were consequently not published. However, a number of interventions involved random assignment to treatment and control conditions, providing support for the relevance of targeting the interparental relationship on child outcomes in the context of intervention studies (Cowan & Cowan, 2002), with most evidence demonstrating small-medium effects on couple relationship quality, parenting, and child outcomes. Second, although where possible to evaluate, most programs demonstrated small to medium effect sizes, not all studies provided information to allow effect size estimation (e.g.

the Strengthening Relationships program provides evidence from focus groups and narratives). In addition, different programs have different follow-up periods, and have different levels of intensity of intervention making it difficult to directly compare findings. It is also important to consider that the programs reviewed were designed for specific populations/contexts (e.g. separation/divorce; transition to parenthood) and that different populations will have different needs. Notwithstanding these limitations, our review of programs designed to improve the couple and interparental relationship and related processes highlights that targeting these processes can remediate the negative effects of interparental conflict on child adjustment. Specifically, programs that target conflict management and communication for couples can lead to associated improvements in parenting (even when parenting skills are not directly targeted), as well as improve outcomes for children. Targeting key transitions (e.g. becoming a parent; transition to school) can be beneficial. In addition, programs that specifically target the interparental relationship in high-risk contexts (e.g. divorce, domestic violence) suggest improved outcomes for children.

Overall, research findings derived from the interparental conflict–child adjustment literature (experimental, cross-sectional, longitudinal, and intervention studies) provide valuable insight into the effects of family stress marked by interparental conflict on children that go beyond simply describing what happens when children are exposed to discordant relations between parents, to highlighting the familial and individual processes through which children are adversely affected. While most currently available interventions recognize the importance of the interparental/couple relationship as a source of influence on the parent–child (and coparenting) relationships, few presently incorporate consideration of the interparental/couple relationship as a direct source of influence on children (even when parenting practices are supported), with fewer still acknowledging the importance of the child's perspective (attributions, emotions) in explaining the impact of conflict between parents on their well-being. Measuring these mediating processes (e.g. parenting processes, child-centered mechanisms) is also an essential next step in the context of intervention studies if reliable program-aligned outcomes are to be examined. Interventions targeting the effects of family stress on children (e.g. family economic pressure, negative parenting, poor parent mental health, parental separation-divorce, domestic violence) where interparental conflict is a feature may therefore need to be revised in light of this evidence base and a debate commenced concerning how best to translate such research findings into policies and practices aimed at easing family stress effects on children – both for the benefit of the present generation of children living in households where interparental conflict is a feature and the next generation of families that these children comprise.

Moving from research and intervention evidence to policy engagement: the challenge of translation

A primary (and increasingly important) objective of research relating to family process influences on youth psychopathology is the effective translation of research into transferable policy applications. While a great deal of rhetoric is directed toward the impact agenda of research (converting research findings to real world contexts), particularly in relation to engaging with policy makers, one fundamental objective/target underlies policy makers interest in and engagement with research – cost savings. A compelling evidence base is presented in this review that children of all ages who witness frequent, intense, and poorly resolved conflicts between parents/carers are at elevated risk for multiple poor outcomes. Linked to these outcomes are substantive costs for a range of services and interventions, such as early health support (health visitor/social care provision), education (elementary, primary, secondary), health/medical services (primary, secondary, and tertiary care), social services (across all ages), employment (early training and long-term benefit costs), crime and justice (criminality, prisons), and family and relationship support services. Using recent policy linked developments in the United Kingdom as an example, we present a possible cost–benefit framework as a final feature of our review aimed at presenting and evidencing the policy-based case for early intervention at the level of the interparental relationship with the objective of improving long-term outcomes for youth.

Estimated fiscal costs in the United Kingdom (and replicated internationally, e.g. see <https://www.nami.org/Learn-More/Mental-Health-By-the-Numbers>) for several of the primary outcome domains reviewed in this paper have been highlighted in recent reports (e.g. annual costs for: mental health, £70–100 billion, Davies, 2013; domestic violence, £16 billion, Walby, 2009; worklessness/unemployment, £12–32 billion, Coles, Godfrey, Keung, Parrott, & Bradshaw, 2010). While each of these separate domains of fiscal cost is individually substantial, it is recognized that these cost domains likely overlap. For example, it is recognized that the interplay between early risks (such as interparental conflict) and long-term outcomes for children most likely involve multiple pathways or cascading processes, which if left to develop uninterrupted, accumulate; generating greater cumulative adverse outcomes and associated costs (Masten & Cicchetti, 2010). Collectively, these processes serve to substantially reduce individual life quality and underpin substantial costs to society.

Building on the theoretical pathways and processes outlined in Figure 1, a cost–benefit model is presented in Figure 2 that aims to chart how interparental conflict affects youth outcomes and how accumulating costs may be avoided through early interparental

relationship support (intervention program implementation). Specifically, interparental conflict is recognized as a factor common to multiple costly domains of adult support and intervention service (e.g. domestic violence, depression/mental health, substance misuse, relationship breakdown/divorce). Furthermore, interparental conflict is recognized as a factor that undermines children’s early cognitive/emotional/neurobiological development (child-centered processes) and wider family relationships (e.g. parent-child relationships; family system processes), which are in turn associated with multiple poor outcomes for youth. Using this framework, it is possible to trace cost-based processes from interparental conflict through to long-term outcomes (e.g. interparental relationship support mediates interparental conflict, leading to reduced poor parenting practices, which in turn may lead to reduced child conduct problems, thereby promoting improved academic attainment, and future health, employment and extended outcomes; see Figure 2). Cascading/cumulative costs of interparental conflict may be estimated by working through a specific pathway, taking into account the potential magnitude of association (effect size) for each link/pathway in the model, and using existing information on the costs attached to specific outcome domains (e.g. mental health, education). Building from this framework and using the scientific evidence presented throughout this review and the ‘logic model’ that may be generated in

advocating for support programs that reduce the long-term (downstream) negative impacts of interparental conflict on youth outcomes through early (upstream) intervention program implementation targeting interparental relationship conflict, the UK Government has recently commissioned a substantial program of investment (>£40 million) aimed at building front-line practitioner capacity to deliver programs that support the interparental relationship with the objective of improving outcomes for children and adolescents, with a particular policy focus on families that experience economic disadvantage (https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/621365/improving-lives-helping-workless-families-print-version.pdf). Uniquely, this government policy program is among the very first in the United Kingdom (and internationally) to recognize the salience of the interparental *relationship* (as compared to a primary focus on the marital status of parents) as a starting point in directing relevant supports aimed at improving outcomes for youth.

The importance of building front-line practitioner capacity to identify and assess interparental conflict effects on children and adolescents

An essential first step to advancing cost-benefit objectives borne out of targeting early interparental

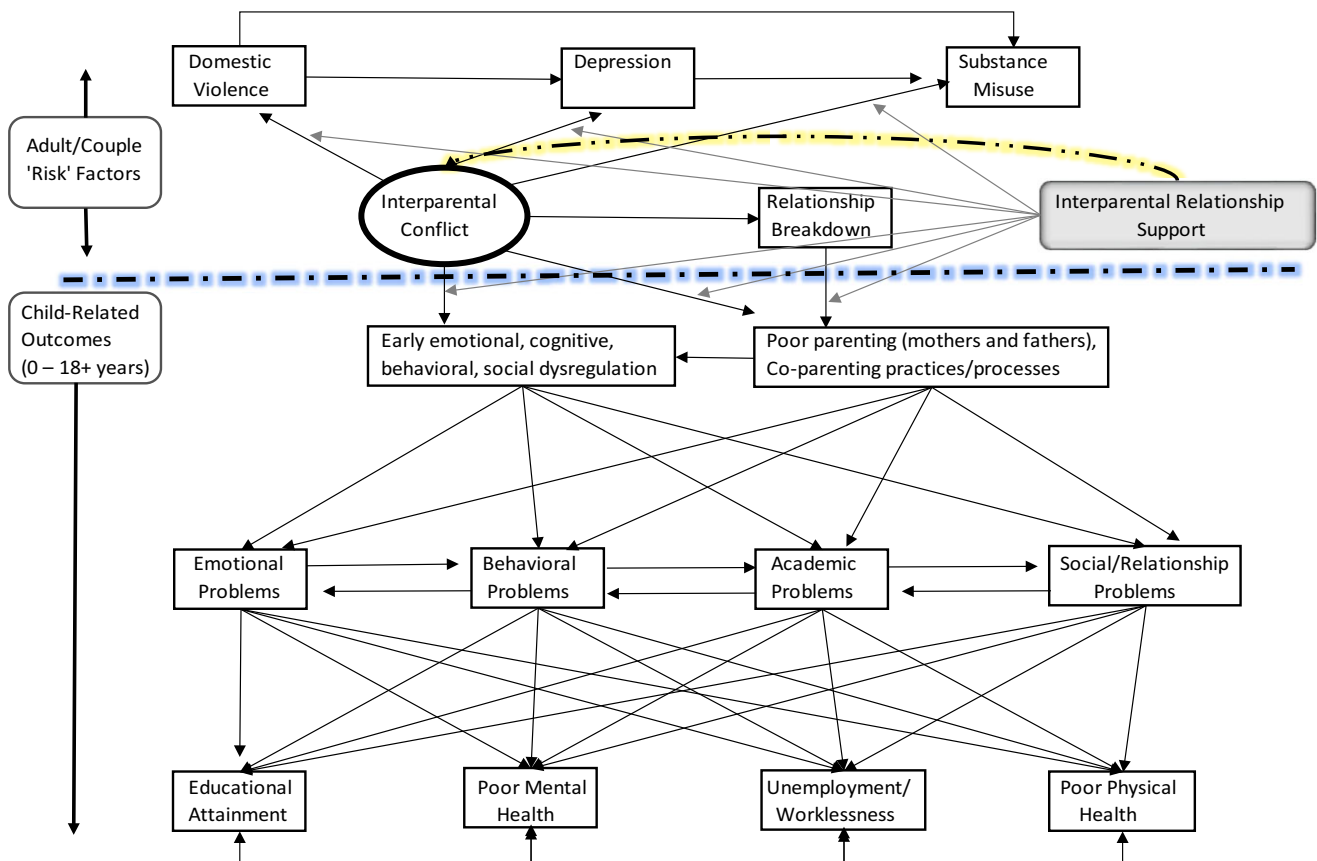


Figure 2 A cost-benefit cascade model of interparental conflict effects on outcomes for children (0-18 years) [Colour figure can be viewed at wileyonlinelibrary.com]

relationship support aimed at improving long-term outcomes for youth is to recognize the need for training and capacity building among front-line professionals and providers of intervention and related support services that target vulnerable parents and children. Presently, a majority of family-focused services in the United Kingdom and internationally emphasize parenting or individual adult/child focused programs (with requisite assessment protocols), with little or no systematic attention directed toward the interparental/carer relationship (see Cowan & Cowan, 2008). In order to address this dearth, front-line practitioner training and capacity building needs to facilitate and promote a renewed focus on the assessment of the interparental relationship, which may add to and complement existing evidence-based programs aimed at supporting vulnerable families and children (including parenting programs). Specifically, front-line practitioners (e.g. social workers, family and child counselors, medical professionals, teachers) who have early opportunity to identify parents/carers at risk of experiencing interparental conflict that poses a risk for child outcomes would benefit from training in the use of standardized assessment resources that allow quantitative profiling of interparental relationship quality. For example, standardized measures that quantify levels of interparental conflict and discord (e.g. Quality Marriage Index, Norton, 1983; Conflict Tactics Scales, Straus, Hamby, Boney-McCoy, & Sugarman, 1996), parenting and coparenting practices (Parent Behavior Inventory, Lovejoy, Weis, O'Hare, & Rubin, 1999; Parenting Alliance Measure, Abidin & Brunner, 1995), and child, adolescent mental health and related outcomes (Strengths and Difficulties Questionnaire, Goodman, 2001; Symptom Checklist Revised, Derogatis, 1992) may be ascertained prior to referral to/implementation of a specific intervention/support program. This would allow more robust/reliable assessment of the impact of any such program on aspects of adult, couple, parent, family, and child function (e.g. pre-postassessment). As highlighted in our rapid review of intervention/support programs, several programs demonstrate positive effects on child outcomes, as well as improved parenting and coparenting practices when interparental relationship support is targeted early. Front-line practitioner training in this area is of paramount importance to promoting a robust future evidence base specific to program implementation and ultimately the generation of more reliable program effects and estimates of future/expected cost-benefits associated with programs aimed at improving outcomes for children (and future generations) who experience interparental conflict.

Summary and conclusions

The primary objective of this review was to provide a comprehensive overview of research highlighting

the role of the interparental relationship for children's development and psychopathology, locating this evidence relative to past research focusing on divorce and domestic violence effects on children. Specifically, the review highlights that frequent, intense, poorly resolved, and child-related interparental conflict adversely affects long-term emotional, behavioral, social, academic development, and future intergenerational/interpersonal relationship behaviors for youth. An integrative multiple complementary domains of research specific to examining interparental conflict effects on children with the objective of illuminating cascading (e.g. family systems and child-centered) processes through which children's mental health outcomes are placed at risk as a result of discordant interparental conflict. Intervention evidence is reviewed, noting that while there is a growing body of international evidence that indicates positive impacts on child outcomes by supporting the interparental relationship, the state of intervention evidence in this area remains at a relatively early stage of development (particularly in the United Kingdom). Building on the research and intervention evidence presented, a cost-benefit model and case for early intervention and related practitioner training in remediating the cascading costs of interparental conflict on child outcomes (within and across generations) is presented.

Supporting information

Additional Supporting Information may be found in the online version of this article:

Figure S1. PRISMA diagram specific to intact households.

Table S1. Synopsis of intervention evidence with programs targeting the interparental relationship, and parenting programs with a couple component in the context of (1): intact households (partners/couples); (2) Divorce; (3) Domestic violence.

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Key points

- Interparental conflict adversely affects children's emotional, behavioral, social, academic, and intergenerational relationship development.
- Multiple cognitive, emotional, neurobiological, psychophysiological, and family relational processes operate to explain the adverse impacts of interparental conflict on children.
- Interparental conflict affects children across a spectrum of adult relationship behavior, spanning a 'silence to violence' continuum.
- Family-focused intervention programs that target parent-child processes in the context of acrimonious interparental conflict may have limited long-term impacts on child psychopathology and related outcomes.
- Intervention programs that target interparental conflict at the level of the interparental relationship may pay significant long-term dividends in reducing multiple costs associated with poor child mental health and extended outcomes.

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