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**Family Processes and Child Mental Health:  
Unpacking Nature from Nurture**

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**Thesis submitted for the degree of Doctor of Philosophy**

**University of Sussex**

**School of Psychology**

**September 2018**

## **Declaration**

I hereby declare that this thesis has not been and will not be submitted in whole or in part to another University for the award of any other degree.

Signature:.....

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## Co-authoring empirical papers/reports of relevance to this thesis

The following papers comprise chapters 3 and 4 of the present thesis and have been prepared for submission to the following journals:

**Smith, A. F.,** Sellers, R., Harold, G. T., Neiderhiser, J. M., Reiss, D., Shaw, D., Natsuaki, M.N., Leve, L. D. Interparental conflict, intergenerational transmission and child internalizing and externalizing problems: using an adoption design to examine maternal and paternal processes. *Journal of Applied Developmental Psychology*.  
[manuscript in review]

**Smith, A. F.,** Sellers, R., Harold, G. T., Neiderhiser, J. M., Reiss, D., Shaw, D., Natsuaki, M.N., Leve, L. D. Interparental conflict, parenting, coparenting and child mental health: Expanding understanding of the relative role of mothers and fathers. *Journal of the American Academy of Child and Adolescent Psychiatry*  
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The following publications do not form part of this thesis, but are either published, in press, under review or in preparation and are of relevance to the present thesis focus:

Sellers, R., **Smith, A. F.,** Leve, L. D., Nixon, L., Cane, T., Cassell, J. A., Harold, G. T. (in press, 2019). Utilising Genetically-Informed Research Designs to Better Understand Family Processes and Child Development: Implications for Adoption and Foster-Care Focused Interventions. *Adoption and Fostering*.

Sellers, R., **Smith, A. F.,** & Harold, G. T. (2018, January 30) Family relationship influences on youth mental health: Moving from evidence to implementation. [Blog post], Retrieved from <https://www.capita-one.co.uk/resources/blog/family-relationship-influences-on-youth-mental-health-moving-from-evidence-to>

Harold, G., Chowdry H, Arzilli F, Sellers R, **Smith A. F.** (2017). Reducing Societal Costs of Inter-Parental Conflict: Introducing a Cascade Model to Estimate Cumulative Cost Benefit Analysis (CBA).

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## Summary

This thesis aims to develop understanding of the relative role of mothers and fathers for children's psychopathology, with a primary focus on interparental conflict, maternal and paternal parenting, and the coparenting relationship. This is among the only research to use a multimethod, multi-informant, longitudinal adoption-at-birth design to assess these processes from early-to-middle childhood. The present thesis analyzed data from the Early Growth and Development Study (EGDS; Leve et al., 2007), a US-based study developed to assess family processes and children's development. The adoption-at-birth design allowed examination of environmental processes without the confound of common genes (Jaffee & Price, 2012). The present thesis examined  $N > 300$  intact mothers and fathers and their children from 2.5 years to 6 years using observational and parent-reported data. Study 1 examined whether interparental conflict, maternal depression and paternal depression influenced child internalizing and externalizing problems via mother-child and father-child hostility. Study 2 examined the relative role of mother hostility, father hostility and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Finally, study 3 examined whether distinct maternal and paternal parenting practices (hostility, harsh and inconsistent discipline, positive parenting) differentially mediated the relationship between interparental conflict and child internalizing and externalizing problems, and whether coparenting moderated these relationships. Each study also examined child-evoked effects on parenting and coparenting. Overall, findings showed interparental conflict to be important for child externalizing problems via father-child hostility, maternal and paternal parenting processes to be differentially related to child internalizing and externalizing problems, and early child behavior to evoke different parenting processes. Coparenting was not

associated with parenting or child outcomes, nor did it moderate associations, highlighting the need for changes in conceptualization and measurement of the coparenting relationship. Findings are discussed with regards to policy and practice implications.



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## **Chapter 1: General Introduction**

### **Thesis Overview**

Child mental health is a global concern; psychiatric disorders affect 13.4% of the child and adolescent population worldwide (Polanczyk, Salum, Sugaya, Caye & Rohde, 2015) and as much as 36.7% of western youth populations (Costello, Mustillo, Erkanli, Keeler & Angold, 2003). Developmental research recognizes that mental health problems do not have to reach the threshold for psychiatric diagnosis to negatively impact on children's lives (Rutter, 2013), and often examines broad internalizing (e.g., depression, anxiety) and externalizing (e.g., conduct problems, aggression) problems as indicators of child psychopathology (e.g., Harold, Elam, Lewis, Rice & Thapar, 2012; 2013; Gerard, Krishnakumar & Buehler, 2006). Research is increasingly shifting from an outcome focused perspective of child mental health to a process-oriented approach (i.e., understanding the processes that can lead to mental health problems). One key area of research is how family processes are implicated in child psychopathology (Emery, 1982; Minuchin, 1974; Harold & Sellers, 2018). Specific family processes linked to child psychopathology include the interparental and parent-child relationships (Conger & Conger, 2008; Cox & Paley, 1997; Minuchin, 1974). The intergenerational transmission of psychopathology (i.e., how mental health problems are passed from parents to children) is also recognized within research (Sellers et al., 2014), although there is limited examination of intergenerational transmission relative to other family processes (e.g., the interparental and parent-child relationships) for child psychopathology (Harold et al., 2011). Additionally, one specific family process that has received less attention is the coparenting relationship, which is defined as the way in which two parental figures relate to each other in their childrearing roles (Feinberg,

2002; 2003). Whilst multiple theories exist to explain how family processes (interparental conflict, parent-child relationships and coparenting) contribute to child psychopathology (Cox & Paley, 1997; Feinberg, 2003; Minuchin, 1974), there is limited understanding of their relative contribution to child mental health. Moreover, although research is increasingly recognizing that fathers play a key role in children's development (Cabrera, Volling & Barr, 2018; Lamb, 2004), research examining the relative contribution of mothers and fathers to child mental health remains sparse, particularly longitudinally across early-to-middle childhood. Furthermore, research examining family processes and child psychopathology is primarily conducted with genetically related parents and children, meaning associations between parents and children may be attributable to common genes. However, an adoption design allows the examination of genetically unrelated parents and children, meaning any significant associations between family processes and child mental health are unconfounded by common genes.

This thesis aims to develop understanding of family processes and child psychopathology, employing a process-oriented approach to examine the relative role of interparental, maternal, paternal and coparenting processes for child internalizing and externalizing problems from early-to-middle childhood (from 2.5 to 6 years) using a longitudinal adoption-at-birth design. Study 1 examines the relative contribution of interparental conflict, mother depression and father depression to child internalizing and externalizing problems indirectly via both mother-to-child and father-to-child hostility, to provide insight into the relative role of mothers and fathers for child mental health. Study 2 examines the relative role of coparenting, mother hostility and father hostility as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Study 3 examines the relative contribution of specific

maternal and paternal parenting practices (hostility, positive parenting and discipline practices) and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, in addition to examining whether coparenting moderates any associations between these family processes and child mental health. Each study also considers the role of child-evoked effects on parenting and/or coparenting.

It is important to note that throughout this thesis, the term “predict/-or/-ed” is used in reference to statistically significant associations between two variables in an inferred direction (for example, “interparental conflict has been shown to predict subsequent parenting”). This reflects language of the statistical methodologies employed throughout the literature and present analyses (linear models) and is not used to refer to prediction in a clinical epidemiological frame of understanding.

To provide a context to publications produced throughout the course of the PhD (indicated on page iii) relative to the core components of present thesis, it is important to note that additional publications serve to provide a literature background of direct relevance to the present thesis. The Adoption and Fostering paper is of direct relevance to the study design used throughout the present thesis (adoption-at-birth design), highlighting existing literature that uses novel research designs to disentangle genetic and family environmental contributions to child mental health and development, thus providing a literature background that has been incorporated into the “Disentangling Genetic and Environmental Contributions to Child Mental Health” section of the general introduction (p. 59). All additional publications provided unique opportunities to develop an understanding of broader literature and practices relating to the specific family processes examined in the present thesis (interparental and parent-child

relationships) and child mental health. These publications were prioritized over and above publishing the individual empirical chapters presented in the present thesis to adhere to the protocol of the Early Growth and Development Study (who provided the data used throughout the thesis), which outlines that individuals may only contribute to articles submitted for publication as first author after being awarded a PhD. The chapters will therefore be submitted for publication subsequent to the approval of final corrections. I developed the research questions and completed all analyses and written components of my thesis, but named co-authors are principal investigators of the Early Growth and Development Study or my PhD supervisors and have contributed to the development of the papers for publication. The empirical chapters of the thesis have been written in publication format to allow for prompt submission to journals after thesis submission and approval.

## **Chapter Overview**

This chapter outlines symptoms, prevalence and outcomes associated with child psychopathology, discusses psychopathology ranging from low-level symptomatology through to diagnosis and outlines how psychopathology can be categorized as internalizing or externalizing problems. The chapter then provides an historical overview of relevant developmental theories and frameworks for examining family processes and child psychopathology. Historical perspectives on the relationship between interparental conflict and child psychopathology are then discussed, before presenting a literature review outlining the current understanding of the role of interparental conflict, the parent-child relationship, the coparenting relationship and parent depressive symptoms for child psychopathology. Throughout the chapter, limitations of existing literature will be highlighted in relation to the aims of the present

thesis. There is then a discussion on challenges to research designs that attempt to examine relative genetic and environmental contributions to children's development (i.e. twin, siblings reared apart and children of twin designs), an outline of the strengths of using an adoption-at-birth design, and a brief discussion of findings from existing research using the adoption design. The strengths of using a longitudinal, multimethod, multi-informant approach in family process and child psychopathology research are then discussed before outlining a summary of the aims of each study in the present thesis. The following section outlines symptoms and categorizations of mental health problems, the prevalence of child psychopathology and outcomes linked to child psychopathology, to provide a background for understanding the outcomes of interest in the present thesis and to provide a rationale for the core aim of the present thesis – to develop understanding of family processes implicated in child psychopathology.

### **Child Psychopathology**

Child mental health is an increasing global health concern; the global prevalence rates of psychiatric disorder in childhood and adolescence has been shown to be 13.4% (Polanczyk et al., 2015), whilst prevalence rates in Western cultures are as high as 36.7% (Costello et al., 2003). Although research often examines mental health in later childhood and adolescence (Costello, Copeland & Angold, 2011), research suggests that a substantive number of children experience mental health problems from early childhood; for example, Bufferd, Dougherty, Carlson, Rose and Klein (2012) found 27.3% of children aged 3 years met the criteria for any psychiatric diagnosis, and that diagnoses remained stable over a 3-year period. Children with a psychiatric diagnosis in childhood are three times more likely to have diagnosis in adolescence (Costello et al., 2003), demonstrating high continuity of psychiatric disorder from childhood to



adolescence. Research has also shown high continuity in psychopathology from childhood to adulthood (Hoffstra, van der Ende & Verhulst, 2002; Copeland, Shanahan, Costello & Angold, 2009). Furthermore, child psychopathology incurs substantive costs to society through public service use, specifically increased health, social and education costs (Snell et al., 2013).

People can experience a range of mental health problems, including emotional problems (depression, anxiety), behavioral problems (conduct problems, aggression), psychotic disorders (schizophrenia) and neurodevelopmental disorders (Autism, Attention Deficit Hyperactivity Disorder). It is recognized that mental health problems can range from low-level symptoms to psychiatric diagnosis, and research often examines the severity of symptoms on a continuum as opposed to the presence or absence of diagnosis (Harold, Acquah, Sellers & Chowdry, 2016), finding early maladaptive behaviors (that do not reach the threshold for diagnosis) to predict increased likelihood of psychiatric disorder in adulthood (Caspi, Moffitt & Newman, 1998). Psychopathology symptoms are often examined under three broader categories of mental health problems; internalizing (e.g., depression, anxiety) and externalizing problems (e.g., conduct problems, aggression), and neurodevelopmental disorders (ADHD, autism). Although the present thesis focuses on child internalizing and externalizing problems, it is important to recognize that there are a range of developmental outcomes linked to internalizing and externalizing problems that are also associated with negative outcomes through the lifespan, including sleep problems, cognitive development/academic attainment, neurodevelopmental problems and physical development. The characterizations, prevalence and impact of child internalizing and externalizing problems and related developmental outcomes are discussed below.

## Externalizing Problems

Externalizing problems represent behaviors displayed outwards, such as aggression, poor impulse control, disruptive behavior and conduct problems (Achenbach, 1990; American Psychiatric Association, 2013; Samek & Hicks, 2014). Several psychiatric disorders are classified as externalizing disorders; these include Conduct Disorder (CD), Oppositional Defiant Disorder (ODD) and Antisocial Behavior Disorder (American Psychiatric Association; APA, 2013). Prevalence of these disorders ranges from 1-11% (APA, 2013). Childhood externalizing problems have been linked to a variety of negative outcomes in later childhood and adolescence, including substance use (King, Iacono & McGue, 2004; Prinstein & La Grecca, 2004; Reinherz, Giaconia, Hauf, Wasserman & Paradis, 2000), risky sexual behavior (Prinstein & La Grecca, 2004), internalizing problems (Mazza et al., 2009; Slemming et al., 2010), and lower academic attainment (Harold, Aitken & Shelton, 2007; Masten et al., 2005). Evidence has also shown early externalizing problems to predict poorer social functioning and increased economic problems in adulthood (Colman et al., 2009), in addition to poorer subsequent mental health (depression, antisocial personality disorder, substance-related disorders; Copeland et al., 2009). Individuals displaying high levels of aggression in childhood have also been shown to engage in poorer parenting practices as parents (Serbin, Moskowitz, Schwartzman & Ledingham, 2013). Childhood aggression/antisocial behavior is also a predictor of later criminality (Copeland, Miller-Johnson, Keeler, Angold & Costello, 2007; Farrington, 2001; Lescheid, Chiodo, Nowicki & Roger, 2008; Liu, 2004). Furthermore, the use of public services due to childhood behavior problems and associated outcomes incurs substantive costs to society (Scott, Knapp, Henderson & Maughan, 2001); for example, the cost of conduct disorder is estimated at £5569.32 per child over a 3-year period (Snell et al., 2013).

## **Internalizing Problems**

Internalizing problems represent inward manifestations of behaviors such as depressive symptoms, anxiety, withdrawal and somatic complaints (Achenbach, 1990; APA, 2013). Depressive disorders are characterized by the presence of sadness and empty or irritable mood, in addition to cognitive and somatic changes that impair individuals' functioning (APA, 2013). There are multiple depressive disorders, including major depressive disorder, persistent depressive disorder, substance/medication-induced depressive disorder, and depressive disorder due to another medical condition (APA, 2013). Anxiety disorders are characterized by a fear of an imminent threat or anticipation of future threat that is excessive or persists beyond developmentally appropriate periods (APA; 2013). Anxiety disorders include Separation Anxiety Disorder, Selective Mutism, Specific Phobia, Social Anxiety Disorder, Panic Disorder, Agoraphobia and Generalized Anxiety Disorder (APA, 2013). Individuals can display internalizing problems ranging from low level symptomatology, through to psychiatric diagnosis, and in the extreme, suicidality (Harold & Sellers, 2018). Research demonstrates that children can experience internalizing symptoms from early childhood. For example, Cartwright-Hatton, McNicol and Doubleday (2005) found prevalence rates for anxiety in children below 12 years of age to range from 2.6% to 41.2%. Depression has also been evidenced in children under six years (Luby, 2010). Early internalizing problems have been shown to increase risk for multiple negative outcomes in adolescence, including substance misuse (Leve, Harold, Ryzin, Elam & Chamberlain, 2012), depression (Dekker et al., 2007; Reinherz et al., 2000; Pine, Cohen, Cohen & Brook, 1999), aggression (Aronen & Soininen, 2000) and poorer academic and social development (Verboom, Sijtsma, Verhulst, Penninx & Ormel, 2014). Childhood internalizing problems have been associated with psychiatric

diagnoses in young adulthood (Copeland et al., 2009) and an increased likelihood of suicide attempts (Harrington et al., 1994). Moreover, individuals experiencing internalizing disorders have a particularly increased likelihood of medical service use (Angold & Costello, 2001), meaning depression is considered to be a large economic burden on society (Lynch & Clarke, 2006), with costs estimated at £3495 per individual over a 3-year period through healthcare, social care and education services (Snell et al., 2013). Furthermore, depression has been shown to account for 4.4% of disability adjusted life years (Ustun, Ayuso-Mateos, Chatterji, Mathers & Murray, 2004).

### **Outcomes Related to Child Internalizing and Externalizing Problems.**

**Neurodevelopmental disorders.** Neurodevelopmental disorders typically develop in early childhood and are characterized by behavioral deficits that result in impairments in multiple aspects of functioning, including personal, social, academic and occupational functioning (APA, 2013). Two examples of neurodevelopmental disorders are Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder. ADHD is characterized by inattention, impulsivity/hyperactivity and disorganization. Autism spectrum disorder is characterized by social impairments, including impairments with verbal and non-verbal communications within social interactions, difficulty developing, understanding and maintaining social relationships and the presence of restrictive, repetitive patterns of behavior/activities. ADHD symptoms have been associated with a range of negative developmental outcomes, such as poor academic attainment, higher comorbid externalizing problems (e.g., conduct problems or disorder), difficulties in social relationships and greater emotional problems (Barbaresi et al., 2007; Barkley, 2002; Rodriguez et al., 2007; Wehmeier, Schacht & Barkley, 2010; Wehmeier, Thapar & van Goozen, 2018). Symptoms of autism have

been associated with psychosis, internalizing and externalizing problems, physical health problems and higher mortality (Seltzer, Shattuck, Abbeduto & Greenberg, 2004).

**Sleep problems.** Sleep patterns in early childhood are important for brain development and the regulation of neurobiological processes (Dahl & El-Sheikh, 2007; Harold & Sellers, 2018). Sleep problems are characterized by difficulty in initiating or maintaining sleep and have been shown to emerge in early childhood and persist into later development (Gregory & Sadeh, 2016; Sadeh, Keinan, & Daon, 2004). Sleep problems in early childhood have been associated with greater internalizing and externalizing problems in later childhood and adolescence (Siversten et al., 2015; Quach, Nguyen, Williams & Sciberras, 2018), and have been implicated in cognitive and academic development (Curcio, Ferrara & Gennaro, 2006; Touchette et al., 2007).

**Cognitive and Academic Development.** Cognitive development refers to the development of thought-processing capacities, including emotion regulation and executive functioning (working memory, inhibitory and attentional control; Nelson, Thomas & de Haan, 2012). Early cognitive development is linked to subsequent internalizing and externalizing problems (Ghassabian et al., 2014; Woltering, Lishak, Hodgson, Granic & Zelazo, 2016), and has been shown to predict subsequent academic development (Sasser, Bierman & Heinrichs, 2015). Academic development covers a range of academic outcomes, including academic attainment (i.e., grades achieved; Harold et al., 2007), classroom conduct (Erath & Bierman, 2006), attitudes towards school and performance (Chen, 2017), relationships with teachers (Burchinal, Peisner-Feinberg, Pianta & Howes, 2002), general school adjustment (Carbonneau, Boivin, Brendgen, Nagin & Tremblay, 2016; McCoy, George, Cummings & Davies, 2013) and peer relationships/social competence in a school setting (Jia, Kotila & Schoppe-Sullivan, 2012). Multiple aspects of academic development have been associated with

internalizing and externalizing problems, including poor academic attainment (Harold et al., 2007; Kristoffersen, Obel & Smith, 2015; Wang, Chow, Hofkens & Salmela-Aro, 2015), social competence in the classroom (Jia et al., 2012), and general school adjustment difficulties (Riglin, Petrides, Frederickson & Rice, 2014; Wang, Xia, Wilson, Bush & Peterson, 2016).

**Physical Development.** There are multiple aspects of physical development that can be examined as indicators of poor development; somatic complaints such as headaches and abdominal pain (Stiles, 2002), reduced physical growth (Montgomery, Bartley, & Wilkinson, 1997), fatigue and physical illness (El-Sheikh, Harger, & Whitson, 2001), and biological markers of dysregulated stress responses and neurotransmitter dysfunction (Troxel & Matthews, 2004). Additionally, maladaptive behaviors linked to physical development can be examined such as smoking, substance misuse and early sexual activity (Glendinning, Shucksmith, & Hendry, 1997; Repetti, Taylor, & Seeman, 2002). Physical health problems are associated with internalizing and externalizing problems (El-Sheikh et al, 2001; Hammer-Helmich et al., 2016), as well as poorer academic attainment (Haas & Fosse, 2008).

**Comorbidity and co-occurring mental health problems.** Internalizing and externalizing problems often do not occur in isolation; research has shown high correlations between internalizing and externalizing problems (Coln, Jordan & Mercer, 2013; Kane & Garber, 2009; Pesenti-Gritti et al., 2008; Schacht, Cummings & Davies, 2009; Shelton & Harold, 2008), as well as evidencing high comorbidity between internalizing and externalizing disorders (Cosgrove et al., 2011). For example, Nock, Kazdin, Hiripi and Kessler (2007), found that 92.4% of individuals with ODD also met the criteria for additional psychiatric diagnosis, including anxiety, mood disorders and substance use disorders. As outlined above, internalizing and externalizing problems are

also associated with neurodevelopmental disorders, sleep problems and poor academic attainment, further demonstrating how mental health problems can co-occur with a range of developmental problems. Furthermore, research suggests that individuals with comorbidity are at an increased risk for negative outcomes than those with just one diagnosis; for example, Copeland et al. (2007) found that individuals with comorbid internalizing and externalizing problems had an increased likelihood of committing severe or violent criminal offences. Those with comorbid disorders are also more likely to experience a slower recovery (Nock et al., 2007).

The research presented thus far outlines how child internalizing and externalizing problems have been linked to a variety of negative outcomes through adolescence and adulthood (Harold et al., 2007; Copeland et al., 2009), and incur significant costs to society (Snell et al., 2013). Research is therefore increasingly taking a process-oriented approach to child mental health, and demonstrates that family processes, such as the interparental relationship and the parent-child relationship, are important for child psychopathology. Poor interparental and parent-child relationships have been linked to internalizing and externalizing problems (Harold et al., 2011; 2012; 2013; Keller, Cummings & Davies, 2005), ADHD symptoms (Lifford, Harold & Thapar, 2009; Ullsberger, Nigg & Nikolas, 2016), sleep problems (Mannering et al., 2011; Kelly & EL-Sheikh, 2001), academic attainment (Harold et al., 2007) cognitive development (Jouriles, McDonald, Mueller & Grych, 2012), social skills/peer relationships (Finger, Eiden, Edwards, Leonard, & Kachadourian, 2010; Hosokawa & Katsura, 2017) and physical health (El Sheikh., 2011; Repetti, Taylor & Seeman, 2002; Troxel & Matthews, 2004). Developing understanding of how family processes can influence child psychopathology can allow the identification of areas that can be targeted with intervention to improve outcomes for children. The following section

provides a chronological overview of theories that have led to the development of research examining family processes and child psychopathology.

## **Historical Overview of Theories of Relevance to Process-Oriented Research and Child Psychopathology**

### **Psychodynamic Theories**

The psychodynamic approach was developed by Sigmund Freud (1938) to provide an explanation for personality development and psychopathology. Freud outlined three major components of personality that vary in levels of consciousness; the id, ego and superego. The id represents the most primitive part of personality containing basic reflexes and drives which serve the purpose of maximizing pleasure. The id is regarded as the unconscious component of personality where repressed desires and thoughts lie. The ego is regarded as the agency component of personality that processes reality and regulates impulses to aid survival. The superego is another agency component of personality, but is thought to regulate impulses based on moral decisions rather than survival and operate via conscience and aspirations for the self.

Freud's psychodynamic approach centers on conflict of internal forces and repressed desires in individuals (Crain, 2016; Freud, 1920). Freud believed that individuals have innate instincts and drives underpinning their behavior which serve to preserve life, with a heavy focus on sexual drives (Freud, 1920, 1938). Freud outlined that children go through five stages of sexual development (the oral, anal, phallic, latency and genital stage). Within each of these stages, body parts that provide somatic functions (mouth, anus, genitals) become sexualized as a result of pleasurable sensations that accompany these somatic functions. Children's desire to fulfil sexual instincts can lead to conflicts with the external environment (e.g., parents), which



influences the form and expression of these sexual drives and impacts on development into adulthood (Freud, 1938; Pearce, 2003). When children experience conflict between their internal world and the external social world, behaviors are repressed, which can lead to subsequent fixation at any stage or regression to previous stages later in life (Crain, 2016). For example, during the anal stage, children can be conditioned to either continue or cease instinctive sexual behaviors based on praise or punishment responses from parents, which has consequences for psychopathology in adulthood (e.g., constraining parenting behaviors that prevent a child from obtaining pleasure through playing with feces in the anal stage may lead to obsessive behaviors around cleanliness in adulthood; Pearce, 2003; Stevens, 1983). More recent psychodynamic theorists posit that psychopathology arises when children's "self-object needs" are not met by positive responses in their environment, and that when their needs are denied, conflict remains between internal forces and the external world, meaning that needs are repressed and remain in primitive form rather than becoming part of the self, which then leads to disorder (Kohut, 2011; Pearce, 2003).

Freud believed that the only value of interpersonal interactions was to provide a role in satisfying sexually driven instincts. However, developing from Freud's initial approach, object relations theory was developed with a greater focus on how interpersonal relationships can influence personality development through providing a basis for self-structure, and that disruptions to this self-structure can lead to problems later in development (Kohut, 2011). Fairbairn (1954) believed that individuals' drives serve to seek satisfying relationships with others as opposed to being merely sexually driven, and that interactions with caregivers are of upmost importance for children's development. Fairbairn's (1954) position was that individuals develop from dependence on their caregiver to interdependence throughout their life, and that difficulties in

transitions and separations from caregivers can lead to psychopathology. Additionally, Winnicott (1971) proposed that individual growth to maturity is dependent on a facilitating environment provided by the caregiver. Just as psychodynamic theories recognize that individuals have innate drives that facilitate survival and that the social environment (including the relationship with a caregiver) can influence development, ethological theories, such as Bowlby's attachment theory (Bowlby, 1989) have been developed to explain the interaction between innate mechanisms and relationships with primary caregivers in impacting child development.

### **Ethological Theories**

The term ethology refers to the study of animal behavior, with the aims of ethology being to understand causation, function, evolution and development of animal behavior (Bolhuis & Hogan, 2017; Tinbergen, 1963). Ethological theories began when Darwin proposed the concept of natural selection; that animals adapt to survive in their environments, and only those who are strong enough to compete successfully reproduce, leading to adaptive behaviors being passed to the next generation (Crain, 2016; Darwin, 1859). Darwin recognized that a key to survival is adaptive social behavior, noting that those who successfully support each other within social groups are more likely to survive (Crain, 2016; Darwin, 1871). This concept has been developed in modern ethological theories. One key ethologist of historical relevance is Konrad Lorenz, who proposed that behavior adapts to fit within the environment, and that species' capabilities to adapt to the environment arise from either information stored within genes or as a result of interaction between the individual and its environment (Lorenz, 1965). One key component of the ethological perspective proposed by Lorenz is the concept of imprinting; the process through which early social preferences become

restricted to a stimulus as a result of exposure to this stimulus, resulting in proximity maintenance to the stimulus with which imprinting has occurred and avoidance of novel stimuli (Bolhuis & Hogan, 2017). Integral to the concept of imprinting is the idea of a “sensitive period”; a developmental window in which an individual is susceptible to imprinting. It is thought that this sensitive period is due to innate, developing physiological mechanisms. The concept of imprinting has led to the development of ethological theories to explain human development, such as Bowlby’s attachment theory.

### **Attachment theory**

The importance of the parent-child relationship was brought to the forefront of research with the development of Bowlby’s attachment theory (Bowlby, 1989), which was developed to explain behaviors of children separated from their mother during the Second World War and those who experienced institutional deprivation (Bolhuis & Hogan, 2017; Crain, 2016). Attachment theory outlines the importance of mother-child attachment for children’s development. The attachment theory was heavily influenced by the concept of imprinting, proposing that children have an innate predisposition to form an attachment with one primary caregiver as a source for survival, protection, and nurturance through proximity maintenance to the caregiver, and that attachment can only occur within a sensitive period (up to 5 years). An attachment figure provides a secure base from which the child can explore the world; a secure attachment is dependent on a parent’s caregiving and ability to provide a secure base. Three attachment types have been identified; secure, insecure avoidant, and insecure resistant. A securely attached infant will become distressed upon separation from the mother, inconsolable by a stranger and happy upon being reunited with the mother. A child with an insecure-resistant attachment will be distressed upon separation from the mother,

unable to be consoled and will both seek comfort and push the mother away upon reunion. Finally, an insecure-avoidant child will show little distress when separated from the mother and have no response when reunited with the mother. A secure attachment can only be developed during a sensitive period, aligning with traditional ethological theories of development (Bolhuis & Hogan, 2017).

Research has widely shown the importance of a secure attachment for children's subsequent development, but the continuity of attachment and its associated behaviors are somewhat dependent on the subsequent rearing environment (Sroufe, 2005). Bowlby (2012) recognized that broader parenting behaviors can be examined from the same theoretical standpoint as attachment and noted the importance of understanding how a parent's experiences can change how parenting behaviors manifest (e.g., experiences in the interparental relationship). Additional theoretical frameworks developing from attachment theory have also been proposed, specifying that family contextual factors (interparental relationships, financial resources) can influence caregiving behaviors, which in turn influence attachment and the development of subsequent romantic relationships/reproductive strategies (Belsky, Steinberg & Draper, 1991). Thus, whilst the attachment theory forms much of the basis for examining family relationships and children's development, the importance of examining factors beyond early caregiver-child attachment is recognized. The present thesis aims to examine the importance of both the mother-child and father-child relationships for children's development in the context of additional family processes (the interparental and coparenting relationships). Whilst attachment theories recognize the importance of the environment (specifically the attachment with a caregiver) for healthy development, a core component of attachment theory is the innate predisposition to form an attachment. In contrast, learning theories do not share beliefs that children have innate

predispositions driving their behaviors, but that children learn behaviors through their experiences in the social world.

## **Learning Theories**

Learning theories posit that behaviors are learned through experiences in the environment. Early concepts of learning theories were developed as a result of experiments conducted on animals, showing that animals can be conditioned to display certain behaviors after repeated exposure to a certain stimulus (classical conditioning; Pavlov, 1928), or conditioned to repeat behaviors based on whether behaviors are rewarded or punished (operant conditioning; Skinner, 1958). The concepts of classical and operant conditioning have been used to develop theories specific to child behaviors, such as social learning theories. The following section outlines the development of learning theories from a traditional behaviorist perspective through to modern learning theories used to explain child psychopathology (e.g., coercion theory; Patterson, 2016).

## **Behaviorist theories**

Modern behaviorist theories were developed through the work of Pavlov (1849-1936), who significantly contributed to the understanding of conditioned reflexes. Pavlov developed the concept of classical conditioning, which represents how behaviors can be conditioned after repeated exposure of a stimulus in pairing with another stimulus that elicits a certain response (e.g., a dog being conditioned to salivate at the ring of a bell after repeatedly hearing the ringing bell when presented with food; Crain, 2016; Pavlov, 1928). Developing from this, Watson (1924) applied the concept of classical conditioning to children's emotions, stating that children are conditioned to feel emotions such as love, anger and fear through their early experiences. Watson (1924) conducted an experiment on an infant orphan named Albert, showing that by

presenting aversive stimuli (such as loud noises) at the same time as a rat, Albert could be conditioned to fear the rat and other fluffy objects, providing an example of conditioned fear. The Pavlovian concept of classical conditioning therefore provided an initial behaviorist approach for child development, suggesting that children can be conditioned to elicit responses through exposure to stimuli.

Skinner (1958) expanded upon early behaviorist approaches, stating that early examples of classical conditioning are learned reflexes, and that rather than simply responding to their environments, individuals play an operant role in learning behaviors. After discovering that rats will continue to display a behavior (pressing a lever) when this behavior is met with a reward/positive response (food), Skinner developed the concept of operant conditioning. This concept outlines that individuals explore their environments and learn behaviors based on whether their behaviors lead to positive or negative consequences. Positive reinforcement refers to when individuals' actions are met with positive consequences (i.e., individuals' behavior is rewarded). Conversely, the concept of negative reinforcement refers to when individuals learn to not repeat behaviors as a result of behaviors being met with adverse consequences (i.e., punishment). The concepts of operant and classical conditioning have led to the development of multiple behaviorist theories explaining how children can learn behaviors, such as social learning theories.

### **Social learning theories**

Bandura's account of social learning theory outlines how children learn their behaviors through observations of important role models as opposed to personal experiences as suggested in traditional behaviorist approaches, and that children imitate the behaviors they observe. Bandura's (1971) social learning theory posits that there are

four stages of learning behaviors: 1) Paying attention to the behaviors of others around the individual; 2) retaining the information obtained through observations; 3) having the motor ability to imitate observed behaviors; and 4) imitated behaviors being positively reinforced. Social learning theory can be used to explain how observations of family members in the immediate environment can lead to different child developmental outcomes. For example, the concept of learning and imitating observed behaviors provides an explanation for how interparental conflict and parent-child relationships characterized by hostility can lead to a child imitating these behaviors by displaying externalizing symptoms. Thus, the social learning perspective warrants consideration when thinking about the influence of hostile family processes on externalizing problems, a particular focus of the present thesis. Two theories that provide more specific examples of social learning in relation to family processes (parenting) and child psychopathology are coercion theory (Patterson, 1976; 2016) and the double failure model (Masten & Cicchetti, 2010).

**Coercion theory.** One derivative of the social learning perspective is the coercion theory, developed by Patterson (1976; 2016). This theory outlines the coercive processes that lead to a cycle of negative behaviors between the parent and the child. The coercion theory proposes that when children respond negatively to undesirable requests from parents (e.g., acting in an aggressive manner in response to being asked to tidy a room) and when these negative responses are met with a positive outcome for the child (e.g., the parent relinquishing this demand), children learn that negative behavior leads to positive outcomes, resulting in the child continuing to display negative behaviors (Eddy, Leve & Fagot, 2001). In turn, a child's continued aggressive behavior will be frustrating for the parent, which will then lead to the parent behaving more negatively to the child (i.e., displaying more hostile and coercive parenting). This

hostile parenting will in turn lead to heightened behavior problems. Thus, the coercion theory captures the concept of positive reinforcement outlined by Skinner (1958) and Bandura (1971), whilst also recognizing a cascade of transactional effects between parent and child coercive behavior (Patterson, Forgatch & DeGarmo, 2010). The coercion theory has been used to provide an explanation of the development of aggressive behavior and criminality (Weisner, Capaldi & Patterson, 2003), in addition to the intergenerational transmission of coercive family processes and psychopathology, outlining how coercive interactions between parents and children that result in aggressive/coercive developmental trajectories can in turn lead to hostile/coercive parenting behaviors when the next generation of children become parents, which can then result in the following generation of children displaying more aggressive behaviors (Capaldi, Pears, Patterson & Owen, 2003). Furthermore, the coercion theory has been used to explain the development of domestic violence (Capaldi & Clark, 1998). Thus, Patterson's coercive family process theory incorporates a social learning perspective with a cascade approach to psychopathology (Patterson et al., 2010), outlining the transactional nature of parent-child interactions and potential processes that may lead to child behavior problems and the intergenerational transmission of coercive processes.

**The double failure model.** As a development of the coercive family process model, the dual failure model explains how coercive, aggressive behavior can lead to multiple negative developmental pathways. Specifically, the failure model outlines how coercive behavior learned within the family is met with negative responses in wider settings such as schools, leading to poor peer relationships and poor academic attainment (Patterson & Stoolmiller, 1991; Masten & Cicchetti, 2010). These negative academic and social outcomes then lead to individuals feeling as failures, which then leads to the development of depression. The failure model therefore provides an



explanation of how comorbid psychopathology can occur and demonstrates how learning behaviors can lead to a cascade of negative developmental outcomes (Masten & Cicchetti, 2010).

In summary, learning theories outline the importance of the social environment for children's development. Traditional behaviorist theories outline that children learn behavior through experience and reinforcement of behaviors, whereas social learning theories emphasize the importance of the child observing, remembering and imitating behaviors displayed by influential role models (e.g., parents). Coercion theory and the failure model highlight the transactional nature of relationships between parents and children and outline the importance of coercive family processes for child psychopathology. The concept of cascading processes in relation to child psychopathology is a fundamental component of ecological theories, which go beyond examining relationships between parents and children by recognizing the importance the wider systems within which parents and children are nested for child psychopathology.

### **Ecological Theories**

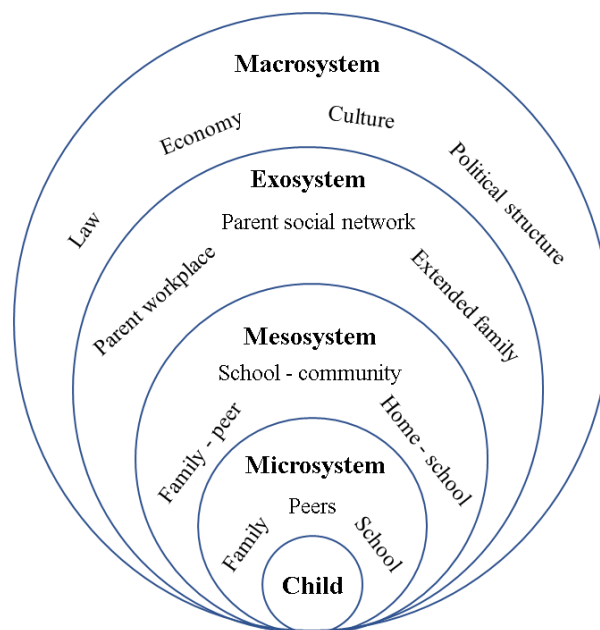
The term ecology refers to the study of relationships between living organisms and their environment. Ecological perspectives have been developed to provide frameworks from which to assess factors influencing human development from childhood through to adulthood. The following section outlines multiple theories that take an ecological perspective to understanding child development and psychopathology, starting with Bronfenbrenner's (1979; 1994) ecological systems theory, which outlines children's development as a product of hierarchical systems ranging from the immediate family environment to the overarching societal/cultural system, before outlining ecological theories that specifically focus on the immediate

family environment (e.g., family systems theories; Cox & Paley, 1997, the family stress model; Conger, Ge, Elder, Lorenz & Simons, 1994).

### **Bronfenbrenner's ecological systems theory**

The ecological systems theory, developed by Bronfenbrenner (1979), outlines how understanding children within the context of multiple environments is critical for understanding human development. The ecological systems' central perspective is that different environments are nested within broader environments (see Figure 1). The ecological systems theory proposes that changes to any given environment will lead to alterations in behavior and individual development. At the innermost section of the ecological system lies the individual. The individual is nested within the Microsystem, which represents the child's immediate environment that can directly impact their development (e.g., the home environment, school, peer groups or the local community). Interactions that occur within the Microsystem are often at the dyadic level, for example between the parent and the child. Additionally, Bronfenbrenner (1979) recognized that adaptive dyadic functioning is partially dependent on positive involvement from a third member (i.e., positive triadic functioning). Where involvement from a third member is disruptive, developmental processes at the dyadic level, and in turn the individual level, can break down. The Microsystem lies within the wider Mesosystem, which represents interactions between different environments within the Microsystem that involve the child (e.g., between the home and school environment). In contrast, interactions occurring in the Exosystem, within which the mesosystem is nested, do not necessarily directly involve the child, but can have indirect effects on the child via impacts on the Mesosystem. The Exosystem represents environments such as a parent's workplace and wider social networks. An example of how disruptions in the Exosystem could impact children's adjustment is a parent experiencing high levels of stress within the

workplace, leading to disrupted parent-child interactions. Finally, the largest and most distal system to the child is the Macrosystem, which represents wider environmental factors such as political, economic and cultural factors. More recently, Bronfenbrenner has expanded his ecological model to include the Chronosystem, which represents change versus consistency in both people and their environment over time (Bronfenbrenner, 1994). Additionally, the revised ecological systems theory recognizes that genes and the environment can interact to influence children's development, termed the bioecological model (Bronfenbrenner & Ceci, 1994; Bronfenbrenner, 1994). The ecological systems theory provides a core basis for understanding how different aspects of the environment can impact children's development, demonstrating a cascade of environmental processes at varying levels through to individual development, thus providing a broad framework for the process-oriented approach employed in the present thesis. Further ecological theories have been developed to provide insight into specific systems (e.g., within certain aspects of the microsystem), such as family systems theories (e.g., Cox & Paley, 1997).



*Figure 1.* Figural representation of Bronfenbrenner's (1979) Ecological Systems Theory

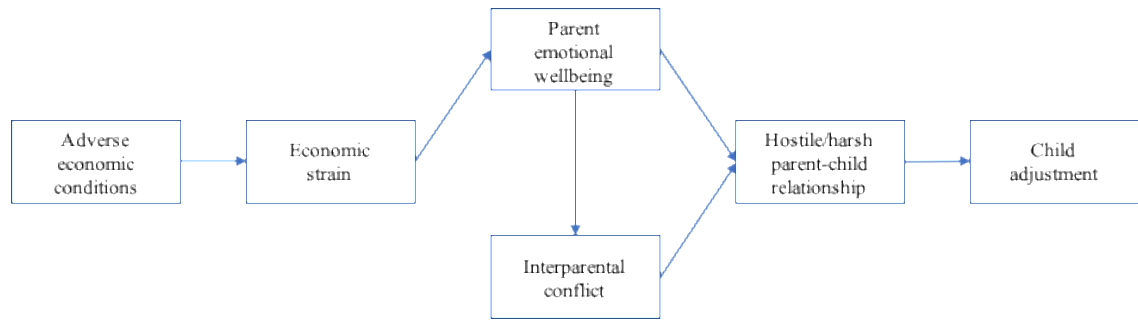
## **Family systems theories**

Family systems theories provide a detailed account of relationships within the Microsystem outlined in Bronfenbrenner's (1979) ecological systems theory, primarily focusing on interactions within the family environment (e.g., interparental and parent-child relationships) that can influence children's development. Family systems theories propose that the family is a hierarchically organized system comprised of multiple subsystems (Cox and Paley, 1997; Minuchin, 1974). The premise of family systems theories is that the family system as a whole is greater than the sum of its parts; subsystems are interrelated and involved in constant interaction. Subsystems can be at the individual level (e.g., parent and child characteristics), at the dyadic level (e.g., interparental, parent-child and sibling relationships), and at the triadic level (between both parents and the child). Family systems theories recognize that subsystems have the capacity to adapt to challenges in existing interactions and reorganize to accommodate change of circumstances and continue functioning (Cox & Paley, 2003). These challenges can include the birth of another child, developmental transitions (such as the transition to school), the death of a family member and partner separation. Subsystems are defined by boundaries that must be maintained for effective family functioning. Each subsystem must work independently and without interference from other subsystems but must also have access to wider family subsystems. Any breakdown of boundaries will lead to a cascade of disruptions between subsystems. Cox and Paley (1997) propose that interparental relationships high in conflict are linked to negative developmental outcomes for children, and that this can occur via disruptions in parent-child relationships. In addition, they recognize that the triadic relationship is an important subsystem for explaining the breakdown of boundaries between different subsystems and provides unique insight into the family system that cannot be discerned

by examining only dyadic functioning. Minuchin's (1974) account of the family system also pays attention to triadic functioning with reference to the coparenting relationship, which involves triadic interactions between both parents and the child. Family systems theories are therefore salient throughout this thesis, as the core thesis aim is to examine how multiple family subsystems (the interparental, mother-child, father-child and coparenting subsystems) contribute to child psychopathology.

### **Example of a family systems approach: The family stress model**

The family stress model was developed to explain the processes through which economic hardship can impact individual and family functioning (Conger et al., 1994; Conger & Conger, 2008; Conger, Conger & Martin, 2010). The family stress model is complementary to family systems theories, as it proposes a cascade of processes through multiple family subsystems to child outcomes. The family stress model outlines how economic hardship and stress can lead to poorer parent emotional wellbeing, which in turn can lead to more conflict in the interparental relationship. Interparental conflict then leads to more hostile parent-child relationships, which then negatively impact child mental health (Figure 2). Although centered on how economic strain can impact on family processes, the model provides a theoretical framework to explain associations between parent mental health, interparental conflict, parent-child relationships and child adjustment, which are key components of the first study in this thesis. The following section outlines an additional family subsystem that is not included within the family stress model; the coparenting relationship.

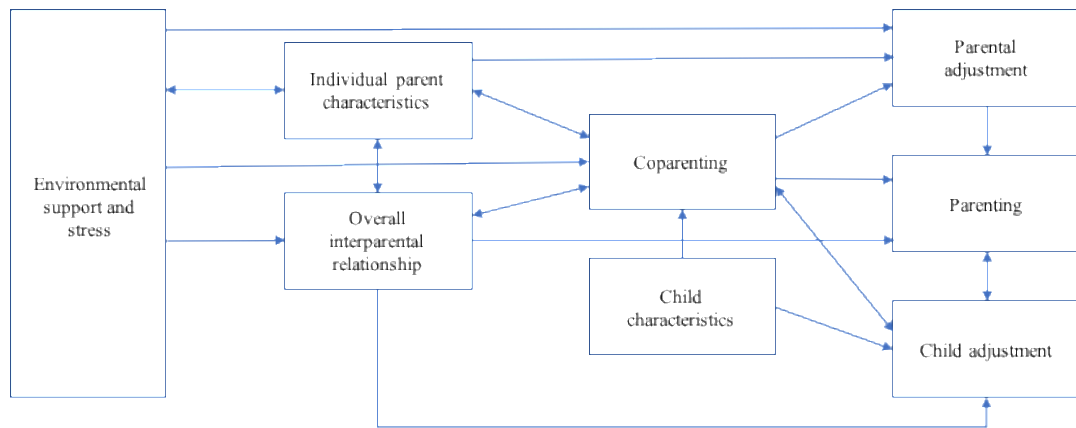


*Figure 2. The Family Stress Model.*

### **Coparenting as a family system and the ecological model of coparenting**

The coparenting relationship has been defined as the extent to which parents work together in raising their child (Feinberg, 2002). The coparenting relationship is considered as a distinct family subsystem that is related to other aspects of family functioning and interacts with other family subsystems to influence children's development (Feinberg, 2003). Whilst the coparenting relationship has been considered as important within a family system for several decades (Minuchin, 1974), it has received limited attention in research until relatively recently. Mark Feinberg (2003) proposed an ecological model of coparenting which outlines how the coparenting relationship fits within a wider family systems framework (Figure 3). The ecological model of coparenting takes both a family systems and family stress perspective, outlining multiple pathways from external environmental support and stress to different aspects of family functioning and child adjustment. The ecological model of coparenting illustrates bidirectional associations between coparenting and the interparental relationship, parent characteristics and child adjustment. Additionally, the model outlines how coparenting is influenced by environmental stress and child characteristics and influences parent adjustment and parenting. This model provides a basis for the present thesis, which examines how coparenting may be implicated in the

relationship between interparental conflict, parent-child relationships and child adjustment.



*Figure 3.* Feinberg's ecological model of coparenting

**Variability in conceptualization and measurement of coparenting.** One issue with coparenting as a family subsystem is that, although the overall definition of coparenting is consistent across the literature (i.e., how parents work together to raise their child; Feinberg, 2002), there is great variation in the conceptualization of specific coparenting constructs, which has led to disparity across the literature with regards to how/which different coparenting constructs are measured. This disparity limits the extent to which existing research provides insight into how coparenting relates to other family processes and children's development. Early research into coparenting focused on coparenting alliance, which is the extent to which parents support and undermine each other in their role as parents (Abidin & Brunner, 1995; Gable, Belsky & Crnic, 1992). More recently, researchers have conceptualized coparenting as a multidimensional construct, although categorizations of coparenting dimensions differ between researchers. Four particularly prominent conceptualizations of coparenting

have been proposed by Feinberg (2002; 2003), McHale (1997), Van Egeren and Hawkins (2004) and Margolin, Gordis and John (2001). These researchers propose aligned but conceptually distinct coparenting constructs.

Coparenting conflict is a key construct in each of the mentioned conceptualizations of coparenting. However, Margolin et al. (2001) referred to coparenting conflict as the extent to which parents disagree over childrearing decisions, whereas McHale (1995) used the term coparenting conflict to represent conflict displayed in front of the child. Conversely, Feinberg (2002) recognized childrearing disagreements and conflict in front of the child as two distinct coparenting dimensions. This provides an example of disparity over the same coparenting dimensions between researchers. Additionally, the conceptualization of support and undermining differs between these four accounts. The concept of coparenting support versus undermining reflects the extent to which parents uphold each other's parenting decisions, respect each other's contributions to parenting and affirm each other's competency as parents (Feinberg, 2002). Van Egeren and Hawkins (2004) proposed that support and undermining should be considered as two distinct coparenting dimensions, whereas Feinberg (2002) outlined coparenting support versus undermining as a single dimension. Conversely, Margolin et al. (2001) and McHale (1997) proposed that support and undermining should not represent constructs in themselves but be components of broader constructs, specifically coparenting cooperation (a composition of coparenting support and shared parental responsibility, values and respect; Margolin et al., 2001) and disparagement (undermining and invoking negative images of the other parent in the child; McHale, 1997). Furthermore, whilst Margolin et al. (2001) did not include undermining in their coparenting dimensions, they outlined a triangulation dimension, which is a failure in parents' boundary maintenance in the act of forming



coalitions with the child against the other parent and drawing the child into conflict, therefore aligning with McHale's (1997) disparagement dimension.

Division of labor is also considered as an important aspect of coparenting, but whilst Feinberg (2002) proposed a distinct division of labor coparenting dimension, Van Egeren and Hawkins (2004) proposed a shared parenting dimension that incorporates division of labor, shared decision making and shared responsibility. Furthermore, Feinberg (2003) and McHale (1997) recognized the family unit as an important aspect of coparenting, but their conceptualizations differ; McHale (1997) outlined a family integrity dimension and reprimand dimension, which represent the extent to which parents promote togetherness in the family and display behaviors that support the family unit respectively, whereas Feinberg (2003) proposed a joint family management dimension, defining this as how parents control communications, behaviors and involvement in the interparental relationship and triadic interactions. These examples are not exhaustive of all coparenting dimensions conceptualized and examined in the literature but demonstrate that, whilst coparenting dimensions are largely centered on whether parents support versus undermine each other, cooperate and jointly manage the family unit, divide child-related labor and engage in conflict either about or in front of the child, there is variation in how specific coparenting dimensions are conceptualized across the literature.

Variation in the conceptualization of coparenting constructs has led to variability in the measurement of coparenting across the literature; multiple observation coding schemes and parent-reported questionnaires have been developed to assess different aspects of the coparenting relationship (Feinberg, Brown & Kan, 2012; Fivaz-Depeursinge & Favez, 2006; Margolin et al., 2001; see Appendix A for a systematic

review demonstrating the variability in measurement). The large variability in how coparenting is assessed results in issues when interpreting findings of research examining associations between coparenting, other family subsystems and child psychopathology, as very few studies examine the “same” aspects of the coparenting relationship. Additionally, whilst most questionnaires and observational coding schemes contain multiple subscales to assess different coparenting constructs, research often only examines one, or few, coparenting constructs at a time, as will become apparent in the review of the literature in subsequent sections of this chapter. Very little research examines a conceptually expansive measure of coparenting in relation to other family processes (i.e., by combining multiple coparenting dimensions to assess the overall coparenting relationship), thus limiting the extent to which research currently provides insight into associations between coparenting and other family processes (e.g., parent-child relationships, interparental conflict) and children’s development. The present thesis therefore utilizes an observation measure of coparenting that assesses the coparenting relationship as a conceptual whole rather than examining only one coparenting dimension, to increase understanding of how the coparenting relationship relates to the interparental relationship, parent-child relationships and child internalizing and externalizing problems.

To summarize, ecological theories of development outline how the environment influences children’s development. Family systems theories focus on how specific subsystems within the family system (e.g. interparental and parent-child relationships) are related to each other and to child development/psychopathology, in addition to recognizing parent mental health as an important factor within the family system. Furthermore, the coparenting relationship is a subsystem that has received considerably limited attention within family processes and child psychopathology research, and there

is great variation in the conceptualization of coparenting. Family systems theories form an integral component of the current thesis, as each study examines family processes and child psychopathology using a family systems framework to develop understanding of the role of the interparental, parent-child and coparenting relationships for child psychopathology. The following section outlines the concept of developmental psychopathology, which encapsulates the components of each of the theories discussed so far, providing important contributions to the understanding of family processes and child psychopathology.

### **Developmental Psychopathology**

The theoretical domain of developmental psychopathology encompasses the core components upon which research into family processes and child psychopathology is based. Developmental psychopathology centers on understanding change versus continuity of adaptive and maladaptive behaviors over time and mediating processes that can explain these continuities and discontinuities (Rutter, 2013; Sroufe & Rutter, 1984). Developmental psychopathology outlines the importance of understanding adjustment as behavior on a continuum rather than the presence or absence of diagnosis; it recognizes that children may experience symptoms of mental health problems that do not reach the level of clinical diagnosis, but that these symptoms may develop into clinical disorder in adulthood (Sroufe & Rutter, 1984). Understanding the processes underlying changes in children's behavior is at the heart of research examining how different family relationships can influence child internalizing and externalizing problems. Two key concepts embedded in developmental psychopathology are equifinality and multifinality (Sroufe, 2013). Equifinality is the term used to explain how one outcome can be influenced by multiple processes as opposed to their being just

one cause for one particular outcome. Multifinality is the term used to describe how one process can be a predictor of multiple outcomes. Furthermore, developmental psychopathology also recognizes the importance of cascading effects from environmental processes in childhood to psychopathology from childhood through to adulthood (Masten & Cicchetti, 2010). There has also been consideration of how family systems and developmental psychopathology approaches can be integrated to further develop understanding of how the interplay between different family relationships (such as the interparental and parent-child relationships) can provide insight into continuities and discontinuities of behavior over time and act as environmental mediators in risk for psychopathology (Davies & Cicchetti, 2004).

Developmental psychopathology highlights limitations to traditional methods of psychiatric diagnosis, recognizing that there is substantial comorbidity in psychopathology (Sroufe, 2013), and that traditional methods have little focus on continuity and discontinuity over time or individual differences in development (Rutter, 2013). It also recognizes that the same experiences and processes experienced by children will not always lead to the same outcome for each child (i.e., two children that experience the same adverse processes [e.g., interparental conflict] may not display the same maladaptive behavior, and one child may develop psychopathology whilst the other may not) and seeks to understand the processes that can explain these differences. The interplay between genes and the environment is highlighted as key for understanding individual differences in the development of psychopathology (Rutter, 2013). This has led to the development of genetically sensitive research designs that provide insight to gene-environment interplay for psychopathology; these designs have been used to highlight how the experiences in the environment can alter gene expression, highlight gene-environment correlation (i.e., how the environment can have

genetically mediated effects and that underlying genes can influence how people shape and select their environments), and highlight how genes and the environment can interact to influence behavior/psychopathology (Rutter, 2013). The concept of gene-environment interaction is particularly important for understanding why some individuals are resilient to adversity whilst others are not (Rutter, 2013; Sroufe, 2013). Gene-environment interplay and genetically sensitive research designs are further discussed in relation to child psychopathology later in this chapter and throughout this thesis. Overall, developmental psychopathology underlies the core aims of the present thesis; to use a genetically sensitive (adoption-at-birth) research design to examine how family (interparental, parent-child, coparenting) processes can explain change versus continuity in child psychopathology from early-to-middle childhood.

### **Summary of Theoretical Background and Relevance to the Present Thesis.**

In summary, the importance of early experiences and the rearing environment (specifically parent-child relationships) for child psychopathology was recognized in early psychodynamic, ethological and learning theories, which each provide distinct explanations for the role parents provide in the development of psychopathology (Bandura, 1971; Bowlby, 1989; Freud, 1938; Patterson, 2016; Skinner, 1958). Ecological theories recognized the child as being part of a wider system that contains multiple subsystems, and that disruptions in subsystems can lead to psychopathology (Bronfenbrenner, 1979). Within this system-oriented perspective, family systems theories (Conger et al., 2010; Cox & Paley, 1997; Feinberg, 2003; Minuchin, 1974) provide frameworks to outline how disruptions in specific family subsystems, such as the interparental, parent-child and coparenting relationships can lead to a cascade of negative family processes and result in child psychopathology, and are therefore the

theories most proximal to the relationships examined in the present thesis. Furthermore, the concept of developmental psychopathology outlines the need to understand the mediating processes that can explain change and continuity in children's maladaptive behavior (psychopathology), identifies that multiple processes can contribute to one outcome and that one process may contribute to multiple outcomes, and recognizes the importance of examining gene-environment interplay for psychopathology. Together, these theories underlie the key aims of the present thesis: to use a genetically sensitive adoption-at-birth design to examine how interparental conflict, the mother-child, father-child and coparenting relationships can explain changes in child internalizing and externalizing problems from early-to-middle childhood.

## **Historical Perspectives on Interparental Conflict and Child Psychopathology**

### **Interparental conflict and child psychopathology**

Historically, research examining interparental conflict and children's development has focused on the impact of parent divorce (Demo & Acock, 1988; Wallerstein & Lewis, 1998). Meta-analyses by Amato and Keith (1991) and Amato (2001) found that children of divorced parents do consistently worse across multiple domains compared to children whose parents remain together; children of divorced parents had significantly higher conduct problems, poorer psychological adjustment, lower academic attainment and poorer social relationships. However, research demonstrates that levels of interparental conflict prior to and following divorce may explain the relationship between divorce and child adjustment (Grych & Fincham, 1990; Cummings & Davies, 2002). Additionally, research examining interparental relationship quality has primarily centered on domestic violence (McTavish, MacGregor, Wathen & MacMillen, 2016). Children who witness domestic violence

show a range of negative developmental outcomes, including depression, conduct problems, poor academic attainment and suicidality (McTavish et al., 2016). However, it is increasingly recognized that children display adverse developmental outcomes when exposed to conflict behaviors that aren't overtly verbally or physically aggressive; interparental conflict exists on a continuum from silence (withdrawal and lack of communication in the relationship) to violence (domestic abuse; Harold & Conger, 1997; Harold et al., 2016; Harold & Sellers, 2018). Interparental conflict can also be compartmentalized into constructive and destructive conflict tactics (Harold & Sellers, 2018), with constructive conflict being shown to predict more positive outcomes, whilst destructive conflict predicts negative developmental outcomes (Coln et al., 2013; Grych, Harold & Miles, 2003; McCoy et al., 2013). Furthermore, research has shown that when interparental conflict is frequent, intense and poorly resolved, children display poorer developmental outcomes (Cummings & Davies, 2002; Grych et al., 2003; Harold & Sellers, 2018; Harold, Shelton, Goeke-Morey & Cummings, 2004; Gonzales, Pitts, Hill & Roosa, 2000).

Interparental conflict has been implicated in a range of outcomes in childhood and adolescence, including higher internalizing and externalizing problems (Beuhler et al., 1997; Cummings, Goeke-Morey & Papp, 2004), impeded social functioning (Finger et al., 2010; Kouros, Cummings & Davies, 2010) and lower academic performance (Ghazarian & Buehler, 2010; Harold et al., 2007). Additionally, interparental conflict has been linked to sleep problems (Mannering et al., 2011), physical health problems (Stiles, 2002), and increased engagement in risky behaviors, such as early sexual activity and substance misuse (Repetti, Taylor & Seeman, 2002; Harold & Sellers, 2018). The wealth of evidence that demonstrates interparental conflict as a key process implicated in child mental health has led to the inclusion of "child affected by parent

relationship distress” within the DSM-5 as a key family factor that can influence child psychiatric disorder (APA, 2013).

To understand how interparental conflict influences child psychopathology, it is important to examine the interplay between interparental conflict and multiple family processes implicated in child psychopathology (Conger & Conger, 2008; Cox & Paley, 1997). One process highlighted as playing an important mediating role in the relationship between interparental conflict and child mental health is the parent-child relationship (Cox & Paley, 1997; Harold & Sellers, 2018). The following section outlines one key theory explaining the impact of interparental conflict on parent-child relationships: the spillover hypothesis.

### **Spillover hypothesis**

The Spillover Hypotheses provides an explanation for the association between interparental conflict and parenting (Erel & Burman, 1995; Cox, Paley & Harter, 2001). The spillover hypothesis states that negativity expressed in the interparental relationship is transferred to parent-child relationships (Erel & Burman, 1995). Linked to this is the theory that parents can also use their children as a scapegoat and blame them for the negativity in the interparental relationship, distracting from the interparental relationship and causing hostility to be displayed towards the child (Cox et al., 2001). Additionally, parents’ experiences of conflict may tire, demoralize and anger the parents to the point at which they have a reduced capacity to be emotionally available to their children or able to detect children’s needs (Cox et al., 2001). Thus, the spillover hypothesis posits that conflict in the interparental relationship will lead to poorer parent-child relationships, which has been widely supported with research evidence (Erel & Burman, 1995; Harold et al., 2012; 2013; McCoy et al., 2013; Stover et al., 2012). It is thought



that the spillover from the interparental to parent-child relationships in turn negatively impacts child psychopathology (Conger et al., 1994; Cox & Paley, 1997; Harold & Sellers, 2018). The following section outlines findings from existing literature examining the parent-child relationship as a process through which interparental conflict can influence child psychopathology.

### **Research Evidence: Interparental Conflict, Parenting and Child Psychopathology**

Research widely supports the spillover hypothesis and family systems theories, showing interparental conflict to predict parenting, which in turn predicts child development (Harold & Sellers, 2018). Research demonstrates that parent-child relationships mediate the relationship between interparental conflict and multiple outcomes through childhood and adolescence, including early emotion regulation (Gallegos, Murphy, Benner, Jacobvitz & Hazen, 2017), sleep problems (Rhoades et al., 2012), academic attainment (Harold et al., 2007), and substance use (Leinonen, Solantaus & Punamaki, 2003). Research has also evidenced the parent-child relationship as a process through which interparental conflict can influence child internalizing and externalizing problems in early childhood (Erath & Bierman, 2006; Keller et al., 2005) and later childhood and adolescence (Coln et al., 2013; Gonzales et al., 2000; Harold et al., 2012; Low & Stocker, 2005).

Research predominantly focuses on how negative parenting practices mediate the relationship between interparental conflict and child adjustment, often examining family processes in relation to externalizing problems. Both cross-sectional and longitudinal research has consistently shown parent-to-child hostility to mediate the relationship between interparental conflict and child externalizing problems in childhood and adolescence; interparental conflict predicts higher levels of parent-child

hostility, which in turn predicts child externalizing problems (Harold et al., 2012; Harold et al., 2013a; Harold, Fincham, Osborne & Conger, 1997; Stover et al., 2012). Limited evidence also suggests that parent hostility can influence internalizing problems (Low & Stocker, 2005; Sellers et al., 2014), and mediate the relationship between interparental conflict and adolescent internalizing problems (Harold et al., 1997). Additionally, interparental conflict has been shown to predict higher harsh/overreactive parenting, which in turn predicts child externalizing problems in toddlerhood to early childhood (Rhoades et al., 2011; Stover et al., 2016). Furthermore, parent-child rejection has been shown to mediate the relationship between interparental conflict and both internalizing and externalizing problems in late childhood to adolescence (O'Donnell, Moreau, Cardemil & Pollastri, 2010; Shelton & Harold, 2008). Thus, evidence demonstrates that interparental conflict can influence child adjustment via negative/hostile parenting practices.

Parent discipline practices have also been shown to play an important role in the relationship between interparental conflict and child adjustment. For example, in a cross-sectional study of children aged 2-18 years, Buehler and Gerard (2002) found parent harsh discipline to partially mediate the relationship between interparental conflict and child adjustment (internalizing and externalizing problems combined). Additionally, Gerard et al. (2006) found interparental conflict to predict harsh discipline longitudinally over one year, which was in turn concurrently associated with externalizing problems, but not internalizing problems in children aged 5-12 years, suggesting that harsh discipline mediates the relationship between interparental conflict and child externalizing problems in middle-to-late childhood. Inconsistent discipline has also been implicated in the relationship between interparental conflict and child adjustment; Gonzales et al. (2000) found interparental conflict to be associated with

higher levels of inconsistent discipline, which was in turn associated with higher depression and conduct problems. Keller et al. (2005) also found inconsistent discipline/psychological control to mediate the relationship between interparental conflict and child adjustment problems (internalizing and externalizing problems combined), further suggesting that inconsistent discipline plays a mediating role in the relationship between interparental conflict and child psychopathology. Further research examining parenting influences on child adjustment supports the importance of harsh and inconsistent discipline practices for child internalizing and externalizing problems (Dette-Hagenmeyer & Reichle, 2014; Laskey & Cartwright-Hatton, 2009; McKee et al., 2007). Thus, research demonstrates that discipline practices can mediate the relationship between interparental conflict and child internalizing and externalizing problems.

Whilst research examining interparental conflict in relation to positive parenting behaviors is less common, limited research also demonstrates that positive parenting behaviors are processes through which interparental conflict can influence internalizing and externalizing problems. For example, interparental conflict has been shown to predict lower parent warmth and psychological autonomy, which in turn predicts higher internalizing and externalizing problems (Schoppe-Sullivan, Schermerhorn & Cummings, 2007). Low general positive parenting has also been shown to mediate the relationship between interparental conflict and child internalizing and externalizing problems (Schacht et al., 2009). Furthermore, the absence of positive parenting behaviors has been shown to predict higher internalizing and externalizing problems, such as emotional unavailability (Sturge-Apple, Davies & Cummings, 2006) and low levels of acceptance (Gonzales et al., 2000). Thus, process-oriented research demonstrates that positive and negative parenting behaviors are important processes in the relationship between interparental conflict and child internalizing and externalizing

problems. However, longitudinal associations have been primarily conducted in late childhood and adolescence, and further research is needed to understand these processes in early-to-middle childhood. Additionally, as research has historically focused on maternal parenting, the relative role of maternal and paternal parenting as mediators in the relationship between interparental conflict and child adjustment is relatively underexplored.

### **Interparental conflict, maternal and paternal parenting and child psychopathology**

Research examining family processes and children's development has historically focused on mothers, particularly when examining parent-child relationship influences on children's development (Harold et al., 2013a). However, the importance fathers for children's development is receiving increased attention (Cabrera et al., 2018; Lamb, 2004). It has been noted that due to the increase of women in the workforce, fathers are providing greater nurturing and childrearing roles within the family, and thus attention to the role of fathers is pivotal to understanding family influences on children's development (Paquette, 2004). However, research historically examines father involvement rather than specific parenting behaviors (Bruce & Fox, 1999; Halme, Åstedt-Kurki & Tarkka, 2009; Harris, 2010; Kalil, Ziol-Guest & Coley, 2005), and interventions that include fathers often target and measure improvement through father involvement (Roggman, Boyce, Cook, Christiansen & Jones, 2004). Furthermore, the role fathers play in children's development is widely underrepresented in the research (Pinquart, 2017). For example, in a meta-analysis examining the relationship between parenting and child delinquency, Hoeve et al. (2009) found only 20% of effect sizes represented associations for fathers, yet associations did not differ in magnitude for mothers and fathers. This underlines the need for greater consideration of the role of both mothers and fathers for child psychopathology.

Whilst the importance of fathers' parenting for children's development is becoming more common in the literature (Cabrera et al., 2018), examination of the relative role of mothers' and fathers' parenting remains infrequent; research often examines maternal and paternal processes separately (Dette-Hagenmeyer & Reichle, 2014; Harold et al., 2011; 2012; Low & Stocker, 2005), or does not differentiate between maternal and paternal parenting (Keller et al., 2005; O'Donnell et al., 2010), providing little insight into the relative contribution of mothers and fathers to children's development. Research that does examine relative associations for mothers and fathers demonstrates that maternal and paternal parenting can uniquely contribute to children's development across childhood and adolescence, including early sleep problems (Rhoades et al., 2012), early negative emotionality (Lipscomb et al., 2011), social functioning (Paley, Conger & Harold, 2000), disruptive peer behavior (Elam et al., 2014), and school adjustment (McCoy et al., 2013). Additionally, mothers' and fathers' parenting have been shown to uniquely contribute to child and adolescent internalizing problems (Marceau et al., 2015; Shelton & Harold, 2008) and externalizing problems (Cummings, George, Koss & Davies, 2013; Malmberg & Flouri, 2011; Rinaldi & Howe, 2012; Shelton & Harold, 2008; Vera, Granzero & Ezpeleta, 2012).

There is limited evidence from research examining parenting influences on child adjustment to suggest that maternal and paternal parenting behaviors differentially contribute to child outcomes. For example, Leinonen et al. (2003) found fathers' punitive parenting to be associated with higher child internalizing problems, greater substance use and poorer school performance, whereas mother non-involved parenting was associated with greater substance use and poorer school performance, and mother authoritative parenting was associated with better quality peer relations. Additionally, Karreman et al. (2008) found that mother positive control predicted better early child

effortful control, whereas father negative control predicted poorer effortful control. Furthermore, Marceau et al. (2015) found mother overreactivity to predict subsequent child externalizing problems, whereas father overreactivity predicted internalizing problems, demonstrating the importance of examining the relative contribution of distinct maternal and paternal parenting processes for child adjustment.

Both mothers' and fathers' parenting have been shown to mediate the relationship between interparental conflict and child development. For example, both mother and father hostility have been shown to mediate the relationship between interparental conflict and child externalizing problems (Harold et al., 2013b; Stover et al., 2012). Additionally, Kaczynski, Lindahl, Malik and Laurenceau (2006) found both mother and father negative parenting (rejection, coercion and low emotional support) to mediate the relationship between interparental conflict and internalizing and externalizing problems. However, just as research has shown mother and father parenting behaviors to differentially predict child outcomes (e.g., Marceau et al., 2015), there is also limited evidence to suggest that distinct maternal and paternal parenting processes may differentially mediate the relationship between interparental conflict and child development. For example, Sturge-Apple et al. (2006) found only fathers' emotional unavailability to mediate the relationship between interparental conflict and child internalizing and externalizing problems, whereas Lim, Wood, Miller and Simmens (2011) found only mothers' negative parenting to mediate the relationship between interparental conflict and child internalizing problems. Additionally, limited research shows that the same mother and father parenting practices can differentially predict different child outcomes; for example, Han, Rudy and Proulx (2017) found low mother warmth to mediate the relationship between interparental conflict and child internalizing problems, whereas father warmth mediated the relationship between

interparental conflict and early peer relationships. Additionally, Shelton and Harold (2008) found that mother-child rejection mediated the relationship between interparental conflict and externalizing problems, whereas father-child rejection mediated the relationship between interparental conflict and internalizing problems. Thus, research indicates that maternal and paternal parenting may differentially mediate the relationship between interparental conflict and child adjustment. However, research examining the relative role of distinct maternal and paternal parenting behaviors as processes through which interparental conflict can influence child adjustment is more commonly conducted in later childhood and adolescence, with fewer studies examining these processes longitudinally from early-to-middle childhood. Furthermore, although discipline practices and positive parenting behaviors are processes through which interparental conflict can influence child internalizing and externalizing problems (Gonzales et al., 2000; Schacht et al., 2009), there is limited examination of whether these mediated processes differ for mothers and fathers.

Limited research also suggests that the spillover from the interparental relationship to the parent-child relationship may be stronger for fathers than mothers; this has been termed the “father vulnerability hypothesis” (Goeke-Morey & Cummings, 2007). Stroud, Durbin, Wilson and Mendelsohn (2011) found poor interparental relationship quality to be associated lower levels of father, but not mother responsiveness. Lower interparental relationship quality has also been associated with father, but not mother overreactivity (Hajal et al., 2015). Additionally, McCoy et al. (2013) found destructive conflict to be associated with inconsistent discipline for fathers only. Moreover, evidence also suggests that the path from interparental conflict to parent hostility is stronger for fathers than mothers (Harold et al., 2012; Kaczynski et al., 2006; Stover et al., 2016). These findings may be due to fathers spending less time

with the child and having less responsibility in caring for the child compared to mothers (Craig, 2006), thus having less defined parenting roles than mothers (Cummings, Goeke-Morey, & Raymond, 2004). This may lead to fathers being less able to compartmentalize their role as a father from their role as a husband, resulting in greater spillover between subsystems (Cox et al., 2001). However, some evidence has shown stronger associations between the interparental relationship and mothers' parenting; for example, Davies, Sturge-Apple and Cummings (2004) found that interparental conflict only predicted mother acceptance, but not father acceptance. These contrasting findings further highlight the need to examine whether interparental conflict is differentially related to maternal and paternal parenting practices.

### **Summary: Interparental conflict, parenting and child psychopathology**

In summary, multiple aspects of the parent-child relationship have been associated with child psychopathology. One specific parenting behavior consistently linked to child adjustment is parent-to-child hostility (e.g. Harold et al., 2013), although these findings are more consistent for child externalizing problems. Other behaviors such as rejection (Shelton & Harold, 2008), discipline practices (Gonzales et al., 2000) and positive parenting behaviors (Schacht et al., 2009) have been shown to mediate the relationship between interparental conflict and child adjustment. Additionally, limited research suggests that distinct maternal and paternal parenting processes may differentially mediate the relationship between interparental conflict and child outcomes (e.g. Shelton & Harold, 2008). However, research rarely examines the relative role of maternal and paternal parenting as mediators in the relationship between interparental conflict and child adjustment from early-to-middle childhood, and research more commonly examines associations with externalizing problems. One aim of the present



thesis is therefore to examine whether maternal and paternal parenting differentially mediate the relationship between interparental conflict and child internalizing and externalizing problems from 2.5 to 6 years. Specifically, studies 1 and 2 examine the relative role of mother and father hostility whilst study 3 examines maternal and paternal hostility, discipline and positive parenting behaviors as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. The following section outlines current understanding of the role of an additional family subsystem in the relationship between interparental conflict, parenting and child adjustment: the coparenting relationship.

### **Research Evidence: The Role of Coparenting within a Family Systems Framework**

As outlined in Feinberg's (2003) ecological model of coparenting (Figure 3), the coparenting relationship is an additional key family subsystem to consider when examining family processes and child psychopathology. The following section outlines research evidence with regards to associations between interparental conflict, coparenting and child adjustment, between coparenting and parenting, and the relative role of coparenting and parenting as mediators in the relationship between interparental conflict and child adjustment. The moderating effects of the coparenting relationship for associations between family processes (i.e., interparental relationship functioning, parent-child relationships) and child adjustment are then discussed.

### **The interparental relationship, coparenting and child adjustment**

The coparenting relationship is considered to be distinct but related to interparental relationship functioning. This has been supported in cross-sectional research. Coparenting alliance has been associated with general interparental relationship adjustment (Abidin & Brunner, 1995; Holland & McElwain, 2013; Kan,

Feinberg & Solmeyer, 2012; Ippolito-Morrill, Hines, Mahmood & Cordova; 2010).

Interparental conflict has been associated with higher coparenting hostility-competitiveness (McConnell and Kerig, 2002; McHale, 1995) and low coparenting interactiveness, responsiveness and cooperation (Katz & Gottman, 1996). However, when these relationships are examined longitudinally, this is often during the transition to parenthood (i.e. examining prenatal marital quality and coparenting in early infancy; Talbot, Baker & McHale, 2009). This developmental period is of key interest, due to being when the coparenting relationship is first established. Nonetheless, studies examining longitudinal associations in the transition to parenthood demonstrate the importance of the interparental relationship for subsequent coparenting quality (Christopher, Umemura, Mann, Jacobvitz & Hazen, 2015; Le, McDaniel, Leavitt & Feinberg, 2016). As there is limited evidence showing interparental conflict to predict coparenting later in childhood (Van Egeren, 2004; Katz & Gottman, 1996), research should further examine whether longitudinal associations between interparental conflict and coparenting are maintained in early-to-middle childhood to increase understanding of the role interparental conflict plays for coparenting once the coparenting relationship has been established.

Coparenting has also been shown to predict multiple child outcomes across early and middle childhood, including disruptive peer behavior (Leary & Katz, 2004), general social skills (Cabrera, Scott, Fagan, Steward-Streng & Chien, 2012; Lewin, Mitchell, Beers, Feinberg & Minkovitz, 2012), early prosocial behavior (Scrimgeour, Blandon, Stifter & Buss, 2013), academic performance (Cabrera et al., 2012), and general classroom adjustment (Dopkins-Stright & Neitzel, 2003). Additionally, coparenting has been widely associated with child internalizing and externalizing problems (Teubert & Pinquart, 2010). Multiple aspects of the coparenting relationship have been associated

with children's externalizing behavior problems, including undermining coparenting, (Farr & Patterson, 2013; LeRoy, Mahoney, Pargement & DeMaris, 2013), triangulation (Buchanan, Maccoby & Dornbusch, 1991; Kerig, 1995), coparenting support (McHale, Johnson & Sinclair, 1999; Schoppe, Mangelsdorf & Frosch, 2001), and hostile-competitive coparenting (McHale and Rasmussen, 1998; Murphy, Jacobvitz & Hazen, 2016). Furthermore, externalizing problems have been predicted by early childrearing disagreements (Lewin et al., 2012). Similarly, a range of coparenting behaviors are associated with child internalizing problems concurrently and longitudinally across early-to-middle childhood, including triangulation (Kerig, 1995; Buehler & Welsh, 2009), hostile-withdrawn coparenting (Katz & Low, 2004), and coparenting conflict (Jouriles et al., 1991). Thus, research demonstrates the importance of the coparenting relationship for child internalizing and externalizing problems.

Coparenting has also been examined as a mediating mechanism in the relationship between the interparental relationship and child adjustment; for example, Katz and Low (2004) found hostile-withdrawn coparenting to mediate the relationship between domestic violence and child anxiety/depression, in addition to finding a significant indirect relationship between domestic violence and child withdrawal via hostile-withdrawn coparenting. Coparenting conflict has also been shown to mediate the relationship between interparental relationship quality and externalizing problems (Mahoney, Jouriles & Scavone, 1997), adolescent risky behavior (Baril, Crouter & McHale, 2007) and delinquency (Cui, Donnellan & Conger, 2007). However, this research is primarily cross-sectional or conducted in later childhood and adolescence, with little research examining coparenting as a mediator in the relationship between interparental conflict and child internalizing and externalizing problems longitudinally across early-to-middle childhood. A key aim of the present thesis is therefore to

examine whether coparenting is a mechanism through which interparental conflict predicts changes in child adjustment across early-to-middle childhood.

### **Coparenting and parenting**

Coparenting and parenting have been shown to be distinct but interrelated (McHale, Kuersten-Hogan, Lauretti & Rasmussen., 2000). Research has shown coparenting to be associated with parents' perceptions of their parenting, including parenting sense of competence (Latham, Mark & Oliver, 2018), parenting stress (Fagan & Lee, 2014) and parenting efficacy (Solmeyer & Feinberg, 2011). Multiple parenting behaviors have also been associated with coparenting. For example, Johnston (1993) found coparenting to be significantly associated with rejection, whilst Karreman, Van Tuijl, Van Aken and Dekovic (2008) found coparenting to be associated with parent control. Research has also shown coparenting conflict to predict negative parenting (Cui et al., 2007) and punitive parenting (Adler-Baeder et al., 2016). Furthermore, Lamela, Figueiredo, Bastos and Feinberg (2016) found coparenting conflict to be associated with higher inconsistent parenting and cooperative coparenting to be associated with lower inconsistent parenting. However, research has not previously examined the relationship between coparenting and parent hostility. As parent hostility has been consistently linked to child adjustment (Harold et al., 2013a; 2013b), it is important to examine how coparenting is linked to this parenting behavior.

As discussed, research is increasingly recognizing the importance of fathers for children's development (Lamb, 2004). However, the coparenting literature primarily examines coparenting in relation to non-resident father involvement due to a large proportion of the coparenting literature centering on coparenting quality among separated families (Sobolewski & King, 2005; Waller, 2012). Coparenting constructs

associated with father involvement include coparenting alliance (McBride & Rane, 1998), cooperative coparenting (Carlson, McLanahan & Brooks-Gunn, 2008; Waller, 2012), conflict and disengagement (Waller, 2012). The importance of a positive coparenting relationship for father involvement has been demonstrated in multiple additional studies (Fagan & Lee, 2011; Fagan & Palkovitz, 2011; Sobolewski & King, 2005).

Limited research examines whether coparenting is differentially associated with maternal and paternal parenting, instead examining associations separately for mothers and fathers. This research has shown coparenting alliance to be associated with mothers' and fathers' warm parenting (Abidin & Brunner, 1995), in addition to showing competitive coparenting to be associated with mother-child and father-child attachment (Caldera and Lindsey, 2006). Coparenting conflict has been associated with both mother-child and father-child conflict (Feinberg, Kan & Hetherington, 2007) and mother and father overreactivity (O'Leary & Vidair, 2005). The scarcity in examination of relative associations between coparenting and maternal and paternal parenting necessitates further examination of these relations. The present thesis aims to examine the relative associations between coparenting and maternal and paternal parenting.

### **The interparental relationship, coparenting, parenting and child psychopathology**

Research examining the relative role of parenting and coparenting as mediators in the relationship between interparental conflict and child outcomes is scarce. Some research has examined the relative contribution of coparenting and parenting to child development without consideration of the interparental relationship, showing coparenting and parenting to differentially contribute to children's development. For example, Belsky, Putnam and Crnic (1996) found parenting and unsupportive

coparenting to uniquely predict toddlers' inhibition. Additionally, Jones, Shaffer, Forehand, Brody and Armistead (2003) found that coparenting conflict and mother monitoring/warmth provided unique variance in child externalizing problems, but that only mother monitoring/warmth predicted internalizing problems. Furthermore, Johnston (1993) found coparenting alliance and parent-child warmth/acceptance to predict child interpersonal competence, but that only parent-child rejection predicted emotional problems, behavior problems, self-preoccupied/narcissistic style and aggression. Limited evidence also suggests that coparenting, maternal parenting and paternal parenting differentially contribute to child outcomes; for example, Dopkins Stright and Neitzel (2003) found coparenting and fathers' rejection to predict attention problems, fathers' rejection to predict child passivity/dependence in the classroom, and only coparenting to significantly predict math/reading scores, whereas mother rejection was not a significant predictor of any outcome. In contrast, Karreman et al. (2008) found mother positive control, father negative control and coparenting hostility-competitiveness to uniquely predict children's early effortful control. These findings demonstrate the importance of examining the relative contribution of coparenting and both mothers' and fathers' parenting to child adjustment.

From a review of evidence, only two studies have examined coparenting and maternal and paternal parenting in the relationship between interparental conflict and child adjustment. O'Leary and Vidair (2005) examined whether childrearing disagreement (i.e., coparenting conflict) and parent overreactivity (a measure of parenting) mediated the relationship between interparental conflict and child internalizing and externalizing problems among children aged 4-7 years, assessing associations for mothers and fathers and boys and girls separately. This study found that across all models, interparental conflict predicted childrearing disagreements but neither

parents' overreactivity. For girls, mother and father overreactive parenting predicted girls' internalizing and externalizing problems. However, for boys, childrearing disagreement and mother overreactivity predicted externalizing problems, whereas childrearing disagreement and father overreactivity predicted boys' internalizing problems. These findings demonstrate the complexity of relationships between family processes and child psychopathology, highlighting that maternal parenting, paternal parenting and coparenting may differentially mediate the relationship between interparental conflict and child internalizing and externalizing problems. However, this study used cross-sectional data and examined models for mothers and fathers separately, providing limited insight into causal processes and the relative role of mothers and fathers. Additionally, Stroud, Meyers, Wilson and Durbin (2015) examined whether mother-child and father-child responsiveness and triadic family functioning mediated the relationship between interparental conflict and child internalizing and externalizing problems, finding interparental relationship functioning to predict triadic functioning and father, but not mother, responsiveness, but only mother responsiveness and triadic functioning to predict internalizing and externalizing problems.

Overall, there is a lack of research examining how maternal, paternal and coparenting processes can mediate the relationship between interparental conflict and child internalizing and externalizing problems, particularly assessing longitudinal associations from early-to-middle childhood. Therefore, examining whether coparenting and mother-child and father-child relationships are unique processes through which interparental conflict can predict changes in child adjustment over time is integral to understanding relative maternal and paternal processes implicated in children's development, which is a core aim of the second and third empirical chapters in this thesis.

### **Coparenting as a moderator of family relationships**

Limited evidence suggests that coparenting may moderate associations between different family processes and child adjustment. Few studies have examined how coparenting moderates the relationship between the interparental relationship and parenting. For example, in a cross-sectional study, Kwan, Kwok and Ling (2015) found coparenting alliance to reduce the magnitude of the relationship between marital satisfaction and fathers' parenting stress; low marital satisfaction was only associated with higher parenting stress when there were low levels of coparenting alliance. Similarly, Merrifield and Gamble (2013) found undermining coparenting to exacerbate the association between marital dissatisfaction and fathers' low parenting efficacy.

Coparenting has also been shown to moderate the relationship between child temperament and parenting. For example, Solmeyer and Feinberg (2011) demonstrated how a poor coparenting relationship can reduce the association between positive child temperamental characteristics and parenting efficacy, finding low negative temperament to only predict higher parenting efficacy when undermining coparenting was low. Furthermore, research demonstrates that a positive coparenting relationship can attenuate the association between early child difficult temperament and later adjustment problems, suggesting that the coparenting relationship can reduce continuity of maladaptive behavior across childhood (Schoppe-Sullivan, Weldon, Cook, Davis & Buckley, 2009; Kolak & Volling, 2013). Thus, although limited, this evidence suggests that a positive coparenting relationship may help reduce the magnitude of associations between negative family processes, and that a poor coparenting relationship can lead to stronger associations among negative family processes.



Research has also shown coparenting to moderate the association between parenting and child adjustment. For example, Jia et al. (2012) found that high father involvement only predicted subsequent lower levels of internalizing problems and higher social competence when in a supportive coparenting relationship. Additionally, Dopkins Stright and Neitzel (2003) found that both mother and father rejection only predicted children's passivity/dependence under low levels of supportive coparenting. Furthermore, Latham et al. (2018) found that low parenting sense of competency only predicted higher disruptive behavior in children when there were low levels of supportive coparenting. These studies therefore suggest that a positive coparenting relationship can buffer against the effects of a poor parent-child relationship on children's development, supporting the general consensus among the coparenting literature; that a positive coparenting relationship leads to positive outcomes for children (Feinberg, 2003; Teubert & Pinquart, 2010).

One contrasting piece of evidence for the moderating role of coparenting comes from Latham, Mark and Oliver (2017), who found that mothers' coercive parenting only predicted subsequent disruptive child behavior when there was a supportive coparenting relationship. When there was a negative coparenting relationship, there was no significant association between coercive parenting and disruptive behavior. This finding suggests that in some circumstances, a poor coparenting relationship may be beneficial for child outcomes, specifically demonstrating that a poor coparenting relationship may buffer against the negative effects of poor parenting on children's development. This contradicts the consensus that when parents are supportive of each other and agree in their parenting roles, children will have better developmental outcomes. This highlights how the literature does not consider that agreement and support of negative parenting behaviors may not be beneficial for children. Therefore, whilst the majority of research

suggests that a positive coparenting relationship may help facilitate positive family processes and positive outcomes for children, it is important to consider the context in which coparenting is being examined, and further develop understanding of the moderating role that coparenting plays in associations between family processes (interparental and parent-child relationships) and child psychopathology.

**Summary: The role of coparenting within the wider family system for child psychopathology**

To summarize, research demonstrates that coparenting is predicted by the interparental relationship (Le et al., 2016), predicts child internalizing and externalizing problems (Teubert & Pinquart, 2010), and mediates the relationship between interparental conflict and child adjustment (Katz & Low, 2004). Additionally, a poor coparenting relationship has been associated with poorer parenting experiences and behaviors (Latham et al., 2018), although there is limited examination of coparenting in relation to both maternal and paternal parenting (particularly mother and father hostility, positive parenting and discipline practices). There is also limited understanding of the role coparenting plays for child adjustment in the context of a wider family system, due to research primarily examining associations between coparenting and one family process (e.g., the interparental relationship) in isolation of other family processes and child mental health (e.g., Le et al., 2016). Furthermore, limited evidence suggests that coparenting may play a moderating role in associations between the interparental and parent-child relationships (e.g., interparental relationship satisfaction and parenting stress; Kwan et al., 2015), and between family processes and child psychopathology (e.g. between punitive parenting and child conduct problems; Latham et al., 2017). However, this is a relatively novel area of examination, and the moderating role of

coparenting remains unclear. The aim of the present thesis is therefore to provide insight into the role of the coparenting relationship for child psychopathology relative to other family processes (specifically, the relative role of coparenting, maternal parenting and paternal parenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems), in addition to exploring whether coparenting moderates associations between interparental conflict and parenting, and between parenting and child internalizing and externalizing problems. The following section outlines the importance of considering parent depression within family process and child psychopathology research.

## **Parent Depression as a Risk for Child Psychopathology**

### **Parent depression and child adjustment**

Intergenerational transmission of depression is an important factor to consider when examining factors influencing children's adjustment: a wealth of evidence demonstrates that children of depressed parents display higher levels of internalizing and externalizing problems through childhood and adolescence (e.g. Downey & Coyne, 1990; Fendrich, Warner & Weissman, 1990; Goodman et al. 2011; Harold et al., 2011; Kopala-Sibley et al., 2011; Mendes et al., 2012), persisting into adulthood (Weissman et al. 2016). Whilst research to date has predominantly focused on the effects of mother depression on child psychopathology, evidence suggests that father depression can also impact child adjustment from early childhood to adolescence (Fletcher, Feeman, Garfield & Vimpani, 2011; Gutierrez-Galve et al., 2015; Kane & Garber, 2004; Schacht et al., 2009; Sweeney & MacBeth, 2016), and that maternal and paternal depressive symptoms uniquely contribute to children's adjustment (Hanington, Heron, Stein & Ramchandani, 2012; Ramchandani et al., 2005; 2008; Ringoot et al., 2015). However,

research historically examines intergenerational transmission with regards to genetic risk for psychopathology, with less consideration of whether family socialization processes can explain the relationship between parent and child psychopathology (Harold et al., 2012; Natsuaki et al., 2014). It is therefore important to understand the processes through which intergenerational transmission of psychopathology occurs.

### **Relative intergenerational transmission and family socialization processes for child psychopathology**

Research demonstrates that parent depression and interparental conflict are interrelated; some research has evidenced parent depression as a predictor of subsequent interparental conflict (Basco, Prager, Pita, Tamir & Stephens, 1992; Conger et al., 1994; Conger et al., 2002; Whisman, Ubelacker & Weinstock, 2004), whilst other research has shown interparental conflict to predict parent depression (Fincham, Beach, Harold & Osborne, 1997; Gabriel, Beach & Bodenmann, 2010; Whisman & Beach, 2012). Additionally, interparental conflict, maternal depression and paternal depression have been shown to uniquely contribute to child internalizing and externalizing problems (Weinfield, Ingerski & Moreau, 2009; Keller, Cummings, Peterson & Davies, 2009).

Parent-child relationships have also been evidenced as a process through which parent depression influences child internalizing and externalizing problems (Elgar, Mills, McGrath, Waschbusch & Brownridge, 2007; Gonzales et al., 2000; Harold et al., 2011). Moreover, evidence suggests that both maternal and paternal parenting mediate the relationship between parent depression and child internalizing and externalizing problems; for example, in a cross-sectional study, Vera et al. (2012) found that mother and father depressive symptoms predicted child antisocial behavior via their own overprotecting behaviors and that mother rejection mediated the relationship between

maternal depression and child antisocial behavior. Longitudinal evidence also supports both maternal and paternal parenting as mediating processes in the relationship between parent depression and child adjustment (Cummings et al., 2013; Malmberg & Flouri, 2011).

Research also examines relative intergenerational transmission and family socialization processes (specifically interparental and parent-child relationships) for child psychopathology, providing support for the family stress model (Conger & Conger, 2008). Research has shown that parent depression can lead to higher levels of interparental conflict, which predicts poorer parenting, in turn predicting child internalizing and externalizing problems (Leinonen et al., 2003; Low & Stocker, 2005; Miller, Cowan, Cowan, Hetherington & Clingempeel, 1993; Mistry, Lowe, Benner & Chien, 2008; Scaramella, Sohr-Preston, Callahan & Mirabile, 2008). Longitudinal evidence also suggests that mother and father intergenerational transmission and family socialization processes are important for child psychopathology; for example, Shelton and Harold (2008) found mother and father depression to predict their own rejecting parenting behaviors indirectly via interparental conflict, in turn finding mother rejection to predict externalizing problems and father rejection to predict internalizing problems. However, research examining relative intergenerational transmission and family socialization influences on child psychopathology is primarily conducted in later childhood and adolescence. The aim of the first study in the present thesis is to develop understanding of relative intergenerational transmission and family socialization processes for child internalizing and externalizing problems from early-to-middle childhood by examining the relative influence of mother depression, father depression and interparental conflict on child internalizing and externalizing problems via both mother-child and father-child hostility. Previous research examining intergenerational

transmission and family socialization processes for psychopathology primarily relies on genetically related parents and children, meaning genetic and family environmental (parent depression, interparental and parent-child relationship) contributions to child psychopathology cannot be fully disentangled. The following section outlines challenges to research examining genetically related parents and children, in addition to outlining how genetically sensitive research designs can provide important contributions to the understanding of genetic and family environmental influences for child psychopathology.

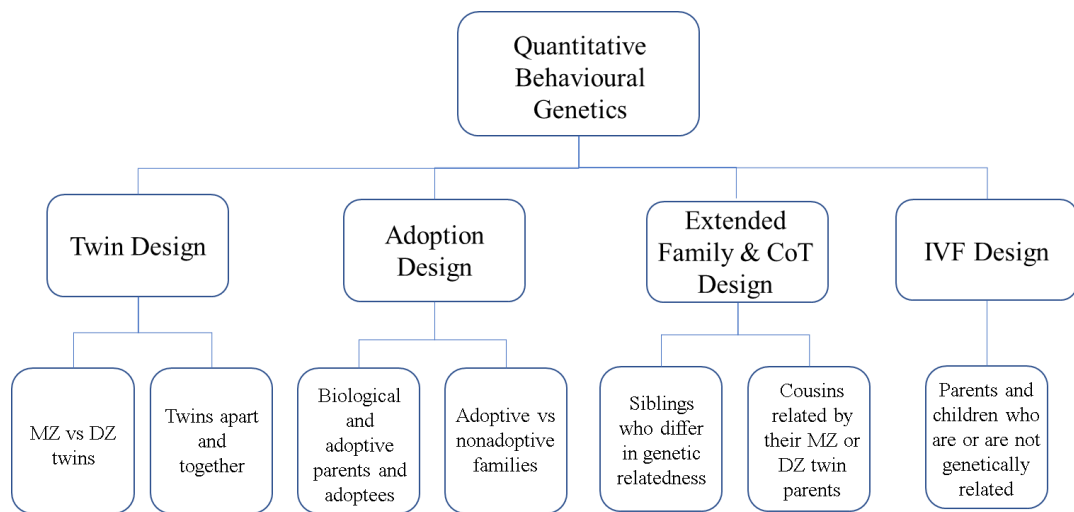
## **Disentangling Genetic and Environmental Contributions to Child Psychopathology**

### **Challenges to family process research: gene-environment correlation**

Family process research primarily uses samples of genetically related parents and children (Harold et al., 2011). One limitation of using this design feature is that it is not possible to discern whether associations between family processes and child outcomes are a result of the environment, or if they are the result of common genes between the parents and children. This is because the genes underlying the rearing environments that parents provide are the same genes underlying child behaviors, meaning any association between the rearing environment and child behavior is confounded by common genes; this is known as passive gene-environment correlation (passive  $r_{GE}$ , Jaffee & Price, 2012). For example, associations between hostile parenting and child aggression could be due to the same genes underlying parents' hostile behavior and child aggression. Another important type of gene-environment correlation is evocative gene-environment correlation (evocative  $r_{GE}$ ), which is when children's genetically-informed attributes evoke responses from their rearing environment (Rutter & Silberg, 2002). For example, child aggressive behavior may

evoke negative responses from parents, leading to more hostile parenting.

Understanding whether family processes are attributable to genetic influence, environmental influence, or both is fundamental for the translation of family process and child psychopathology research to practice; understanding environmental processes that are important for children's development is key for developing effective interventions to improve outcomes for children (Harold, Leve & Sellers, 2017). Novel research designs that allow the examination of associations between family members of varying genetic relatedness can be used to increase understanding of gene-environment interplay and child development. These research designs include the twin, children of twin, siblings reared apart, adoption-at-birth and adoption-at-conception (*In-Vitro* Fertilization; IVF) design (Figure 4), which are discussed in the following section.



*Figure 4.* A summary of traditional behavioral genetic research designs (adapted from Sellers, Smith et al., *in press*, 2019). MZ = monozygotic; DZ = dizygotic; CoT = children of twins; IVF = in vitro fertilization.

### **Twin, children of twins, and sibling reared apart designs**

The twin design involves comparing characteristics between monozygotic twins, who share 100% of their genes, and dizygotic twins, who share 50% of their genes. Stronger associations between monozygotic than dizygotic twins indicate genetic influence. In contrast, if there are equal associations between monozygotic and dizygotic twins, this suggests that the environment also plays a role in these behaviors. In an extension of the twin design, the Children of Twins (CoT) design examines correlations between the environment and outcomes in children of monozygotic and dizygotic twin parents. Children of monozygotic twins share the same number of genes with their parent and their parents' twin sibling, but they do not typically share an environment with the parent's twin sibling. Similar associations between children and their parent and children and their parent's twin would suggest genetic influence, whereas greater similarity between a child and their parent than the parent's twin would suggest environmental influence. Additionally, genetic influence can be inferred if children share more similarities with a monozygotic twin of the parent than a dizygotic twin of the parent.

The siblings reared apart design examines associations between genetically-related siblings who have been brought up in separate rearing environments. Examination of monozygotic twins reared apart allows for the control of genetic similarities, meaning any differences in behavior are a likely to be a result of their separate rearing environment (Bouchard, Lykken, McGue, Segal, & Tellegen, 1990; Pedersen et al., 1991). Examining sibling pairs in which one is adopted whilst the other remains with biological parents provides information about the potential outcomes of individuals had they not been adopted, providing a unique insight into how different



environments can influence the outcomes of children who share some of their genes. Each of the designs discussed can provide insight into genetic and environmental contributions to children's development. Findings from some of these studies are discussed below.

### **Research evidence from twin, siblings reared apart and CoT studies**

Research using twin, CoT and siblings reared apart designs have shown a genetic component to developmental outcomes such as criminality (Mednick, Gabrielli & Hutchings, 1984), and internalizing and externalizing problems (Jaffee, Moffitt, Caspi, Taylor & Arseneault, 2002). However, these studies also demonstrate that concordance in psychopathology cannot be wholly attributed to common genes. These designs have also highlighted the importance of the rearing environment for children's development. Specifically, twin studies have demonstrated that much of the concordance rates for internalizing and externalizing problems are attributable to shared environment (Gjone & Stevenson, 1997).

Evidence from twin, CoT and siblings reared apart designs also demonstrates the importance of specific family processes for children's development. For example, twin studies have shown that the association between family conflict and child internalizing problems is similar for monozygotic and dizygotic twins, suggesting that the influence of family conflict is attributable to the environment (Rice, Harold, Shelton, & Thapar, 2006). Additionally, research utilizing the CoT design has found environmental processes to explain the link between family conflict and children's internalizing and externalizing problems, and both genetic and environmental processes to explain associations between marital quality, agreement on parenting, and children's internalizing and externalizing problems (Schermerhorn et al., 2011), demonstrating the

importance of the interparental and coparenting relationships for children's adjustment. Evidence from CoT studies also suggests that associations between parenting and child adjustment can be attributed to the environment (McAdams et al., 2014). A recent study of siblings reared apart found children living with their biological parents to be at increased risk compared to their adopted siblings, providing evidence for environmental risk for child substance abuse (Kendler, Ohlsson, Sundquist & Sundquist, 2016). CoT studies have also found the association between parent and child internalizing problems to be stronger than associations between the child and the parent's monozygotic twin, showing parent mental health to be an important influence for child adjustment (Eley et al., 2015; Natsuaki et al., 2014). Furthermore, evidence from twin studies provides support for evocative *r*GE, with research demonstrating that children's genetically-informed characteristics can influence parenting behavior (Klahr & Burt, 2014) and negative family relationships (Feinberg, Reiss, Neiderhiser, & Hetherington, 2005; Neiderhiser, Marceau, & Reiss, 2013; Reiss, Neiderhiser, Hetherington, & Plomin, 2000). Thus, studies using twin, CoT and sibling reared apart research designs demonstrate the importance of the rearing environment for children's development and highlight how children can evoke responses from their rearing environment.

### **The adoption design**

Although twin, sibling reared apart and CoT studies can provide useful information on genetic and environmental influences on children's development, passive *r*GE cannot be ruled out as an explanation for associations as family members are genetically related. In contrast, in an adoption design parents and children are genetically unrelated, meaning any associations between parents and children cannot be explained by common genes and the confound of passive *r*GE is removed. Any

associations between genetically unrelated adoptive parents and children are therefore attributable to environmental processes. In a full adoption design, information is also available for birth parents. As birth parents and adoptive children share their genes but do not share a rearing environment, any associations between birth parents and adopted children are attributable to genetic influence (and prenatal influence for birth mothers). Furthermore, the inclusion of birth parent information allows the examination of evocative  $rGE$ ; associations between birth parent characteristics and adoptive parent behaviors can be examined directly and indirectly via adopted child characteristics to examine whether children's genetically informed behavior evokes responses from parents. Thus, the adoption design can provide otherwise unobtainable insight into the importance of the rearing environment for children's development and how heritable traits can influence the rearing environment. However, one confound of an adoption design is lag time to placement; children may spend time being reared by their biological parents before adoption. This makes it difficult to fully disentangle genetic and environmental contributions to children's development. However, an adoption-at-birth design overcomes this caveat, as children share no rearing environment with their biological parent prior to adoption. The present thesis utilizes data from the world's largest longitudinal adoption-at-birth study; the Early Growth and Development Study (EGDS, Leve et al., 2007), details of which are provided in the next chapter.

### **In vitro fertilization/ artificial reproductive technologies designs**

An extension of the adoption design is the "adoption at conception" design, which involves the examination of associations between families with children born through assisted reproductive technology (specifically *In Vitro* Fertilization; IVF). Children born via IVF can vary in genetic relatedness to their parents (Thapar et al.,

2007). Children can be genetically related to both parents (homologous IVF), related to the mother but not the father (sperm donation), related to the father but not the mother (egg donation) or genetically unrelated to both parents (embryo donation). Finally, with surrogacy, children are genetically related to both parents but do not share a prenatal rearing environment with their parents. The IVF design therefore provides insight into genetic and environmental contributions to children's development through the examination of parents and children of varying genetic relatedness.

### **Findings from the adoption and IVF design: the importance of the rearing environment**

Studies utilizing the adoption design highlight the importance of the rearing environment for children's development. Specifically, interparental conflict and parent-child relationships have been shown to be important for adopted child outcomes, including early toddler anger (Rhoades et al., 2011), sleep problems (Mannering et al., 2011; Rhoades et al., 2012), and externalizing problems in middle childhood (Harold et al., 2013a; Harold et al., 2013b). Adoptive mother and father hostility have been evidenced as processes through which interparental conflict can influence child adjustment in several studies using the adoption design (Bornovalova et al., 2014; Burt, McGue, Krueger, & Iacono, 2007; Stover et al., 2012), highlighting the importance of these family processes for child adjustment regardless of whether parents and children are genetically related. There is less evidence linking these processes to internalizing problems in an adoption design and limited examination of parenting processes beyond harsh/hostile parenting (i.e., limited examination of discipline practices and positive parenting using an adoption design). An aim of the final study in this thesis is to use an adoption-at-birth design to examine parenting processes beyond hostility (discipline and

positive parenting) as mediators in the relationship between interparental conflict and both internalizing and externalizing problems.

Evidence from the adoption design also suggests that intergenerational transmission can occur via environmental processes; both adoptive mother and father depression have been associated with subsequent child internalizing and externalizing symptoms (Laurent et al., 2013; Pemberton et al., 2010). Additionally, using the IVF design (i.e. adoption-at-conception), Harold et al. (2011) found mother depression to be related to child depression indirectly via mother parenting in genetically related and unrelated parents and children, but there was an indirect relationship for genetically related fathers only. These findings suggest that the transmission of depression from fathers to children may be attributable to genetic factors, but the influence of mother depression is attributable to the environmental. In contrast, Stover et al. (2016) found adoptive father antisocial behavior to predict child aggression via the path from interparental conflict to hostile parenting, whereas neither mother antisocial behavior or hostility predicted child aggression, suggesting that intergenerational transmission of antisocial behavior is stronger for fathers among genetically unrelated parents and children. However, using the IVF design, Harold et al. (2012) showed mother and father antisocial behavior to predict child antisocial behavior among genetically unrelated parents and children indirectly via mother-child hostility and the path from interparental conflict to father-child hostility. These findings underline the importance of using novel research designs (i.e., the adoption design) to develop understanding of relative intergenerational transmission and family socialization processes for child psychopathology. The aim of the first study in the present thesis is to use a longitudinal adoption-at-birth design to examine the relative contribution of interparental conflict,

mother depression and father depression for child internalizing and externalizing problems via mother-child and father-child hostility from early-to-middle childhood.

Whilst evidence from adoption studies highlights the interparental relationship, parent-child relationships and parent mental health as important influences for children's adjustment, the coparenting relationship is rarely examined using this research design. In a review of evidence, only one study has examined the relationship between coparenting and child adjustment among adoptive families: Farr and Patterson (2013) found a significant association between coparenting and child internalizing and externalizing problems, suggesting that the coparenting relationship may be an important environmental process for child adjustment. However, research has not previously examined how coparenting relates to child adjustment in the context of a wider family process model using a longitudinal adoption-at-birth design. The aim of the second and third empirical studies in the present thesis is to examine the role of coparenting in the relationship between interparental conflict, mothers' and fathers' parenting and child internalizing and externalizing problems using data from the EGDS.

### **Findings from the adoption design: evocative $rGE$ .**

The adoption design provides unique insight into how children's genetically informed behavior can evoke responses from their rearing environment (evocative  $rGE$ ). The first study to examine evocative  $rGE$  using an adoption design found birth mother psychopathology to be associated with adoptive mother hostility through disrupted children's behavior (Ge et al., 1996), suggesting that children's disruptive behavior is influenced by their biological mothers' genes, which then evokes negative parenting in their genetically unrelated mothers. Additionally, Harold et al. (2013a) found birth mother ADHD symptoms to predict mother hostility indirectly via

children's early impulsivity/activation. Numerous findings from the EGDS also evidence child-evoked effects on fathers' parenting. For example, Hajal et al. (2015) found that birth mothers' positive temperament predicted reduced harsh parenting in adoptive fathers. Additionally, Elam et al. (2014) found adopted toddlers' genetically influenced low social motivation (evidenced by associations with birth mothers' low behavioral motivation) to predict adoptive mothers' and fathers' hostility towards their children, which then predicted children's subsequent disruptive behavior with peers. Overall, evidence from the adoption design indicates that children's genetically informed negative behavior can evoke negative responses from genetically unrelated mothers and fathers, which can then predict poorer child adjustment. Thus, findings underline the importance of considering child-evoked parenting when examining process-oriented models for child adjustment. However, research has primarily examined the influence of specific temperamental characteristics on parenting as opposed broader child behaviors and largely demonstrates cross-sectional associations between child temperament and parenting. Each study in the present thesis therefore examines longitudinal associations between early child adjustment (internalizing and externalizing behavior) and subsequent maternal and paternal parenting to increase understanding of child-evoked effects on parenting within a wider family systems framework (i.e., examining interparental, parent depression and gene-environment evocative processes for maternal and paternal parenting).

In summary, research using the adoption design demonstrates the importance of parent psychopathology, interparental conflict and both mothers' and fathers' parenting for child psychopathology, with limited evidenced also demonstrating the importance of coparenting for child psychopathology. Findings also highlight that children's genetically informed behavior can evoke parenting responses and lead to the

continuation of problematic child behavior in genetically unrelated families. However, little research uses a longitudinal adoption-at-birth design to examine relative intergenerational transmission and family socialization processes across early-to-middle childhood, and there is limited examination of coparenting using an adoption design. Examining these processes in a design that enables the examination of associations without the confound of passive *r*GE is fundamental for developing understanding of how the family system influences children's adjustment.

### **Methodological Considerations: The Benefits of a Longitudinal, Multimethod, Multi-Informant Approach**

As discussed throughout this literature review, a strength of longitudinal compared to cross-sectional research is that longitudinal research allows the direction of associations between family processes and child outcomes to be examined (e.g., by ascertaining whether certain family processes predict subsequent family processes and child adjustment). When examining longitudinal associations, it is also important to control for early child symptoms to ensure that associations between family processes and child adjustment cannot be explained by early child behavior and that these processes are explaining changes in child behavior (Grych et al., 2003; Kessler & Greenberg, 1981). However, research examining longitudinal relationships often does not control for early child behavior (e.g., Han et al., 2017). Therefore, the present thesis included early child adjustment to allow the examination of interparental conflict, maternal and paternal depression, maternal and paternal parenting, and coparenting as predictors of changes in child internalizing and externalizing symptoms over time.

Another important consideration within family process and child psychopathology research is the method through which family processes are measured



(observed or parent reported). Research examining family processes often relies on mother-reported data, due to lower response rates in research from fathers than mothers (Ramchandani et al., 2005). This single informant approach can lead to trait negative affectivity bias (where individuals with general negative traits are likely to report negatively across multiple questionnaires), which can lead to inflated associations (Harold & Conger, 1997; Rhoades et al., 2012). Employing a multi-informant approach in family process research is beneficial in reducing this bias (Harold et al., 2007). Due to the availability of fathers in the present sample, both mother and father reported data was included throughout measures used across the present thesis, thus reducing the bias present in single informant data. Additionally, few family process studies use both parent reported and observational data. The present thesis complements the multi-informant approach with observational data to assess interparental conflict, thus achieving a more complete representation of interparental conflict than using only parent reported or observational data. Including observational data provides insight into behaviors without informant effects, whilst mother and father reports provide information on more general patterns of behavior (e.g., by asking about the frequency of behaviors over the last month) that cannot be obtained in a snapshot provided by observational data, which is subject to variability in day-to-day behavior (Meunier et al., 2011). Coparenting is also assessed using interviewer impressions of observed behavior. Thus, a key strength of the studies within the present thesis is the use of a longitudinal, multimethod, multi-informant approach within an adoption-at-birth design.

### **Policy and Practice Implications**

The importance of family process research examining predictors of change in child psychopathology is highlighted through its policy and practice implications.

Understanding family processes implicated in child psychopathology provides insight into potential targets for intervention to improve outcomes for children. Genetically sensitive research designs are uniquely informative for policy and practice, as they allow the examination of relationships between family processes and child psychopathology (e.g., between the parent-child relationship and child externalizing problems) among genetically unrelated parents and children, meaning any association between parents and children cannot be attributed to common genes, thus indicating family environmental influences on child development. Where there are significant associations between family environmental influences (e.g., parent-child relationship) and child psychopathology among genetically unrelated parents and children, this indicates that child outcomes may be improved by targeting these processes through intervention. Additionally, research designs that allow the examination of GxE provide useful contributions for understanding when children may or may not benefit from intervention, thus paving the way to the development of individually tailored intervention. Further policy and practice implications specific to the family processes examined in the present thesis (interparental, parent-child and coparenting processes) are considered in the discussion chapter of this thesis.

### **Summary and Thesis Aims**

To summarize, existing research demonstrates the importance of interparental conflict, the parent-child relationship and parent depression for child adjustment. However, research rarely considers relative intergenerational transmission and family socialization processes for child internalizing and externalizing problems, particularly in early-to-middle childhood using genetically sensitive research designs. Additionally, limited research considers the relative role of distinct maternal and paternal parenting

behaviors as processes through which interparental conflict can influence child internalizing and externalizing problems. Moreover, there is limited understanding of the coparenting relationship within a wider family systems framework. Overall the present thesis aims to develop understanding of the relative role of mothers and fathers for children's development, with a primary focus on the interparental relationship, maternal and paternal parenting, and the coparenting relationship.

Study 1 examines whether interparental conflict, maternal depression and paternal depression can influence child internalizing and externalizing problems via parent hostility (mother and father hostility combined), before examining the unique contributions of mother-child and father-child hostility as mediators in this relationship, to increase understanding of the relative role of mothers and fathers for child mental health. Study 2 develops from study 1 by introducing an additional family subsystem that can provide insight into the role of mothers and fathers for child adjustment; the coparenting relationship (how mothers and fathers work together as parents to promote positive child development). Specifically, study 2 examines the relative role of mother hostility, father hostility and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, with the aim of understanding the role of the coparenting relationship for child adjustment within the wider family system (i.e., relative to interparental and maternal and paternal parenting processes). Study 3 develops from study 2, aiming to increase understanding of the relative role of mothers and fathers for child adjustment by examining multiple maternal and paternal parenting behaviors beyond hostility (alongside coparenting) as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Specifically, study 3 examines whether mother and father hostility, warmth, positive parenting, inconsistent discipline and harsh discipline

differentially mediate the relationship between interparental conflict and child internalizing and externalizing problems. Moreover, study 3 also examines coparenting as a moderator of associations between interparental conflict and each examined maternal and paternal parenting practice, and between parenting and child internalizing and externalizing problems, to provide further insight into the role of the coparenting relationship within the wider family system. Furthermore, each study in the present thesis also examines child-evoked effects on parenting and coparenting, to further understand the cascade of processes that can contribute to changes in child internalizing and externalizing symptoms over time.

One strength of the present thesis is the aforementioned use of the adoption-at-birth design, allowing the examination of family processes (interparental conflict, parent-child relationships, coparenting relationship) as environmental influences on children's development without the confound of common genes (Jaffee & Price, 2012). An additional strength of the present thesis is the utilization of longitudinal data, to allow the examination of these processes as predictors of change in children's behavior over time. Furthermore, the studies in the present thesis use a multimethod, multi-informant approach, employing observational and mother- and father-reported data to reduce single-rater bias. Thus, the studies presented in this thesis provide unique contributions to the understanding of family processes and child psychopathology, being the first to use a multimethod, multi-informant, longitudinal adoption-at-birth design to examine the importance of interparental, maternal, paternal and coparenting processes for child internalizing and externalizing problems from early-to-middle childhood. The following section outlines the methods used in the present thesis, providing sample and measurement details for the EGDS and outlining analysis methods.

## **Chapter 2: Thesis Sample and Methods**

This chapter summarizes the sample and procedure for the present thesis. The present thesis uses the Early Growth and Development Study (EGDS), a longitudinal adoption-at-birth study developed to assess family processes as predictors of five life course developmental pathways (internalizing and externalizing problems, social competence, school adjustment and healthy weight). The following section outlines the total sample, the sample included in the present thesis and any differences between samples, in addition to outlining sample retention. Study procedures, measures and analysis methods used in the present thesis are also outlined.

### **Sample: The Early Growth and Development Study (EGDS)**

The EGDS is a longitudinal adoption-at-birth study consisting of 561 sets of adoptive mothers, adoptive fathers, adopted children and birth mothers, and a subset of birth fathers (Leve et al., 2013). Children were adopted at a median of two days after birth. The University of Oregon Institutional Review Board provided ethical approval (protocol number: 04262013.036). The sample is representative of adoptive parent and birth parent populations that completed adoption plans at the participating agencies in the same period. Due to the availability of measures, only data from cohort I is used in the present thesis. Demographics do not differ between families in Cohort I and Cohort II, other than adoptive parents in Cohort I having a lower income than families in Cohort II, and adoptive mothers in Cohort I being on average one year younger than adoptive mothers in Cohort II (Leve et al., 2013). Same sex and separated parents are excluded from present analyses due to the nature of comparing the relative role of mothers and fathers; only intact heterosexual parents who provided data for at least one of the time points used in the present thesis (2.5 years, 4.5 years and 6 years) are

included, resulting in a sample of  $N = 303$  heterosexual, intact adoptive families in studies assessing coparenting (studies 2 and 3; 177 boys, 126 girls), and  $N = 301$  families for the study assessing parent depressive symptoms (study 1; 175 boys, 126 girls). Table 1 shows the demographics of adoptive mothers, adoptive fathers and adopted children included in the present thesis. Family income ranged from \$30,000-\$1,650,000 ( $M = \$178,078.82$ ). Table 1 also shows results from chi-square ( $\chi^2$ ) and t-tests comparing demographics for the families included in the present thesis ( $N = 303$ ) and other families in Cohort I that are not included in the present thesis (same-sex, single or divorced families,  $N = 58$ ). Findings show that demographics for families included in the present sample do not differ from other family types in Cohort I.

Table 1

*Demographics and  $\chi^2$ /t tests comparing Cohort I participants included versus excluded in the present thesis*

Demographics	Cohort I total	Included sample <sup>a</sup>	Excluded sample <sup>b</sup>	$\tau/\chi^2$	df	p
Income (Mean (SD))	180469.81	178078.82	194218.00	-.70	295	.49
	(141955.05)	(144068.88)	(129805.82)			
AC ethnicity (N (%))				6.18	6	.40
White American	208 (57.6)	179 (59.1)	29 (50)			
Hispanic/ Latino	34 (9.4)	30 (9.9)	4 (6.9)			
African American	40 (11.1)	29 (9.6)	11 (19)			
More than one race	74 (20.8)	61 (20.1)	14 (24.1)			
Other race/ unknown	4 (1.2)	4 (1.3)	0 (0)			
AP 1 ethnicity				1.98	6	.92
(N (%))						
White American	330 (91.4)	275 (90.8)	55 (94.8)			
Hispanic/Latino	9 (2.5)	8 (2.6)	1 (1.7)			
African American	13 (3.6)	11 (3.6)	2 (3.4)			
More than one race	4 (1.1)	4 (1.3)	0 (0)			
Other race/ unknown	5 (1.5)	5 (1.7)	0 (0)			
AP 2 ethnicity				7.27	6	.28
(N (%))						
White American	323 (89.5)	276 (91.1)	47 (81.0)			
Hispanic/Latino	4 (1.7)	4 (1.3)	2 (3.4)			
African American	18 (5.0)	14 (4.6)	4 (7.3)			

More than one race	4 (1.1)	4 (1.3)	0 (0)			
Other race/ unknown	7 (2.0)	5 (1.7)	2 (3.6)			
AC gender (N(%))				.89	1	.35
Male	207 (57.3)	177 (58.4)	30 (51.7)			
Female	154 (42.7)	126 (41.6)	28 (48.3)			

AC = Adopted child, AP = adoptive parent, df = degrees of freedom

<sup>a</sup>Intact, heterosexual families who provided information at one or more of the assessments included in the present thesis

<sup>b</sup>Same-sex, single or divorced adoptive families, or intact families that did not complete any assessments in the present thesis.

## Recruitment Procedures

The EGDS recruitment procedures were designed to accomplish five main goals: (1) to reduce the likelihood of recruiting only one member of the adoption triad (i.e., child, adoptive parents, birth parents); (2) to not initiate contact until after period of revocation to minimize ethical concerns; (3) to minimize the probability of information being transferred across participants; (4) to recruit a sample that would contain varying levels of adoption openness (i.e., knowledge of adoption and/or contact with birth parents) and ethnic diversity; and (5) to recruit a large subsample of birth fathers. This led to collaboration with four recruitments sites covering the Mid-Atlantic, West/Southwest, the Mid-West Pacific and Southwest regions of the United States. Participants were recruited through 45 adoption agencies in 15 states across these regions from March 2003 to January 2010. Families were eligible to participate if: (a) the adoption placement was domestic; (b) placement occurred before 3 months postpartum; (c) the infant was not genetically related to adoptive parents; (d) there were no known major medical conditions; and (e) birth and adoptive parents could understand English at 8th Grade level. Letters were sent to each eligible adoptive family describing the study and providing the option to opt out of the study by returning a stamped postcard. Two weeks after mailing, for families who did not opt out, birth mothers were recruited and considered an active participant after returning a signed

consent form. Adoptive families were then recruited via contact information provided by the agency, and considered participating after returning signed consent forms. Finally, birth fathers were recruited through the same procedures.

### Sample Retention

The present thesis uses data from wave C (2.5 years), wave D (4.5years) and wave E (6 years) of the EGDS. In the total Cohort I sample, from wave A to wave C there was a 96.1% retention rate, and from wave C to wave E there was a 91.53% retention rate. Of the sample included in the present analysis (intact heterosexual parent families), there was a 20.1% attrition rate from wave C to E. Table 2 shows results from  $\chi^2$  and t-tests comparing demographics and study variables for families who were retained across the three waves and for those where there was attrition by wave E. Results indicate that participants retained in the sample had significantly higher father observed interparental conflict, a significantly more positive coparenting relationship and significantly higher income than families who were not retained at wave E.

Table 2

$\chi^2$ /t-tests comparing demographics and study variables for retained versus non-retained families

Demographics / Study variables	Retained C to E	Attrition by wave E	t / $\chi^2$	df	p
	Mean (SD) / N (%)	Mean (SD) / N (%)			
AC ethnicity			6.16	6	.41
White American	142 (58.4)	35 (58.3)			
Hispanic/Latino	25 (10.3)	5 (8.3)			
African American	26 (10.7)	4 (6.7)			
More than one race	48 (19.8)	15 (25.0)			
Other race/Unknown	2 (.8)	1 (1.7)			
AP 1 ethnicity			6.71	6	.35
White American	223 (91.8)	52 (86.7)			
Hispanic/Latino	6 (2.5)	2 (3.3)			



African American	9 (3.7)	2 (3.3)			
More than one race	3 (1.2)	1 (1.7)			
Other race/Unknown	2 (.8)	3 (5.1)			
AP 2 ethnicity					
White American	221 (90.9)	55 (91.7)	4.55	6	.60
Hispanic/Latino	4 (1.6)	0 (0)			
African American	10 (4.1)	4 (6.7)			
More than one race	4 (1.6)	0 (0)			
Other race/Unknown	4 (1.6)	1 (1.7)			
AC Gender			1.34	1	.25
Male	138	39			
Female	105	21			
Income	155573.34 (150120.95)	112494.52 (140471.04)	-2.02	301	.05*
M IPC observed	.85 (.18)	.83 (.17)	-.67	238	.50
F IPC observed	.83 (.18)	.77 (.15)	-2.29	82.92	.02*
M reported partner IPC	19.61 (6.33)	20.58 (6.48)	1.03	286	.30
F reported partner IPC	22.77 (7.74)	22.82 (7.81)	.04	280	.97
Early child adjustment	153.43 (15.41)	153.36 (14.60)	-.03	247	.98
M depression	1.38 (.06)	1.38 (.06)	-.39	283	.70
F depression	1.37 (.05)	1.37 (.06)	-.06	278	.95
M hostility	10.63 (2.80)	11.61 (3.28)	1.69	226	.09
F hostility	10.33 (2.94)	9.77 (1.66)	-1.43	49.97	.16
M warmth	1.20 (.08)	1.24 (.14)	1.62	27.38	.12
F warmth	29.61 (3.30)	30.12 (3.13)	.73	202	.47
M positive parenting	1.26 (.05)	1.27 (.07)	.52	34.43	.61
F positive parenting	22.90 (2.38)	23.06 (2.06)	.36	244	.72
M inconsistent disc	11.96 (2.53)	11.94 (2.53)	-.05	245	.96
F inconsistent disc	12.17 (2.56)	12.15 (2.68)	-.03	243	.98
M harsh disc	8.85 (1.92)	9.35 (2.47)	1.30	247	.19
F harsh disc	9.11 (2.20)	9.18 (2.10)	.17	241	.87
Coparenting	1.30 (.11)	1.36 (.11)	2.75	234	.01*

\*p < .05, AC = Adopted child, AP = Adoptive parent, SD = standard deviation, df = degrees of freedom, M = mother, F = Father, disc = discipline.

### Assessment Procedures

Assessment in the EGDS include questionnaires, in-person interviews and standardized testing for birth parents, adoptive parents and children, diagnostic interviews with adoptive parents and birth parents, and observational interactions for adoptive families (mother-child, father-child, mother-father and mother-father-child interactions). Additionally, food and activity diaries for adoptive families, medical records for birth parents and adopted child, DNA collection via buccal cells for the

adoptive triad, cortisol measures for the adopted child and birth parents, and official arrest records for birth parents are collected as part of the assessments. Parents also completed some questionnaires that were delivered by post. Overall, 149 different assessments have been administered over the course of the study. The first assessments were 4 months postpartum for birth parents and 9 months postpartum for adoptive families. Assessments were conducted every 9 months in infancy and have been collected every year from toddlerhood up to age 9. In-person assessments are primarily conducted in the home, and last approximately 3-4 hours each, which included observed interactions and interviews.

The present thesis uses data from questionnaires (obtained through a combination of in-person interviews during a home visit, telephone interviews, online questionnaires and postal questionnaires) and observed interactions for adoptive families at the 2.5, 4.5 and 6-year assessments that assess interparental conflict, parent-child relationships, parent depressive symptoms, coparenting and child psychopathology (internalizing and externalizing problems). The present thesis uses mother and father reports of each questionnaire. Interparental conflict is assessed using observations of a marital interaction task and questionnaire data obtained through a combination of in-person interviews and online questionnaires. Parent depressive symptoms are assessed through postal questionnaires. Coparenting is assessed using observational data from the home visit. Parenting measures are assessed with a combination of online questionnaires, postal questionnaires, telephone interviews and in-person interviews during the home visit, and child outcomes are assessed using a combination of postal and online questionnaires.

## Measures

### Interparental conflict and parent mental health (2.5 years)

**Interparental conflict.** Interparental conflict is assessed using both observational and parent reported data. During a home visit at the 2.5-year assessment, adoptive mothers and fathers completed a 20-minute marital interaction task designed to elicit positive and negative emotions. The interviewer instructed the couple to discuss the 19 topics presented to them on cards, which included topics such as what they find frustrating about each other and when they first met. Interactions were coded by trained coders using the Iowa Family Interaction Rating Scales - Marital Interaction Code (Dogan, Milne-Kahn, Pong, Wu & Conger, 2005; Melby et al., 1989), which included the following scales: negative mood, angry coercion, antisocial, assertive communication, hostility, listener responsiveness, reciprocate hostile and warmth/support. Codes were rated on a 9-point scale from 1 (Not at all characteristic) to 9 (Mainly characteristic). Approximately 30% of observations were coded by two coders. The present thesis uses the hostility, negative mood and antisocial codes to construct an observed interparental conflict variable. Intraclass correlations ranged from .38 (negative mood) to .60 (hostility). Although these are relatively low, these codes have been previously used at an earlier wave as indicators of interparental conflict (Rhoades et al., 2012), and combined showed good reliability ( $\alpha = .82$  mothers,  $\alpha = .80$  for fathers). Adoptive mothers and fathers also completed the hostility subscale from the Behavior Affect Rating Scale (BARS; Melby, Ge, Conger & Warner, 1995), a 10-item subscale assessing behaviors displayed by the partner towards the reporter during the last year. Items were rated on a 7-point scale, ranging from 1 (Always) to 7 (Never). Items include “How often did your partner... Shout or yell at you because he/she was mad at you?” and ... “Argue with you whenever you disagreed about something?”.

Items are reverse-coded so that higher scores indicate higher hostility ( $\alpha = .87$  for mothers,  $\alpha = .91$  for fathers). Both the observed and reported interparental conflict scales are used in each of the three empirical studies as indicators of a latent interparental conflict variable.

**Parent depressive symptoms.** Mother and father depressive symptoms are assessed using adoptive mother and father self-reports of the Beck Depression Inventory (BDI; Beck & Steer, 1993), a 21-item measure assessing their depressive symptoms over the last week. One item assessing suicidal thoughts was omitted to reduce situations in which clinical follow-up would be required (Pemberton et al. 2010), resulting in a 20-item scale. Items are rated on a 4-point scale ranging from 1 to 4, with each number representing a statement in relation to the question. Examples include “I do not feel sad” (1) to “I am so sad or unhappy that I can’t stand it” (4), and “I don’t feel disappointed in myself” (1) to “I hate myself” (4). Higher scores indicate higher depressive symptoms ( $\alpha = .79$  for mothers,  $\alpha = .85$  for fathers). Mother and father depressive symptoms are included in the first empirical study in the present thesis.

#### **Coparenting and parenting (4.5 years)**

**Coparenting.** Coparenting is assessed using a 12-item interviewer impressions scale developed for this study. Interviewers reported on 12 behaviors at the end of the home visit at the 4.5 year assessment. Items assess overall family behavior (e.g., “How courteous were family members to each other?”), warmth and hostility between parents (e.g., “Did the couple display physical affection during the visit (touch, kiss, hug)?”; “Was there tension between the couple during the visit?”), and how couples relate to the child together with regards to childrearing conflict, division of labor, cooperation and shared parenting enjoyment (e.g., “Did the couple share a sense of pride in their child?”; “Did the couple argue over how to care for their child?”; “Did the couple seem to work

together as a team in taking care of their child?"; "Did one parent express anger or resentment towards the other parent for not helping out enough with the child?"). Items are rated on a 5-point scale ranging from 1 (Not at all) to 5 (Very). Seven items are reverse-coded and all 12 items are summed to create an overall measure of coparenting, with higher scores indicating poorer coparenting ( $\alpha = .84$ ). Coparenting is assessed in the second and third empirical studies in this thesis.

**Parent-to-child hostility.** Parent-to-child hostility is measured using adoptive mother and father reports of the Hostility subscale of the Iowa Family Interaction Rating Scales (Melby et al., 1989). This is a 5-item measure rated on a 7-point scale ranging from 1 (Never) to 7 (Always). Mothers and fathers reported on a range of hostile behaviors displayed towards the child in the last month, including "How often did you... get angry at him/her?" and "...Criticize him/her and his/her ideas?". Higher scores represented higher hostility ( $\alpha = .78$  for mothers,  $\alpha = .76$  for fathers). Parent-to-child hostility is included in all studies in this thesis.

**Parent-to-child warmth.** Parent-to-child warmth is measured using adoptive mother and father report of the 6-item warmth subscale from the Iowa Family Interaction Rating Scales (Melby, 1989). Parents were asked to report how often over the past month they displayed behaviors towards their child, including "how often did you... help him/her do something that was important to him/her" and "...act supportive and understanding towards him/her". Items are rated on a 7-point scale ranging from 1 (Never) to 8 (Always) and reverse coded so that higher scores represent lower warmth ( $\alpha = .86$  for mothers,  $\alpha = .85$  for fathers). Parent-to-child warmth is included in the final empirical chapter of this thesis.

**Positive parenting.** Positive parenting is measured using mother and father reports of the positive parenting subscale from the Alabama Parenting Questionnaire (APQ; Shelton, Frick & Wootton, 1996). The subscale consists of six items rated on a 5-point scale from 1 (Never) to 5 (Always). The positive parenting subscale represents the extent to which parents provide positive feedback or rewards for their child. Parents reported on items such as “You let your child know when he/she is doing a good job with something” and “You compliment your child when he/she does something well”. Items are reverse coded so that higher scores represent lower levels of positive parenting ( $\alpha = .69$  for mothers,  $\alpha = .72$  for fathers). Positive parenting is included in the final empirical chapter of this thesis.

**Inconsistent discipline.** Inconsistent discipline is measured using mother and father reports of the inconsistent discipline subscale from the APQ (Shelton et al., 1996). The subscale consists of six items such as “You threaten to punish your child then do not actually punish him/her” and “The punishment you give your child depends on your mood”. Items are rated on a 5-point scale from 1 (Never) to 5 (Always). Higher scores represent higher levels of inconsistent discipline ( $\alpha = .65$  for mothers,  $\alpha = .61$  for fathers). Inconsistent discipline is included in the final empirical chapter of this thesis.

**Harsh discipline.** Harsh discipline is measured using mother and father reports of the 6-item harsh discipline subscale from the Discipline Questionnaire (Pears, Capaldi & Owen, 2007). Items include “When your child won’t mind you or breaks a rule, how often do you...scold or yell at your child?” and “...spank or swat your child?”, and are rated on a 5-point scale ranging from 1 (Always or almost always) to 5 (Never). Higher scores represent higher levels of harsh discipline ( $\alpha = .55$  for mothers,  $\alpha = .54$  for fathers). Harsh discipline is included in the final empirical chapter of this thesis.

## **Child mental health**

**Early child adjustment (2.5 years).** Early child adjustment is measured using mothers' and fathers' reports of the internalizing and externalizing subscales from the Child Behavior Checklist (CBCL; Achenbach, 1991). The internalizing subscale consists of 36 items assessing child depression/anxiety symptoms (e.g., "looks unhappy without good reason"), emotional reactivity (e.g., "disturbed by any change in routine", somatic complaints (e.g., headaches without medical cause) and withdrawal (e.g., doesn't answer when people talk to him/her). The externalizing subscale consists of 24 items assessing aggression (e.g., doesn't seem to feel guilty after misbehaving) and attention problems (e.g., can't concentrate/can't pay attention for long). Items are rated on a 3-point scale (1 = not true, 2 = sometimes true, 3 = very true). As children's internalizing and externalizing problems have been shown to be undifferentiated before 4 years of age (Leve et al., 2009), mother and father reports of internalizing and externalizing symptoms are combined to create a composite measure of child adjustment ( $\alpha = .92$ ). Early child adjustment is included in each empirical study in the present thesis.

**Child internalizing and externalizing problems (6 years).** Children's internalizing and externalizing problems are measured using mother and father reports of the CBCL (Achenbach, 1991). Items are rated on a 3-point scale, ranging from 1 (Not true) to 3 (Very true). The present thesis uses the 31-item Internalizing (mothers  $\alpha = .81$ ; fathers  $\alpha = .83$ ) and the 35-item Externalizing subscale (mothers  $\alpha = .88$ ; fathers  $\alpha = .90$ ). For item examples, see the above early child adjustment measures section. Child internalizing and externalizing problems are assessed as the outcome variables in each empirical study in the present thesis. Mother and father reports are summed to create composite internalizing and externalizing problems variables in study 1 (single

respondent was considered as missing) and mother and father reports are used as indicators for latent internalizing and externalizing variables in studies 2 and 3.

### **Additional variables**

Prenatal complications and adoption openness are considered as control variables in each study in this thesis to take into account early (prenatal) environmental influences and similarities between birth and adoptive families as a result of contact between birth parents and children (Ge et al., 2008; Marceau et al., 2016).

### **Analysis Strategy**

Relevant transformations are completed throughout the thesis to adjust for skew. Data preparation (normality checks, transformations) and preliminary analyses (descriptives and correlations) are conducted in SPSS (IBM Corp., 2017). Due to missing data across and within assessments, each study implements multiple imputation in R 3.4.1 (R Core Team, 2017) using predictive mean matching with the “mice” package (van Buuren & Groothuis-Oudshoorn, 2011). Structural equation modelling (SEM) is used to examine each theoretical model, using the “Lavaan” package (Rosseel, 2012) in R 3.4.1 (R Core Team, 2017). Structural equation modelling allows the examination of unobservable latent constructs, and is therefore used in the present thesis to examine latent interparental conflict, parenting and child outcomes. Structural equation modelling also allows latent and manifest variables to be both predictors and outcomes, so is therefore used to assess parenting and coparenting as outcome variables (predicted by interparental conflict and child adjustment, in addition to mother and father depression in study 1) and predictors of child outcomes. This also allows examination of the indirect effects of interparental conflict and parent depression on child internalizing and externalizing problems via parenting and/or coparenting. Power



calculations indicated that the sample size needed to detect the significance of small effect sizes ( $\beta = .10$ ) at a statistical power level of  $\alpha = .80$  in the models in the present thesis is  $N \leq 276$ , thus indicating that the  $N > 300$  in the present thesis provides adequate statistical power to test hypotheses with the absence of type 2 errors. Indices used to indicate model fit are Chi Square( $\chi^2$ ), Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index (CFI), with a non-significant  $\chi^2$ ,  $CFI > .95$ , and  $RMSEA < .06$  indicating good fit (Hu & Bentler, 1999).

### **Aims: Study 1**

The aim of study 1 is to examine relative intergenerational transmission and family socialization processes for child internalizing and externalizing problems, specifically examining whether early interparental conflict and mother and father depression influence children's internalizing and externalizing problems via mother-child and father-child hostility. To align with traditional family process research that does not distinguish between maternal and paternal parenting, the first model examines whether composite parent hostility (mother and father hostility combined) mediates the relationship between interparental conflict, mother depression, father depression and child adjustment. To assess whether separating maternal and paternal hostility provides unique insight into family processes and child adjustment, the relative mediating roles of mother and father hostility in the relationship between interparental conflict, mother and father depression, and child internalizing and externalizing problems is then examined in a second model. Both models also examine whether early child adjustment predicts mother and father (or composite) hostility. It is hypothesized that mother depression and interparental conflict will predict mother hostility, and father depression and interparental conflict will predict father hostility. Both mother and father hostility

are hypothesized to predict child internalizing and externalizing problems. Furthermore, early child adjustment is hypothesized to predict mother and father hostility.

### **Aims: Study 2**

The aim of study 2 is to examine the relative role of coparenting, mother hostility and father hostility as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Again, early child adjustment is examined as a predictor of mother hostility, father hostility and coparenting. It is hypothesized that interparental conflict will predict coparenting and mother and father hostility and that these processes will differentially predict child internalizing and externalizing problems. However, due to the limited examination of these processes in the existing literature, no specific hypotheses are made about which would be the strongest predictor of internalizing and externalizing problems.

### **Aims: Study 3**

The aim of study 3 is to examine the relative role of distinct maternal and paternal parenting processes and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, in addition to examining whether coparenting moderates associations and whether early child adjustment differentially evokes maternal and paternal parenting. Five models examine mother and father hostility, warmth, positive parenting, inconsistent discipline and harsh discipline alongside coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. It is hypothesized that interparental conflict will differentially predict specific maternal and paternal parenting behaviors, and that specific maternal and paternal parenting behaviors will differentially

predict child internalizing and externalizing problems. Exploratory analysis is also conducted using Ordinary Least Squares (OLS) regression to examine coparenting as a moderator of the paths between interparental conflict and parenting, and between parenting and child internalizing and externalizing problems.

### **Chapter 3: Interparental conflict, intergenerational transmission and child internalizing and externalizing problems: Using an adoption design to examine maternal and paternal processes**

This chapter has been written for submission to the Journal of Applied Developmental Psychology, so the writing style adheres to the guidelines for this journal. This article is currently in review.

Contributing authors to the empirical paper are as follows:

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### **Abstract**

The present study examined relative intergenerational transmission and family socialization processes for child psychopathology, specifically examining the relative role of mother-child and father-child hostility as mediators in the relationship between mother and father depression, interparental conflict and child internalizing and externalizing problems, and whether early child behavior evokes more hostile parenting. A multimethod, multi-informant, longitudinal adoption-at-birth design was employed, assessing 301 adoptive families from 2.5 - 6 years, using parent reported and observational data. Two structural equation models were conducted to examine the mediating role of (a) composite parent hostility (mother and father hostility combined) to align with research that historically does not differentiate between maternal and paternal parenting, and (b) mother and father hostility as distinct constructs. Each model also examined child-evoked effects on parenting. Findings showed mother and father depression to be associated with early child adjustment and concurrent interparental conflict. Only early child adjustment (composite internalizing and externalizing problems) predicted composite hostility, which in turn predicted externalizing, but not internalizing problems. However, when examining maternal and paternal hostility as unique constructs, interparental conflict predicted father hostility, and early child adjustment predicted mother and father hostility. Mother and father hostility predicted child externalizing, but not internalizing problems. Findings demonstrate the importance of examining mothers' and fathers' parenting as unique constructs. Policy and practice implications are discussed.

*Keywords:* Interparental conflict, intergenerational transmission, maternal parenting, paternal parenting, externalizing, internalizing.

## Introduction

Family socialization processes have long been regarded as important for child behavior and development, referring to the role that families (particularly parents) play in children's learning of behaviors that align with the norms of society (Grusec, 2011). One key focus of family socialization research is examining how family socialization processes are linked to child psychopathology; specifically, the interparental and parent-child relationship are recognized as important family socialization influences for child internalizing problems (depressive symptoms, anxiety and withdrawal) and externalizing problems (disruptive, aggressive behavior; Harold & Sellers, 2018; Keller et al., 2009). In addition to family socialization influences for child mental health, it is important to consider the intergenerational transmission of psychopathology (i.e., how mental health problems are passed from parents to children; Sellers et al., 2014; Silk et al., 2011). Research demonstrates that offspring of depressed parents display higher levels of internalizing and externalizing problems (Goodman et al. 2011; Mendes et al., 2012), highlighting the importance of intergenerational transmission of depression for child outcomes.

Family socialization and intergenerational transmission of psychopathology research has historically been examined from differing perspectives; family socialization research emphasizes the importance of family contextual influences (e.g., interparental and parent-child relationships) for child psychopathology (Shoppe-Sullivan et al., 2007), whereas intergenerational transmission of psychopathology is predominantly examined in relation to genetic risk for psychopathology (i.e., by examining how psychopathology is passed from parents to children via common genes; Elam et al., 2014; Harold et al., 2013a; Leve et al., 2009). However, limited research has examined the intergenerational transmission of psychopathology among genetically

unrelated parents and children, finding significant associations between non-genetically related parent and child mental health problems (Harold et al., 2011, 2012; Lewis, Rice, Harold, Collishaw & Thapar, 2011), highlighting parent psychopathology as an environmental risk for child psychopathology (i.e., intergenerational transmission of psychopathology that cannot be explained by common genes). Nevertheless, there is little consideration of intergenerational transmission of depression relative to family socialization influences on child internalizing and externalizing problems using research designs that allow these processes to be examined as environmental influences without the confound of common genes (i.e., the adoption design). The present study therefore integrated family socialization and intergenerational transmission perspectives for child psychopathology in a non-genetically related sample, specifically examining the role of the mother-child and father-child relationship as processes mediating intergenerational transmission of depression and interparental relationship influences on child internalizing and externalizing problems.

### **The Parent-Child Relationship as a Mediator for Interparental Influences and Intergenerational Transmission of Child Psychopathology**

The interparental relationship is an important family socialization process for child psychopathology (Harold & Sellers, 2018). Higher levels of interparental conflict are associated with child internalizing and externalizing problems (El-Sheikh & Elmore-Staton, 2004; Harold et al., 2012; Stover et al., 2016); specifically, where acrimony in the interparental relationship is frequent, intense and poorly resolved, children display more psychopathology symptoms (Grych et al., 2003; Harold et al., 2004). Parent-child relationships are a key family process that can explain how interparental conflict can impact child internalizing and externalizing problems (Harold & Sellers, 2018). Family

systems theories propose that child internalizing and externalizing problems are influenced by multiple interrelated, interacting family subsystems, including the interparental and parent-child relationships (Cox & Paley, 1997). Disruptions in one of these subsystems leads to disruptions in other subsystems, in turn impacting child adjustment. For example, disruptions in the interparental relationship (such as high levels of interparental conflict) may lead to disruptions in parent-child relationships, in turn influencing child internalizing and externalizing problems (Stover et al., 2016). An explanation for how disruptions in the interparental relationship lead to disruptions in the parent-child relationships is the Spillover Hypothesis, which posits that negativity in the interparental relationship can spill over to the parent-child relationship, resulting in the parent displaying more negative, hostile behaviors towards the child (Erel & Burman, 1995). Considerable supportive evidence demonstrates that interparental conflict is associated with poorer parenting practices (Krishnakumar & Buehler, 2000), and that the parent-child relationship mediates the relationship between interparental conflict and child internalizing and externalizing problems (Coln et al., 2013; Schoppe-Sullivan et al., 2007; Shelton & Harold, 2008). Specifically, parent hostility is a prominent parenting process linking interparental conflict and child internalizing and externalizing problems (Harold et al., 2013b; Low & Stocker, 2005; Stover et al., 2016). These findings demonstrate the importance of considering multiple family subsystems when examining family processes and child psychopathology, showing a cascade from the interparental relationship to child adjustment via the parent-child relationship.

Intergenerational transmission of depression can also occur via the parent-child relationship. Parents with higher depressive symptoms display poorer parenting behaviors, including lower warmth and acceptance, and higher levels of intrusiveness and rejection (Bayer, Sanson & Hemphill, 2006; Dix & Meunier, 2009; Elgar et al.,



2007). Parenting has also been shown to mediate the relationship between parent depression and child adjustment (Buehler & Gerard, 2002; Coln et al., 2013; Keller et al., 2005). Specifically, when parents are depressed, they display more hostile parenting behaviors, in turn leading to higher child internalizing and externalizing problems (Giallo et al., 2014a; 2014b; Sellers et al., 2014; Sweeney & MacBeth, 2016). Thus, findings demonstrate the parent-child relationship as an important explanatory process for intergenerational transmission of psychopathology.

Family process research with a specific focus on parenting influences on children has historically focused on maternal processes, with less consideration of fathers (Murray, Sinclair, Cooper, Ducournau & Turner, 1999). However, fathers are increasingly being recognized as important for children's development (Barker, Iles & Ramchandani, 2017; Cabrera et al., 2018). Additionally, the relative role of mothers and fathers within the family system is more widely considered; both maternal and paternal parenting have been evidenced as processes through which interparental conflict (Shelton & Harold, 2008; Sturge-Apple et al., 2007) and parent depression (Malmberg & Flouri, 2011) can impact child internalizing and externalizing problems. Moreover, research has examined the relative contribution of both parents' depressive symptoms and interparental conflict to child internalizing and externalizing problems via the mother-child and father-child relationship, finding each of these processes to play an important role within the family system for child psychopathology (Du Rocher Schudlich & Cummings, 2007; Shelton & Harold, 2008). However, these studies primarily assess relations in later childhood and adolescence, with fewer studies examining the relative role of maternal and paternal intergenerational transmission and socialization processes for child adjustment longitudinally across early-to-middle childhood. Furthermore, although evidence shows the importance of mothers and

fathers for children's development, fathers remain underrepresented in research: a meta-analysis of the relationship between parenting and child delinquency found that only 20% of papers examined fathers' parenting (Hoeve et al., 2009), underlining the need to increase understanding of the role of fathers for children's development. The aim of the present study was therefore to examine the relative role of maternal and paternal parenting as mediators in the relationship between interparental conflict, maternal and paternal depression, and child internalizing and externalizing problems in early-to-middle childhood.

### **Using an Adoption Design to Separate Environmental and Genetic Influence**

Traditional research examining family processes and child internalizing and externalizing problems examines associations among genetically related parents and children. Research examining associations between genetically related parents and children cannot fully disentangle genetic and environmental processes, as associations between the rearing environment and child outcomes may be explained by common genes between parents and children. This is referred to as passive gene-environment correlation (passive  $rGE$ ; Jaffee & Price, 2012). An adoption-at-birth design allows examination of associations between genetically unrelated parents and children, removing the confound of passive  $rGE$ . As adoptive parents and children are genetically unrelated, associations cannot be explained by common genes, and therefore associations are attributable to the environment.

Studies utilizing an adoption design have shown the parent-child relationship to be an important mediating process in the relationship between interparental conflict and child adjustment. For example, in a cross-sectional study, Stover et al. (2012) found adoptive mother-child and father-child hostility to mediate the relationship between

interparental conflict and child aggression at 27 months. These findings have also been supported longitudinally from toddlerhood to early childhood using the same adoption sample (Harold et al., 2013b). As these parents and children are genetically unrelated, passive  $rGE$  is removed, meaning the relationship between interparental conflict and externalizing problems via the parent-child relationship can only be explained by the environment, underlining the importance of these family processes for child adjustment.

Research utilizing the adoption design has also demonstrated that intergenerational transmission of depression can be attributed to environmental processes (Natsuaki et al., 2014). Specifically, adoptive mother and father depression have been shown to predict child internalizing and externalizing problems (Laurent et al., 2013; Pemberton et al., 2010). Similarly, research examining associations between genetically unrelated parents and children born through assisted reproductive technologies (i.e. adoption-at-conception; Thapar et al., 2007) has shown parenting to mediate the associations between maternal and paternal depression and child adjustment among genetically unrelated parents and children born through In Vitro Fertilization (IVF; Harold et al., 2011; Lewis et al., 2011; Rice, Lewis, Harold & Thapar, 2013).

There is limited evidence using an adoption design to examine intergenerational transmission relative to family socialization influences on child adjustment; specifically, few studies simultaneously assess intergenerational transmission and interparental and parenting influences on child internalizing and externalizing problems. Research utilizing the IVF design has demonstrated intergenerational transmission of antisocial behavior via the interparental and parent-child relationship; Harold et al. (2012) showed mother hostility to mediate the relationship between interparental conflict and child antisocial behavior among genetically unrelated mothers and children, and found father hostility to mediate the relationship between father antisocial behavior, interparental

conflict and child antisocial behavior for genetically unrelated father-child pairs. These findings have been partially supported longitudinally using an adoption design, as Stover et al. (2016) found adoptive mother and father antisocial behavior to predict their respective hostile parenting directly, in addition to finding father antisocial behavior to predict father hostility indirectly via interparental conflict, and father hostility to predict child aggression. This research demonstrates the importance of taking a system-wide approach when investigating family influences on child adjustment, taking into consideration parent mental health, the interparental relationship and parent-child relationships. However, from a review of the evidence, there are no existing studies using a longitudinal adoption design to assess whether mother and father hostility mediate the relationship between interparental conflict, maternal and paternal depressive symptoms and subsequent child internalizing and externalizing problems across early-to-middle childhood.

An important factor to consider when examining family process and child psychopathology research is the effect that children can have on their parents. Research has previously demonstrated that early child behavior can impact parenting processes (Kopala-Sibley et al., 2017; Schoppe-Sullivan et al., 2007; Verhoeven, Junger, van Aken, Dekovic & van Aken, 2010). However, as evocative processes are primarily examined among genetically related parents and children, these associations are confounded by passive  $rGE$ . An adoption design provides unique insight into child-evoked parenting, as adoptive parents and children are genetically unrelated, meaning associations between child and parent behavior can only be explained by the environment. The adoption design enables the examination of whether children's heritable behavior can evoke responses from their rearing environment, known as evocative gene-environment correlation (evocative  $rGE$ ; Ge et al., 1996; Rutter &

Silberg, 2002). Research using the adoption design has evidenced evocative  $rGE$  (Elam et al., 2014). For example, Harold et al. (2013a) found birth mother ADHD symptoms to predict early adopted child impulsivity, which predicted adoptive mother hostility. However, this research has primarily studied specific heritable characteristics rather than broader child behavior, and findings represent cross-sectional associations, meaning the direction of relations between parent and child behavior cannot be ascertained. The present study therefore aimed to identify evocative processes by examining longitudinal relations between early child adjustment (internalizing and externalizing problems) and subsequent maternal and paternal hostility.

### **The benefits of a longitudinal, multimethod, multi-informant approach**

Research examining family processes and child psychopathology often relies on mother-reported data, due to lower response rates in research from fathers than mothers (Ramchandani et al., 2005). This single informant approach can lead to trait negativity bias (Harold & Conger, 1997; Rhoades et al., 2012). Employing a multi-informant approach in family process research is beneficial in reducing this bias (Harold et al., 2007). Due to the availability of fathers in the present sample, we were able to include both mother and father reported data throughout all measures, thus reducing the bias present in single informant data. Additionally, few studies use both parent reported and observational data in family process and child psychopathology research. The present study complemented the multi-informant approach with observational data to assess interparental conflict, providing a more complete representation of interparental conflict than could be achieved by only using one of these methods. Including observational data provides insight into behaviors without single informant effects, whilst mother and father reports provide information on more general patterns of behavior over a period of time (e.g. providing information of conflict behaviors over the last month) that cannot

be obtained in a snapshot provided by observational data, which is subject to variability in day-to-day behavior (Meunier et al., 2011).

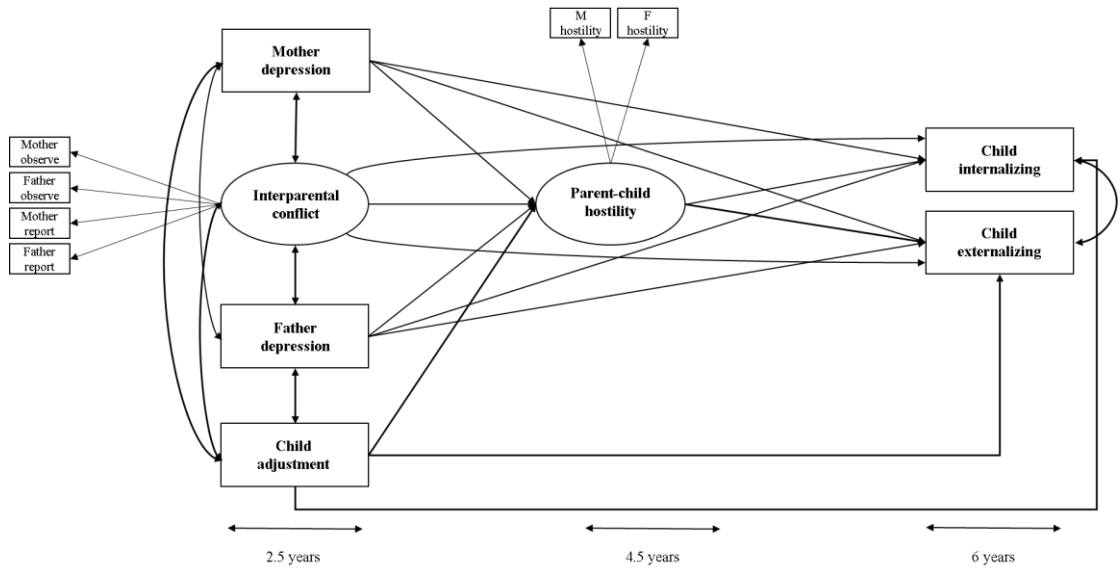
When examining longitudinal associations between family processes (e.g., interparental conflict, parenting) and child psychopathology, including early child adjustment is fundamental to ensure that associations between family processes and child adjustment represent these processes as predictors of changes in children's behavior over time (Grych et al., 2003; Kessler & Greenberg, 1981). The present study therefore included early child adjustment as a predictor of internalizing and externalizing problems, to examine whether interparental conflict, parent mental health, and parenting contribute to changes in children's behavior across early-to-middle childhood.

### **The Present Study**

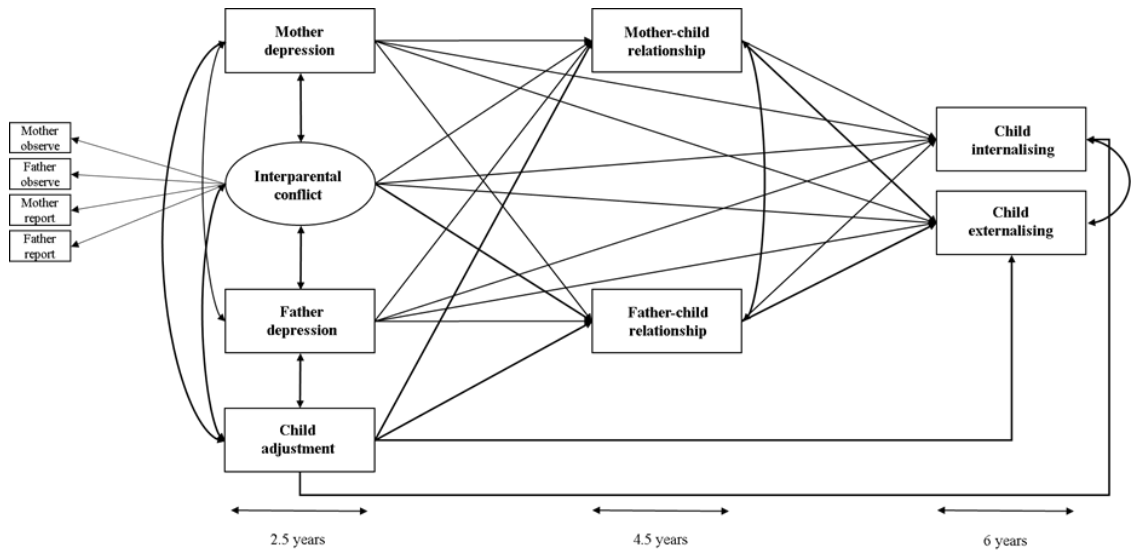
The present study was among the first to utilize an adoption-at-birth design whilst employing a longitudinal, multi-informant, multi-method approach to examine the intergenerational transmission of psychopathology as an environmental process relative to family socialization influences on child adjustment, by examining the relative role of maternal and paternal hostility as mediators in the relationship between interparental conflict, maternal and paternal depression and child internalizing and externalizing problems across early-to-middle childhood. Mother-to-child and father-to-child hostility at 4.5 years were examined as mediators of the relationship between interparental conflict, mother depression and father depression at 2.5 years, and child internalizing and externalizing problems at 6 years. Additionally, early child adjustment at 2.5 years was assessed to examine evocative effects of early child behavior on maternal and paternal hostility at 4.5 years, in addition to serving as a control measure,

enabling the examination of whether these family processes contribute in changes in child behavior across early-to-middle childhood.

First, we (I) examined whether a composite measure of hostility (mother and father hostility combined) mediated the relationship between interparental conflict, maternal and paternal depression and child internalizing and externalizing problems (Figure 5a), to align with traditional family process research that does not assess the relative contributions of mothers and fathers to child adjustment. We (I) then assessed the relative role of mother and father hostility as mediators in the relationship between interparental conflict, mother and father depression, and child internalizing and externalizing problems (Figure 5b) to assess whether separating maternal and paternal hostility provides unique insight into family processes and child internalizing and externalizing problems. It was hypothesized that interparental conflict and mother depression at 2.5 years would predict mother hostility at 4.5 years, and that interparental conflict and father depression at 2.5 years would predict father hostility at 4.5 years. In turn, both mother and father hostility were hypothesized to predict child internalizing and externalizing problems at 6 years. We also hypothesized that early child adjustment at 2.5 years would predict mother and father hostility at 4.5 years.



*Figure 5a.* Theoretical model showing the proposed relationship between study variables, examining the mother-child and father-child relationship combined



*Figure 5b.* Theoretical model showing the proposed relationship between study variables, examining the mother-child and father-child relationship separately



## Methods

### Sample and Procedure

The current study employed the Early Growth and Development Study (EGDS), a longitudinal adoption-at-birth study consisting of 561 adoptive mothers and fathers, adopted children, birth mothers, and a subset of birth fathers. The sample is representative of adoptive parent and birth parent populations that completed adoption plans at the participating agencies in the same period. Participants were recruited through 45 adoption agencies across 15 states in the Mid-Atlantic, West, Southwest, Midwest and Pacific Northwest regions of the US from March 2003 to January 2010. Families were eligible to participate if: (a) the adoption placement was domestic; (b) placement occurred before 3 months postpartum; (c) the infant was not genetically related to adoptive parents; (d) there were no known major medical conditions; and (e) birth and adoptive parents could understand English at 8th Grade level. Children were adopted at a median of 2 days after birth. The University of Oregon Institutional Review Board provided ethical approval (protocol number: 04262013.036). The present study included families from Cohort I of the EGDS, due to availability of measures. Additionally, due to the nature of comparing the relative role of mothers and fathers, only intact families who provided data for one or more of the 2.5 year, 4.5 year and 6 year assessments were included in analyses. This resulted in a sample of  $N = 301$  heterosexual, intact adoptive families (175 boys, 126 girls). Of these families, 91% of adoptive parents were white American, 4-5% African American, 1.3% more than one race, 1-3% Hispanic or Latino, and 1.7% other race or unknown. The race of adopted children was as follows: 59% white American, 20% more than one race, 10% Hispanic or Latino, 10% African American, and 1% other race or unknown. Family income

ranged from \$30,000- \$1,650,000 ( $M = \$178,079$ ). At each assessment, adoptive families participated in several videotaped interaction tasks. Additionally, adoptive mothers and fathers independently completed questionnaires.

## Measures

**Interparental conflict.** Interparental conflict was measured at 2.5 years using both observational and parent reported data. During a home visit, adoptive mothers and fathers completed a 20-minute marital interaction task, which involved parents discussing 19 topics that were designed to elicit both positive and negative emotions, such as what they find frustrating about each other and when they first met. Interactions were coded for hostility, antisocial behavior and negative mood by trained coders using the Iowa Family Interaction Rating Scales - Marital Interaction Code (Dogan et al., 2005; Melby et al., 1989). Codes were rated on a 9-point scale from 1 (Not at all characteristic) to 9 (Mainly characteristic). Approximately 30% of observations were coded by two coders. Intraclass correlations ranged from .38 (negative mood) to .60 (hostility). Although these are relatively low, these codes have been previously used at an earlier wave as indicators of interparental conflict (Rhoades et al., 2012), and combined showed good reliability ( $\alpha = .82$  for both mothers and fathers). Adoptive mothers and fathers also reported on their partner's hostile behaviors displayed towards themselves using the hostility subscale from the Behavior Affect Rating Scale (BARS; Melby, Conger, Ge & Warner, 1995), a 10-item subscale rated on a 7-point scale, ranging from 1 (Always) to 7 (Never). Items were reverse-coded so that higher scores indicate higher hostility ( $\alpha = .87$  for mothers,  $\alpha = .91$  for fathers).

**Parent depressive symptoms.** Mother and father depressive symptoms were assessed at 2.5 years using adoptive mother and father self-reports of the Beck

Depression Inventory (BDI; Beck & Steer, 1993), a 21-item measure assessing their depressive symptoms over the last week. One item assessing suicidal thoughts was omitted to reduce situations in which clinical follow-up would be required (Pemberton et al. 2010), resulting in a 20-item scale. Items were rated on a 4-point scale ranging from 1 to 4, with higher scores indicating higher depressive symptoms ( $\alpha = .79$  for mothers,  $\alpha = .85$  for fathers).

**Early child adjustment.** Early child adjustment was measured at 2.5 years using mothers' and fathers' reports of the internalizing and externalizing subscales from the Child Behavior Checklist (CBCL; Achenbach, 1991) at 2.5 years. As children's internalizing and externalizing problems have been shown to be undifferentiated before 4 years of age (Leve et al., 2009), mother and father reports of internalizing and externalizing symptoms were combined to create a measure of overall child adjustment ( $\alpha = .92$ ).

**Parent-to-child hostility.** Parent-to-child hostility was measured at 4.5 years using adoptive mother and father report of the Hostility subscale of the Iowa Family Interaction Rating Scales (Melby et al., 1989). This is a 5-item measure rated on a 7-point scale ranging from 1 (Never) to 7 (Always), with higher scores representing higher hostility ( $\alpha = .78$  for mothers,  $\alpha = .76$  for fathers).

**Child internalizing and externalizing problems.** Children's internalizing and externalizing problems were measured at 6 years using mother and father reports of the CBCL (Achenbach, 1991). Items were rated on a 3-point scale, ranging from 1 (Not true) to 3 (Very true). The present study used the 31-item Internalizing subscale and the 35-item Externalizing subscale. Mother and father reports were summed to give an overall internalizing score ( $\alpha = .89$ ) and overall externalizing score ( $\alpha = .92$ ).

**Additional variables.** Prenatal complications and adoption openness were considered as control variables to take into account early (prenatal) environmental influences and similarities between birth and adoptive families as a result of contact between birth parents and children (Ge et al., 2008; Marceau et al., 2016). These variables were not related to any other study variables, thus were excluded from analysis.

### **Analysis Strategy**

Observed mother and father interparental hostility, mother and father reported depressive symptoms and child internalizing problems at 6 years were log transformed to adjust for significant skew. Missing data ranged from 5.0 % (Mother reports of father interparental hostility at 2.5 years) to 31.0 % (externalizing problems at 6 years). Little's test indicated that data was missing completely at random,  $\chi^2(301) = 326.56$ ,  $p = .15$ . Thus, multiple imputation was implemented in R 3.4.1 (R Core Team, 2017) using predictive mean matching with the "mice" package (van Buuren & Groothuis-Oudshoorn, 2011). The "Lavaan" package (Rosseel, 2012) was used in R 3.4.1 (R Core Team, 2017) to conduct Structural Equation Modelling (SEM) with 20 imputed datasets. Two SEMs were estimated. The first model examined whether composite parent hostility (mother and father hostility combined in a latent construct) mediated the relationship between interparental conflict, mother and father depression, and child internalizing and externalizing problems, (Figure 5a). The second model examined the relative role of mother and father hostility as mediating mechanisms in these relationships (Figure 5b). Indices used to indicate model fit were Chi Square( $\chi^2$ ), Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index (CFI),

with a non-significant  $\chi^2$ , CFI >.95, and RMSEA <.06 indicating good fit (Hu & Bentler, 1999).

## Results

### Preliminary Results

Table 3 shows pooled imputed correlations, means and standard deviations. All numbers represent transformed values where relevant. All interparental conflict variables were significantly associated (ranging from  $r = .26, p < .01$  to  $.32, p < .01$ ). All interparental conflict variables were associated with father depression (ranging from  $r = .13, p < .05$  to  $r = .31, p < .01$ ). Mother observed and reported interparental conflict were associated with mother depression (observed  $r = .23, p < .01$ , reported  $r = .36, p < .01$ ). Mother depression and father depression were significantly associated ( $r = .12, p < .05$ ). Mother and father depression were associated with early child adjustment (mother depression  $r = .22, p < .01$ , father depression  $r = .16, p < .01$ ), providing support for intergenerational transmission of depression as an environmental process. Father depression, early child adjustment and father reported interparental conflict were associated with father-to-child hostility at 4.5 years (ranging from  $r = .21$  to  $r = .30, p < .01$ ), and mother depression and early child adjustment were associated with mother-to-child hostility at 4.5 years (mother depression  $r = .22, p < .01$ , early adjustment  $r = .32, p < .01$ ), providing initial support for the hypothesis that interparental conflict and maternal and paternal depression predict their respective hostile parenting behaviors, as well as providing initial evidence for evocative effects. Father depression and mother and father reported interparental conflict were associated with internalizing problems at 6 years (ranging from  $r = .17, p < .05$  to  $r = .22, p < .01$ ). Both mother and father hostility at 4.5 years were associated with child internalizing and externalizing problems at 6 years (ranging from  $r = .16, p < .05$ , to  $r = .34, p < .01$ ), providing initial support for the hypothesis that mother and father hostility contribute to internalizing and

externalizing problems. Early child adjustment and internalizing and externalizing problems at 6 years were significantly correlated (ranging from  $r = .47$ ,  $p < .01$  to  $r = .54$ ,  $p < .01$ ).

### **Model 1: Combining Mother and Father Reports of Hostility**

Figure 6 shows SEM results with standardized coefficients. Text reports standardized and unstandardized coefficients with 95% confidence intervals. At 2.5 years, higher levels of interparental conflict were associated with higher levels of mother and father depression (for mothers,  $\beta = .34$ , [ $b = .18$ , (.08, .28)],  $p < .01$ ; for fathers,  $\beta = .33$ , [ $b = .17$ , (.07, .26)],  $p < .01$ ). Early child adjustment problems were positively associated with mother depression ( $\beta = .22$ , [ $b = .19$ , (.07, .31)],  $p < .01$ ), father depression ( $\beta = .16$ , [ $b = .14$ , (.02, .26)],  $p = .02$ ) and interparental conflict ( $\beta = .27$ , [ $b = .36$ , (.12, .60)],  $p < .01$ ), demonstrating that where children had higher adjustment problems, parents had higher depressive symptoms and greater conflict in the interparental relationship. Early child adjustment problems also predicted more hostile parenting ( $\beta = .40$ , [ $b = .43$ , (.21, .65)],  $p < .01$ ), but no other variables predicted parent hostility. Early child adjustment was the only significant predictor of child internalizing problems ( $\beta = .40$ , [ $b = .11$ , (.07, .16)],  $p < .01$ ), whereas child externalizing problems were significantly predicted by early child adjustment ( $\beta = .36$ , [ $b = 2.66$ , (1.35, 3.98)],  $p < .01$ ) and parent hostility ( $\beta = .49$ , [ $b = 3.43$ , (1.17, 5.70)],  $p < .01$ ). There was a significant indirect relationship between early child adjustment and externalizing problems via parent hostility ( $\beta = .20$ , [ $b = 1.45$ , (.48, 2.41)],  $p < .01$ ). The model had poor fit to the data,  $\chi^2(28) = 71.56$ ,  $p < .01$ , CFI = .89, RMSEA = .07.

Table 3

Means, SDs and Correlations of all study variables.

	1	2	3	4	5	6	7	8	9	10	11
1. M observed interparental hostility											
2. F observed interparental hostility	.26**										
3. M report of partner hostility	.32**	.22**									
4. F report of partner hostility	.31**	.23**	.48**								
5. M depression <sup>a</sup>	.23**	.04	.36**	.11							
6. F depression <sup>a</sup>	.17*	.17*	.13*	.31**	.12*						
7. M hostility to child	.03	.14†	.07	.07	.14*	.11					
8. F hostility to child	.10	.05	.11	.30**	.08	.21**	.33**				
9. Child adjustment	.09	.07	.22**	.18**	.22**	.16**	.32**	.24**			
10. Child internalizing <sup>a</sup>	.15†	.03	.17*	.18*	.10	.22**	.16*	.23**	.47**		
11. Child externalizing	.11	.04	.05	.11	.05	.08	.33**	.34**	.53**	.54**	
Mean	8.49	8.17	19.82	22.72	13.84	13.69	10.68	10.20	15.35	19.33	67.32
SD	1.80	1.73	6.36	7.73	.59	.58	2.88	2.78	1.51	.43	11.33

\*  $p < .05$ , \*\*  $p < .01$ , †  $p < .06$ , <sup>a</sup> transformed variables, M = mother, F = father.



## Model 2: Mother and Father Hostility as Separate Constructs

Figure 7 shows SEM results with standardized coefficients. Text reports standardized and unstandardized coefficients with 95% confidence intervals. As in the first model, higher levels of interparental conflict were associated with higher levels of mother and father depression (for mothers,  $\beta = .33$ , [ $b = .17, (.07, .27)$ ],  $p < .01$ ; for fathers,  $\beta = .33$ , [ $b = .17, (.07, .27)$ ],  $p < .01$ ). Higher child adjustment problems were associated higher levels of interparental conflict ( $\beta = .27$ , [ $b = .35, (.11, .60)$ ],  $p < .01$ ), in addition to higher mother and father depression (for mothers,  $\beta = .22$ , [ $b = .19, (.07, .31)$ ],  $p < .01$ ; for fathers,  $\beta = .16$ , [ $b = .14, (.02, .26)$ ],  $p < .01$ ). Mother-to-child hostility and father-to-child hostility were significantly associated ( $\beta = .28$ , [ $b = 1.93, (.93, 2.94)$ ],  $p < .01$ ). When examining the relative impact of mother depression, father depression, interparental conflict and early child adjustment on hostility, only early child adjustment predicted mother-to-child hostility ( $\beta = .30$ , [ $b = .57, (.31, .83)$ ],  $p < .01$ ). In contrast, father-to-child hostility was significantly predicted by interparental conflict ( $\beta = .21$ , [ $b = .66, (.03, 1.29)$ ],  $p = .04$ ) and early child adjustment ( $\beta = .18$ , [ $b = .32, (.07, .57)$ ],  $p = .01$ ), demonstrating that the association between interparental conflict and parenting is only apparent when separating mother and father hostility. Although mother and father depression were initially associated with their respective hostility, neither mother nor father depression predicted mother-to-child or father-to-child hostility in the full model, suggesting that child behavior is a stronger predictor of mother hostility than mother depression, and that interparental conflict and child behavior are stronger predictors of father hostility than father depression. Child internalizing and externalizing problems were significantly associated ( $\beta = .40$ , [ $b = 1.33, (.84, 1.82)$ ],  $p < .01$ ). Only early child adjustment predicted child internalizing problems ( $\beta = .48$ , [ $b = .12, (.09, .16)$ ],  $p < .01$ ). However, in addition to early adjustment predicting externalizing problems ( $\beta = .46$ , [ $b$

= 3.55, (2.64, 4.46)],  $p < .01$ ), higher levels of mother hostility and father hostility predicted higher externalizing problems (mother hostility,  $\beta = .13$ , [ $b = .51, (.04, .98)$ ],  $p = .03$ ; father hostility,  $\beta = .21$ , [ $b = .83, (.33, 1.34)$ ],  $p < .01$ ), demonstrating that maternal and paternal hostility uniquely contribute to child externalizing problems. Neither internalizing nor externalizing problems were predicted by interparental conflict, maternal depression or paternal depression. There was a trend for interparental conflict to indirectly predict externalizing problems via father hostility ( $\beta = .04$ , [ $b = .57, (-.05, 1.19)$ ],  $p = .07$ ). There was a significant indirect relationship between early child adjustment and externalizing problems via mother and father hostility, demonstrating the importance of evocative processes for children's externalizing problems (for mothers,  $\beta = .04$ , [ $b = .29, (.03, .55)$ ],  $p = .03$ ; for fathers,  $\beta = .04$ , [ $b = .26 (.05, .48)$ ],  $p = .02$ ). The model showed adequate fit to the data ( $\chi^2(23) = 48.29$ ,  $p < .01$ , CFI = .93, RMSEA = .06).

Collectively, results suggest that interparental conflict influences father-to-child hostility, and that both mother-to-child and father-to-child hostility provide unique contributions to children's externalizing problems. Findings also suggest that early child adjustment problems can evoke more hostile parenting in mothers and fathers, and that maternal and paternal depression are interrelated with interparental conflict and early child adjustment.

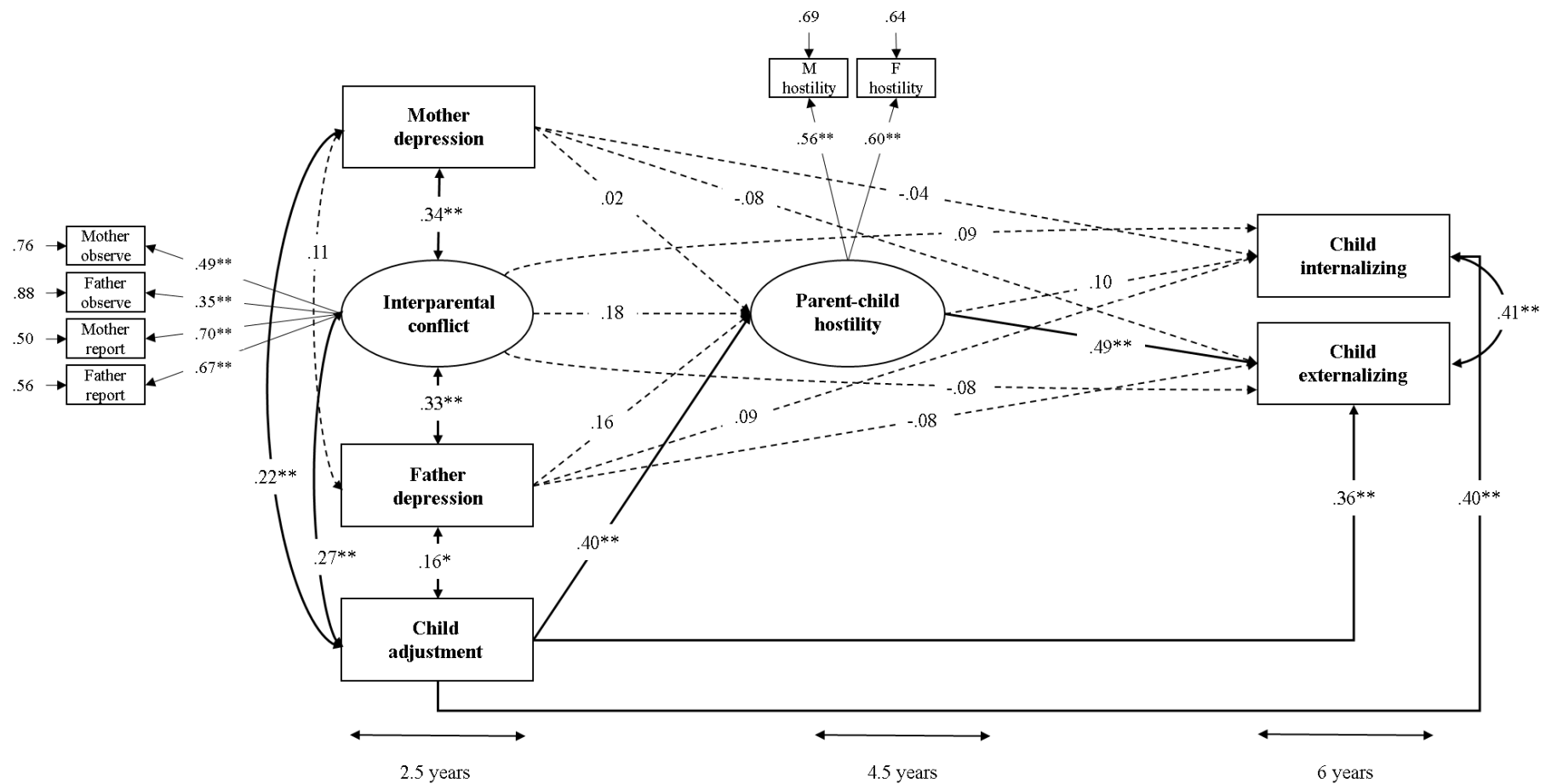


Figure 6. Model showing the relationship between interparental conflict, parent depression, parent hostility and child internalizing and externalizing problems. \*  $p < .05$ , \*\*  $p < .01$

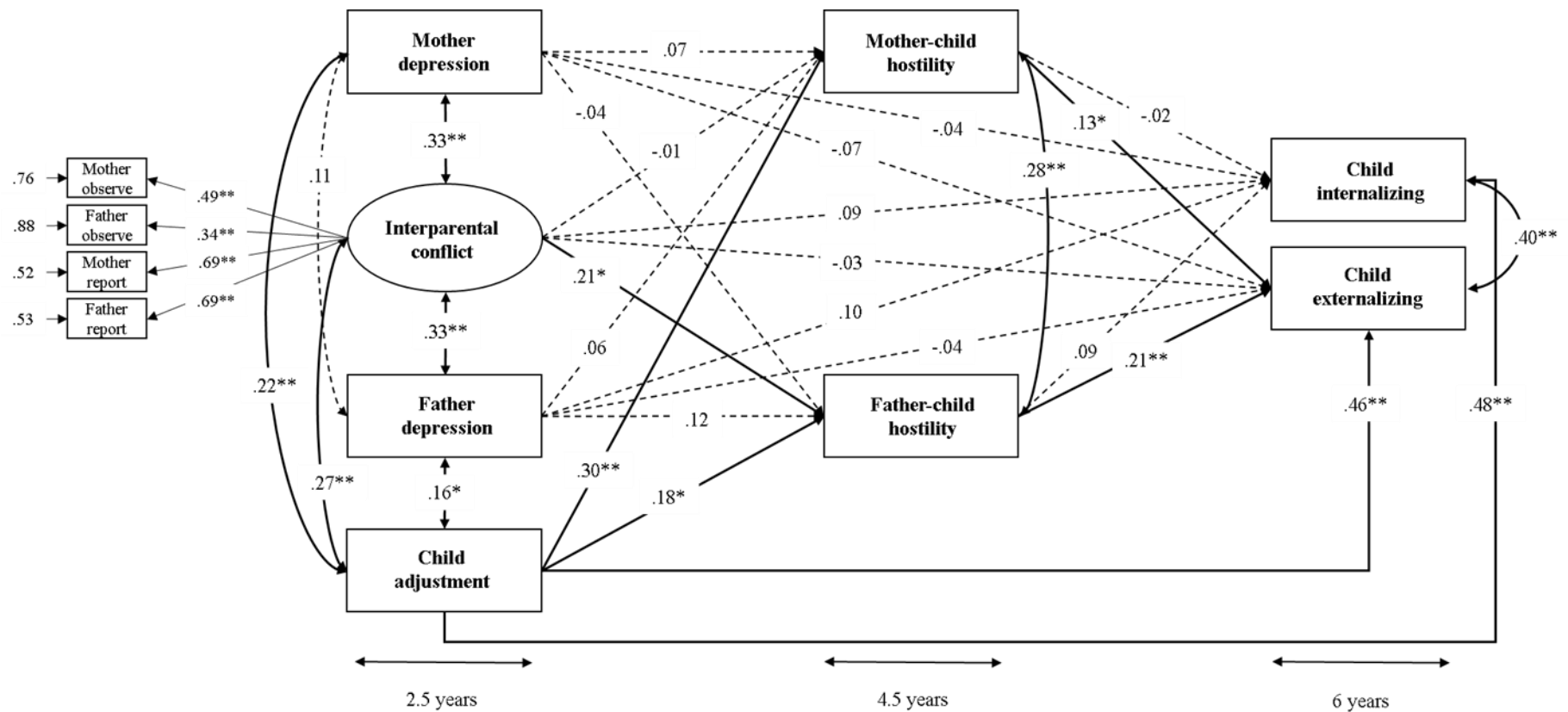


Figure 7. Model showing the relationship between interparental conflict, parent depression, maternal and paternal hostility, and child internalizing and externalizing problems. \*  $p < .05$ , \*\*  $p < .05$

## Discussion

This study is among the first to use a multimethod, multi-informant, longitudinal adoption-at-birth design to examine intergenerational transmission as an environmental risk relative to family socialization processes for child psychopathology, specifically examining whether interparental conflict and maternal and paternal depression can impact child internalizing and externalizing problems via mother and father hostility, whilst also examining whether early child adjustment evokes more hostile parenting in mothers and fathers. Parents and children in the present study were genetically unrelated, thus removing the confound of passive *r*GE (Jaffee & Price, 2012), meaning any association between parent depression, interparental conflict, parenting and child behavior are attributable to the environment.

Both mother and father hostility were shown to uniquely predict child externalizing problems. This finding supports previous research showing both the mother-child and father-child relationship to be important for children's behavior problems (Harold et al. 2013b; Marceau et al., 2015; Vera et al., 2012), underlining the need to consider both maternal and paternal processes for children's development. Additionally, there was a trend towards an indirect relationship between interparental conflict and externalizing problems via father-to-child hostility. These findings support a family systems perspective (Cox & Paley, 1997), illustrating the importance of examining multiple subsystems for child adjustment, specifically interparental conflict and both the mother-child and father-child relationships. Moreover, as early child adjustment was included as a predictor of externalizing problems, and was shown to account for a large proportion of variance in externalizing problems, significant associations represent the important contributions of mother and father hostility to

changes in child externalizing problems across early-to-middle childhood. This extends existing research demonstrating concurrent and longitudinal associations between these family processes that do not include early adjustment (Kaczynski et al., 2006; Low & Stocker, 2005; Marceau et al., 2015). Furthermore, as parents and children in this sample are genetically unrelated, these findings represent associations that can only be explained by the environment. Thus, findings highlight interparental conflict and maternal and paternal hostility as important family processes for the development of child externalizing problems from early-to-middle childhood.

Neither mother nor father hostility predicted child internalizing problems in the present study. Although previous research has shown parenting to contribute to children's internalizing problems (O'Donnell et al., 2010; Schoppe-Sullivan et al., 2007), previous research often examines these associations in early adolescence (O'Donnell et al., 2010; Shelton & Harold, 2008), and with cross-sectional data (Kaczynski et al., 2006). Associations may differ longitudinally across early-to-middle childhood. Additionally, the present study controlled for early child adjustment. Initial correlations showed mother and father hostility to be associated with internalizing problems, and previous research has shown significant associations to diminish after controlling for early child behavior, due to the continuity in child symptoms explaining large proportions of variance in child internalizing symptoms (Grych et al., 2003; Schoppe-Sullivan et al., 2007). Furthermore, discrepancies in findings could be due to the parenting dimension assessed. It is possible that parent-to-child hostility does not predict internalizing symptoms as strongly as other aspects of the parent-child relationship. For example, previous research has shown that parent warmth (Han et al., 2017), psychological and behavioral control (Pinquart, 2017; Schoppe-Sullivan et al., 2007), overreactivity (Marceau et al., 2015), harsh discipline (Mackenbach et al., 2014),

and rejection (Elgar et al., 2007; Shelton & Harold, 2008) may be more important for internalizing problems. Thus, the present findings do not undermine the importance of family processes for child internalizing problems. Rather, future research should examine how different parenting processes contribute to changes in child internalizing symptoms across early-to-middle childhood.

When assessing predictors of composite parent hostility (mother and father hostility combined), only early child adjustment significantly predicted parent hostility, whereas mother depression, father depression and interparental conflict were not significant predictors. This would suggest that interparental conflict and parent depression do not uniquely contribute to parent hostility after accounting for child effects. However, when examining mother and father hostility as separate constructs, interparental conflict predicted father hostility, but not mother hostility. These disparate findings underline the importance of examining relative processes for mothers and fathers, as the salience of the interparental relationship for parent hostility (specifically father hostility) was not apparent in the model combining maternal and paternal hostility to form a composite hostility measure, but became evident when examining mother and father hostility as separate constructs.

Present findings extend previous research showing interparental conflict to predict both parents' hostility (Harold et al., 2013b; Stover et al., 2012), finding interparental conflict to only predict father hostility. A possible explanation for this pattern of findings is that the present study used a multi-informant, multimethod approach to assess interparental conflict, using both mother and father reported and observed conflict. Previous research demonstrating significant associations between interparental conflict and both mother and father hostility has relied on parents' reports of interparental conflict only (Harold et al. 2013b; Stover et al., 2012), meaning

associations between interparental conflict and mother hostility evidenced in these studies may be due to reporter bias across interparental and mother-child measures. Additionally, research examining how interparental conflict can influence parenting often does not simultaneously examine the effect of early child adjustment on parenting behaviors. Early adjustment was a significant predictor of mother and father hostility, meaning there was less variance in hostility to be accounted for by other variables, which may explain why interparental conflict did not significantly predict mother hostility. Present findings suggest that early child behavior evokes mother hostility above and beyond the interparental relationship, whereas both interparental conflict and early child adjustment can lead to more hostility from fathers. This supports previous evidence suggesting that fathers' parenting may be more vulnerable to spillover from the interparental relationship than mothers' parenting (Cummings, Merrilees & George, 2010; Krishnakumar & Buehler, 2000; Stover et al., 2016). Specifically, present results support previous findings from Harold et al. (2013b), who found the path from interparental conflict to hostility to be significantly stronger for fathers. However, as interparental conflict has been shown to predict multiple maternal parenting behaviors, such as rejection (Shelton & Harold, 2008), warmth (Han et al., 2017) and general negative parenting (Kaczynski et al., 200; Lim et al., 2011), it would be premature to conclude that the interparental relationship is not important for mothers' parenting.

Early child adjustment predicted subsequent mother and father hostility, aligning with previous research suggesting that early child behavior can influence parenting (Kopala-Sibley et al., 2017; Schoppe-Sullivan et al., 2007; Verhoeven et al., 2010). As parents and children in the present adoption sample are not genetically related, these findings are indicative of evocative effects, as passive  $rGE$  is removed, meaning associations between early child behavior and subsequent parenting can only be



attributed to the environment. This finding supports and extends previous research that employs an adoption design to demonstrate that specific heritable temperamental characteristics are associated with maternal and paternal parenting (Elam et al., 2014; Harold et al., 2013a), by evidencing longitudinal associations between general maladaptive behavior and subsequent parenting. The significant indirect relationship between early child adjustment and subsequent externalizing problems via both mother and father hostility evidenced in this study underlines the value of considering child-on-parent effects within family process research.

Mother and father depressive symptoms were associated with early child adjustment, and initial correlations demonstrated a longitudinal association between father depression and child internalizing problems. Due to the nature of the adoption design, parents and children in the current sample are genetically unrelated, meaning associations between parent and child symptoms cannot be explained by common genes. Findings support previous research demonstrating intergenerational transmission of psychopathology among genetically unrelated parents and children (Harold et al., 2012; Natsuaki et al., 2014), therefore providing further evidence to suggest that intergenerational transmission of depression is an environmental process.

The present study also found initial associations between mother and father depression and their respective hostile parenting behaviors, however these associations were no longer significant after considering the relative role of interparental conflict, early adjustment and both parents' depressive symptoms. This does not support previous research showing mother and father depressive symptoms to be linked to child adjustment via their influence on parenting (Hanington et al., 2012), instead suggesting that interparental conflict and early child adjustment may be more closely related to parent-child relationships and subsequent child adjustment than parent depression.

These findings demonstrate the importance of examining intergenerational transmission relative to family socialization processes to better understand factors most proximal to child internalizing and externalizing problems. However, as previous research has shown parent depression to predict parenting behaviors such as nurturing parenting and rejection (Elgar et al., 2007), future research should examine the relative role of maternal and paternal depression, interparental conflict and child evocative processes on parenting behaviors beyond hostility.

Although no longer directly associated with their respective hostile parenting behaviors, mother and father depression remained associated with interparental conflict and early child adjustment in the full model. This finding indicates that intergenerational transmission may impact child adjustment via family socialization processes such as the interparental relationship, thus playing an important role within the family system. The significant association between parent depression and interparental conflict for both mothers and fathers supports previous research demonstrating that parent depression is indirectly related to parenting and child adjustment via the interparental relationship (Keller et al., 2009; Sweeney & MacBeth, 2016). Future research should therefore assess the indirect effects of parent depression on child adjustment via interparental conflict and parenting using a longitudinal adoption-at-birth design.

There are several important policy and practice implications to be taken from the present study. Firstly, the finding that both mother and father hostility predicted child externalizing problems underlines the importance of including fathers in intervention. However, fathers are often overlooked in this area: a meta-analysis by Panter-Brick et al. (2014) found that only around one quarter of parenting interventions included fathers. Nonetheless, when interventions do target fathers, they evidence positive

impacts for children (Cabrera et al., 2018). Present findings alongside previous evidence show that incorporating fathers into intervention is pivotal to improving outcomes for children. Additionally, the relationship between interparental conflict and father-child hostility highlights a potential limitation of interventions that only target parenting processes: whilst parenting is important for child mental health, positive parenting behaviors facilitated by intervention efforts may not be sustained in the context of high interparental conflict, due to the continuing cascade from interparental conflict to fathers' parenting (Harold et al., 2017). This aligns with intervention research, which, although limited, suggests that interventions targeting the interparental relationship are beneficial for child outcomes (Harold et al., 2017; Harold & Sellers, 2018).

Furthermore, the findings demonstrating evocative effects from early child adjustment to mother and father hostility underline the importance increasing parents' awareness of how child behaviors can impact their parenting, and suggest that teaching parents to respond more positively to child behaviors may be beneficial in improving outcomes for children. It is particularly important to note that the significance of these associations among families in which children and parents are not genetically related accentuates the importance of the rearing environment for children's mental health, thus supporting the potential benefit of targeting these family processes through intervention. Thus, findings from the present study have key implications for intervention policy and practice, not only stressing the importance of including fathers in family intervention, but also highlighting the need to target the interparental relationship and increase parents' ability to positively respond to child behavior to help sustain positive effects for child mental health.

## **Limitations**

Although the present study provides insight into family processes and child adjustment with implications for intervention policy and practice, several caveats must be noted. Firstly, due to the nature of comparing relative maternal and paternal processes in relation to child adjustment, findings only represent associations among intact, heterosexual families. It is therefore important for future research to examine whether intergenerational transmission and parent-child processes for child psychopathology differ for other family compositions, such as separated and same-sex parents. Moreover, due to the nature of longitudinal research and the use of both observational and parent reported data to assess interparental conflict, some participants missed one or more assessments, meaning the sample size for families who completed all assessments was limited. However, this caveat was addressed using multiple imputation to increase power.

Whilst the observed interparental conflict measures used in the present study had low inter-rater reliability, combined, these observed interparental conflict measures showed high reliability, and have been previously used to represent interparental conflict at an earlier time point in the current sample (Rhoades et al., 2012). Employing a multimethod approach by including the observational measure in addition to parent-reported interparental conflict helps overcome rater bias that can occur when only using parent-reported data (Rhoades et al., 2012), and provides insight into conflict behaviors that cannot be obtained through parent reports. Thus, the strengths of this multimethod approach outweigh the limitation of low inter-rater reliability.

Although not a limitation per se, the present study only assessed one aspect of the parent-child relationship. It is increasingly being recognized that processes may

differ for mothers and fathers (Cabrera et al., 2018), and research suggests that maternal and paternal parenting behaviors may differentially influence child adjustment (Han et al., 2017; Marceau et al., 2015). It is therefore important for future research to assess the relative contribution of gender specific parenting practices, as well as examining processes that involve both mothers and fathers, such as the coparenting relationship (how mothers and fathers work together and support each other in childrearing; Feinberg, 2003), to increase understanding of how mothers and fathers contribute to children's development.

Limitations notwithstanding, the present study was the first to use a multimethod, multi-informant, longitudinal adoption-at-birth design to provide insight into the relative contribution of mothers and fathers to child internalizing and externalizing problems across early-to-middle childhood, as well as highlighting children's contributions to parenting. Findings highlight intergenerational transmission of depression as an environmental process (in demonstrating associations between parent depression and early child adjustment problems) and demonstrate the importance of interparental conflict for children's development via the father-child relationship, as well as showing that early child behavior can evoke more hostile parenting in both mothers and fathers, both of which are important for children's externalizing problems. These findings have important implications for intervention, underlining the potential benefit of including fathers in intervention, targeting the interparental relationship and teaching parents how to positively respond to challenging child behavior. Overall, findings from the present study underline the importance of a family systems approach to assess parent mental health, and interparental, maternal and paternal processes to increase understanding of family processes related to child internalizing and externalizing problems.

### **Chapter Transition: Building from Study 1**

The first study in this thesis provided insight into relative intergenerational transmission and family socialization processes for child psychopathology, with findings demonstrating that both mother and father hostility contribute to externalizing problems. Additionally, findings showed that interparental conflict is associated with father hostility, that early child adjustment (internalizing and externalizing problems combined) evokes both mother and father hostility, and that both mother and father depression are associated with interparental conflict and early child psychopathology. As parents and children in this study are genetically unrelated, associations between mother and father hostility and child externalizing problems, and between interparental conflict, mother and father depression and early child adjustment cannot be explained by common genes. Findings highlight the importance of examining relative maternal and paternal parenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, examining child-evoked effects on parenting, and considering intergenerational transmission in family process research.

Building from these findings, the following study aims to provide insight into the role of an additional family subsystem relative to interparental and parent-child influences for child psychopathology; the coparenting relationship (i.e., how parents work together to promote positive child development). Specifically, the following chapter uses the same sample as Study 1 to examine the relative role of coparenting, mother hostility and father hostility as mediators in the relationship between interparental conflict and child internalizing and externalizing problems from early-to-middle childhood, in addition to examining whether early child adjustment evokes coparenting and mother and father hostility.

## **Chapter 4: Interparental conflict, parenting, coparenting and child mental health: Expanding understanding of the relative role of mothers and fathers**

This chapter has been developed in preparation for submission to the Journal of the American Academy of Child and Adolescent Psychiatry, so the writing style of this chapter adheres to the guidelines of this journal. Additional analyses for this study have been included in the appendices (signposted in the results section of this chapter). This article is currently in review.

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### **Abstract**

This study examined the relative role of mother-to-child hostility, father-to-child hostility and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems from toddlerhood to middle childhood, using a multimethod, multi-informant adoption-at-birth design. A sample of 303 adopted children, adoptive mothers and adoptive fathers from the Early Growth and Development Study (EGDS) were assessed using parent reported and observational data longitudinally at three time points from 2.5 years to 6 years. Structural equation modelling was used to examine whether interparental conflict and early child adjustment at 2.5 years predict mother hostility, father hostility and coparenting at 4.5 years, and in turn whether these processes predict child internalizing and externalizing problems at 6 years. Findings showed interparental conflict to predict father hostility and coparenting, but not mother hostility. Early child adjustment predicted mother and father hostility but not coparenting. After controlling for early child adjustment, there was a significant indirect relationship between interparental conflict and child externalizing problems via father hostility, but mother hostility and coparenting did not predict externalizing problems. Neither mother hostility, father hostility, nor coparenting predicted internalizing problems. Findings demonstrate the importance of interparental conflict for coparenting and for child externalizing problems via the father-child relationship, in addition to demonstrating child-evoked effects for mothers' and fathers' parenting. Findings support the potential benefit of targeting the interparental relationship and encouraging the inclusion of fathers in intervention.

**Keywords:** Interparental conflict, coparenting, mother hostility, father hostility, internalizing, externalizing.



## **Introduction**

A positive coparenting relationship plays a key role in children's positive adjustment (Teubert & Pinquart, 2010). When parents display low levels of support, agreement and cooperation in their parenting roles, children are at higher risk for internalizing and externalizing problems (Farr & Patterson, 2013; Teubert & Pinquart, 2010). High levels of interparental conflict and parent-to-child hostility have also been evidenced as important processes for child adjustment (Stover et al., 2016). Family systems theories propose that the family comprises multiple interdependent subsystems, including the interparental relationship, the parent-child relationship, and the coparenting relationship, stipulating that disturbances in one family subsystem are related to disturbances in other family subsystems, which can lead to increased child psychopathology (Cox & Paley, 1997; Minuchin, 1974). It is therefore important to consider the contribution of the coparenting relationship relative to multiple family subsystems for child psychopathology (Feinberg, 2003). The present study examined the relative role of coparenting, mother-to-child hostility and father-to-child hostility as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, using a longitudinal multi-method, multi-informant adoption-at-birth design to assess these family socialization processes as environmental influences that cannot be attributed to common genes.

### **Interparental Conflict, Maternal and Paternal Parenting, and Child Internalizing and Externalizing Problems**

Research has demonstrated that parent-child hostility is a process through which the interparental relationship can influence child adjustment (Harold et al., 2012; Harold et al., 2013b). Historically, research examining family processes and child

psychopathology has primarily focused on the mother-child relationship. However, the father-child relationship is increasingly recognized as important for children's development (Cabrera et al., 2018). Research examining the relative role of mothers' and fathers' hostile parenting as explanatory processes in the relationship between interparental conflict and child adjustment suggests that interparental conflict is indirectly linked to child adjustment via both mother and father hostility (Harold et al., 2013b; Stover et al., 2012). Furthermore, evidence indicates that father hostility may be more vulnerable to spillover from the interparental relationship than mother hostility (Harold et al., 2012; Stover et al., 2016) highlighting the importance of examining the relative contributions of mothers and fathers in family process and child outcome research.

### **The Relationship between Coparenting and Other Family Subsystems**

Coparenting has been defined as the ways in which parents relate to each other as parents (Feinberg, 2003). The coparenting relationship is seen as a multidimensional subsystem, comprising constructs such as coparenting conflict, support versus undermining and cooperation between parents, which (together) represent a picture of how parents work together to promote positive child development (Feinberg, 2002; Margolin et al., 2001). Coparenting has been linked to multiple processes within the family system. Specifically, interparental conflict has been shown to predict poorer coparenting relationships, although longitudinal associations have primarily been examined in the transition to parenthood (i.e., examining prenatal interparental relationship quality and the coparenting relationship in early infancy), rather than later in childhood (Le et al., 2016). Additionally, poor coparenting has been shown to predict adjustment problems across early-to-middle childhood (Umemura, Christopher, Mann,

Jacobvitz & Hazen, 2015), and to mediate the relationship between interparental conflict and child adjustment (Katz & Low, 2004). Furthermore, research has demonstrated associations between coparenting and multiple parenting behaviors in early-to-middle childhood, including control and punitive parenting (Adler-Baeder et al., 2016; Karreman et al., 2008), but is yet to be examined in relation to mother and father hostility.

Research primarily examines associations between coparenting and one family process (e.g., between coparenting and child adjustment) in isolation of other family processes, rarely employing a system-wide approach to assess the contribution of coparenting to child adjustment relative to other family processes. From a review of evidence, only two studies have examined whether coparenting and the mother-child and father-child relationships mediate the association between interparental conflict and child internalizing and externalizing problems (O’Leary & Vidair, 2005; Stroud et al., 2015). However, O’Leary and Vidair (2005) examined models for mothers and fathers separately, meaning the relative role of maternal and paternal parenting could not be ascertained. Additionally, both studies relied on cross-sectional data, and did not examine parent hostility (O’Leary & Vidair, 2005; Stroud et al., 2015). It is therefore important to examine the relative contributions of coparenting, mother hostility and father hostility as mediators in the relationship between interparental conflict and child psychopathology longitudinally across early-to-middle childhood (Figure 8).

### **Methodological Considerations**

Family process research primarily relies on genetically-related parents and children, meaning associations between parents and children could be due to common genes or the environment shaped by parents’ genes, making it difficult to disentangle

genetic and environmental contributions to child psychopathology (referred to as passive gene-environment correlation; passive  $rGE$ ; Jaffee & Price, 2012). The present study employed an adoption-at-birth design (using the Early Growth and Development Study; EGDS; Leve et al., 2007, 2013) to examine associations between genetically unrelated parents and children (removing the confound of passive  $rGE$ ), meaning significant associations can only be explained by the environment, and cannot be attributed to common genes. Previous research using the adoption design indicates that parent hostility mediates the relationship between interparental conflict and child adjustment (Harold et al., 2013b; Stover et al., 2012), and that coparenting is associated with child externalizing problems among genetically unrelated parents and children (Farr & Patterson, 2013), suggesting that these processes are important for child adjustment. Research is yet to use an adoption design to examine the relative contribution of interparental conflict, maternal and paternal parenting, and coparenting to child internalizing and externalizing problems longitudinally from early-to-middle childhood.

When using longitudinal data to examine associations between family processes (e.g., interparental conflict, parenting) and child psychopathology, it is important to account for earlier child behaviors so that any change in children's adjustment is a function of the mediating variables (Grych et al., 2003). Including early child adjustment within an adoption sample also allows the examination of evocative effects (i.e., how children's genetically-informed behavior can alter responses in their rearing environment, referred to as evocative gene-environment correlation; evocative  $rGE$ ; Rutter & Silberg, 2002). The present study examined whether early child behavior influenced genetically unrelated adoptive mother and father hostility and the coparenting relationship.

Whilst coparenting is recognized as a multicomponent system, research often only examines singular coparenting dimensions (Adler-Baeder et al., 2016; Bronte-Tinkew, Horowitz & Carrano, 2010), limiting the insight currently provided into the relationship between coparenting and other family processes and child psychopathology. To address this limitation, the present study employed a measure that conceptually considered multiple aspects of the coparenting relationship as currently defined to assess the overall coparenting relationship. Additionally, the present study employed a multimethod, multi-informant approach, using mother and father reported and observed data, reducing the trait negativity bias present in family process and child psychopathology research that relies on single-informant (primarily mother-reported) data (Harold & Conger, 1997; Rhoades et al., 2012).

The present study examined whether interparental conflict at 2.5 years is related to child internalizing and externalizing symptoms at 6 years indirectly via mother-to-child and father-to-child hostility and coparenting at 4.5 years (see Figure 8). Additionally, early child adjustment was measured at 2.5 years to assess interparental, parent-child and coparenting processes as predictors of changes in child behavior over time, and to examine evocative effects of early child behavior on parent hostility and coparenting. An adoption-at-birth design was employed to examine family environmental processes without the confound of passive *rGE*.

## Method

### Sample and Procedure

The current study employed the EGDS, a longitudinal adoption-at-birth study consisting of 561 adoptive mothers and fathers, adopted children, birth mothers, and a subset of birth fathers (Leve et al., 2007, 2013). The sample is representative of adoptive parent and birth parent populations that completed adoption plans at the participating agencies in the same period. Participants were recruited through 45 adoption agencies across 15 states in the Mid-Atlantic, West, Southwest, Midwest and Pacific Northwest regions of the US from March 2003 to January 2010. Families were eligible to participate if: (a) the adoption placement was domestic; (b) placement occurred before 3 months postpartum; (c) the infant was not genetically related to adoptive parents; (d) there were no known major medical conditions; and (e) birth and adoptive parents were able to understand English at 8<sup>th</sup> Grade level. Children were adopted at a median of 2 days after birth. Ethical approval was provided by the University of Oregon Institutional Review Board (protocol number: 04262013.036). Due to the focus on comparing maternal and paternal processes, the present study included all intact different-sex parents from Cohort I who completed questionnaires and/or observed interactions at one or more of the 2.5, 4.5 or 6 year assessments, resulting in a sample of 303 families (177 boys, 126 girls). Families from Cohort II were not included due to availability of measures. Family income ranged from \$30,000-\$1,650,000 ( $M = \$178,079$ ). Ninety one percent of adoptive parents were white American, 4-5% African American, 1.3% more than one race, 1-3% Hispanic or Latino, and 1.7% other race or unknown. The race of adopted children was as follows: 59% white American, 20% more than one race, 10% Hispanic or Latino, 10% African

American, and 1% other race or unknown. Demographics within Cohort I did not differ between different-sex intact parents and other family types. Families completed in-home assessments at each time point, involving participation in multiple videotaped interaction tasks and adoptive mothers and fathers completing questionnaires. The present study utilized observation and questionnaire data from the 2.5 and 4.5 year assessments, and questionnaire data from the 6-year assessment.

## Measures

**Interparental conflict (2.5 years).** Adoptive mothers and fathers completed the 5-item hostility subscale from the Behavior Affect Rating (Melby, Ge, Conger & Warner, 1995). Each parent reported on their partner's hostility towards themselves during the past year. Items were rated on a 7-point scale, ranging from 1 (Always) to 7 (Never). Items were reverse-coded so that a higher score represented higher hostility (mothers  $\alpha = .87$ ; fathers  $\alpha = .91$ ). Mothers and fathers also completed a 20-minute marital interaction task, which involved parents discussing 19 topics designed to elicit positive and negative emotions, such as when they met and what they find most frustrating about each other. Observations were coded by trained coders using the Iowa Family Interaction Rating Scales- Marital Interaction Code (Dogan et al., 2005; Melby et al., 1989). All codes were rated on a 9-point scale from 1 (Not at all characteristic) to 9 (Mainly characteristic). Three codes were summed: negative mood, hostility and antisocial behavior (Rhoades et al., 2012). Approximately 30% of observations were coded by two coders. Although intraclass correlations were relatively low, ranging from .38 (negative mood) to .60 (hostility), these measures have previously been used at an earlier wave as indicators of interparental conflict (Rhoades et al., 2012), and combined showed good reliability ( $\alpha = .81$  for both mothers and fathers).

**Coparenting (4.5 years).** Coparenting was assessed using a 12-item interviewer impressions scale developed for this study. Items assessed behavior observed during the in-home assessment, measuring overall family behavior (e.g. “How courteous were family members to each other?”), warmth between couples (e.g. “Did the couple display physical affection during the visit (touch, kiss, hug)?”), overt hostility between parents (e.g. “Was there tension between the couple during the visit?”), and how couples related to the child together (e.g. “Did the couple share a sense of pride in their child?”; “Did the couple argue over how to care for their child?”; “Did the couple seem to work together as a team in taking care of their child?”; “Did one parent express anger or resentment towards the other parent for not helping out enough with the child?”). Items were rated on a 5-point scale ranging from 1 (Not at all) to 5 (Very). Seven items were reverse-coded and all 12 items were summed to create an overall measure of coparenting, with higher scores indicating poorer coparenting ( $\alpha = .84$ ).

**Parent-to-child hostility (4.5 years).** Mothers and fathers completed the 5-item hostility subscale of the Iowa Family Interaction Rating Scales (Melby et al., 1989), measuring hostility expressed towards the child in the last month. Items were rated on a 7-point scale ranging from 1 (Never) to 7 (Always) with higher scores indicating higher parent-to-child hostility (mothers  $\alpha = .77$ ; fathers  $\alpha = .76$ ).

**Child adjustment (2.5 and 6 years).** Mothers and fathers completed the 32-item Internalizing subscale and 34-item Externalizing subscale of Child Behavior Checklist (CBCL; Achenbach, 1991). Items were rated on a 3-point scale from 1 (Not true) to 3 (Very true). As previous research has suggested that children’s internalizing and externalizing problems cannot be differentiated until around 4 years of age (Leve et al., 2009), mother and father reports of internalizing and externalizing were combined to create an overall adjustment variable at 2.5 years ( $\alpha = .92$ ). At 6 years, reliability was



high for mothers' and fathers' reports of internalizing (mothers  $\alpha = .81$ ; fathers  $\alpha = .83$ ) and externalizing problems (mothers  $\alpha = .88$ ; fathers  $\alpha = .90$ ).

**Control variables.** Prenatal complications and adoption openness were initially considered as control variables to control for similarities between birth and adoptive families as a result of contact/knowledge between birth parents and children, and to attempt to disentangle genetic influence and the prenatal environment (Ge et al., 2008; Marceau et al., 2013). However, these covariates were not associated with any variables in the model, and thus were not included in further analyses.

### **Analysis Strategy**

Missing data ranged from 5% (mother reported partner hostility at 2.5 years), to 28.5% (father self-reported hostility to child at 4.5 years). Little's test indicated that data was missing completely at random ( $\chi^2(421) = 457.48, p = .11$ ). Thus, to maximize data, multiple imputation was implemented in R 3.4.1 (R Core Team, 2017), using predictive mean matching (PMM) with the "mice" package (Van Buuren & Groothuis-Oudshoorn), resulting in  $N = 303$ . Confirmatory factor analysis (CFA) and Structural equation modelling (SEM) was also conducted in R 3.4.1 with 20 imputed datasets using the "lavaan" package (Rosseel (2012). Fit indices used for this model were Chi Square ( $\chi^2$ ), Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index (CFI), with a non-significant  $\chi^2$ , CFI  $>.95$ , and RMSEA  $<.06$  indicating good fit (Hu & Bentler, 1999).

## Results

### Preliminary Results

Table 4 shows correlations, means and standard deviations. Values represent results for transformed variables where relevant. Mother and father reported and observed interparental conflict were significantly correlated with each other, and all conflict variables, with the exception of mother-reported partner hostility, were correlated with the parent-to-child hostility measures. Mother observed and partner-reported conflict were associated with father reported internalizing and externalizing problems. Coparenting was significantly associated with father observed hostility only. Parent-to-child hostility measures were correlated with child adjustment measures, with the exception of father-to-child hostility and mother-reported internalizing problems, and mother-to-child hostility and father-reported internalizing problems. All outcome variables were significantly associated with each other, with the exception of father-reported internalizing and mother-reported externalizing. CFA results indicated that the latent variable of interparental conflict (mother and father observed and reported interparental conflict) showed good fit,  $\chi^2(2) = 3.38$ ,  $p = .18$ , CFI = .99, RMSEA = .05. SEM was then conducted for all models.

Table 4

Means, standard deviations and correlations among all non-imputed study variables.

	1	2	3	4	5	6	7	8	9	10	11	12
1. M observed IPC (2.5y) <sup>i</sup>												
2. F observed IPC (2.5y) <sup>i</sup>	.35**											
3. M report IPC (2.5y)	.25**	.30**										
4. Father report IPC (2.5y)	.34**	.41**	.53**									
5. C adjustment (2.5y)	.16	.04	.13	.23*								
6. Coparenting (4.5y) <sup>i</sup>	.16	.22*	-.03	.08	-.06							
7. M hostility (4.5y)	.14	.19**	.17	.20*	.41**	-.03						
8. F hostility (4.5y)	.18*	.14	.15	.34**	.28**	.02	.44**					
9. C internalizing (M; 6y) <sup>i</sup>	.09	-.12	.11	.06	.42**	-.07	.23*	.11				
10. C internalizing (F; 6y) <sup>i</sup>	.23**	.06	.08	.21*	.35**	.06	.15	.20*	.44**			
11. C externalizing (M;6y)	.07	-.07	.06	.08	.55**	-.10	.43**	.33**	.55**	.17		
12. C externalizing (F; 6y)	.26**	.05	.01	.25**	.50**	-.10	.36**	.41**	.29**	.59**	.54**	
Mean	.84	.82	19.17	21.90	155.02	1.30	10.97	10.31	1.64	1.63	34.19	34.10
SD	.18	.18	6.18	7.29	14.56	.10	2.96	3.06	.05	.05	6.23	6.75

\* p <.05, \*\* p <.01, IPC = Interparental conflict, (M) = mother, (F) = father, (C) = child, (y) = years, <sup>i</sup> transformed variables.

## Model Results

Prior to the full theoretical model (Figure 8), models were conducted to examine a) composite hostility (maternal paternal hostility combined), b) mother and father hostility, and c) coparenting as a mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Results for these models are presented in Appendix B. Figure 8 represents SEM results for the model examining the relative role of coparenting, mother hostility and father hostility as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, showing standardized beta coefficients. Text reports standardized and unstandardized coefficients and 95% confidence intervals. Fit indices showed that the model had adequate fit to the data,  $\chi^2(37) = 69.06$ ,  $p < .01$ , CFI = .94, RMSEA = .05. Interparental conflict was associated with early child adjustment ( $\beta = .26$ , [ $b = 1.59$ , (.51, 2.68)],  $p < .01$ ). Mother-to-child hostility was predicted by early child adjustment ( $\beta = .30$ , [ $b = .57$ , (.31, .83)],  $p < .01$ ), but was not predicted by interparental conflict. In contrast, father-to-child hostility was predicted by interparental conflict ( $\beta = .25$ , [ $b = .17$ , (.05, .69)],  $p < .01$ ) and early adjustment ( $\beta = .20$ , [ $b = .36$ , (.11, .62)],  $p < .01$ ). Coparenting was significantly predicted by interparental conflict ( $\beta = .26$ , [ $b = .07$ , (.02, .12)],  $p < .01$ ), but was not predicted by early adjustment. Mother-to-child and father-to-child hostility were significantly associated ( $\beta = .28$ , [ $b = 1.99$ , (.93, 3.04)],  $p < .01$ ). Coparenting was not significantly associated with either mother-to-child or father-to-child hostility. Child internalizing problems were predicted by early child adjustment only ( $\beta = .57$ , [ $b = .11$ , (.07, .15)],  $p < .01$ ), whereas child externalizing problems were significantly predicted by early adjustment ( $\beta = .57$ , [ $b = 1.76$ , (1.24, 2.27)],  $p < .001$ ) and father-to-child hostility ( $\beta = .18$ , [ $b = .29$ , (.05, .54)],  $p = .02$ ). Neither coparenting

nor mother-to-child hostility predicted either internalizing or externalizing problems. There was a significant indirect relationship between interparental conflict and child externalizing problems via father-to-child hostility ( $\beta = .04$ , [ $b = .05$ ,  $(.01, .10)$ ],  $p < .05$ ). Chi Square difference tests indicated that no paths significantly differed for mothers and fathers, nor did the paths from interparental conflict to coparenting, mother hostility and father hostility (see table 5).

Table 5

*Chi Square difference tests comparing paths for mothers and fathers.*

Paths constrained to be equal	$\chi^2$	$df$	$\chi^2 \Delta$
Full model	56.14	37	-
Paths from mother and father hostility to externalizing	56.58	38	.45
Paths from IPC to mother and father hostility	59.62	38	3.48
Paths from IPC to coparenting and mother hostility	56.55	38	.41
Paths from IPC to coparenting and father hostility	58.85	38	2.41
Paths from early adjustment to IPC	57.93	38	1.79

IPC = Interparental conflict.

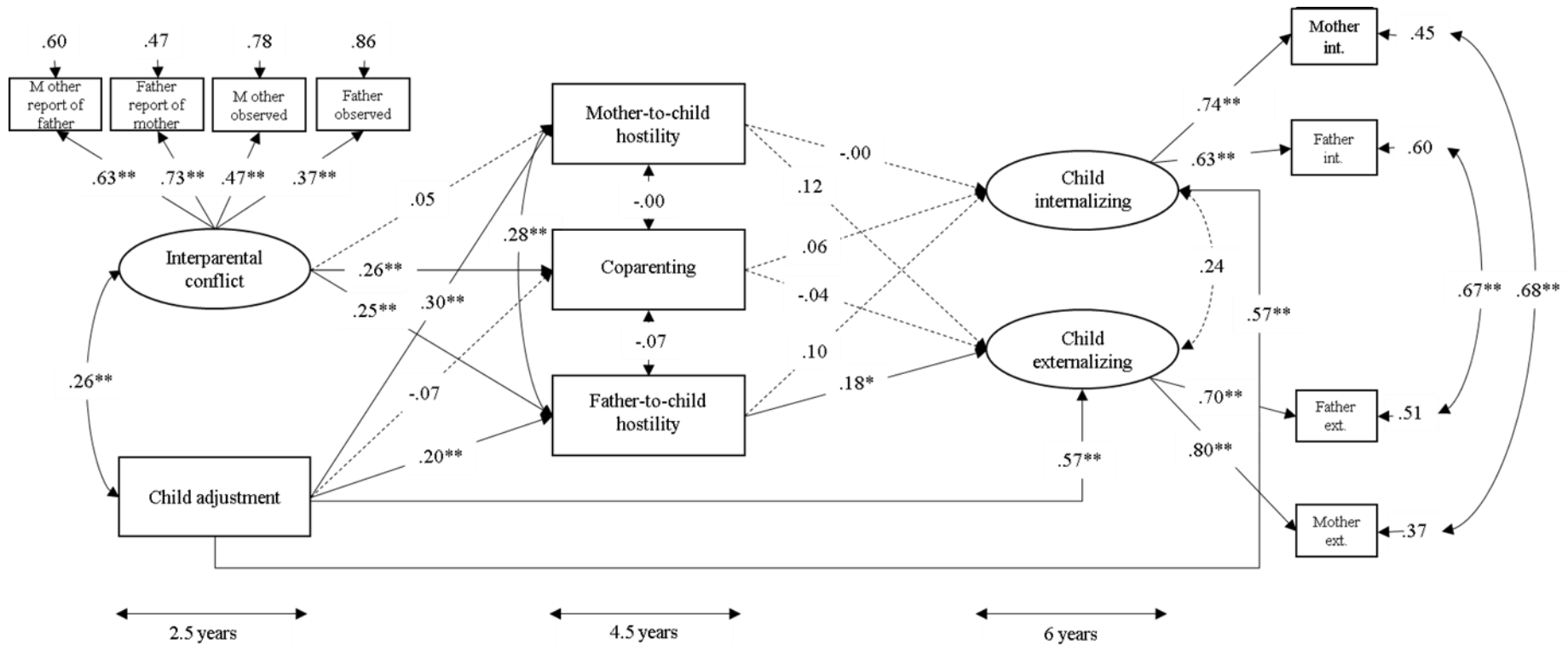


Figure 8. Full theoretical model with results showing standardized coefficients, \*  $p < .05$ , \*\* $p < .01$ . Dashed lines represent non-significant paths. “int.” = internalizing, “ext.” = externalizing.

## Discussion

The present study was among the first to use a multimethod, multi-informant longitudinal adoption-at-birth design to examine the relative role of mother hostility, father hostility and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems across early-to-middle childhood, whilst also assessing child evocative effects on parenting and coparenting. The adoption-at-birth design used in the present study allowed these processes to be examined as environmental influences on child adjustment without the confound of common genes (i.e. removing the confound of passive  $rGE$ ; Harold et al., 2013b).

Interparental conflict at 2.5 years predicted subsequent coparenting, demonstrating that the coparenting relationship is susceptible to spillover from negativity in the interparental relationship. This finding suggests that parents who are engaged in higher levels of conflict are less able to agree on childrearing decisions and support each other, cooperate and share enjoyment in their parenting roles across early-to-middle childhood, and extends previous research demonstrating concurrent associations between the interparental and coparenting relationship in early-to-middle childhood (Holland & McElwain, 2013), and longitudinal associations in the transition to parenthood (i.e., between prenatal marital relationship quality and coparenting in infancy; Le et al., 2016). Interparental conflict also predicted father-to-child, but not mother-to-child hostility. Findings suggest that paternal parenting is more susceptible to spillover from the interparental relationship, aligning with previous research (Harold et al., 2012; Stover et al., 2016) and demonstrating the importance of examining relative maternal and paternal processes. However, effect sizes in the relationship between interparental conflict and parenting did not significantly differ for mothers and fathers.

Thus, it would be premature to conclude that mothers' parenting is not impacted by conflict in the interparental relationship, and is therefore important to examine the relative association between interparental conflict and maternal and paternal parenting practices beyond hostility.

Early child adjustment predicted both mother-to-child and father-to-child hostility, replicating previous findings showing that early child behavior can impact on subsequent parenting practices (Belsky & Jaffee, 2006). Findings suggest that early negative child behavior can evoke negative parenting behaviors for mothers and fathers. Due to the nature of the adoption-at-birth design utilized in the present study, common genes cannot explain associations between child behavior and parenting, demonstrating that negative child behavior can evoke more hostile parenting from mothers and fathers regardless of whether children and parents are genetically related. In contrast, early child adjustment did not predict coparenting. This finding is inconsistent with previous research that has shown negative child behavior to evoke a more negative coparenting relationship (Cook, Schoppe-Sullivan, Buckley & Davis, 2009). This incongruity may be due to the limited existing research primarily examining associations between early child behavior and coparenting in cross-sectional studies, in early infancy as opposed to toddlerhood, and primarily examining early temperamental characteristics rather than broader behavior patterns (Cook et al., 2009). Future research should further examine specific child characteristics and aspects of the coparenting relationship involved in evocative relationships.

Coparenting was not significantly associated with mother-to-child or father-to-child hostility. Although significant associations have been found between coparenting and parenting (Adler-Baeder et al., 2016; Karreman et al., 2008), coparenting has not previously been examined in relation to hostility. Present findings suggest that a



negative coparenting relationship may not be associated with parent hostility. Additionally, contradictory to previous research (Katz & Low, 2004; Teubert & Pinquart, 2010), coparenting was not associated with subsequent child internalizing or externalizing problems. This discrepancy could be due to existing research primarily examining the relationship between coparenting and adjustment using cross-sectional data (Farr & Patterson, 2013), and examining associations in early toddlerhood (Baril et al., 2007; Solmeyer, Feinberg, Coffman & Jones, 2014). Present findings suggest that problems in the coparenting relationship may be less prevalent for child psychopathology in early-to-middle childhood. However, interventions with a coparenting component have shown positive effects on children's adjustment in this developmental period (Cowan, Cowan & Heming, 2005), demonstrating the need to further examine the relationship between coparenting and child outcomes in early-to-middle childhood.

The lack of significant associations between coparenting and both parenting and child adjustment in the present study could be due to inconsistencies in definition and measurement of coparenting within the literature. Although coparenting is recognized as a multidimensional construct (Feinberg, 2002), there is a tendency for research to only examine associations between individual coparenting dimensions and other family processes, as opposed to the overall coparenting relationship (Adler-Baeder et al., 2016; Stroud et al., 2011). Additionally, when the overall coparenting relationship is examined, the coparenting dimensions combined to form an overall coparenting measure differ across the literature (Feinberg, 2003; Le et al., 2016). This highlights the importance of developing a standardized assessment of the coparenting relationship. Furthermore, lack of associations may represent limitations in the conceptualization of coparenting. The general consensus is that a positive coparenting relationship is

associated with positive child outcomes (Feinberg, 2003; Teubert & Pinquart, 2010). This stance fails to recognize the contexts in which a positive coparenting relationship as defined may not be beneficial for child outcomes (such as in the context of negative parenting). Demonstrating this limitation, Latham and colleagues found that coparenting moderated the relationship between maternal punitive parenting and children's disruptive behavior, with a negative coparenting relationship buffering against the negative impact of punitive parenting on children's behavior problems (Latham et al., 2017). This underlines the need to broaden conceptualizations of coparenting and for future research to further examine coparenting as a moderator of family processes and child psychopathology.

Findings showed a significant indirect relationship between interparental conflict and child externalizing problems via father-to-child hostility. However, mother-to-child hostility did not predict externalizing problems. Findings highlight the importance of both the interparental and father-child subsystems for children's development, particularly as, through the nature of the adoption design, associations cannot be explained by common genes. Whilst previous research suggests that both mother and father hostility are processes through which interparental conflict can influence externalizing problems (Harold et al., 2013b; Stover et al., 2012), these studies did not control for early child adjustment. As early child adjustment is recognized as a strong predictor of later child adjustment (Grych et al., 2003; Harold & Conger, 1997), associations between parenting and later child outcomes would be expected to reduce after the inclusion of early adjustment. This underlines the importance of considering early adjustment when examining family processes and child psychopathology. However, the association between hostility and child externalizing problems did not significantly differ for mothers and fathers. Thus, findings do not

undermine the importance of the mother-child relationship for children's externalizing problems, but rather highlight the importance of considering the contributions of both mothers and fathers when examining processes through which interparental conflict can impact children's adjustment.

Initial correlations showed both mother and father hostility to be associated with subsequent child internalizing problems. However, in the full model, neither mother nor father hostility uniquely predicted child internalizing problems after controlling for early child adjustment. Whilst this finding does not align with previous research showing associations between hostility and internalizing problems (Harold & Conger, 1997), research more commonly examines externalizing problems rather than relative associations for internalizing and externalizing problems (Harold et al., 2013b; Stover et al., 2016). Present results suggest that father hostility may be a stronger predictor of externalizing problems than internalizing problems. However, research has shown parenting behaviors such as psychological control, warmth and rejection to predict internalizing problems (Harold & Sellers, 2018; Pinquart, 2017). Future research should therefore examine whether additional maternal and paternal parenting practices differentially predict changes in internalizing and externalizing problems over time.

The present findings have multiple implications for intervention policy and practice. Findings emphasize the importance of incorporating the father-child relationship as a target for intervention, in addition to targeting the interparental relationship in intervention to prevent spillover from the interparental to the father-child relationship. Whilst interventions targeting the interparental relationship are limited in number, findings suggest that these interventions are successful in improving child adjustment (Harold & Sellers, 2018). Additionally, the significant associations between early child adjustment and mother and father hostility suggests that interventions

increasing parents' awareness of evocative effects and educating parents on how to respond more positively to difficult behavior may be beneficial for reducing child-evoked negative parenting.

Limitations of the present study warrant consideration. Firstly, the present study only examined processes for intact families, so findings may not be applicable to all family types. As the coparenting relationship is a particularly salient area of research for divorced/separated couples (Pruett, Ebling & Cowan, 2011), future research should examine whether these associations differ for families in which one parent does not reside in the household, in addition to other risk groups. Additionally, as previous research has found multiple aspects of parenting to be related to coparenting (Karreman et al., 2008; Adler-Baeder et al., 2016), future research should examine the relative contribution of coparenting and maternal and paternal parenting beyond hostility for child adjustment. Finally, the coparenting measure was a newly developed measure for the EGDS. However, the scale was developed to conceptually align with previously defined coparenting constructs (coparenting conflict, sharing a sense of pride in the child, support and cooperation, and division of labor; Feinberg, 2003; Margolin et al., 2001). Additionally, the magnitude of the association between interparental conflict and coparenting in the present study aligns with associations in previous research (Katz & Low, 2004; Le et al., 2016), suggesting that the coparenting measure used in the present study assesses similar behaviors to existing measures designed to assess coparenting. Moreover, much coparenting research is conducted using bespoke measures of only one coparenting dimension (Bronte-Tinkew et al., 2010), whereas the present measure covered an extensive range of coparenting behaviors to measure the coparenting relationship. Furthermore, all other measures used in this study were well validated, and the multimethod, multi-informant approach utilized overcomes the limitation of single-

rater bias (Rhoades et al., 2012), thus strengthening the methodology of the current paper.

This study was the first to use a longitudinal, multimethod, multi-informant adoption-at-birth design to examine coparenting, mother hostility and father hostility as mediators in the relationship between interparental conflict and child internalizing and externalizing problems from early-to-middle childhood. Findings showed the importance of interparental conflict for children's externalizing behavior problems via the father-child relationship, in addition to showing how early child behavior can evoke negative parenting for mothers and fathers. These associations represent environmental processes that cannot be explained by common genes. The lack of associations between coparenting and other family processes underlines the need for research to reconsider the conceptualization of the coparenting relationship. Thus, findings highlight areas of development in research and practice that could have positive implications for child mental health.

## **Chapter Transition: Building from Study 2**

Findings from chapter 4 (study 2) demonstrate that interparental conflict can impact child externalizing problems via father-to-child hostility, in addition to showing that interparental conflict can influence the coparenting relationship, and that early child adjustment (internalizing and externalizing problems combined) can evoke more hostile parenting in mothers and fathers. The lack of associations between coparenting and mother and father hostility and child internalizing and externalizing problems highlights the need to better understand the role of the coparenting relationship for child psychopathology within a family systems framework. Furthermore, the lack of significant findings in relation to family processes and child internalizing problems underlines the need to examine whether maternal and paternal parenting practices beyond hostility can predict child internalizing problems.

The following chapter therefore aims to develop understanding of the role of the coparenting relationship and maternal and paternal parenting processes beyond hostility for child psychopathology (internalizing and externalizing problems). The following study examines the relative role of coparenting and specific maternal and paternal parenting practices (hostility, inconsistent and harsh discipline, positive parenting and warmth) as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, whilst also examining child-evoked effects on parenting practices and coparenting. Furthermore, exploratory analyses are conducted in this chapter to examine whether coparenting moderates associations between interparental conflict and maternal and paternal parenting, and between maternal and paternal parenting and child internalizing and externalizing problems.

**Chapter 5: Specific maternal and paternal parenting practices as mediators in the relationship between interparental conflict and child adjustment: Does coparenting moderate associations?**

This chapter has been written in a journal manuscript format for the purpose of this thesis and will be further developed for submission to the Parenting Journal.

### **Abstract**

The present study examined the relative role of coparenting and specific maternal and paternal parenting processes (hostility, positive parenting and discipline practices) as mediators in the relationship between interparental conflict and child internalizing and externalizing problems from early-to-middle childhood. Child-evoked effects on parenting and coparenting were also examined. Exploratory analyses were conducted to examine coparenting as a moderator of relationships between interparental conflict and parenting, and between maternal and paternal parenting and child internalizing and externalizing problems. Structural equation modelling was used to examine N = 303 intact mothers, fathers and children from 2.5 to 6 years using a longitudinal adoption-at-birth study (Early Growth and Development Study; EGDS). Findings showed that interparental conflict indirectly influenced externalizing problems via father hostility and predicted father inconsistent discipline and coparenting. Father harsh discipline and mother inconsistent discipline predicted externalizing problems, and low mother warmth and positive parenting predicted higher internalizing problems. Early child adjustment problems predicted father and father hostility and warmth, and mother harsh discipline. Coparenting was not associated with any parenting practices or child outcomes and did not moderate any associations. Findings are discussed in relation to policy and practice implications.

**Keywords:** Interparental conflict, mother-child relationship, father-child relationship, coparenting,



## **Introduction**

The interparental relationship is widely regarded as an important family process for child psychopathology (Harold & Sellers, 2018). Higher levels of interparental conflict are associated with higher internalizing and externalizing problems from early childhood through to adolescence (Harold et al., 2013b; Shelton & Harold 2008). One process through which interparental conflict is thought to influence internalizing and externalizing problems is via the parent-child relationship. Two theories that provide an explanation for the role parenting plays in the relationship between interparental conflict and child adjustment are family systems theories (Cox & Paley, 1997; Minuchin, 1974) and the spillover hypothesis. Family systems theories outline the family as a system comprised of multiple interdependent subsystems, including the interparental, parent-child and coparenting relationships, proposing that disruptions in one subsystem can lead to disruptions in other family subsystems, which can in turn lead to more negative child outcomes (Cox & Paley, 1997; Minuchin, 1974); for example, disruptions in the interparental subsystem (high levels of interparental conflict) can lead to poorer child adjustment via disruptions in parent-child relationships. Complementary to family systems perspectives, the spillover hypothesis (Erel & Burman, 1995) posits that high levels of hostility and negativity in the interparental relationship spill over to the parent-child relationship, resulting in poorer parenting behaviors displayed towards the child. In turn, harsh, hostile parenting behaviors can lead to poorer outcomes for children, specifically higher internalizing and externalizing problems (Shelton & Harold, 2008).

Research supports the parent-child relationship as a process through which interparental conflict can influence child internalizing and externalizing problems (Harold & Sellers, 2018; Stover et al., 2012). Research often examines negative

parenting behaviors as mediators in the relationship between interparental conflict and child adjustment, finding parent-to-child hostility (Harold & Conger, 1997; Harold et al., 2011, 2012, 2013b), rejection (O'Donnell et al., 2010; Shelton & Harold, 2008), and harsh/overreactive parenting (Rhoades et al., 2011; Stover et al., 2012) to mediate the relationship between interparental conflict and child adjustment from early childhood to adolescence. However, research primarily examines these processes in relation to externalizing problems (Harold et al., 2011, 2013; Stover et al., 2012; Rhoades et al., 2011), with less examination of how hostile parenting behaviors mediate the relationship between interparental conflict and internalizing problems relative to externalizing problems.

Whilst research often centers on negative parenting behaviors (e.g., hostility) in the relationship between interparental conflict and child externalizing problems, limited research suggests that positive parenting behaviors also play an important role in this relationship for both internalizing and externalizing problems; specifically, research has shown parent warmth to mediate the relationship between interparental conflict and internalizing and externalizing problems (O'Donnell et al., 2010; Schoppe-Sullivan et al., 2007). Additionally, general positive parenting (positive reinforcement, warmth and affection combined) has been implicated in the relationship between interparental conflict and internalizing and externalizing problems (Schacht et al., 2009; Schoppe-Sullivan et al., 2007), highlighting the importance of positive parenting behaviors as processes through which interparental conflict can influence child adjustment.

Furthermore, discipline practices have also been evidenced as important for child adjustment (Dette-Hagemeyer & Reichle, 2014), with limited evidence suggesting that high levels of harsh and inconsistent discipline mediate the relationship between interparental conflict and child internalizing and externalizing problems (Erath &

Bierman, 2006; Gerard et al., 2006; Gonzales et al., 2000). However, research assessing the role of positive parenting behaviors and discipline practices in the relationship between interparental conflict and child adjustment is primarily conducted in later childhood and adolescence (Gonzales et al., 2000; Schacht et al., 2009; Schoppe-Sullivan et al., 2007), and/or demonstrates cross-sectional associations (Gerard et al., 2006; Gonzales et al., 2000). It is therefore important to examine whether positive parenting and discipline practices mediate the relationship between interparental conflict and child internalizing and externalizing problems longitudinally from early-to-middle childhood.

### **Interparental Conflict and Mother versus Father Parenting and Child Adjustment**

Family process and child outcome research has historically focused on maternal processes (Giallo et al., 2014b; Scaramella et al., 2008). However, the importance of fathers for children's development is increasingly recognized (Lamb, 2004; Cabrera et al., 2018). Research has moved towards examining the relative role of mothers and fathers for children's development, showing both maternal and paternal parenting to uniquely contribute to child and adolescent internalizing problems (Marceau et al., 2013; Shelton & Harold, 2008), and externalizing problems (Cummings et al., 2013; Malmberg & Flouri, 2011; Rinaldi & Howe, 2012; Shelton & Harold, 2008; Vera et al., 2012). Additionally, research demonstrates that maternal and paternal parenting provide unique mediating roles in the relationship between interparental conflict and child adjustment; for example, mother and father hostility have been shown to mediate the relationship between interparental conflict and child externalizing problems (Harold et al., 2013b; Stover et al., 2012).

Evidence suggests that the same maternal and paternal parenting behaviors may differentially mediate the relationship between interparental conflict and child adjustment. For example, Shelton and Harold (2008) found that mother-child rejection mediated the relationship between interparental conflict and externalizing problems, whereas father-child rejection mediated the relationship between interparental conflict and internalizing problems. Additionally, when examining the relative role of mother and father emotional unavailability in the relationship between interparental conflict and child internalizing and externalizing problems, Sturge-Apple et al. (2006) found that only father emotional unavailability was a significant mediator in this relationship. In contrast, Lim et al. (2011) found mother, but not father negative parenting to mediate the relationship between interparental conflict and child internalizing problems. Furthermore, Han et al. (2017) found low mother warmth to mediate the relationship between interparental conflict and child internalizing problems, whereas father warmth mediated the relationship between interparental conflict and early peer relationships. Together these findings indicate that specific maternal and paternal parenting behaviors may differentially mediate the relationship between interparental conflict and child internalizing and externalizing problems. However, whilst positive parenting behaviors and discipline practices have been evidenced as processes through which interparental conflict can influence child internalizing and externalizing problems (Erath & Bierman, 2006; Gerard et al., 2006; Gonzales et al., 2000; Schacht et al., 2009; Schoppe-Sullivan et al., 2007), these studies did not examine the relative contribution maternal and paternal parenting behaviors. There is little examination of whether specific maternal and paternal parenting behaviors (positive parenting, discipline practices and hostile parenting) differentially mediate the relationship between interparental conflict and child internalizing problems relative to externalizing problems longitudinally from

early-to-middle childhood. The first aim of the present study was therefore to examine whether these maternal and paternal behaviors differentially mediate the relationship between interparental conflict and child internalizing and externalizing problems in this developmental period.

### **The Role of Coparenting for Child Mental Health**

The coparenting relationship is recognized by family systems theories as important for child adjustment (Minuchin, 1974). Coparenting has been defined as the way in which parents work together to raise their child (Feinberg, 2003), and has been shown to be important for child internalizing and externalizing problems (Teubert & Pinquart, 2010; Schoppe et al., 2001; Murphy et al., 2016). Additionally, aligning with a family systems perspective (which recognizes the importance of considering multiple family subsystems in relation to child psychopathology; Cox & Paley, 1997), a theoretical framework has been developed to outline the role that coparenting plays within the wider family system, called the ecological model of coparenting (Feinberg, 2003). This framework outlines coparenting as a mediator in the relationship between interparental conflict and child adjustment. These proposed associations have been supported empirically, (Cui et al., 2007; Katz & Low, 2004; Mahoney et al., 1997). However, to date, findings predominantly represent cross-sectional associations in later childhood and adolescence, with less research examining coparenting as a mediator in the relationship between interparental conflict and child internalizing and externalizing problems longitudinally from early-to-middle childhood. The ecological model of coparenting also proposes associations between coparenting and parent-child relationships, which has also received support in the literature; for example, research has shown that poor coparenting is associated with negative parenting practices (Adler-

Baeder et al., 2016; Cui et al., 2007; Lamela et al., 2016), and that positive coparenting is associated with positive parenting behaviors such as mother and father warmth (Abidin & Brunner, 1995). However, little research has examined associations between coparenting and hostile parenting behaviors or discipline practices.

Whilst research demonstrates that coparenting is a mediator in the relationship between interparental conflict and child adjustment (Katz & Low, 2004) and is associated with parenting (Adler-Baeder et al., 2016), research rarely considers the relative role of parenting and coparenting as mediators in the relationship between interparental conflict and child adjustment. Two exceptions are studies conducted by O’Leary and Vidair (2005) and Stroud et al. (2015), who found that maternal and paternal parenting and coparenting differentially mediated the relationship between interparental conflict and child internalizing and externalizing problems. In a review of evidence, only one study has examined the relative role of maternal parenting, paternal parenting and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems using longitudinal data; the previous chapter in the present thesis (Chapter 4; study 2) found that coparenting neither predicted child internalizing or externalizing problems, nor was it associated with mother or father hostility. Thus, there is inconsistent evidence with regards to the role of the coparenting relationship within the family system. The second aim of the present study was therefore to examine the relative role of coparenting and specific maternal and paternal parenting practices (discipline, hostile parenting and positive parenting) as mediators in the relationship between interparental conflict and child internalizing and externalizing problems.

Coparenting can also moderate associations between family processes (e.g., the interparental and parent-child relationships) and child psychopathology. Research

demonstrates that coparenting moderates associations between the interparental relationship and parenting experiences; for example, Kwan et al. (2015) found that poor interparental relationship quality was associated with higher parenting stress when there was a poor coparenting relationship, but that poor interparental relationship quality and parenting stress were not associated when there was a positive coparenting relationship. Additionally, Merrifield and Gamble (2013) found coparenting to moderate associations between marital satisfaction and fathers' parenting efficacy; the decrease in parenting efficacy as marital satisfaction declined was greatest in the context of higher undermining coparenting. These findings suggest that a poor coparenting relationship facilitates negative relationships between family processes, whereas a positive coparenting relationship can attenuate associations between negative family processes (specifically between the interparental relationship and parenting experiences).

Evidence also suggests that coparenting moderates the association between parenting and child adjustment. For example, Jia et al. (2012) found that father involvement predicted lower levels of internalizing problems and higher social competence only when in a supportive coparenting relationship, showing how a positive coparenting relationship can facilitate positive relationships between parenting and child adjustment. Furthermore, Dopkins Stright and Neitzel (2003) found that a supportive coparenting relationship attenuated the association between both mother and father rejection and children's passivity/dependence, suggesting that a positive coparenting relationship can reduce associations between poor parenting and poor child outcomes. Together, these findings support the general consensus among the coparenting literature, which is that a positive coparenting relationship leads to positive outcomes for children (Feinberg, 2003; Teubert & Pinquart, 2010). However, Latham et al. (2017) found that mothers' coercive parenting only predicted subsequent disruptive child

behavior when there was a supportive coparenting relationship, whereas a poor coparenting relationship attenuated this association. This finding suggests that a poor coparenting relationship can buffer against the effects of negative parenting on child behavior problems, instead suggesting that in the context of negative parenting, a poor coparenting relationship may be beneficial for child outcomes. This highlights a limitation of the consensus that a positive coparenting relationship is always beneficial for child outcomes. The final aim of this study was to further explore the moderating role of coparenting, by examining whether coparenting moderates the relationship between interparental conflict and maternal and paternal parenting, and between maternal and paternal parenting and child internalizing and externalizing problems.

### **Methodological Considerations in Family Process and Child Outcome Research**

Family process and child psychopathology research predominantly relies on genetically related parents and children, meaning associations between family processes and child mental health may be attributable to common genes, known as passive gene-environment correlation (passive  $rGE$ ; Jaffee & Price, 2012). This prevents the examination of family environmental processes (e.g., interparental conflict, parent-child relationships) as separate from genetic influence. In contrast, in an adoption-at-birth design, parents and children are genetically unrelated, meaning associations between parents and children cannot be attributed to common genes. Previous research using the adoption design demonstrates that mother-child and father-child hostility can mediate the relationship between interparental conflict and child externalizing problems (Harold et al., 2013b; Stover et al., 2012), thus showing interparental conflict and parent hostility to be important influences for child externalizing problems. Additionally, limited research has examined coparenting using an adoption design, finding



coparenting to predict internalizing and externalizing problems among genetically unrelated adoptive parents and children (Farr & Patterson, 2013), but research is yet to use an adoption design to examine coparenting within a wider family systems framework (with the exception of chapter 4 in the present thesis). The present study used an adoption-at-birth design to examine the relative role of coparenting and maternal and paternal parenting (positive parenting, discipline practices, hostility) in the relationship between interparental conflict and child internalizing and externalizing problems.

The adoption-at-birth design also provides insight into evocative processes; specifically, this design allows the examination of how children's genetically informed behavior can evoke their rearing environment (e.g., parenting practices), known as evocative gene-environment correlation (evocative  $r_{GE}$ ; Rutter & Silberg, 2002). Research using the adoption design has provided evidence to support evocative  $r_{GE}$  (Elam et al., 2014; Ge et al., 1996; Harold et al., 2013a). However, this research has primarily examined cross-sectional associations between specific early child temperamental characteristics and hostile parenting (Harold et al., 2013a; Elam et al., 2014), providing limited insight into how broader child behavior patterns can influence subsequent different parenting behaviors. The previous two studies in the present thesis found early child adjustment (a composite measure of internalizing and externalizing problems at 2.5 years) to predict adoptive mother and mother and father hostility at 4.5 years, providing evidence to suggest that child behaviors can evoke more hostile parenting in mothers and fathers. The present study aimed to further develop understanding of evocative processes by examining whether early child adjustment evokes responses from different maternal and paternal parenting domains, specifically positive parenting, discipline practices and hostile parenting.

When examining longitudinal associations between family processes and child adjustment, it is important to control for early child adjustment to allow family processes (e.g., interparental conflict, parenting) to be examined as predictors of changes in children's behavior over time (Grych et al., 2003; Kessler & Greenberg, 1981; Schoppe-Sullivan et al., 2007). The present study therefore included early child adjustment as a predictor of internalizing and externalizing problems, to examine whether interparental conflict, coparenting, and parenting contribute to changes in children's behavior across early-to-middle childhood.

An additional methodological strength of the present study was the use of a multimethod, multi-informant design. Research examining family processes and child psychopathology often relies mother reported data due to lower response rates from fathers (Ramchandani et al., 2005). This single informant approach can lead to inflated associations as a result of trait negativity bias (i.e., a single reporter with a tendency to respond negatively reporting similarly across multiple questionnaires; Harold & Conger, 1997). Due to the availability of mother and father reported data, the present study employed a multi-informant approach, thus reducing trait negativity bias (Harold et al., 2007). Observational data was also available for measures of interparental conflict and coparenting. Using observational data to assess interparental conflict and coparenting provides insight into behaviors without informant effects, whilst mother and father reports of interparental conflict provide information on more general patterns of behavior that cannot be obtained in a snapshot provided by observational data, which is subject to variability in day-to-day behavior (Meunier et al., 2011). Thus, the use of a multimethod, multi-informant, longitudinal adoption-at-birth design provides a novel method of assessing whether interparental, maternal, paternal and coparenting processes

are implicated in child internalizing and externalizing problems from early-to-middle childhood.

### **The Present Study**

The present study was among the first to use a multimethod, multi-informant adoption-at-birth design to examine whether specific maternal and paternal parenting processes mediate the relationship between interparental conflict and child internalizing and externalizing problems longitudinally from early-to-middle childhood, whilst also examining the mediating and moderating role of coparenting and child-evoked effects on parenting. Structural Equation Modelling (SEM) was employed to conduct five models examining the relative role of coparenting and maternal and paternal hostility, warmth, positive parenting, inconsistent discipline and harsh discipline as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Interparental conflict and early child adjustment were assessed at 2.5 years. Parenting and coparenting behaviors were assessed at 4.5 years, and child internalizing and externalizing problems were assessed at 6 years.

## Method

### Sample and Procedure

The present study used the Early Growth and Development Study (EGDS), a longitudinal adoption-at-birth study consisting of 561 sets of adoptive mothers, adoptive fathers, adopted children and birth mothers, and a subset of birth fathers. The sample is representative of adoptive parent and birth parent populations that completed adoption plans at the participating agencies in the same period. Participants were recruited through 45 adoption agencies across 15 states in the Mid-Atlantic, West, Southwest, Midwest and Pacific Northwest regions of the US from March 2003 to January 2010. Families were eligible to participate if: (a) the adoption placement was domestic; (b) placement occurred before 3 months postpartum; (c) the infant was not genetically related to adoptive parents; (d) there were no known major medical conditions; and (e) birth and adoptive parents could understand English at 8th Grade level. Children were adopted at a median of 2 days after birth. The University of Oregon Institutional Review Board provided ethical approval (protocol number: 04262013.036). Due to the nature of comparing the relative role of mothers and fathers and the availability of measures, only intact families from Cohort I who provided data for at least one time point were included in analyses. This resulted in a sample of  $N = 303$  heterosexual, intact adoptive families (177 boys, 126 girls). Of these families, 91% of adoptive parents were white American, 4-5% African American, 1.3% more than one race, 1-3% Hispanic or Latino, and <1% other race or unknown. The race of adopted children was as follows: 58% white American, 21% more than one race, 10% Hispanic or Latino, 10% African American, and <1% other race or unknown. Family income ranged from \$30,000-\$1,650,000 ( $M = \$178,079$ ). At each assessment, adoptive families participated in

several videotaped interaction tasks. Additionally, adoptive mothers and fathers independently completed questionnaires.

## Measures

**Interparental conflict.** Interparental conflict was measured at 2.5 years using both observational and parent reported data. During a home visit, adoptive mothers and fathers completed a 20-minute marital interaction task in which parents discussed 19 topics that were designed to elicit both positive and negative emotions, such as what they find frustrating about each other and when they first met. Interactions were coded for hostility, antisocial behavior and negative mood by trained coders using the Iowa Family Interaction Rating Scales - Marital Interaction Code (Dogan et al., 2005; Melby et al., 1989). Codes were rated on a 9-point scale from 1 (Not at all characteristic) to 9 (Mainly characteristic). Approximately 30% of observations were coded by two coders. Intraclass correlations ranged from .38 (negative mood) to .60 (hostility). Although intraclass correlations are relatively low, these codes combined showed good reliability ( $\alpha = .82$  mothers,  $\alpha = .80$  for fathers) and have been previously used as indicators of interparental conflict at an earlier wave (Rhoades et al., 2012). Adoptive mothers and fathers also reported on their partner's hostile behaviors displayed towards themselves during the last year using the hostility subscale from the Behavior Affect Rating Scale (BARS; Melby et al., 1995), a 10-item subscale rated on a 7-point scale, ranging from 1 (Always) to 7 (Never). Parents reported on how often over the past year their partner had displayed behaviors towards them, such as "How often did your partner... Shout or yell at you because he/she was mad at you?" and "...Argue with you whenever you disagreed about something?". Items were reverse-coded so that higher scores indicate higher hostility ( $\alpha = .87$  for mothers,  $\alpha = .91$  for fathers).

**Early child adjustment.** Early child adjustment was measured at 2.5 years using mothers' and fathers' reports of the internalizing and externalizing subscales from the Child Behavior Checklist (CBCL; Achenbach, 1991). The internalizing subscale consisted of 36 items assessing child depression/anxiety symptoms (e.g., "looks unhappy without good reason"), emotional reactivity (e.g., "disturbed by any change in routine", somatic complaints (e.g., headaches without medical cause) and withdrawal (e.g., doesn't answer when people talk to him/her). The externalizing subscale consisted of 24 items assessing aggression (e.g., doesn't seem to feel guilty after misbehaving) and attention problems (e.g., can't concentrate/can't pay attention for long). As children's internalizing and externalizing problems have been shown to be undifferentiated before 4 years of age (Leve et al., 2009), mother and father reports of internalizing and externalizing symptoms were combined to create a composite measure of child adjustment ( $\alpha = .92$ ).

**Coparenting.** Coparenting was assessed at 4.5 years using a 12-item interviewer impressions scale developed for this study. Items assessed behavior observed during the in-home assessment, measuring overall family behavior (e.g., "How courteous were family members to each other?"), warmth between couples (e.g., "Did the couple display physical affection during the visit (touch, kiss, hug)?"), overt hostility between parents (e.g., "Was there tension between the couple during the visit?"), and how couples related to the child together (e.g., "Did the couple share a sense of pride in their child?"; "Did the couple argue over how to care for their child?"; "Did the couple seem to work together as a team in taking care of their child?"; "Did one parent express anger or resentment towards the other parent for not helping out enough with the child?"). Items were rated on a 5-point scale ranging from 1 (Not at all) to 5 (Very). Seven items

were reverse-coded and all 12 items were summed to create an overall measure of coparenting, with higher scores indicating poorer coparenting ( $\alpha = .84$ ).

**Parent-to-child hostility.** Parent-to-child hostility was measured at 4.5 years using adoptive mother and father reports of the Hostility subscale of the Iowa Family Interaction Rating Scales (Melby et al., 1989). This is a 5-item measure rated on a 7-point scale ranging from 1 (Never) to 7 (Always). Mothers and fathers reported on a range of hostile behaviors displayed towards the child in the last month, including “How often did you... get angry at him/her?” and “...Criticize him/her and his/her ideas?”. Higher scores represented higher hostility ( $\alpha = .78$  for mothers,  $\alpha = .76$  for fathers).

**Parent-to-child warmth.** Parent-to-child warmth was measured at 4.5 years using adoptive mother and father reports of the 6-item warmth subscale from the Iowa Family Interaction Rating Scales (Melby et al., 1989). Parents were asked to report how often over the past month they displayed behaviors towards their child, including “how often did you... help him/her do something that was important to him/her” and “...act supportive and understanding towards him/her”. Items were rated on a 7-point scale ranging from 1 (Never) to 8 (Always) and reverse coded so that higher scores represented lower warmth ( $\alpha = .86$  for mothers,  $\alpha = .85$  for fathers).

**Positive parenting.** Positive parenting was measured at 4.5 years using mother and father reports of the positive parenting subscale from the Alabama Parenting Questionnaire (APQ; Shelton et al., 1996). The subscale consisted of six items rated on a 5-point scale from 1 (Never) to 5 (Always). The positive parenting subscale represented the extent to which parents provided positive feedback or rewards for their child. Parents reported on items such as “You let your child know when he/she is doing

a good job with something” and “You compliment your child when he/she does something well”. Items were reverse coded so that higher scores represented lower levels of positive parenting ( $\alpha = .69$  for mothers,  $\alpha = .72$  for fathers).

**Inconsistent discipline.** Inconsistent discipline was measured at 4.5 years using mother and father reports of the inconsistent discipline subscale from the APQ (Shelton et al., 1996). The subscale consisted of six items such as “You threaten to punish your child then do not actually punish him/her” and “The punishment you give your child depends on your mood”. Items were rated on a 5-point scale from 1 (Never) to 5 (Always). Higher scores represented higher levels of inconsistent discipline ( $\alpha = .65$  for mothers,  $\alpha = .61$  for fathers).

**Harsh discipline.** Harsh discipline was measured at 4.5 years using mother and father reports of the 6-item harsh discipline subscale from the Discipline Questionnaire (Pears et al., 2007). Items included “When your child won’t mind you or breaks a rule, how often do you...scold or yell at your child?” and “...spank or swat your child?”. Items were rated on a 5-point scale ranging from 1 (Always or almost always) to 5 (Never). Higher scores represented higher levels of harsh discipline ( $\alpha = .55$  for mothers,  $\alpha = .54$  for fathers).

**Child internalizing and externalizing problems.** Children’s internalizing and externalizing problems were measured at 6 years using mother and father reports of the CBCL (Achenbach, 1991). Items were rated on a 3-point scale, ranging from 1 (Not true) to 3 (Very true). The present study used the 31-item Internalizing subscale and the 35-item Externalizing subscale. Reliability was high for mothers’ and fathers’ reports of internalizing (mothers  $\alpha = .81$ ; fathers  $\alpha = .83$ ) and externalizing problems (mothers  $\alpha = .88$ ; fathers  $\alpha = .90$ ).



**Additional variables.** Prenatal complications and adoption openness were considered as control variables to take into account early (prenatal) environmental influences and similarities between birth and adoptive families as a result of contact between birth parents and children (Ge et al., 2008; Marceau et al., 2016). These variables were not related to any other study variables, thus were excluded from analysis.

### **Analysis Strategy**

Missing data ranged from 5.0 % (Mother reports of father interparental hostility at 2.5 years) to 31.0 % (externalizing problems at 6 years). Little's test indicated that data was missing completely at random,  $\chi^2(1217) = 1198.59$ ,  $p = .64$ . Thus, multiple imputation was implemented in R 3.4.1 (R Core Team, 2017) using predictive mean matching with the "mice" package (van Buuren & Groothuis-Oudshoorn, 2011), resulting in a sample of  $N=303$ . SEM was conducted with 20 imputed datasets using the "Lavaan" package (Rosseel, 2012) in R 3.4.1 (R Core Team, 2017). Five models were estimated. Each model assessed the relative role of coparenting and mothers' and fathers' parenting as mediating mechanisms in the relationship between interparental conflict and child internalizing and externalizing problems. The parenting constructs in each model were as follows: hostility (Figure 9), warmth (Figure 10), positive parenting (Figure 11), inconsistent discipline (Figure 12), and harsh discipline (Figure 13). Chi Square( $\chi^2$ ), Root Mean Square Error of Approximation (RMSEA), and the Comparative Fit Index (CFI), were used to indicate model fit, with a non-significant  $\chi^2$ ,  $CFI > .95$ , and  $RMSEA < .06$  indicating good fit (Hu & Bentler, 1999).

## Results

### Preliminary Results

Imputed correlations, means and standard deviations are presented in Table 6. All mother and father reported and observed interparental conflict indicators were significantly correlated. No interparental conflict variables were associated with either mother or father warmth, positive parenting, or mother inconsistent discipline. Father inconsistent discipline and mother and father harsh discipline and hostility were associated with at least one interparental conflict indicator. All interparental conflict indicator variables were associated with coparenting, with the exception of mother reported father conflict. Mother and father reported interparental conflict were associated with early child adjustment. Mother observed and father reported partner conflict were associated with father reported internalizing problems, and father reported interparental conflict was associated with father reported externalizing problems. Mother and father reports of each parenting variable were significantly associated (e.g., mother warmth was associated with father warmth). Mother and father hostility were associated with all parenting variables (lower warmth and positive parenting, higher inconsistent and harsh discipline). Mother and father warmth were associated with all parenting variables apart from father harsh discipline and their partner's inconsistent discipline. Low mother positive parenting was associated mother inconsistent discipline, and low father positive parenting was associated with higher mother and father harsh discipline. Mother and father hostility and low warmth, father inconsistent discipline and mother harsh discipline were associated with early child adjustment problems. Mother hostility, low warmth, low positive parenting and inconsistent discipline were associated with mother reported internalizing problems. Mother and father hostility and

father inconsistent discipline were positively associated with father reported internalizing problems. Mother and father hostility and harsh discipline, and mother reported warmth, positive parenting and inconsistent discipline were positively associated with mother reported externalizing problems. Mother and father hostility, mother warmth and father harsh discipline were associated with father reported externalizing problems. Coparenting was not associated with any parenting or child outcome variables. CFA results indicated that the measurement model for interparental conflict had good fit,  $\chi^2(2) = 3.18$ ,  $p = .20$ , CFI = .99, RMSEA = .04. SEM was then conducted for all models. All figures report standardized coefficients whilst the text reports standardized and unstandardized coefficients and 95% confidence intervals.

Table 6

*Correlations means and standard deviations of study variables.*

	1	2	3	4	5	6	7	8	9	10	11
1. M observed conflict <sup>1</sup>	-										
2. F observed conflict <sup>1</sup>	.26**	-									
3. M partner conflict	.30**	.23**	-								
4. F partner conflict	.30**	.25**	.47**	-							
5. M hostility	.04	.15*	.07	.09	-						
6. F hostility	.10	.09	.11	.30**	.33**	-					
7. M warmth <sup>1</sup>	-.04	.04	.06	-.01	.37**	.22**	-				
8. F warmth	-.04	.13	.05	.09	.24**	.25**	.32**	-			
9. M positive parenting <sup>1</sup>	-.06	.01	.05	-.02	.23**	.16*	.44**	.29**	-		
10. F positive parenting	-.09	.04	.05	.04	.21**	.15*	.29**	.53**	.31**	-	
11. M inconsistent disci	.05	.01	.10	.10	.29**	.21**	.18**	.10	.17*	.08	-
12. F inconsistent disci	.18*	.09	.13*	.29**	.22**	.30**	.13	.20**	.03	.11	.28**
13. M harsh discipline	.07	.13†	.04	-.01	.45**	.18*	.24**	.19**	.09	.13*	.25**
14. F harsh discipline	.07	.09	.03	.16*	.19**	.35**	.11	.10	.10	.19**	.14
15. Coparenting <sup>1</sup>	.20**	.15*	.08	.16*	.00	-.02	.07	.00	.05	-.02	.06
16. Adjustment	.07	.06	.20**	.17**	.30**	.23**	.19**	.16*	.13	.05	.11
17. M internalizing <sup>1</sup>	-.02	-.06	.11	-.00	.16*	.12	.21**	.01	.18*	.02	.14*
18. F internalizing <sup>1</sup>	.17*	.04	.12	.20**	.14†	.24**	.11	.07	.09	-.02	.13
19. M externalizing	-.02	-.02	.04	-.06	.29**	.25**	.22**	.13	.13*	.01	.20**
20. F externalizing	.16	.03	.01	.13*	.26**	.34**	.15†	.11	.05	.03	.08
Mean	8.51	8.17	19.83	22.79	10.74	10.26	12.04	29.64	12.66	22.94	11.98
SD	1.81	1.76	6.39	7.71	2.86	2.83	.87	3.22	.51	2.35	2.60

	12	13	14	15	16	17	18	19	20
1. M observed conflict <sup>1</sup>									
2. F observed conflict <sup>1</sup>									
3. M partner conflict									
4. F partner conflict									
5. M hostility									
6. F hostility									
7. M warmth <sup>1</sup>									
8. F warmth									
9. M positive parenting <sup>1</sup>									
10. F positive parenting									
11. M inconsistent disci									
12. F inconsistent disci	-								
13. M harsh discipline	.02	-							
14. F harsh discipline	.39**	.20**	-						
15. Coparenting <sup>1</sup>	.05	-.02	.03	-					
16. Adjustment	.15*	.17*	.15	-.01	-				
17. M internalizing <sup>1</sup>	.05	.05	-.00	-.01	.44**	-			
18. F internalizing <sup>1</sup>	.15 <sup>†</sup>	.08	.14	.07	.36**	.45**	-		
19. M externalizing	.08	.17*	.18**	-.06	.53**	.61**	.25**	-	
20. F externalizing	.10	.09	.15*	-.04	.42**	.31**	.61**	.55**	-
Mean	12.17	8.90	9.11	13.08	15.36	16.41	16.32	33.97	33.29
SD	2.57	1.98	2.18	1.09	1.54	.49	.50	6.22	6.83

SD = standard deviation, M = Mother, F = Father, disci = discipline, \*  $p < .05$ , \*\*  $p < .01$ , <sup>†</sup>  $p < .06$ , <sup>1</sup> = log transformed variables

### Hostility Mediator Model

Figure 9 shows results for the model examining mother hostility, father hostility and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Fit indices showed that the model had acceptable fit to the data  $\chi^2(37) = 53.79$ ,  $p = .04$ , CFI = .97, RMSEA = .04.

Interparental conflict was associated with early child adjustment ( $\beta = .24$ , [ $b = 1.48$ , CI(.41, 2.56)],  $p < .01$ ). Higher levels of interparental conflict predicted higher levels of father-to-child hostility ( $\beta = .27$ , [ $b = .19$ , CI(.07, .32)],  $p < .01$ ) and poorer coparenting ( $\beta = .24$ , [ $b = .07$ , CI(.02, .21)],  $p < .01$ ), but did not significantly predict mother-to-child hostility. Early child adjustment problems predicted higher mother-to-child hostility ( $\beta = .29$ , [ $b = .53$ , CI(.28, .79)],  $p < .01$ ) and father-to-child hostility ( $\beta = .17$ , [ $b = .31$ , CI(.05, .56)],  $p = .02$ ), but did not significantly predict coparenting. Mother and father hostility were significantly associated ( $\beta = .27$ , [ $b = 1.93$ , CI(.89, 2.98)],  $p < .01$ ), but coparenting was not associated with either mother or father hostility. Father-to-child hostility ( $\beta = .20$ , [ $b = .35$ , CI(.10, .59)],  $p < .01$ ) and early child adjustment problems ( $\beta = .56$ , [ $b = 1.79$ , CI(1.32, 2.25)],  $p < .01$ ) predicted higher externalizing problems. Neither mother hostility nor coparenting predicted externalizing problems. There was a significant indirect relationship between interparental conflict and child externalizing problems via father-to-child hostility ( $\beta = .05$ , [ $b = .06$ , CI(.01, .12)],  $p = .03$ ). Only early child adjustment predicted internalizing problems ( $\beta = .57$ , [ $b = .13$ , CI(.09, .17)],  $p < .01$ ).

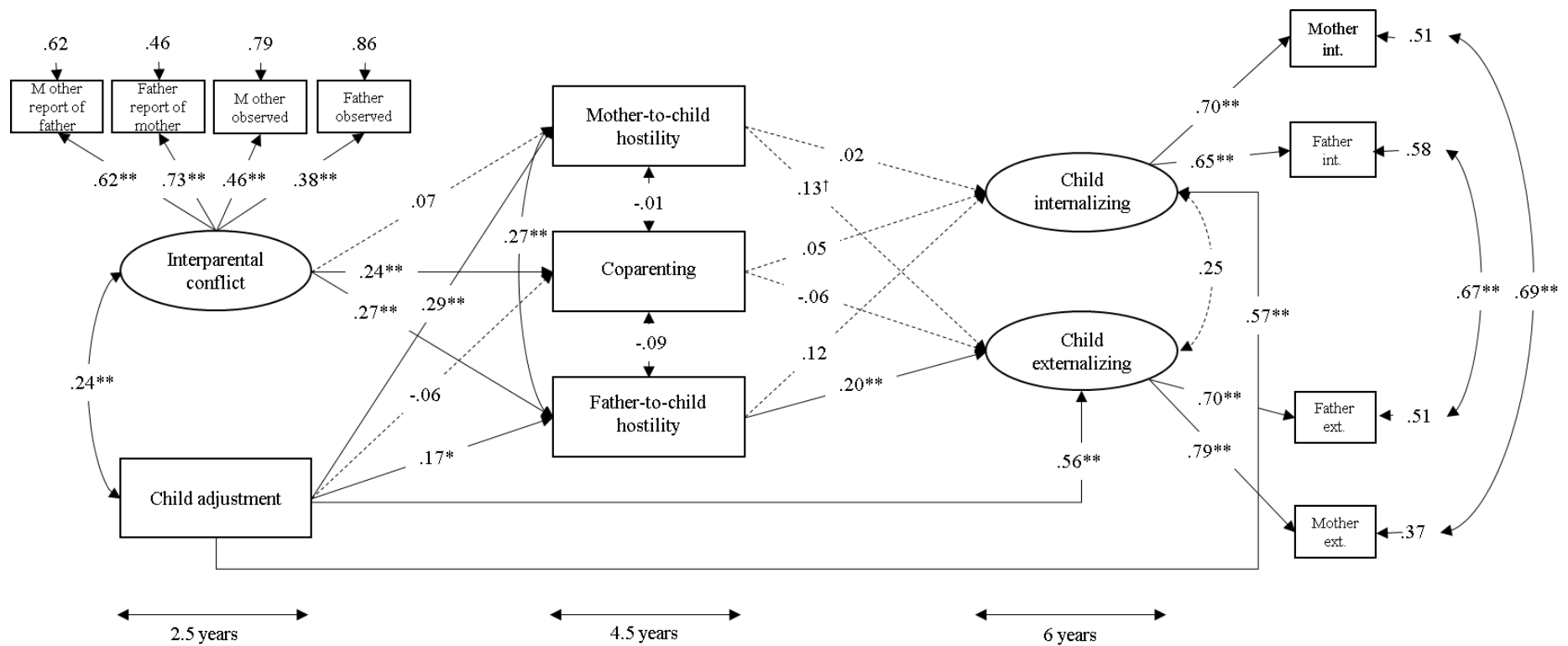


Figure 9. Model showing mother and father hostility as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, displaying standardized coefficients, \*  $p < .05$ , \*\* $p < .01$ , †  $p = .06$ . Dashed lines represent non-significant paths. “int.” = internalizing, “ext.” = externalizing.

### Warmth Mediator Model

Figure 10 shows results for the model examining mother warmth, father warmth and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Fit indices showed that the model had good fit to the data  $\chi^2(37) = 45.25, p = .17$  CFI = .98, RMSEA = .03. Early child adjustment was associated with interparental conflict ( $\beta = .25, [b = 1.59, CI(.46, 2.73)], p < .01$ ). Interparental conflict predicted coparenting ( $\beta = .24, [b = .06, CI(.02, .11)], p < .01$ ), but did not predict mother or father warmth. Early child adjustment problems predicted lower mother warmth ( $\beta = .20, [b = .11, CI(.03, .11)], p < .01$ ) and father warmth ( $\beta = .14, [b = .31, CI(.01, .60)], p < .05$ ), but did not significantly predict coparenting. Mother and father warmth were significantly associated ( $\beta = .23, [b = .82, CI(.43, 1.21)], p < .01$ ), but coparenting was not associated with either mother or father warmth. Only early child adjustment predicted externalizing problems ( $\beta = .61, [b = .207, CI(1.61, 2.54)], p < .01$ ), but there was a trend towards lower mother warmth predicting higher externalizing problems ( $\beta = .13, [b = .79, CI(-.04, 1.63)], p = .06$ ). Early child adjustment problems ( $\beta = .57, [b = .14, CI(.10, .18)], p < .01$ ) and lower mother-to-child warmth ( $\beta = .17, [b = .08, CI(.01, .15)], p = .03$ ) predicted higher internalizing problems, but father-to-child warmth and coparenting were not significant predictors of internalizing problems.



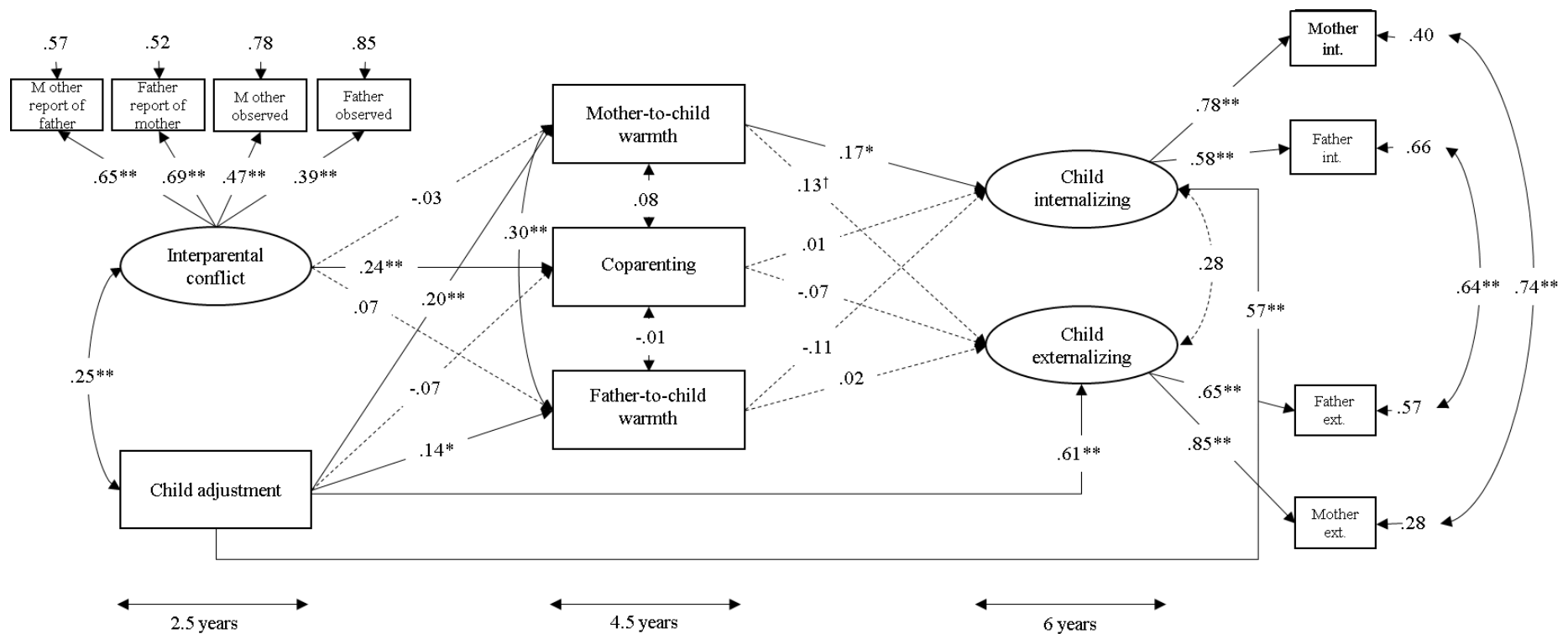


Figure 10. Model showing mother and father low warmth as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, displaying standardized coefficients, \*  $p < .05$ , \*\* $p < .01$ , †  $p = .06$ . Dashed lines represent non-significant paths. “int.” = internalizing, “ext.” = externalizing.

### Positive Parenting Mediator Model

Figure 11 shows results for the model examining mother positive parenting, father positive parenting and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Fit indices showed that the model had good fit to the data  $\chi^2(37) = 45.09$ ,  $p = .17$ , CFI = .98 RMSEA = .03. Interparental conflict was associated with early child adjustment ( $\beta = .25$ , [ $b = 1.61$ , CI(.49, 2.72)],  $p < .01$ ). Interparental conflict predicted coparenting ( $\beta = .26$ , [ $b = .06$ , CI(.03, .11)],  $p < .01$ ), but did not predict mother or father positive parenting. Early child adjustment did not predict coparenting or father positive parenting, but there was a trend towards early adjustment problems predicting lower mother positive parenting ( $\beta = .14$ , [ $b = .05$ , CI( - .00, .09)],  $p = .06$ ). Mother and father positive parenting were significantly associated ( $\beta = .31$ , [ $b = .37$ , CI(.20, .54)],  $p < .01$ ), but coparenting was not significantly associated with mother or father positive parenting. Only early child adjustment predicted externalizing problems ( $\beta = .57$ , [ $b = 2.13$ , CI(1.68, 2.59)],  $p < .01$ ). Mother positive parenting, father positive parenting and coparenting did not predict externalizing problems. Internalizing problems were predicted by early child adjustment problems ( $\beta = .58$ , [ $b = .14$ , CI( .10, .18)],  $p < .01$ ) and lower levels mother positive parenting ( $\beta = .16$ , [ $b = .11$ , CI(.00, .22)],  $p = .05$ ). Neither coparenting nor father positive parenting predicted internalizing problems.



### Inconsistent Discipline Mediator Model

Figure 12 shows results for the model examining mother inconsistent discipline, father inconsistent discipline and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Fit indices showed that the model had good fit to the data,  $\chi^2(37) = 50.52$ ,  $p = .07$ , RMSEA = .04, CFI = .97. Interparental conflict was associated with early child adjustment ( $\beta = .25$ , [ $b = 1.50$ , CI(.42, 2.58)],  $p < .01$ ). Interparental conflict predicted poorer coparenting ( $\beta = .24$ , [ $b = .07$ , CI(.02, .12)],  $p < .01$ ) and higher levels of father inconsistent discipline ( $\beta = .32$ , [ $b = .20$ , CI(.09, .32)],  $p < .01$ ), but did not predict mother inconsistent discipline. Early child adjustment did not predict mother inconsistent discipline, father inconsistent discipline or coparenting. Mother and father inconsistent discipline were significantly associated ( $\beta = .25$ , [ $b = 1.54$ , CI(.64, 2.44)],  $p < .01$ ), but coparenting was not associated with mother or father inconsistent discipline. Early child adjustment predicted internalizing problems ( $\beta = .58$ , [ $b = .14$ , CI(.10, .18)],  $p < .01$ ) and externalizing problems ( $\beta = .62$ , [ $b = 2.11$ , CI(1.65, 2.57)],  $p < .01$ ). Neither coparenting nor father inconsistent discipline predicted internalizing or externalizing problems. Higher levels of mother inconsistent discipline predicted higher externalizing problems ( $\beta = .17$ , [ $b = .34$ , CI(.07, .61)],  $p = .01$ ) and there was a trend toward mother inconsistent discipline predicting higher internalizing problems ( $\beta = .14$ , [ $b = .02$ , CI(-.00, .04)],  $p = .08$ ).

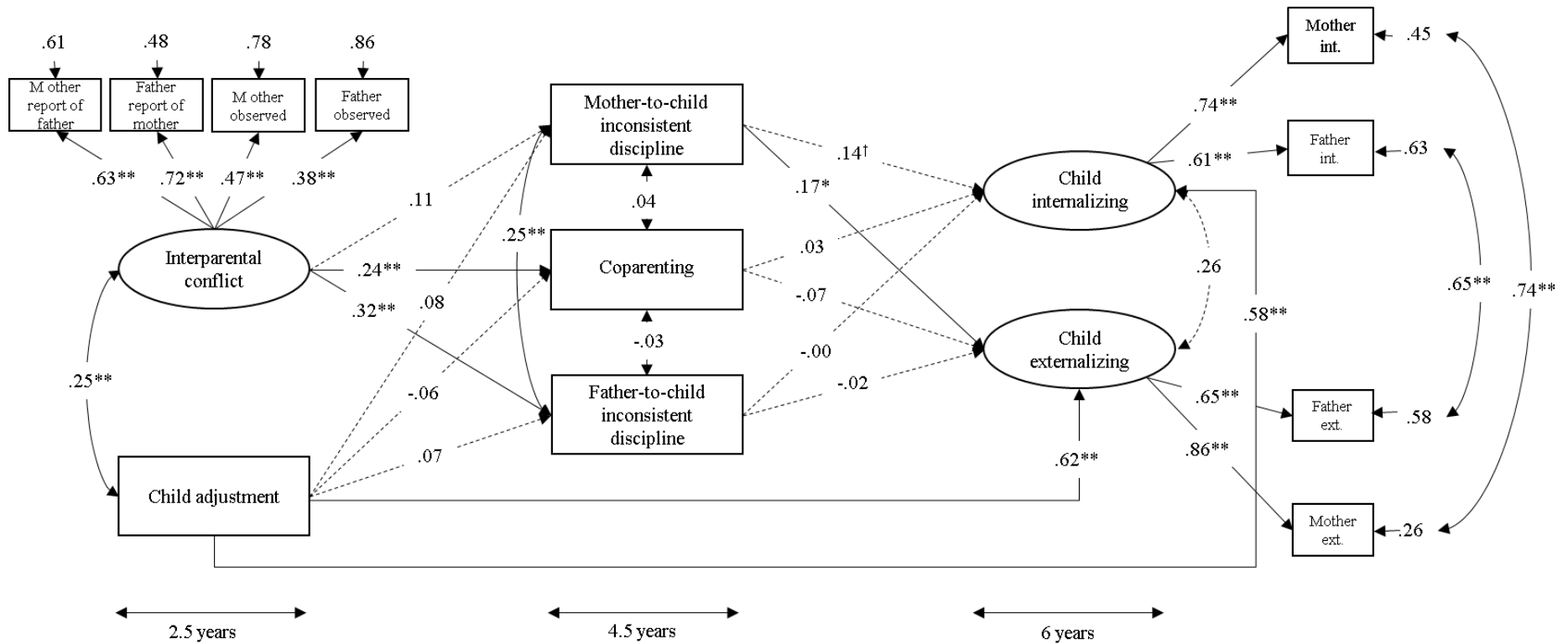


Figure 12. Model showing mother and father inconsistent discipline as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, displaying standardized coefficients, \*  $p < .05$ , \*\*  $p < .01$ , †  $p = .06$ . Dashed lines represent non-significant paths. “int.” = internalizing, “ext.” = externalizing.

### Harsh Discipline Mediator Model

Figure 13 shows results for the model examining mother harsh discipline, father harsh discipline and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Fit indices showed that the model had adequate fit to the data,  $\chi^2(37) = 58.35$ ,  $p = .01$ , RMSEA = .04, CFI = .96. Interparental conflict was associated with early child adjustment problems ( $\beta = .25$ , [ $b = 1.57$ , CI(.44, 2.69)],  $p < .01$ ). Interparental conflict predicted poorer coparenting ( $\beta = .24$ , [ $b = .06$ , CI(.02, .11)],  $p < .01$ ) but did not predict mother or father harsh discipline. Early child adjustment problems predicted higher levels of mother harsh discipline ( $\beta = .16$ , [ $b = .21$ , CI(.02, .39)],  $p = .03$ ), but did not predict father harsh discipline or coparenting. Mother and father harsh discipline were significantly associated ( $\beta = .18$ , [ $b = .76$ , CI(.17, 1.35)],  $p = .01$ ), but coparenting was not associated with either mother or father harsh discipline. Only early child adjustment predicted internalizing problems ( $\beta = .57$ , [ $b = .15$ , CI(1.62, 2.55)],  $p < .01$ ). Externalizing problems were predicted by early child adjustment ( $\beta = .59$ , [ $b = 2.08$ , CI(1.62, 2.55)],  $p < .01$ ) and father harsh discipline ( $\beta = .13$ , [ $b = .33$ , CI(.01, .65)],  $p = .04$ ), with higher levels of harsh discipline predicting greater externalizing problems.

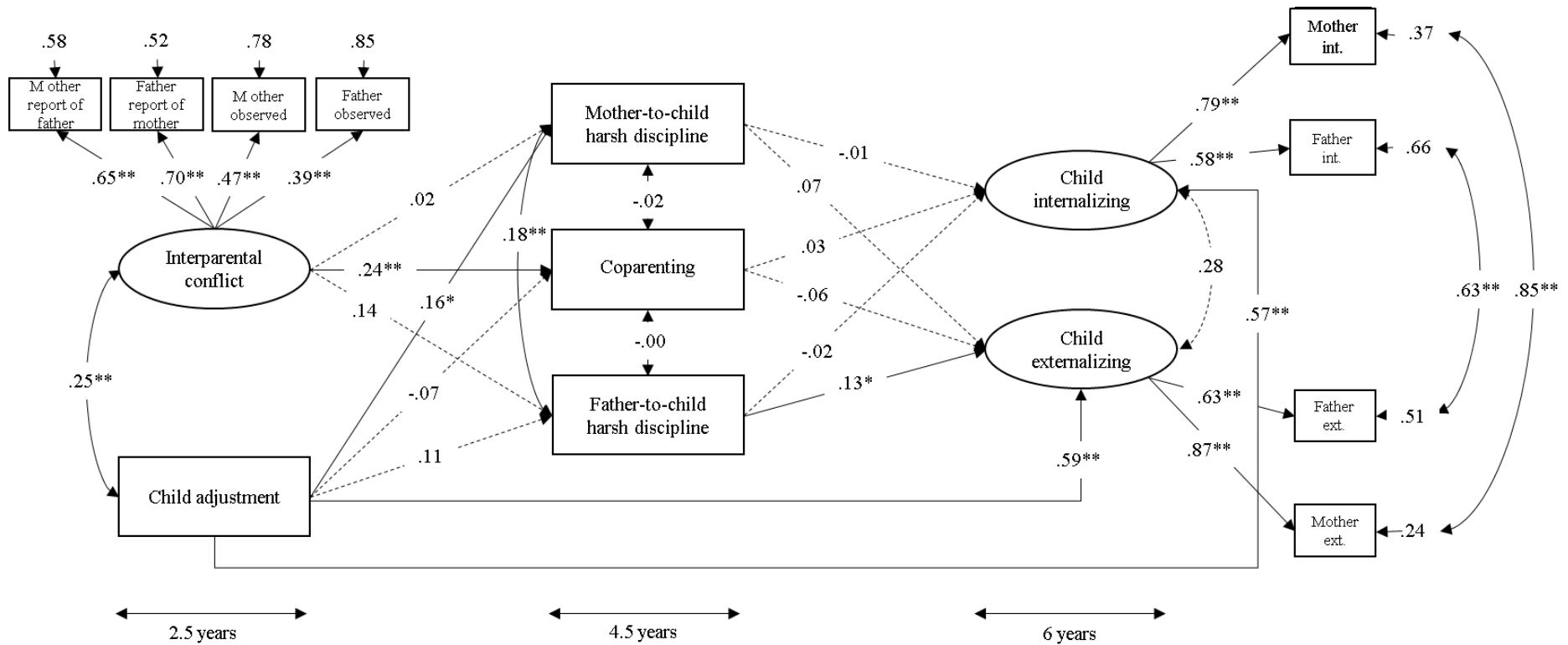


Figure 13. Model showing mother and father harsh discipline as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, displaying standardized coefficients, \*  $p < .05$ , \*\* $p < .01$ . Dashed lines represent non-significant paths. “int.” = internalizing, “ext.” = externalizing.

**Exploratory Analysis: Coparenting as a Moderator of Relationships**

Exploratory analysis was conducted by creating centered interaction terms and using ordinary least squares (OLS) regression to examine coparenting as a moderator of associations between interparental conflict and maternal and paternal parenting, and between maternal and paternal parenting and child internalizing and externalizing problems. There were no significant interactions between interparental conflict and coparenting in predicting any parenting variables, and there were no significant interactions between coparenting and maternal or paternal parenting variables in predicting internalizing or externalizing problems (see Appendix C), suggesting that coparenting does not moderate associations between interparental conflict and parenting, or between parenting and child internalizing and externalizing problems. As these analyses were exploratory, the moderating role of coparenting requires further examination.



## **Discussion**

The present study was among the first to use a multimethod, multi-informant adoption-at-birth design to examine the relative role of specific maternal and paternal parenting behaviors and coparenting in the relationship between interparental conflict and child internalizing and externalizing problems from early-to-middle childhood. Mother and father hostility, warmth, positive parenting, inconsistent discipline and harsh discipline were examined alongside coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Additionally, the present study examined whether early child behavior differentially evokes responses in these parenting domains for mothers and fathers, and whether coparenting moderates associations between interparental conflict and maternal and paternal parenting, and between maternal and paternal parenting and child internalizing and externalizing problems.

### **Spillover from the Interparental Relationship**

Interparental conflict predicted father hostility and inconsistent discipline, but did not predict any maternal parenting behaviors. These findings support previous research showing interparental conflict to predict greater levels of hostility and inconsistent discipline in fathers but not mothers (McCoy et al., 2013; Stover et al., 2016), and suggest that there is greater spillover from the interparental relationship to fathers' parenting than mothers' parenting. Additionally, neither mother nor father warmth, positive parenting or harsh discipline were predicted by interparental conflict. Findings are inconsistent with previous research showing interparental conflict to predict lower maternal and paternal positive parenting and warmth (Han et al., 2017; McCoy et al., 2013), greater harsh discipline (Erath & Bierman, 2006) and increased mother hostility

(Harold et al., 2011). A possible explanation for the discrepancy in findings could be due the present study also examining early child adjustment as a predictor of parenting, whereas previous research finding interparental conflict to predict warmth, harsh discipline and mother hostility did not simultaneously examine child-evoked effects on parenting (Han et al., 2017; McCoy et al., 2013; Erath & Bierman, 2006; Harold et al., 2011; 2012). Associations between interparental conflict and these parenting behaviors may be explained by child-evoked effects. Additionally, inconsistencies could be explained by the aspect of interparental conflict being examined in relation to parenting. The present study assessed interparental conflict using parent reported and observed interparental hostility, whereas previous research indicates that different expressions of interparental conflict predict different parenting behaviors. For example, McCoy et al. (2013) found that constructive conflict predicted higher levels of mother and father warmth, whereas destructive marital conflict predicted father inconsistent discipline. Additionally, Gonzales et al. (2000) found conflict frequency, but not conflict resolution or intensity, to predict inconsistent discipline. Findings from these studies suggest that positive interparental conflict behaviors are more strongly linked to positive parenting practices, whereas negative manifestations of interparental conflict may have a greater influence on negative parenting behaviors. Thus, it would be premature to conclude that the interparental relationship is not important for mothers' parenting or fathers' positive parenting and harsh discipline practices. Future research should further examine whether distinct interparental conflict behaviors beyond interparental hostility differentially predict specific parenting behaviors.

Higher levels of interparental conflict predicted poorer coparenting quality, suggesting that interparental conflict can lead to greater conflict in front of the child and disagreement over childrearing, less cooperative and supportive coparenting behaviors,

and unequal division of childrearing duties. This finding extends previous research that has shown the interparental relationship to predict coparenting in the transition to parenthood (Christopher et al., 2015; Gallegos et al., 2017; Le et al., 2016) by demonstrating that interparental conflict is important for coparenting after the coparenting relationship has been established. Overall, findings demonstrate the importance of the interparental relationship for fathers' parenting (hostility and inconsistent discipline) and the coparenting relationship.

### **Child-Evoked Effects**

Early child adjustment was associated with interparental conflict, demonstrating that adjustment problems and interparental conflict co-occur. Additionally, early child adjustment problems predicted higher levels of hostility and lower levels of warmth in mothers and fathers, and higher levels of harsh discipline in mothers. In contrast, child adjustment did not predict either mother or father inconsistent discipline or positive parenting behaviors. These findings suggest that early child behavior problems impact parents' affective behaviors (increasing hostility and decreasing warmth) and can lead to parents implementing harsher discipline practices, but that parents maintain consistent discipline and do not decrease positive parenting practices (such as positive reinforcement) in response to difficult child behavior. This supports previous research showing early child adjustment problems to predict lower parent warmth (Schoppe-Sullivan et al., 2007) and aligns with research showing child externalizing problems to predict more authoritarian parenting styles (Kopala-Sibley et al., 2017). Present findings also suggest that child evocative effects contribute to mothers' harsh and hostile parenting behaviors and mothers' and fathers' warmth over and above interparental conflict. However, as there was a significant association between interparental conflict

and child adjustment, and interparental conflict predicted father hostility and inconsistent discipline, findings underline the importance of examining both the interparental relationship and child-evoked effects in family process and child psychopathology research.

As parents and children in this sample are genetically unrelated, findings cannot be explained by common genes, meaning any associations between child adjustment, the interparental relationship and parenting are attributable to the environment. Findings support and extend previous research using an adoption-at-birth design to demonstrate evocative *rGE*, which has primarily examined cross-sectional associations (Elam et al., 2014; Harold et al., 2013b). The present study showed early child adjustment to predict subsequent parenting. Additionally, previous studies examining evocative *rGE* examined specific child temperamental characteristics in relation to hostile parenting, whereas the present study demonstrated that broader child adjustment problems evoke multiple aspects of parenting in mothers and fathers. Thus, the present study provides unique insight into the role of early child behavior as an influence on parenting.

### **Parenting and Internalizing and Externalizing problems**

Father hostility significantly predicted externalizing problems, and there was a trend towards mother hostility predicting externalizing problems. There was a significant indirect relationship between interparental conflict and child externalizing problems via father hostility, showing the importance of interparental conflict and fathers' hostile parenting for child externalizing problems. Additionally, father harsh discipline and mother inconsistent discipline predicted externalizing problems. These findings extend previous research showing harsh and inconsistent discipline to predict externalizing problems (Dette-Hagenmeyer & Reichle, 2014; Erath & Bierman, 2006;

Gerard et al., 2006; Gonzales et al., 2000), by demonstrating that different maternal and paternal discipline practices contribute to child externalizing problems. Neither mother nor father warmth or positive parenting predicted externalizing problems, contradicting previous evidence (Schoppe-Sullivan et al., 2007; Schacht et al., 2009). A possible explanation for this discrepancy in findings is that previous research examined associations in later childhood and adolescence (Schoppe-Sullivan et al., 2007; Schacht et al., 2009). It may be that warmth and positive parenting play a greater role in externalizing problems later in childhood but have less of an influence earlier in childhood. Present findings suggest that negative parenting behaviors have a greater contribution to externalizing problems from early-to-middle childhood than positive parenting behaviors. Additionally, findings indicate that maternal and paternal parenting behaviors differentially contribute to child externalizing problems, specifically suggesting that fathers' hostile parenting behaviors are more important for externalizing problems than mothers' hostile behaviors, and that specific maternal and paternal discipline practices (father harsh discipline and mother inconsistent discipline) contribute to externalizing problems.

Low levels of mother warmth and positive parenting significantly predicted higher internalizing problems, but no other parenting behaviors predicted internalizing problems. This supports findings from Han et al. (2017), who found mother but not father warmth to predict internalizing problems from age 3-5 years. Present findings also support previous research failing to find associations between harsh discipline and internalizing problems (Gerard et al., 2006), but do not align some with previous research showing internalizing problems to be predicted by inconsistent discipline (Dette-Hagenmeyer & Reichle, 2014; Gonzales et al., 2000) and hostility (Harold & Conger, 1997). This may be due to research primarily examining internalizing problems

in later childhood and adolescence (Gonzales et al., 2000; Harold & Conger, 1997); these parenting behaviors may have less influence on internalizing problems in early-to-middle childhood. Additionally, these studies did not assess the relative role of mothers and fathers when examining associations between these parenting behaviors and child internalizing problems. Overall, findings from the present study suggest that specific maternal and paternal parenting processes differentially contribute to child internalizing and externalizing problems; specifically, findings suggest that fathers' harsh and hostile parenting behaviors and mothers' inconsistent discipline increase externalizing problems, whereas mothers' positive parenting practices can reduce children's internalizing problems. Nonetheless, given that previous evidence has shown father positive parenting and mother hostility/harsh parenting to predict internalizing and externalizing problems, future research should further examine the age at which different mother and father parenting practices can influence child adjustment.

One strength of the present study is the utilization of the adoption-at-birth design. As parents and children in this sample are genetically unrelated, the confound of passive  $rGE$  is removed, meaning any significant associations between parenting and child adjustment cannot be explained by common genes and are therefore attributable to the environment. Whilst previous studies using the adoption design highlight the importance of parent hostility and overreactivity as processes through which interparental conflict can influence child externalizing problems (Harold et al., 2013; Rhoades et al., 2011; Stover et al., 2012; 2016), limited research has used this design to examine maternal and paternal positive parenting and discipline practices within a wider family process model (i.e., that also examines interparental conflict) as predictors of child internalizing and externalizing problems. The present study therefore provides unique contributions to research by evidencing harsh and inconsistent discipline

practices as important family processes for child externalizing problems, and maternal positive parenting behaviors as an important influence on internalizing problems from early-to-middle childhood.

### **Lack of Significant Effects for Coparenting**

Coparenting was not associated with early child adjustment, internalizing problems or externalizing problems. This does not align with associations proposed in the ecological model of coparenting (Feinberg, 2003), and contradicts previous evidence showing that coparenting predicts internalizing and externalizing problems (Teubert & Pinquart, 2010; Farr & Patterson, 2013) and mediates the relationship between interparental conflict and child adjustment (Cui et al., 2007; Katz & Low, 2004; Mahoney et al., 1997). One possible explanation for this discrepancy in findings is the age at which coparenting was examined in relation to child adjustment; previous research often examines coparenting as a mediator in the relationship between interparental conflict and child adjustment later in childhood or adolescence, and often relies on cross-sectional data (Cui et al., 2007; Farr & Patterson, 2013; Katz & Low, 2004; Mahoney et al., 1997). Coparenting was also not associated with any parenting behaviors. Whilst research has previously shown coparenting to be associated with parenting (Adler-Baeder et al., 2016; Cui et al., 2007; Lamela et al., 2016), there is little evidence for associations with positive parenting, hostility or discipline practices. It may be that coparenting is only associated with certain parenting behaviors, such as involvement (Sobolewski & King, 2005) and punitive parenting (Adler-Baeder et al., 2016). Furthermore, coparenting did not moderate any associations between interparental conflict and parenting or between parenting and child internalizing or externalizing problems. This contradicts previous research showing the coparenting

relationship to moderate associations between the interparental relationship and parenting (Kwan et al., 2015; Merrifield & Gamble, 2013), between early child behavior and parenting (Solmeyer & Feinberg, 2011), and between parenting and child adjustment (Jia et al., 2012; Latham et al., 2017).

The lack of a clear role of the coparenting relationship in the present study may be due to inconsistencies in how the coparenting relationship is defined and measured in the literature: whilst the coparenting relationship is recognized as a multidimensional construct (Feinberg, 2003; Hock & Mooradian, 2012), research often examines specific coparenting dimensions. For example, research often considers only the support and undermining dimensions when examining associations between coparenting and child adjustment, (Farr & Patterson, 2013; LeRoy et al., 2013), and when examining the moderating role of coparenting (Jia et al., 2012; Dopkins-Stright & Neitzel, 2003). Additionally, the coparenting dimensions used to represent a conceptually expansive picture of coparenting differ across the literature (Feinberg, 2003; McHale, 1997; Margolin et al., 2001). Thus, it may be that only certain aspects of coparenting are associated with child adjustment and parenting, and that these were not identified in the coparenting measure used in the present study. This underlines the need for greater understanding of what dimensions encompass the coparenting relationship (i.e., more consistent conceptualization across the literature) and standardization of measurement of the coparenting relationship to better understand the role of coparenting within a family systems framework.

### **Limitations and Future Directions**

One caveat of the present study is the use of a previously invalidated interviewer impressions measure to assess the coparenting relationship. Previous research using



observational data to assess coparenting uses detailed coding of triadic interactions (Jia et al., 2012), whereas the present study used observer reports of broader coparenting behavior. More detailed coding may therefore be necessary to identify nuanced coparenting behaviors that may be related to other family processes (e.g., parenting) and child outcomes. However, the association between coparenting and interparental conflict in the present study is similar in magnitude to research using different observational and reported coparenting measures (Katz & Low, 2004; McConnell & Kerig, 2002), suggesting that the present measure is assessing similar behaviors as previous measures designed to assess coparenting. Additionally, research often uses bespoke measures to assess one coparenting dimension, sometimes using only one item to assess coparenting (e.g. coparenting conflict; Fagan & Lee, 2014), whereas the present study used a measure that assessed multiple aspects of the coparenting relationship, such as conflict over childrearing, overt conflict in front of the child, cooperation and division of labor. Furthermore, all other measures in this study were well validated measures, and the multi-informant, multimethod approach used in the present study reduces single reporter bias present in much research examining family processes and child psychopathology (Rhoades et al., 2011), thus strengthening the methodology of the present study. An additional issue to consider in the present study is multiple testing; however the available sample size in the present study provides adequate statistical power to provide theoretical specification and examination of each specific indicator examined across the set of models in the present study. An additional limitation that warrants attention is the examination of intact, heterosexual families only. Future research should examine associations in separated and same-sex families to understand the contributions of interparental, coparenting and specific parenting processes to child internalizing and externalizing problems in different family types.

## **Policy and Practice Implications**

Findings have several important implications for intervention and prevention policy and practice. Firstly, the significant indirect relationship between interparental conflict and child externalizing problems via father hostility underlines the importance of interventions targeting the interparental relationship to reduce child behavior problems, supporting emerging evidence showing the positive effects of interventions targeting the interparental relationship (Harold & Sellers, 2018). Findings also highlight the potential benefit of father participation in intervention to improve outcomes for children. Moreover, the finding that specific maternal and paternal parenting practices differentially predicted child internalizing and externalizing problems underlines the need for interventions directed towards different maternal and paternal parenting practices depending on the target outcome; specifically, findings suggest that developing interventions that increase maternal warmth/positive parenting may help reduce internalizing problems in middle childhood, whereas interventions aiming to decrease harsh, hostile paternal parenting behaviors may help reduce externalizing problems. Furthermore, the finding that early child adjustment predicts hostility, low warmth and harsh discipline demonstrates the importance of considering child evocative processes in intervention; reducing negative parenting responses to child behavior through intervention may help prevent the continuation of early adjustment problems into middle childhood.

In summary, the present study provides unique insight into the relative role of mothers and fathers for children's internalizing and externalizing problems, showing that mothers and fathers provide unique contributions to child adjustment from early-to-middle childhood via specific parenting processes (father hostility and harsh discipline, mother warmth, positive parenting and inconsistent discipline). Findings demonstrate

the importance of interparental conflict for child externalizing problems via father hostility and provide evidence for child-evoked parenting. The lack of a clear role of the coparenting relationship highlights the need to refine and increase consistency of coparenting definition and measurement to increase understanding of coparenting influences on child psychopathology within a wider family systems framework.

## Chapter 6: General discussion

### Thesis Rationale/Aims

Family socialization processes, such as the interparental and parent-child relationships are established as important for child psychopathology (Harold & Sellers, 2018; Stover et al., 2016). Research demonstrates that both mother-child and father-child relationships are processes through which interparental conflict can influence child internalizing and externalizing problems (Harold et al., 2011, 2012; Shelton & Harold, 2008), although the examination of the relative impact of specific maternal and paternal parenting processes on child psychopathology is scarce. Additionally, research recognizes the importance of intergenerational transmission of psychopathology (Goodman et al., 2011; Mendes et al., 2012), although there is limited understanding of relative intergenerational transmission and family socialization processes (specifically interparental conflict and the parent-child relationship) for child mental health longitudinally from early-to-middle childhood (Harold et al., 2011); specifically, there is limited understanding of the relative relationships between interparental conflict, mother depression, father depression and child internalizing and externalizing problems via the mother-child and father-child relationships. Moreover, whilst family systems theories recognize the importance of the coparenting relationship for child psychopathology (i.e., how parents work together to facilitate positive child development; Feinberg, 2003; Minuchin, 1974), there is little understanding of the role coparenting plays in child mental health relative to other family processes (interparental conflict, the parent-child relationship).

Family process and child psychopathology research primarily examines genetically related parents and children, meaning any associations between family

processes and child mental health may be explained by common genes (i.e., associations are confounded by passive *rGE*; Jaffee & Price, 2012). Additionally, intergenerational transmission research has primarily been examined with regards to genetic risk for psychopathology, with less research considering parent mental health as an environmental risk for psychopathology via family socialization processes (interparental and parent-child relationships; Harold et al., 2011). An adoption-at-birth design allows the examination of genetically unrelated parents and children, meaning associations between family processes and child mental health cannot be explained by common genes and are attributable to the environment. The aim of this thesis was to develop understanding of whether family processes (specifically interparental conflict, the mother-child and father-child relationship, and the coparenting relationship) can explain variation in child internalizing and externalizing problems longitudinally from early-to-middle childhood using a multimethod, multi-informant, adoption-at-birth design, whilst also considering intergenerational transmission of psychopathology and gene-environment correlation processes.

The first study in this thesis (chapter 3) aimed to develop understanding of relative intergenerational transmission and family socialization processes (interparental conflict, maternal and paternal parenting) for child psychopathology from early-to-middle childhood, using an adoption-at-birth design to examine the relative contribution of mother depression, father depression and interparental conflict on child internalizing and externalizing problems via mother and father hostility. The study presented in chapter 4 built upon chapter 3 by examining the coparenting relationship within a wider family systems framework, assessing the relative role of mother hostility, father hostility and coparenting as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Finally, the study presented in

chapter 5 built upon chapters 3 and 4 by examining whether specific maternal and paternal parenting behaviors (hostility, positive parenting, discipline practices) and coparenting differentially mediated the relationship between interparental conflict and child internalizing and externalizing problems. Chapter 5 also examined whether coparenting moderates associations between interparental conflict and maternal and paternal parenting, and between maternal and paternal parenting and child internalizing and externalizing problems. Furthermore, each study in the present thesis examined whether early child adjustment (composite internalizing and externalizing problems) predicts maternal and paternal parenting and coparenting) to develop understanding of child and parent contributions to child psychopathology.

### **Predictors of Child Psychopathology**

The core aim of the present thesis was to develop understanding associations between family processes and child psychopathology, specifically to understand whether interparental conflict predicts internalizing and externalizing problems via the mother-child, father-child and coparenting relationship, and whether processes differ for specific parenting practices. A significant indirect relationship between interparental conflict and child externalizing problems via father-to-child hostility was evidenced throughout each study. This finding demonstrates the importance of both interparental conflict and fathers' hostile parenting practices for child externalizing behavior problems. Additionally, interparental conflict was consistently associated with early child adjustment (internalizing and externalizing problems combined). Although this association is cross-sectional in nature, the significant interrelation between interparental conflict and early child psychopathology further demonstrates the

importance of including the interparental relationship when examining family processes and child mental health.

The present thesis also showed specific maternal and paternal parenting behaviors to differentially predict internalizing and externalizing problems. For example, in chapter 3, in addition to father hostility predicting externalizing problems, mother hostility also predicted child externalizing problems. In subsequent chapters, although mother hostility did not predict externalizing problems, the association between hostility and externalizing problems did not differ for mothers and fathers, suggesting that both mother and father hostility play an important role in child externalizing problems. Additionally, findings from chapter 5 demonstrated that father hostility, father harsh discipline and mother inconsistent discipline predict externalizing problems, and that mother warmth and positive parenting predict internalizing problems. These findings suggest that father harsh/hostile parenting behaviors are important for child externalizing problems, that different maternal and paternal discipline practices contribute to externalizing problems, and that mothers' positive parenting behaviors are important for reducing internalizing problems. These findings provide unique contributions to family process and child psychopathology research, demonstrating that specific maternal and paternal parenting behaviors are important for child internalizing and externalizing problems.

Findings support and extend previous research showing father hostility to mediate the relationship between interparental conflict and child externalizing problems in toddlerhood (Stover et al., 2012, 2016) and later childhood (Harold et al., 2012), showing interparental conflict in early childhood to be important for child externalizing problems in middle childhood via father hostility. Findings also extend previous

research that does not differentiate between maternal and paternal parenting when finding harsh and inconsistent discipline to predict externalizing problems (Dette-Hagenmeyer & Reichle, 2014; Erath & Bierman, 2006; Gerard et al., 2006; Gonzales et al., 2000), by demonstrating that different maternal and paternal discipline behaviors play a role in child behavior problems (specifically mother inconsistent discipline and father harsh discipline). Additionally, the finding that mother, but not father, warmth and positive parenting predict internalizing problems aligns with previous research studying children in early-to-middle childhood (Han et al., 2017). Although previous evidence has shown mother and father warmth and positive parenting to predict externalizing problems (Schacht et al., 2009; Schoppe-Sullivan et al., 2007) and inconsistent discipline and parent hostility to predict internalizing problems (Dette-Hagenmeyer & Reichle, 2014; Gonzales et al., 2000; Sellers et al., 2014), this research primarily examines associations in later childhood and adolescence. Present findings suggest that in early-to-middle childhood, warmth and positive parenting play less of a role in externalizing problems and discipline practices and hostile behaviors play less of a role in externalizing problems. Future research should further develop understanding of the relative role of mothers and fathers for child psychopathology by examining the developmental periods in which specific maternal and paternal parenting behaviors (hostility, harsh and inconsistent discipline, positive parenting and warmth) predict internalizing and externalizing problems.

Although this thesis found only mother positive parenting behaviors to predict internalizing problems, this does not undermine the importance of fathers for child internalizing problems. Additional maternal and paternal parenting behaviors have been implicated in child internalizing and externalizing problems, such as rejection (Shelton & Harold, 2008; Vera et al., 2012), psychological and behavioral control (Pinquart,



2017), over-involvement, over protection, overcontrol and challenging parenting (Möller et al., 2016), parenting styles (Pinquart, 2017) and overreactivity (Marceau et al., 2015). Future research should therefore examine a wider range of parenting behaviors as mediators in the relationship between interparental conflict and child internalizing and externalizing problems, to develop insight into specific maternal and paternal processes that are important for both internalizing and externalizing problems from early-to-middle childhood.

### **Methodological Strengths: A Longitudinal Adoption-at-Birth Design**

A key methodological strength of the present thesis is the use of a longitudinal adoption-at-birth design. Research examining family processes and child psychopathology primarily relies on genetically related parents and children. When parents and children are genetically related, associations between parents and children can be either attributed to genes, the environment, or an interplay between the two, meaning genetic and environmental influence cannot be disentangled (passive  $rGE$ ; Jaffee & Price, 2012); for example, among genetically related parents and children, common genes may underly parents' hostile behaviors and child externalizing problems, meaning associations between parenting and child externalizing problems may be attributable to both genes and the environment. The adoption design allows genetic effects to be unpacked from environmental effects, allowing family environmental factors (e.g., interparental conflict, parenting) to be examined without the confound of common genes (Harold et al., 2013b). Therefore, findings from the present thesis provide unique insight into family environmental effects for child psychopathology by demonstrating associations between family processes and child mental health that cannot be explained by common genes. Specifically, associations

between interparental conflict and early child adjustment provides evidence for interrelations between interparental conflict and child psychopathology that are not attributable to genetic processes. Additionally, findings demonstrate that interparental conflict, father hostility and harsh discipline, and mother inconsistent discipline are important influences on child externalizing problems, as well as showing mother warmth and positive parenting to be important influences for child internalizing problems. Findings therefore support and extend research among genetically related parents and children showing interparental conflict and maternal and paternal parenting to be important family socialization processes for child internalizing and externalizing problems (e.g., Shelton & Harold, 2008; Dette-Hagenmeyer & Reichle, 2014; Erath & Bierman, 2006; Gonzales et al., 2000). Moreover, the longitudinal nature of the present thesis and the inclusion of an early child adjustment measure (composite child internalizing and externalizing problems) as a predictor of subsequent internalizing and externalizing problems means that significant relationships represent interparental conflict, maternal parenting and paternal parenting as predictors of changes in children's behavior from early-to-middle childhood. This extends findings from traditional family process research that examines cross sectional associations (e.g., Coln et al., 2013) or longitudinal associations without controlling for early child behavior (e.g., Han et al., 2017). Overall, the use of a longitudinal adoption-at-birth design enabled this thesis to provide unique understanding of interparental conflict and maternal and paternal parenting contributions to child internalizing and externalizing problems from early-to-middle childhood.

## **Spillover of Interparental Conflict to Parenting and Coparenting**

A key aim of the present thesis was to understand maternal and paternal parenting and coparenting as processes through which interparental conflict can influence child internalizing and externalizing problems. Although father hostility was the primary mechanism in the relationship between interparental conflict and child externalizing problems, present findings provide important contributions to the understanding of interparental influences on maternal and paternal parenting and coparenting. Chapter 3 first examined associations using a composite parent hostility (mother and father combined) to align with research that historically does not distinguish associations between interparental conflict and mothers' and fathers' parenting (e.g., Gerard et al., 2006; Gonzales et al., 2000; Keller et al., 2005), before examining relative associations between interparental conflict and mother and father hostility. Interparental conflict did not predict composite parenting, suggesting that conflict in the interparental relationship does not spill over to the parent-child relationship. However, when mother and father hostility were examined as distinct parenting constructs, findings showed interparental conflict to predict father, but not mother hostility, which was demonstrated again across chapters 4 and 5. Additionally, results from chapter 5 indicate that interparental conflict also predicts higher levels of paternal inconsistent discipline. Findings align with previous evidence showing father, but not mother, hostility and inconsistent discipline to be predicted by interparental conflict (McCoy et al., 2013; Stover et al., 2016), and suggest that there is greater spillover from the interparental relationship to fathers' parenting than mothers' parenting. This supports the father vulnerability hypothesis, which proposes that the father-child relationship is more vulnerable to the negative effects of discord in the interparental relationship than the mother-child relationship (Goeke-Morey &

Cummings, 2007). One possible explanation for greater spillover from the interparental relationship to the father-child relationship is gender role differences; fathers have been shown to spend less time with the child and have less childcare responsibilities compared to mothers (Craig, 2006). Lower paternal involvement in childcare may lead to fathers' parenting roles being less defined than mothers' (Cummings, Goeke-Morey, & Raymond, 2004), which may result in fathers experiencing greater difficulties in compartmentalizing their role as a father from their role as a husband, in turn leading to greater spillover between the interparental and father-child subsystems (Cox et al., 2001). Thus, present findings demonstrate the importance of interparental conflict for fathers' parenting, specifically hostility and inconsistent discipline, but suggest that interparental conflict plays less of a role in mothers' and fathers' positive parenting behaviors and harsh discipline.

Findings from the present thesis (specifically chapter 5) do not support previous research showing interparental conflict to predict higher mother and father harsh discipline (Erath & Bierman, 2006), decreased warmth and positive parenting (Han et al., 2017; McCoy et al., 2013), and higher mother hostility (Harold et al., 2011, 2013b; Stover et al., 2012). There are several possible explanations for this discrepancy in findings. Firstly, the present thesis measured interparental conflict using both mother and father reported and observed interparental conflict (i.e., a multimethod, multi-informant approach), whereas previous research primarily relies on parent reported measures. Associations between interparental conflict and positive parenting, harsh discipline and maternal hostility and inconsistent discipline evidenced in previous research may therefore be due to reporter bias across interparental measures. An additional explanation for the present thesis not supporting previous research showing associations between interparental conflict and parent warmth, harsh discipline and

mother hostility could be due to previous studies not simultaneously examining child-evoked effects on parenting (Erath & Bierman, 2006; Han et al., 2017; Harold et al., 2011, 2012; McCoy et al., 2013). Present findings suggest that early child adjustment predicts mother and father warmth and mother hostility over and above interparental conflict. Findings with regards to child evoked effects are further discussed in the following section.

Discrepancies between past and present findings in associations between interparental conflict and parenting may also be explained by the operational specification of interparental conflict; interparental conflict can be viewed on a continuum of silence to violence (Harold & Sellers, 2018), and previous research has examined multiple dimensions of interparental conflict, such as constructive versus destructive conflict (McCoy et al., 2013) the frequency, intensity and resolution of conflict (Fosco & Grych, 2010; Gonzales et al., 2000) and levels of interparental hostility (Stover et al., 2016). This thesis examined parent reported and observed interparental hostility, whereas specific interparental conflict components have previously been shown to differentially predict different parenting behaviors; for example, McCoy et al. (2013) found destructive conflict to predict father, but not mother inconsistent discipline, constructive conflict to predict higher levels of mother and father warmth, but neither constructive or destructive conflict to predict either mother or father psychological control. Additionally, when examining interparental conflict frequency, intensity and resolution as predictors of inconsistent discipline, hostile control and acceptance, Gonzales et al. (2000) found conflict frequency to predict inconsistent discipline, conflict resolution to predict acceptance, the intensity of conflict to predict neither inconsistent discipline or acceptance, and no interparental conflict components to predict hostile control. However, when combining frequency,

intensity and resolution of conflict to form a composite interparental conflict measure, interparental conflict predicted acceptance, inconsistent discipline and hostile control (Gonzales et al., 2000). These studies show that associations between interparental conflict and parenting can differ depending on the operational specification of interparental conflict, and provide evidence to suggest that associations may be stronger between positive interparental conflict behaviors and positive parenting, and between negative interparental conflict behaviors and negative parenting practices. Future research should therefore further examine whether different dimensions of interparental conflict beyond interparental hostility differentially predict mother and father hostility, warmth, harsh discipline, inconsistent discipline and positive parenting.

In chapters 4 and 5, interparental conflict was shown to predict a poorer coparenting relationship, showing how higher levels of interparental conflict can lead to greater conflict in front of the child, conflict over childrearing decisions, lower cooperation and support, unequal division of labor and less shared enjoyment in childrearing. This finding extends previous research that has shown the interparental relationship to predict coparenting in the transition to parenthood (i.e., showing prenatal interparental relationship quality to predict coparenting in early infancy; Christopher et al., 2015; Gallegos et al., 2017; Le et al., 2016) by highlighting the importance of interparental conflict for coparenting after the coparenting relationship has been established, specifically showing that interparental conflict in toddlerhood predicts coparenting later in childhood (4.5 years).

### **Child-Evoked Effects on Parenting and Coparenting**

All models presented throughout this thesis examined child evoked effects on parenting and coparenting. Early child adjustment (composite internalizing and

externalizing problems) was found to predict maternal and paternal parenting; specifically, across each empirical chapter, early child adjustment predicted mother and father hostility (in addition to predicting composite parent hostility in chapter 3). Additionally, early child adjustment predicted lower levels of mother and father warmth and higher levels of mother harsh discipline in Chapter 5. These findings show that early child adjustment problems can evoke more hostile parenting and reduce levels of warmth in mothers and fathers, in addition to showing that mothers may respond to difficult child behavior by increasing harsh discipline practices. Conversely, findings suggest that early child behavior does not reduce levels of positive parenting (i.e., positive reinforcement), nor does it increase inconsistent discipline in mothers or fathers. As children and parents in the present thesis are genetically unrelated, the association between child adjustment and parenting cannot be explained by common genes (i.e., the confound of passive  $rGE$  is removed), meaning that the effects of child adjustment on parenting can only be explained by the environment. Previous research using the adoption-at-birth design has found evidence for evocative  $rGE$  (i.e., children's genetically-informed behavior evoking responses from genetically unrelated parents; Rutter & Silberg, 2002); for example, Harold et al. (2013a), found birth mother ADHD symptoms to predict early child impulsivity/activation, which in turn predicted adoptive mother hostility. Previous research demonstrating evocative  $rGE$  has primarily shown cross-sectional associations between specific child temperamental characteristic and parenting (Elam et al., 2014; Harold et al., 2013a). Findings from this thesis therefore extend previous findings by showing that broader child adjustment problems can influence subsequent parenting, as well as showing that child evoked effects differ depending on the specific maternal and paternal parenting construct under scrutiny. Overall, the present thesis provides unique insight into gene-environment evocative

processes, showing that early child adjustment predicts multiple parenting behaviors (maternal and paternal warmth and hostility, and mother harsh discipline) over and above interparental conflict, in addition to showing that early child adjustment predicts hostility over and above parents' depressive symptoms. The relationship between parent depression and parenting is discussed in the following section.

Early child adjustment did not predict coparenting in the present thesis (chapters 4 and 5), suggesting that early adjustment difficulties do not impact parents' abilities to work together in promoting positive child development (i.e., by displaying conflict in front of the child, disagreeing over childrearing decisions, failing to cooperate and support of each other's parenting or failing to divide child labor equally). Although previous research has shown that child behavior can impact on the coparenting relationship (Baril et al., 2007; Davis, Schoppe-Sullivan, Mangelsdorf & Brown, 2009; Gordon & Feldman, 2008; Riina & McHale, 2014), this often examines child temperament in early infancy as a predictor of coparenting in late infancy (Cook et al., 2009; Davis et al., 2009; Gordon & Feldman, 2008), whereas the present thesis assessed child behavior in early childhood using a composite measure of early child adjustment (internalizing and externalizing problems combined) as opposed to specific temperamental characteristics. Discrepancies in findings could also be due to the coparenting dimensions examined; the present study used a measure representing the overall coparenting relationship, whereas previous research has examined associations between child temperament and specific coparenting dimensions, such as a joint involvement and shared decision making (Riina & McHale, 2014) and coparenting support and undermining (Davis et al., 2009). Future research needs to be conducted to better establish whether specific child behaviors differentially predict certain aspects of



the coparenting relationship, and whether associations differ across developmental periods.

### **Intergenerational Transmission of Psychopathology**

Another key aim of the present thesis was to examine relative intergenerational and family socialization (interparental, mother-child and father-child) influences on child psychopathology. Findings from chapter 3 demonstrated a significant association between early child adjustment and both mother and father depression. Whilst these associations are cross-sectional and cannot provide insight into the direction of relationships, significant associations between child adjustment and both mother and father depression among genetically unrelated parents and children provide evidence for intergenerational transmission of psychopathology that cannot be attributed to common genes. Thus, this finding extends from research that shows associations between both mother and father depression and child psychopathology in genetically related parents and children (Malmbourg & Flouri, 2011; Schacht et al., 2009; Shelton & Harold, 2008), and supports evidence that suggests the intergenerational transmission of psychopathology cannot be solely a genetic process but is in part attributable to the environment (Harold et al., 2012; Natsuaki et al., 2014).

Chapter 3 also showed that mother and father depressive symptoms were initially associated with their respective hostile parenting behaviors (i.e., significant associations between mother depression and mother hostility, and between father depression and father hostility), which aligns with previous research showing parent depression to predict parenting (Du Rocher Schudlich & Cummings, 2007; Hanington et al., 2012; Vera et al., 2012). However, associations became non-significant when simultaneously assessing interparental conflict and early child adjustment as predictors

of parent hostility. This extends research that has shown parent depression to influence child psychopathology via disruptions to parenting (Cummings et al., 2013; Vera et al., 2012), by demonstrating that when considering relative intergenerational transmission, family socialization (interparental conflict) and gene-environment evocative processes for parenting and child psychopathology, interparental conflict and child evoked effects provide stronger contributions to parenting. However, there was a significant association between interparental conflict and both mother and father depression, which indicates that parent depression may impact parenting indirectly via interparental conflict. This finding underlines the importance of including parent depression/intergenerational transmission processes when examining family processes and child psychopathology, and supports the relationships proposed in the family stress model (Conger et al., 1994), which suggests that parent depression can increase interparental conflict, which can negatively impact on parenting, which in turn can influence child adjustment. This aligns with previous research finding indirect relationships between parent depression and parenting via interparental conflict and between parent depression and child adjustment via the relationship between interparental conflict and parenting (Keller et al., 2009; Shelton & Harold, 2008; Sweeney & MacBeth, 2016). However, as the association between parent depression and interparental conflict was cross-sectional in the present thesis, future research should use an adoption-at-birth design to examine the longitudinal associations between parent depression and interparental conflict, to examine whether parent depression can impact child psychopathology indirectly via interparental conflict and parenting among genetically unrelated parents and children.

Furthermore, the present thesis only examined relative intergenerational transmission and family socialization processes for psychopathology with regards to relative influences of parent depression and interparental conflict via mother and father

hostility. However, as the final empirical chapter the present thesis demonstrated that multiple maternal and paternal parenting behaviors are differentially influenced by child behavior and interparental conflict and differentially influence child internalizing and externalizing problems, maternal and paternal depressive symptoms may also differentially predict child adjustment via specific parenting behaviors. Future research should consider the relative role of intergenerational transmission and family socialization processes for child psychopathology through the examination of specific parenting behaviors (e.g., positive parenting and discipline practices) to develop understanding of intergenerational influences on parenting relative to interparental and child-evoked effects. Limited research also suggests that both maternal and paternal depressive symptoms are linked to the coparenting relationship (Cabrera et al., 2012; Cabrera, Shannon & Taillade, 2009). Therefore, future research could also examine relative contributions of parent depression and coparenting to child psychopathology within a wider family systems framework. Furthermore, as different aspects of parent mental health have been shown to be important for child mental health among genetically unrelated parents and children via parent-child relationships, such as parent antisocial behavior (Harold et al., 2012), future research could also examine the intergenerational transmission of mental health problems beyond depression relative to the interparental relationship and specific maternal and paternal parenting practices using an adoption-at-birth design.

### **The role of Coparenting in the Relationship between Interparental Conflict, Parenting and Child Psychopathology**

The final key aim of the present thesis was to develop understanding of the role of coparenting within a family systems framework, specifically in the relationship

between interparental conflict, maternal and paternal parenting and child internalizing and externalizing problems. Coparenting was examined as a mediator alongside maternal and paternal parenting (hostility, warmth, positive parenting and inconsistent and harsh discipline) in the relationship between interparental conflict and child internalizing and externalizing problems. Additionally, exploratory analyses were conducted to examine whether coparenting moderates associations between interparental conflict and maternal and paternal parenting, and between maternal and paternal parenting and child internalizing and externalizing problems. As discussed, coparenting was predicted by interparental conflict. However, findings showed no other associations between coparenting and other family processes or child psychopathology; coparenting was not associated with any maternal and paternal parenting practices, nor did coparenting predict child internalizing or externalizing problems.

Although previous research has shown coparenting to predict internalizing and externalizing problems (Teubert & Piquart, 2010; Farr & Patterson, 2013) and to be a process through which interparental conflict can influence child adjustment (Katz & Low, 2004; Mahoney et al., 1997), this research primarily examines cross-sectional associations between interparental conflict, coparenting and child psychopathology, and often examines associations in later childhood and adolescence (Farr & Patterson, 2013; Katz & Low, 2004; Mahoney et al., 1997). Present findings suggest that the coparenting relationship provides less of a contribution to internalizing and externalizing problems in early-to-middle childhood. However, it would be premature to conclude that coparenting is not important for child adjustment in this developmental period, as interventions targeting the coparenting, interparental and parent-child relationships (Family Foundations; Feinberg & Kan, 2008) have been shown to reduce child externalizing and internalizing problems in early to middle childhood (Feinberg,

Jones, Kan & Goslin, 2010; Feinberg, Kan & Goslin, 2009; Feinberg, Jones, Roettger, Solmeyer & Hostetler, 2014; Solmeyer et al., 2014). Nonetheless, it is difficult to distinguish the components of the program positively impacting child adjustment (i.e., positive effects may be occurring through the parent-child and interparental relationship focus of the program), which necessitates further examination of the relationship between coparenting and child adjustment.

One possible explanation for the apparent lack of association between coparenting and child adjustment is that coparenting may only influence psychopathology in certain contexts. Previous research suggests that factors such as the age of the child, clinical background and family income can moderate associations between coparenting and child adjustment (Teubert & Pinquart, 2010). Additionally, Leary and Katz (2004) found children's vagal suppression (a component of the parasympathetic nervous system that regulates the heart during stress) to moderate the associations between hostile-withdrawn coparenting and positive versus negative peer behavior. Furthermore, Schoppe et al. (2001) found adaptive family structure to moderate the associations between undermining coparenting and externalizing problems, in addition to finding that family negative affect moderated the association between undermining coparenting and externalizing problems. Thus, whilst the present study found no overall association between coparenting and child internalizing and externalizing problems, future research could examine the contexts in which coparenting can impact internalizing and externalizing problems early-to-middle childhood (i.e., by examining whether factors such as child gender, socioeconomic status or physical health indicators moderate associations between coparenting and child adjustment).

The present thesis found no association between coparenting and either maternal or paternal hostility, warmth, positive parenting, inconsistent discipline or harsh discipline. Whilst the lack of association between coparenting and parenting in this thesis does not align with previous research showing coparenting and parenting to be interrelated (Adler-Baeder et al., 2016; Cui et al., 2007; Lamela et al., 2016), previous research has rarely examined relative associations between coparenting and maternal and paternal parenting. Research examining associations between coparenting and fathers' parenting primarily centers around non-resident father involvement, due to a large focus on separated parents within the coparenting literature (Carlson et al., 2008; Sobolewski & King, 2005). Additionally, coparenting has previously been associated with parenting experiences such as parenting stress and efficacy (Fagan & Lee, 2014; Solmeyer & Feinberg, 2011), parenting behaviors such as rejection and punitive parenting (Adler-Baeder et al., 2016; Johnston, 1993), and both mother-child and father-child conflict, attachment and overreactivity (Caldera & Lindsey, 2006; Feinberg et al., 2007; O'Leary & Vidair, 2005), but there is little evidence for associations between coparenting and both mother and father hostility, positive parenting and harsh discipline. It may be that coparenting is not related to these specific parenting practices.

Although previous research has shown poor coparenting to be associated with inconsistent discipline (Lamela et al., 2016) and warmth (Abidin & Brunner, 1995; Bonds & Gondoli, 2007), this research did not differentiate between or examine relative associations for maternal and paternal parenting behaviors, thus not providing insight into whether coparenting differentially relates to mother and father inconsistent discipline or warmth; it may be that coparenting is associated with overall parent warmth and discipline practices, but is not associated with individual parents' behaviors. Additionally, Lamela and colleagues (2016) examined associations for

separated parents; coparenting may be differentially associated with parenting practices depending on whether parents are coparenting whilst cohabiting or living in separate households. Moreover, Abidin and Brunner (1995) only examined associations between coparenting alliance and warmth and Bonds and Gondoli (2007) only examined associations between coparenting support and warmth, whereas the present study assessed composite measure of coparenting. It may be that only certain aspects of the coparenting relationship may be associated with parent warmth. Further research is therefore needed to determine whether certain aspects of the coparenting relationship are associated with specific parenting practices, and whether these associations differ across family types.

Finally, although previous research examining the moderating role of coparenting in the relationship between interparental conflict and parenting, and between parenting and child adjustment is scarce, the present study did not provide evidence to support previous research demonstrating coparenting as moderator in relationships between the interparental relationship and parenting (Kwan et al., 2015; Merrifield & Gamble, 2013), or between parenting and child adjustment (Jia et al., 2012; Latham et al., 2017). This may be because of the discrepancy in measurement between previous studies and the present thesis; previous research examining coparenting as a moderator between the interparental relationship can parenting primarily examines interparental relationship quality (e.g., satisfaction), and parenting experiences (e.g., stress and efficacy; Merrifield & Gamble, 2013), whereas the present study examined interparental conflict and specific parenting behaviors (hostility, positive parenting and discipline practices). Additionally, research examining coparenting as a moderator between parenting and child outcomes has examined father involvement in relation to internalizing problems (Jia et al., 2012) and coercive

parenting in relation to disruptive behavior (Latham et al., 2017), but has not previously examined coparenting as a moderator in associations between the maternal and paternal parenting constructs examined in the present thesis and child internalizing and externalizing problems longitudinally across early-to-middle childhood. It may be that the coparenting relationship does not moderate associations between these family processes (interparental conflict, maternal and paternal hostility, warmth, positive parenting, inconsistent and harsh discipline) and child internalizing and externalizing problems in this age group. However, as moderation analyses in the present thesis were only exploratory, this avenue requires further investigation, and previous findings should not be discarded. Indeed, discrepancies within past research highlight the need to better understand the contexts in which a positive coparenting relationship is facilitative of positive outcomes for children, and whether a poor coparenting relationship may in fact improve child outcomes when in the context of negative parenting (Latham et al., 2017).

### **Issues with Coparenting Conceptualization and Measurement**

One possible explanation for the discrepancy in findings from the present thesis and past research with regards to the role of coparenting for family processes and child psychopathology is a general issue in the coparenting literature: the large discrepancy in how coparenting is measured. As discussed in the thesis introduction, the conceptualization of specific coparenting constructs, differs in the coparenting literature, which has led to substantive variation in the methods and measures used to assess the coparenting relationship (such as multiple different parent-reported questionnaire measures, and multiple coding schemes for observed triadic interactions; see Appendix A for a systematic review). This variation in measurement has led to



inconsistency in the coparenting constructs examined in relation to family processes and child mental health. The previous section of the discussion outlined how discrepancies in associations between coparenting and parenting in the present thesis may differ from past research due to the coparenting dimensions examined in previous literature (e.g., previous research showing associations between parent warmth and coparenting support; Bonds & Gondoli, 2007). However, this is a common occurrence throughout the coparenting literature. For example, research demonstrating associations between coparenting and child adjustment often examines singular, or few coparenting dimensions, such as coparenting support and undermining (Farr & Patterson, 2013; LeRoy et al., 2013; Schoppe et al., 2001). This is also the case for research examining coparenting as a moderator in relationships between interparental relationship quality and parenting, and between parenting and child adjustment (Dopkins-Stright & Neitzel, 2003; Jia et al., 2012). Research often also uses single or few-item scales to assess only coparenting conflict in relation to parenting and child outcomes (Cabrera et al., 2012; Fagan & Lee, 2014). Moreover, there is little consistency across research that examines a conceptually expansive coparenting relationship (i.e., combining multiple coparenting dimensions to form a composite coparenting measure). For example, research examining coparenting using the scale created by Margolin et al. (2001) uses a composite measure combining cooperation, conflict and triangulation (e.g., Baril et al., 2007), whereas other studies combine the coparenting agreement, conflict, mutual engagement, support and parental closeness subscales of the coparenting questionnaire developed by Feinberg et al. (2012) to assess the coparenting relationship (e.g., Kwon, Jeon & Elicker, 2013). This inconsistency in how coparenting is measured means that research provides limited insight into the role coparenting plays within the family system, underlining how greater consistency in both the conceptual understanding and

measurement of the coparenting relationship is needed to better understand the role coparenting plays in the relationship between interparental conflict, maternal and paternal parenting and child internalizing and externalizing problems from early-to-middle childhood.

### **Limitations**

Several limitations of the present thesis warrant mention. Firstly, the coparenting measure used in was newly developed for the Early Growth and Development Study, using observer reports of the broad coparenting relationship during home visits; from a review of evidence, this method has not previously been used to measure the coparenting relationship, with previous research observational data being coded for specific behaviors displayed in triadic interaction tasks (Jia et al., 2012). The lack of associations between coparenting, parenting and child adjustment may indicate that detailed coding is necessary to identify nuanced coparenting behaviors linked to parenting and child outcomes. However, the magnitude of the association between interparental conflict and subsequent coparenting is similar to previous studies using observational and parent reported coparenting measures (Katz & Low, 2004; McConnell & Kerig, 2002), which suggests that the interviewer impressions measure used in the present thesis is assessing similar behaviors as other measures designed to assess coparenting. Furthermore, all other measures used throughout the thesis are well validated, and the multi-informant, multimethod approach used in the present study reduces single reporter bias present in much family process and child psychopathology research (Harold & Conger, 1997; Rhoades et al., 2011). Nonetheless, future research could extend the multimethod, multi-informant approach used in the present thesis by using both observed and reported data across all measures. An additional caveat of this

thesis is that whilst longitudinal research provides insight into the direction of relationships between family processes and child psychopathology, data is correlational, and correlation is not indicative of causation. Therefore, although present findings show longitudinal associations between interparental conflict, child behavior and maternal and paternal parenting practices, and between parenting and subsequent child internalizing and externalizing problems, these relationships cannot be concluded as causal processes. Additionally, whilst the present study found significant predictors of parenting and child outcomes, significant variance in outcomes was left to be explained by additional factors that were not examined in the present thesis. This highlights the need for future research to consider additional processes that may play a role in family processes and child psychopathology (such as sibling relationships, socioeconomic status, work stresses, extended family relationships, additional parenting behaviors, parent mental health beyond depression; Bronfenbrenner, 1994; Harold & Sellers, 2018).

An important point to note is that whilst there was a proportion of missing data in the present thesis, as data was indicated as missing completely at random, missing data was appropriately dealt with by implementing multiple imputation to maximize sample size. An additional factor to consider is multiple testing; however, the available sample size provided adequate statistical power for the theoretical specification and examination of each specific indicator examined across each set of models in the present thesis. Furthermore, the present study only examined intact, heterosexual adoptive families. Future research should consider the processes examined in the present thesis in same-sex adoptive families (i.e., examining relative processes for primary and secondary caregivers in relation to child psychopathology), in addition to other family compositions (for example foster families or separated/step-families).

Furthermore, families in the present thesis primarily represented affluent White-American adoptive families, necessitating the examination of families from varying socioeconomic and cultural backgrounds to better understand the role of the interparental relationship, coparenting and maternal and paternal (or primary and secondary caregiver) parenting practices for child internalizing and externalizing problems from early-to-middle childhood.

### **Future Directions**

Throughout this discussion, multiple future directions have been highlighted, such as considering the influence of specific interparental conflict behaviors/ attributes that are differentially linked to parenting, examining a wider range of parenting behaviors and wider family factors that may impact on family processes and child psychopathology, examination of the relative impact of interparental conflict and mother and father depression on specific parenting behaviors beyond hostility, and whether family processes (such as specific maternal and paternal parenting practices) differentially influence child outcomes at different developmental periods. Additionally, the development of conceptualization and measurement of the coparenting relationship has been highlighted as necessary to enable greater consistency in future research when examining associations between coparenting, family processes (parenting, interparental conflict) and child psychopathology. This section discusses additional future directions for research examining interparental, parent-child and coparenting processes for child mental health; gene-environment interaction, child gender differences, consideration of child attributions of interparental conflict, and general measurement of maternal and paternal parenting.

**Gene-environment interaction.** Whilst the present study used the adoption design to provide unique insight into family environmental (interparental, mother-child, father-child, intergenerational transmission) influences for child psychopathology and highlight child evocative processes, one additional aspect of gene-environment interplay that the adoption design can shed light on that was not considered in the present thesis is gene-environment interaction (GxE). GxE refers to the interaction between the rearing environment and genetic risk for behavior. One form of GxE is where a negative, stress-inducing environment can increase individuals' risk for developing disorders to which they are genetically predisposed, which is known as the diathesis stress perspective. Alternatively, GxE can occur when a heritable trait results in children being differentially responsive to both positive and negative rearing environments, known as the differential susceptibility hypothesis (Belsky & Pluess, 2009; Ellis, Boyce, Belsky, Bakermans-Kranenburg & Van Ijzendoorn (2011)). Thus, from an intervention standpoint, examination of GxE can be used to provide insight into environments that can offset or increase genetic risk.

Previous adoption studies have shown parenting to interact with child genetic risk to influence development, providing support for the diathesis stress perspective. For example, Hyde et al. (2016) found positive parenting to buffer the impact of genetic risk on adopted children's early callous-unemotional behavior. Additionally, Rhoades et al. (2011) found that adoptive mothers' and fathers' harsh parenting significantly influence toddlers' anger only when children were genetically at risk (measured by birth mother anger/frustration). Research examining interactions between parenting and genetic risk for child psychopathology also provides evidence for differential susceptibility; Leve et al. (2009) found that structured parenting decreased childhood behavior problems when children had high genetic risk (indicated by birth parent substance use), but increased

toddler behavior problems for children with low genetic risk. Thus, adoption studies examining GxE indicate how children's genetic propensities can make them differentially susceptible to their rearing environment, highlighting how both positive and negative parenting can interact with genetic risk to influence child psychopathology. Thus, one direction for future research is to explore GxE for the processes examined in the present thesis, to examine whether the influence of interparental conflict and specific parenting behaviors (hostility, positive parenting, and discipline practices) and coparenting for child internalizing and externalizing problems differs depending on children's genetic risk.

**Child gender differences.** Whilst the present thesis focused on the relative contribution of mothers and fathers for child psychopathology, some evidence suggests that there are also child gender differences in relationships between family processes (e.g., parenting) and child adjustment. For example, Shelton and Harold (2008) found that the association between mother-child rejection and child externalizing problems was only significant for girls, and that father-child rejection only predicted boys' externalizing problems. Additionally, Nath, Russell, Kuyken, Psychogiou and Ford (2016) found father-child conflict to predict boys' but not girls' emotion regulation and conduct problems. Moreover, Leinonen et al. (2003) examined the relative contribution of mother and father punitive, non-involved and authoritative parenting for 12 year old boys' and girls' substance use, internalizing problems, peer relations and school performance, finding mother and father parenting behaviors to differentially predict outcomes for boys and girls; specifically, they found father punitive parenting to predict boys' and girls' internalizing problems and school performance, mother non-involved parenting to predict boys' substance use and school performance, and mother authoritative parenting to predict boy peer relations. These findings suggest that specific

maternal and paternal parenting behaviors can differentially predict boys' and girls' outcomes.

Limited evidence also suggests that the path from interparental conflict to child internalizing and externalizing problems via coparenting and parenting may differ depending on parent and child gender. Specifically, O'Leary and Vidair (2005) found that the relationship between interparental conflict, childrearing disagreements, parent overreactivity and child internalizing and externalizing problems differed depending on parent and child gender; specifically, this study found a path from the interparental relationship to girls' internalizing and externalizing problems via the path from childrearing disagreement to overreactive parenting for girls only, whereas for boys, only father reactivity predicted internalizing problems and only mother overreactivity predicted externalizing problems. Additionally, childrearing disagreement directly predicted boys' but not girls' externalizing problems, and directly predicted boys' and girl' internalizing problems when examined relative to mother overreactivity, but did not directly predict boys' or girls' internalizing problems when examined relative to father overreactivity. This finding demonstrates the complexity of the relationship between interparental conflict, parenting, coparenting and child internalizing and externalizing problems, showing that these paths differ depending on parent and child gender. Future research should further develop understanding of the relative contribution of coparenting and maternal and paternal parenting in the relationship between interparental conflict and child internalizing and externalizing problems by examining whether these relationships differ depending on child gender, and whether specific maternal and parenting processes differentially predict boys' and girls' psychopathology from early-to-middle childhood (and later development).

**Child attributions of interparental conflict: emotional security and cognitive contextual processes.** The present thesis focused on maternal and paternal observed and reported family processes and child psychopathology in early-to-middle childhood. However, research demonstrates that children's attributions of interparental conflict later in childhood and adolescence are important for child psychopathology. The emotional security hypothesis states that children's perceptions of interparental conflict with regards to conflict frequency, intensity and resolution, in addition to children's cognitive representations and behavioral responses to interparental conflict can mediate the relationship between interparental conflict and child adjustment (Davies & Cummings, 1994), and has been supported empirically (Cummings, George, McCoy & Davies, 2012; Davies, Sturge-Apple, Bascoe & Cummings, 2014). Similarly, the cognitive contextual framework proposes that children can respond to interparental conflict by holding themselves responsible and blaming themselves for conflict and experiencing feelings of threat towards the stability of the family, which in turn can negatively impact child psychopathology (Grych et al., 2003; Kim, Jackson, Conrad & Hunter, 2008). Thus, future research examining specific parenting processes mediating the relationship between interparental conflict and child internalizing and externalizing problems across childhood and adolescence could also examine the role that children's cognitive representations of conflict play in these associations.

**Assessment of maternal and paternal parenting.** One step towards understanding the relative role of mothers and fathers for child psychopathology is the consideration of whether research that examines maternal and paternal parenting using the same measures adequately captures both parents' behavior. Research shows that mothers and fathers play different roles as parents; for example, fathers tend to spend more time with their children in physical activities than mothers, try to excite their



children whilst mothers try to contain them, are more encouraging in risk-taking and explorative behaviors than mothers, and encourage children to be braver and stand up for themselves more than mothers (Paquette, 2004), suggesting that mothers' and fathers' parenting differs. Additionally, as family process and child psychopathology research has historically focused on maternal parenting in relation to child outcomes, measures of parenting have been developed to assess maternal parenting behaviors, which has led to the question of whether these measures are the best way to assess paternal parenting behaviors or whether fathers' contributions to child psychopathology can be better understood by developing new measurement tools that better capture fathers' parenting behaviors (Cabrera et al., 2018). An avenue of investigation for future research aiming to provide insight into the relative role of mothers and fathers for child mental health is to develop new measurement tools that allow the examination of fathers' interactions with children and the impact of fathers' behaviors on child psychopathology.

### **Policy and Practice Implications**

Findings from the present thesis have important implications for policy and practice. Firstly, the finding that interparental conflict predicts child externalizing problems via father hostility demonstrates the importance of targeting the interparental relationship through intervention. Interventions aiming to improve child behavior problems often focus on the parent-child relationship (Gardner & Scott, 2015). Present findings suggest that whilst interventions targeting the parent-child relationship may improve outcomes for children short-term, if interparental conflict is not targeted through intervention, then the cascades (or spillover) of negativity in the interparental relationship to the parent-child relationship will still occur, in turn meaning that the

positive effects of parenting interventions may not be sustained. Rather, targeting both the interparental relationship through intervention may prevent the cascade of negativity to the parent-child relationship, and thus improve outcomes for children. Indeed, although intervention effects are more commonly examined in relation to couple relationship and/or parent-child relationship quality, evidence is surfacing to show the positive effects of interventions that target the interparental relationship for child outcomes (Harold & Sellers, 2018; Harold et al., 2016).

A second implication of the present research for policy and practice is the finding that both mothers and fathers are important for child mental health; interventions are often focused on the mother-child relationship, and interventions targeting fathers tend to focus on facilitating father involvement, with less interventions targeting specific paternal behaviors (Panter-brick et al., 2014). However, present findings suggest that encouraging father participation in intervention and educating targeting their parenting practices may positively impact child mental health. Additionally, present findings suggest that interventions should be tailored to target different parenting practices for mothers and fathers depending on the child outcome of interest. Specifically, present findings suggest that increasing mothers' positive parenting behaviors may reduce child internalizing problems, whereas reducing fathers' hostile/harsh parenting and mothers' inconsistent discipline may reduce child externalizing problems. Findings also highlight the need to recognize maternal and paternal depression within interventions targeting interparental relationships and child psychopathology, in addition to educating parents about the impact that child behavior can have on their parenting practices, and to teach parents how to more positively respond to negative child behavior. Thus, in providing unique insight into the impact of interparental conflict (and parent depression) on child internalizing and externalizing

problem via specific maternal and paternal parenting practices, this thesis has invaluable implications for the development of intervention policy and practice that incorporates the fathers and wider family factors beyond parenting, such as interparental conflict, evocative effects and parent mental health.

## **Conclusions**

To conclude, the present thesis provides important contributions to the understanding of family processes and child psychopathology, using an adoption-at-birth design to shed light onto the relative role of mothers and fathers for child psychopathology, with examination of the interparental relationship, mother and father depression, coparenting, and multiple maternal and paternal parenting practices for changes in child internalizing and externalizing problems from early-to-middle childhood. Findings demonstrate that interparental conflict is an important influence on child behavior problems via father hostile parenting and that specific maternal and paternal parenting behaviors differentially contribute to child internalizing and externalizing problems (maternal positive parenting impacting on internalizing problems, and paternal hostility and harsh discipline and maternal inconsistent discipline impacting on externalizing problems). Additionally, findings show the importance of child-evoked effects on parenting, and demonstrate intergenerational transmission of psychopathology as (at least in part) an environmental process. Furthermore, findings highlight the need to increase consistency in the conceptualization and measurement of the coparenting relationship to better understand how coparenting fits within the family system to influence child psychopathology. Findings have important policy and practice implications, underlining the importance of

incorporating fathers, the interparental relationship and parent mental health in intervention to improve outcomes for children.

## Appendices

### **Appendix A: Methods of Measurement of Coparenting: A systematic literature review**

#### **Introduction**

Different aspects of family functioning (e.g., the interparental relationship and parent-child relationships) are important processes for child psychopathology (Harold & Sellers, 2018). Family systems theories (Cox, Paley & Harter, 2001) recognize that families are made of interdependent subsystems (e.g., the interparental relationship, parent-child relationships) that interact to influence child psychopathology (Cox & Paley, 1997; Cox et al., 2001). One subsystem recognized as important for family functioning and child development is the coparenting relationship, defined as the way in which parents work together in rearing their child (Feinberg, 2002; Feinberg, 2003). Whilst the broad concept of coparenting is consistent throughout the literature, there is substantive variation in the conceptualization of specific coparenting constructs (Feinberg, 2003; Margolin et al., 2001; Van Egeren & Hawkins, 2004), which has led to disparity in the operationalization of coparenting. No systematic review has previously been conducted to assess measurements of the coparenting relationship. The aim of this systematic review is to outline all published measurement methods for the coparenting relationship and how coparenting measures are used to assess coparenting constructs.

#### **How Coparenting has been Conceptualized**

There is great variability in how coparenting is conceptualized within the coparenting literature. Early research widely examined coparenting alliance, defined as

the extent to which parents support and undermine each other in their caregiving roles (Abidin & Brunner, 1995). Historically, research has also considered discrepancies in parenting as a key coparenting dimension, which is differences between the two parents' behaviors (McHale, 1995), although this is considered by some as a weak representation of the coparenting relationship (Van Egeren & Hawkins, 2004). More recently, researchers have developed conceptualizations of multiple coparenting constructs that encompass the overall coparenting relationship. For example, McHale (1997) proposed four coparenting dimensions: (1) Family integrity, representing the extent to which parents promote togetherness in the family; (2) Coparental conflict, representing conflict displayed in the presence of the child, (3) Disparagement, representing parents' undermining and attempts to invoke negative images of the absent parent in the child; and (4) Reprimand, representing behaviors supporting the family unit, such as limit setting. More recently, Margolin et al., (2001) proposed three coparenting dimensions: (1) Coparental conflict, representing conflict around childrearing; (2) Coparental cooperation, referring to parents' support, value and respect for each other as parents, sharing responsibility and reducing each other's burden; and (3) Triangulation, representing parents' acts of drawing children into conflict and forming coalitions with the child against the other parents, both of which are considered failures in boundary maintenance. Additionally, Feinberg (2002) categorized coparenting into four main components: (1) Support versus undermining, representing the extent to which parents respect each other's contribution to parenting, withhold each-others' parenting decisions and affirm each-others' parenting competency; (2) Childrearing disagreement, representing the extent to which parents agree on child-related topics (which is not considered as problematic if negotiation follows disagreement); (3) Division of family-related labor, such as childcare, daily routines,

household tasks and medical issues, which becomes problematic when perceived as unequal; and (4) Conflict displayed in front of the child. Van Egeren and Hawkins (2004) also proposed four coparenting dimensions: (1) Coparental solidarity, representing the formation of a unified subsystem categorized by warmth and positivity between parents when in the presence of the child; (2) Coparenting support, representing actions that support and extend the parents' attempts to accomplish parenting goals; (3) Undermining coparenting, representing criticism and lack of respect towards the other parent's parenting decisions, and attempts to thwart the other parent's attempts at parenting goals; (4) Shared parenting, representing division of labor, shared responsibility of decision making and joint limit setting. These dimensions are not exhaustive of all coparenting constructs examined, as will be identified in the following review. Thus, specific dimensions of the coparenting relationship differ across the literature, but mainly revolve around parents' supportive versus undermining behaviors, maintaining boundaries between the interparental and parent-child relationship, perceived equality in the division of labor, and conflict over childrearing and/or conflict in front of the child. The multiple definitions and categorizations of specific coparenting constructs has led to the development of an array of measures to assess the different proposed coparenting constructs.

### **How Coparenting Measurements Map onto Definition**

Research has examined the coparenting relationship using a range of measures, including qualitative interviews and content/thematic analysis (Cartwright & Gibson, 2013), quantitative questionnaires (Feinberg et al., 2012) and by observing and coding triadic interactions, such as the widely used Lausanne Trilogue Play (Fivaz-Depeursinge & Favez, 2006). Multiple coding schemes exist to code triadic interactions, such as the

Family Alliance Assessment Scale (Lavanchy-Scaiola, Favez, Tissot & Frascarolo, 2008) and the Coparenting and Family Rating System (McHale, Kuersten-Hogan, Lauretti & Rasmussen, 2000). Additionally, a range of questionnaires have been developed to assess different coparenting dimensions, such as the Parenting Alliance inventory (Abidin & Brunner, 1995), which focuses on parenting alliance, compared to the Coparenting Relationship Scale (Feinberg et al., 2012), which measures coparenting support, undermining, agreement, closeness, endorsement of partner's parenting and division of labor. Despite the variability in conceptualization and measurement of coparenting, no systemic review has been conducted to establish all published measurement instruments for the coparenting relationship or how these measurements have been used to operationalize the wide range of coparenting dimensions.

### **Review Aims**

The aim of the present review is to identify all methods of measurement for the coparenting relationship, with the core aim of understanding consistencies versus inconsistencies of measurement in the coparenting literature, and the use of measurement tools to assess different defined coparenting dimensions. The core questions that will be addressed in this literature review are:

- (1) How do researchers define coparenting?
- (2) What quantitative questionnaire measures have been used to examine defined coparenting constructs?
- (3) How do observation studies measure different coparenting constructs?
- (4) Does definition and measurement of coparenting in qualitative studies map on to how coparenting is quantitatively measured?



## Methods

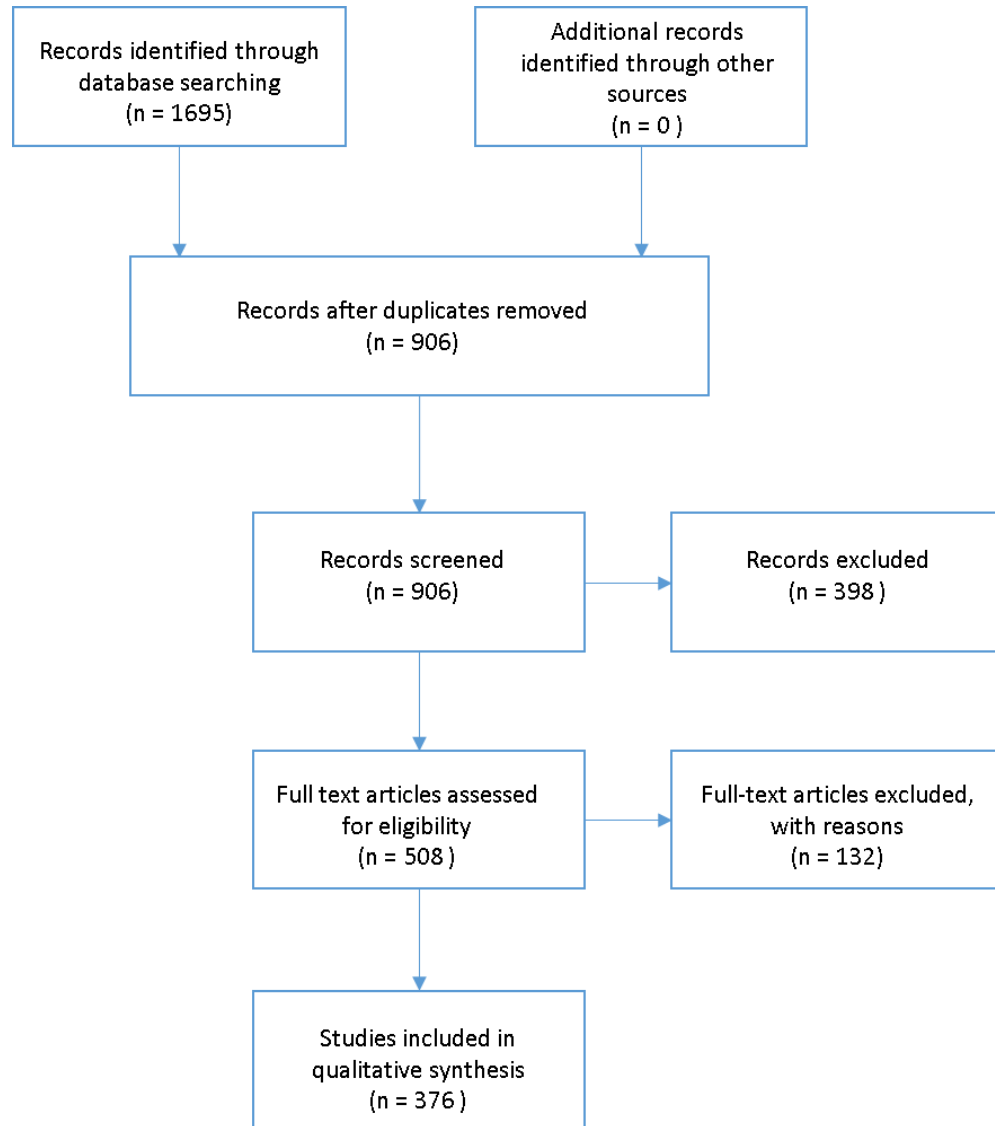
### Selection Criteria

This systematic review followed specific inclusion and exclusion criteria to gain the most coherent understanding of how coparenting is defined and operationalized across studies. The systematic review was carried out following guidelines outlined by the PRISMA statement (Moher, Liberati, Tetzlaff & Altman, 2009), and was conducted by one reviewer. The databases used to conduct the electronic search were Scopus (Elsevier), Web of Science (Thomas Reuters) and Pubmed (Medline). The search-term used was “coparent\* OR co-parent\*”, to allow for either term to be included with any form of word ending. Searches were conducted to include papers that contained these search terms in the title, abstract or as a key word, and papers were included from any year. Titles and abstracts were first screened, followed by full text articles. The inclusion/exclusion criteria were as follows: (a) written/translated in English; (b) must be in a peer reviewed journal or a book containing an empirical study; (c) must have full access; (d) coparenting must be measured, as opposed to discussed; (e) papers will be excluded if examining coparent behavior when referring to the other co-parent figure’s behavior (e.g. discussing “coparent warmth” when referring to the other parent’s warmth towards the child), and will only be included if exploring behavior between two parents/care figures, or each co-parent’s behavior in relation to the coparental relationship; (f) all family types will be included (e.g. divorced, step-families, adoption and foster care, single parents with a coparent); (g) quantitative, observational and qualitative data will be included.

Papers were split into three categories based on how they examine coparenting: quantitative questionnaire measures, observational measures and qualitative measures.

Papers that included two or more methods of measuring coparenting and thus overlapped between the categories were included within both categories.

## Results



*Figure 14.* PRISMA diagram showing systematic literature review search results

The three literature searches in Scopus, Web of Science and PubMed yielded 1695 results. Of these, 784 results were duplicates, leaving 906 records to be screened. These records were screened by title and abstract simultaneously, at which stage 398 were excluded due it being clear that coparenting was not measured ( $N = 290$ ), due to having no access to the full article ( $N = 78$ ), or due to not being written in English ( $N =$

30). This left 509 full texts to be assessed for eligibility. Of these 509 papers, 132 were excluded due to not measuring coparenting, and in 33 of these cases, papers stated that they measured “co-parent” behavior, which was referring to either the other parent figure’s behavior, or behavior between co-parents that was not related to the child. Thus 376 studies were included in the review (see Figure 14). Of these 376 papers, 339 used quantitative methods and 38 used qualitative methods to measure coparenting. Of the 339 papers using quantitative methods, 270 used questionnaires and 79 used observation coding schemes.

### **Quantitative Measures**

Table 7 provides details (i.e., subscales, number of items) of all identified measures that were utilized three or more times, presented in order of popularity (number of times used). The search yielded 30 additional named measures that were used two or less times that are a mixture of parent and child reports (Table 9), and 74 articles using unnamed coparenting measurement instruments. All identified measures in Table 7 are parent report measures.

The most commonly used coparenting measure was the Coparental Interaction Scale/Quality of Coparental Communication Scale (Ahrons, 1981). Articles used the Coparental Interaction Scale/Quality of Coparental Communication Scale (Ahrons, 1981) to measure coparenting constructs such as communication (e.g., Russell, Beckmeyer, Coleman & Ganong, 2016), support and conflict (e.g., Gosselin & Gosselin, 2016), overall coparenting quality (e.g., Bonach, 2008), and cooperation (e.g., Beckmeyer & Arditti, 2014). Additionally, this scale was used to examine antagonistic versus supportive coparenting (Schrodt, 2011) and coparental alliance (Braver, Sandler, Cohen Hita & Wheeler, 2016).

The second most commonly used measure was the Coparenting Relationship Scale (Feinberg et al., 2012). This was used to measure coparenting constructs that aligned with the subscales defined in the measure (e.g. agreement, support/undermining and division of labor, Lamela et al., 2016; endorsement of partner's parenting, parent-based closeness, Kan & Feinberg, 2015), as well as constructs such as joint family management (Lamela et al., 2016), overall coparenting quality (e.g. Feinberg et al., 2016) and positive and negative coparenting (Teti, Shimizu, Crosby & Kim, 2016).

The third and fourth most commonly used measures were the Parenting Alliance Inventory (Abidin & Brunner, 1995) and the Parenting Alliance Measure (Abidin & Konold, 1999). These were mainly used to measure the coparenting construct coparenting alliance (e.g., Farr, 2016). However, some studies also used this scale to measure the overall coparenting relationship (Marczak, Becher, Hardman, Galos & Ruhland, 2015), coparenting support and trust (Holland & McElwain, 2013), coparenting respect (Elliston, McHale, Talbot, Parmley & Kuersten-Hogan, 2008), cooperation, communication and respect (Lamela, Figueiredo & Bastos, 2013) and teamwork, commitment and judgement (Scott & Lishak, 2012).

The fifth most used measure was the Coparenting Questionnaire (Margolin et al., 2001). Coparenting constructs measured using this tool mainly aligned with the subscales defined in this measure; cooperation, conflict and triangulation (e.g., Pedro et al., 2012). This tool was also used to examine coparenting support (Huntington & Vetere, 2015), undermining (Song & Volling, 2015), coparental alliance (Braver et al., 2016) and overall coparenting (Rye et al., 2012).

The sixth most popular coparenting measure was the Coparenting Scale/Coparenting Scale Revised (McHale, 1997; CSR-R, McHale, 1999). This was

used to measure coparenting constructs that aligned with the subscales, such as family integrity promotion, disparagement, conflict and reprimand (e.g., Togliatti, Lavadera & Benedetto, 2011; Karreman et al., 2008). An adapted version of this scale for the purpose of researching an intervention in Korea measured conflicted coparenting, intimate coparenting and integrative coparenting (Doh et al., 2016), whilst a Dutch version of the scale was used to measure coparenting support and undermining (Metz, Majdandzic & Bogels, 2016).

An additional scale used to measure coparenting was the O’Leary-Porter Scale (OPS, Porter & O’Leary, 1980), which was used to measure coparenting conflict (e.g., Forehand, Parent, Golub & Reid, 2014), and conflict in front of the child (e.g., Parent, Jones, Forehand, Cuellar & Shoulberg, 2013). The Quality of Coparenting Questionnaire (Stright & Bales, 2003) was used to measure supportive and antagonistic coparenting communication (e.g., Schrodtt & Shimkowski, 2015), overall coparenting (Szabo, Dubas & van Aken, 2012), and coparenting support and undermining (e.g., Cook et al., 2009). The Relationship Between Former Spouse Scale (Goldsmith, 1980) was used to measure coparental coordination (e.g., Finzi-Dottan & Cohen, 2016), coparental communication and hostility/tension (Finzi-Dottan & Cohen, 2014), cooperation and mutual support (e.g. Cohen & Levin, 2012), and participation in children’s activities (e.g., Price, Serovich, Chapman & Wright, 1992). The Who Does What? Questionnaire (Cowan & Cowan, 1990) was used to measure division of labor (e.g., Khazan, McHale & Decourcey, 2008) and prenatal versions of this questionnaire measured expectations of division of labor (e.g., McHale & Rotman, 2007). The Family Experiences Questionnaire (Frank, Jacobsen & Avery, 1988; Van Egeren & Hawkins, 2004) was used to measure coparenting support and undermining (e.g., Merrifield & Gamble, 2013) and overall coparenting (Van Egeren, 2004), and an

adapted version of the original Family Experiences Questionnaire (Frank et al., 1988) measured shared responsibility and spouse criticism (Chance, Costigan & Leadbeater, 2013). The Acrimony Scale (Shaw & Emery, 1987) was used to measure coparental conflict (e.g., Stallman & Ohan, 2016) and coparental cooperation (Pruett, Ebling & Cowan, 2011). Finally, Domains of Marriage Scale (Huston, McHale & Crouter, 1986) was used to measure satisfaction in coparenting (Riina & McHale, 2014).

Scales that were used twice or less also measured similar coparenting constructs such as coparenting conflict (e.g., Dadds & Powell, 1991; Snyder, 1997; Jouriles et al., 1991), communication (e.g., Stanley & Markman, 1997), support and triangulation (e.g., Linares et al., 2005) and coparenting alliance (Dumka, Prost & Barrera, 2002). Other aspects of coparenting measured in these scales include confidence in coparenting (Stanley et al., 2001), coparenting consistency and techniques (Newland, Coyle & Freeman, 2008), and similarity in parenting (e.g., Robinson, Mandelco, Olsen & Hart, 2001).

Furthermore, multiple studies used bespoke measures to examine coparenting constructs such as support (e.g., Price-Robertson, Baxter & Mathews, 2015; Bronte-Tinkew, Scott, Horowitz & Lilja, 2009), conflict (e.g., Cabrera et al., 2009), coparenting alliance (e.g. Fagan, Levine, Kaufman & Hammar, 2016), undermining (e.g., Hock & Mooradian, 2012), division of labor (Khoury-Kassabri, Attar-Schwartz & Zur, 2014), cooperation (e.g. Fagan et al., 2016), cohesion (Viry, 2014) and overall coparenting quality (e.g., Becher et al., 2015). Bespoke measures were also used to examine coparenting conflict and triangulation reduction/avoidance behaviors (Rector, LaGraff, Stolz & Brandon, 2015), collaborative coparenting (Fuhrmans, von der Lippe & Fuhrer, 2014), coparent alienation (Harman, Biringen, Ratajack, Outland & Kraus, 2016), coparenting self-efficacy (Fagan, Cherson, Brown & Vecere, 2015), and communication

with the child about the coparent (Bowers, Ogolsky, Hughes & Kanter, 2014).

Furthermore, the scale designed for the Fragile Families and Child Well-being study was used in reference to overall coparenting quality (e.g., Goldberg, 2015), supportive coparenting (e.g., Pudasainee-Kapri & Razza, 2015), coparenting efforts (Williams, Cheadle & Goosby, 2015), and to differentiate between cooperative, disengaged, conflicted and mixed coparenting styles (Waller, 2012).

### **Observation Coding Schemes**

Table 8 shows all identified observation coding schemes that were utilized three or more times, presented in popularity (number of times used). The search yielded seven additional named coding schemes that were used two or less times (see Table 9), and 22 articles using unnamed coparenting coding schemes. Through the nature of triadic interactions, intact families were the target population for all observations and coding schemes.

Coding schemes were used to code observations from triadic interactions. Researchers either observed triadic free-play interactions (e.g., Farr & Patterson, 2013), or structured triadic tasks (e.g., building task; Schoppe-Sullivan et al., 2001). The most common triadic task was the Lausanne Trilogue Play (LTP; Fivaz-Depeursinge & Favez, 2006), which was utilized 18 times, in addition to a prenatal adaptation of the LTP, which was used in five articles. Coparenting observations were also conducted by observing dyadic interactions between parents, such as discussions using the Who Does What? Questionnaire (McHale, Fivaz-Depeursinge, Dickstein, Robertson & Daley, 2008), or discussions between co-parents about child-related topics (e.g., Baker, McHale, Strozier & Cecil, 2010)



The Coparenting and Family Rating Scale (McHale et al., 2000) was used to measure overall coparenting quality and coparenting dynamics (Christopher et al., 2015), positive coparenting, negative coparenting and coparenting balance (Bingham, Kwon & Jeon, 2013), cohesion (Talbot, Baker & Mchale, 2009), harmony and negativity (e.g., Talbot & Mchale, 2004), coparenting support (Curran, Hazen & Mann, 2009), and solidarity and disengagement (McHale & Coates, 2014). Moreover, researchers used the Coparenting and Family Rating Scale (McHale et al., 2000) to examine hostility-competitiveness and parenting discrepancy (e.g., McConnell & Kerig, 2002), and competition, cooperation, warmth, verbal sparring, investment, child-centredness, disconnection, shared focus and coparenting alliance (e.g., Mchale et al., 2013). The Coparenting Behavior Coding Scale (Schoppe-Sullivan, Mangelsdorf & Frosch, 2001) was used to examine support and undermining across all studies utilizing this scale (e.g., Farr, 2016). The Family Alliance Assessment Scale (Lavanchy-Scaiola et al., 2008) was used to measure coparental structuring (Gueron-Sela, Atzaba-Poria, Meiri & Marks, 2016), support and conflict (e.g., Tissot, Favez, Ghisletta, Frascarolo & Despland, 2016), and overall coparenting (Marcu, Oppenheim & Koren-Karie, 2016). Furthermore, the Family-Level Interaction and Co-parenting Coding System (FICS; Low, Katz, Young, & Kahm, 1997) was used to measure overall coparenting (Katz & Woodin, 2002), and positive and hostile withdrawn coparenting (e.g., Katz & Low, 2004).

### **Qualitative Studies**

The qualitative studies examining coparenting used primarily interviews (e.g. Nelson, Thach, Shelton & Boyer, 2015). There were also two cases of open-ended survey questions (Power et al., 2012), one use of diary entry analysis (Bos, van Balen &

van den Boom, 2007), one focus group (Kirby & Sanders, 2012) and two instances of in-depth case studies of the Lausanne Trilogue play (Fivaz-Depeursinge & Favez, 2006). Coparenting constructs examined/highlighted in qualitative analyses tended to map onto the coparenting constructs measured using quantitative methods. For example, there was a large focus on cooperation (e.g., Baker, McHale, Strozier & Cecil, 2010) and conflict (e.g., Power et al., 2012). Additionally, there was a large focus on support and division of labor (e.g., Nelson et al., 2015). Other coparenting constructs explored using qualitative methods that map onto quantitative measures included solidarity

Table 7

*Quantitative Coparenting Measures*

Questionnaire Measure	Details of measure / Subscales	Target Age	Target Population	No. papers utilized
Coparental Interaction Scale/ Quality of Coparental Communication Scale (Ahrons, 1981)	1-item measuring frequency of coparental interaction scale on a 7-point Likert scale (7= two or more times weekly, 1=never; 1=less than 5 minutes, 4=longer than 15 minutes), 10-item scale assessing frequency of coparenting interactions related to parenting (5 = always, 1 = never; $\alpha = .92 - .93$ ), and a 13-item subscale assessing frequency of non-parent related interactions (6 = daily, 1 = never; $\alpha = .84 - .93$ ) 10-item scale measuring quality of coparental relationship, including a 4-item conflict subscale rated on a 5-point Likert Scale (5 = always, 1 = never; $\alpha = .88-.89$ ), and a 6-item Support Subscale rated on a 5-point Likert scale (5= always, 1=never; $\alpha = .74-.75$ ).	<18 years  (Utilized from prenatal- 18 years)	Divorced/ separated parents (Utilized in divorced/ separated parents, Stepfamilies, Incarcerated parents, Mothers and their coparent figure, and Intact families)	47  (+10 Coparental interaction questionnaire, Ahrons & Wallisch, 1987)
Coparenting Relationship Scale (Feinberg, Brown & Kan, 2012)	35-item scale measured on a 7-point Likert scale (0 = not true of us/ never, 6 = very true of us/often; total scale $\alpha = .91-.94$ ). Subscales measure coparenting agreement (4 items; $\alpha = .66 - .74$ ), coparenting closeness (5 items, $\alpha = .75 - .83$ ), exposure to conflict subscale (5 items, $\alpha = .81 - .90$ ), coparenting support (6 items, $\alpha = .86 - .89$ ), endorse partner's parenting (7 items, $\alpha = .61 - .88$ ) and division of labor (2 items). Also a brief measure consisting of 14 items ( $\alpha = .81- .89$ )	Infancy  (Utilized from 0-16 years)	Couples in the transition to parenthood (Utilized in intact parents in transition to parenthood, divorced parents, intact parents, teen parents, and families with a history of intimate partner violence)	21  (2 French version, 1 prenatal version and 3 brief scale)

Parenting Alliance Inventory (Abidin & Brunner, 1995)	20-item Scale measuring parenting alliance on a 5-point Likert scale (5=strongly agree, 1= strongly disagree).	4-6 years  (Original sample had children aged 2-7 years; utilized from age 0-17 ears).	Intact and divorced /separated couples (Utilized in intact couples, divorced/ separated parents, teen parents, same-sex and opposite sexed adoptive parents, high risk families e.g. fathers with history of substance abuse and intimate partner violence).	19  (1 translated to French, 2 translated to Chinese, and an adapted version by McBride & Rane, 1998, used twice.)
Parenting Alliance measure (Abidin & Konold, 1999)	20-item refined version of the parenting alliance inventory consisting of a 3-item respect subscale and a 17-item communication and teamwork subscale.	1-19 years	Intact and separated families (Utilized by intact and separated families, incarcerated parents, and families with a history of child abuse/ neglect and domestic violence).	18
Coparenting Questionnaire (Margolin, Gordis & John, 2001)	14-item measure rated on a 5-point Likert scale ( <i>never, rarely, sometimes, usually or always</i> ), consisting of a 5-item Cooperation Subscale ( $\alpha = .69 - .80$ ), 4-item Triangulation Subscale ( $\alpha = .73 - .84$ ), and a 5-item Conflict Subscale ( $\alpha = .74 - .84$ ). Can be combined for total coparenting score ( $\alpha = .84 - .87$ ).	4-9 years  (Utilized for ages 1 month -18 years)	Intact families	18  (3 Adapted versions, 1 observation)

			(utilized in intact and divorced families)	coding based on questions)
Coparenting Scale (McHale, 1997)	16-item self-report questionnaire reporting how frequently each parent engages in behavior (1 = “absolutely never, 7 = “almost constantly – at least once an hour”). Comprised of a 7-item Family Integrity Subscale ( $\alpha = .82$ ), 3-item Disparagement Subscale ( $\alpha = .74$ ), 2-item Conflict Subscale ( $\alpha = .79$ ) and 4-item Reprimand Subscale ( $\alpha = .59$ ).	3-5 years  (Utilized from 0-13 years)	Intact families (Utilized by intact, divorced and stepfamilies)	12  (plus 3 CRS-R, McHale, 1999; Unpublished manuscript; 2 Chinese versions, one Korean version, 2 Dutch versions and 2 French versions).
O’Leary-Porter Scale (Porter & O’Leary, 1980)	8-item scale measuring conflict in front of the child measured on a 5-point scale (1 = Never, 5 = Very often; $\alpha = .96$ ).	5-16 years  (Utilized at 1-17 years)	Intact parents (Utilized for intact parents, stepfamilies and single mothers with non-paternal coparent)	9
Quality of Coparenting Questionnaire (Stright & Bales, 2003)	12-item Coparenting in Family of Origin Scale measuring parents’ reports of their own parents’ supportive and unsupportive coparenting behaviors (1 = never, 5 = always), comprised of 6 supportive and 6 unsupportive items ( $\alpha = .89 - .92$ ).	3-5 years & adult report of coparenting of family	Intact families (Utilized in intact and divorced families)	8

	14-item scale of Parents' perceptions of the coparenting relationship (1=never, 5 = always), comprised of 7 supportive and 7 unsupportive coparenting items ( $\alpha = .75 - .83$ ).	origin (Utilized from 1 year – 35 years)		
Relationship Between Former Spouse Scale (Goldsmith, 1980)	10 items exploring how often on a 5-point Likert scale (1=always, 5=never) that the parent communicates with ex-spouse about child-related issues/topics. 11 items exploring how often on a 5 point Likert Scale (1=always, 5=never) parent receives support from/there is conflict with ex-spouse (7-item support subscale and 4-item conflict subscale). 13-item subscale measuring how often on a 5 point Likert scale (1=daily, 5=never) the parent discusses non-child-related topics with former spouse. 10-item subscale measured on a 5 point Likert scale (1=very much, 5=not at all) reporting on how much involvement father has in childrearing activities. 20-item scale measuring attachment (4 items), hostility (3 items), caring (4 items) and guilt (4 items) towards former spouse, as well of perceptions of former spouse as a parent (4 items). $\alpha = .89- .93$	<18 years	Divorced parents (Utilized by intact and divorced/divorcing families)	8
Who Does What? (Cowan & Cowan, 1990)	Three 12-item subscales asking about division of labor: Household and family tasks subscale, including laundry, cooking, gardening and car maintenance;  Family decisions subscale, including vacation, partner's involvement in work outside the family and amount of involvement in the community; Child-related tasks subscale, such as feeding, dressing, bathing, arranging for childcare or babysitting, calling the doctor.  [No access: Info from Cowan, C. P., & Cowan, P. A. (1988). Who does what when partners become parents: Implications for men,	(Utilized from prenatal-11 years).	(Utilized in intact biological and adoptive families)	7  (3 prenatal version, plus five instances of use as a discussion tool for dyadic interaction)

	women, and marriage. <i>Marriage &amp; Family Review</i> , 12(3-4), 105-131.]			
Family Experiences Questionnaire (Van Egeren & Hawkins, 2004; adapted from Frank, Jacobsen & Avery, 1988)	Modified 31-item General Alliance subscale from the 117-item self-report scale. Subscales have been modified to assess coparenting solidarity (10 items, $\alpha = .75 - .80$ ), support (10 items, $\alpha = .78 - .83$ ), undermining (6 items, $\alpha = .74 - .89$ ) and shared parenting (8 items, $\alpha = .82 - .84$ ). [Subscales also contained observations using the CFRS, and items from the Parental Regulation Inventory and the Caregiving Labor Inventory, but these have not been reported as being used by any researchers]	0-3 years  (Utilized from 0-7 years)	Intact couples	4  (+ 1 adaptation, and 1 adaptation of original scale = 6)
The Acrimony Scale (Shaw & Emer, 1987)	25-item questionnaire assessing areas of conflict between divorced parents on a 4-point scale (1=almost never, 4=almost always). Used to measure "coparental conflict", $\alpha = .83 - .88$	5-12 years (Utilized from 2 years-adulthood).	Divorced parents	5
Domains of Marriage Scale (Huston, McHale & Crouter, 1986)	3-item Coparenting satisfaction scale rated by mother and fathers on a 9-point Likert scale (1 = extremely dissatisfied, 9 = extremely satisfied), exploring satisfaction with coparent's values, satisfaction with coparent's support in decision making, and satisfaction with the level of influence in decision making ( $\alpha = .84 - .89$ ).	Utilized from pre-late adolescence	Intact families	3

Table 8

*Coparenting observation coding schemes*

<b>Coding Scheme</b>	<b>Details of Coding Scheme</b>	<b>Citation</b>	<b>Target Age</b>	<b>Target Population</b>	<b>No. papers utilized</b>
Coparenting and Family Rating Scale (CFRS)	Codes for coparenting and family ratings: <i>competition, cooperation, verbal sparring, couple warmth, child-centredness</i> .  Codes for dyadic ratings: <i>warmth, negativity, investment, provision of structure and sensitivity</i> .	McHale, Kuersten-Hogan & Lauretti (2000)	(Utilized from 1 month – 11 years)	Intact families	24 (+2 uses before scale was officially named and published)
Coparenting Behavior Coding Scale	Codes for <i>pleasure, warmth, cooperation, displeasure, coldness, anger and competition</i> .	Cowan & Cowan (1996) / Schoppe, Mangelsdorf & Frosch (2001)	(Utilized prenatal – 5 years)	Intact families	18
The Family Alliance Assessment Scales	Family alliance codes: <i>Participation (postures and gazes, inclusion of partners); Organization (role implication, structure); Focalization (Co-construction; parental scaffolding); Affect sharing (family warmth, validation, authenticity); Timing/synchronization (interactive mistakes during activities, interactive mistakes during transitions); Coparenting (support, conflicts); Infant (involvement, self-regulation)</i> .	Lavanchy Scaiola, Favez, Tissot & Frascarolo (2008)	0-5 years	Intact families	5
Family-Level Interaction and Co-parenting Coding System	Five scales assessing coparenting, with codes for <i>negativity, disengagement/withdrawal, neutral conversation, cooperation and positive affect</i> . Five scales for family-level processes, with codes for <i>playfulness, cohesiveness, adaptability, conflict and negativity</i> . Each code is rated on a 5-point Likert scale, ranging from low to high.	Low, Katz, Young & Kahm (1997)	4-6 years	Intact families	3



Table 9

*Titles of coparenting questionnaire measures and coding schemes used in two or less studies.*

<b>Questionnaire measure/coding scheme</b>	<b>Citation</b>	<b>No. of times Utilized</b>
Diabetes-Specific Coparenting Questionnaire	Barzel & Reid (2008)	2
The Measure of Coparenting Alliance	Dumka, Prost & Barrera (2002)	2
Ideas About Parenting Scale	Heming, Cowan & Cowan (1991)	2
Childrearing Issues: Self and Spouse Scale	Hetherington & Clingempeel (1992)	2
Child-Rearing Disagreements Scale	Jouriles et al. (1991)	2
Co-Parenting Behavior Questionnaire (CBQ)	Mullett & Stolberg (1999)	2
Coparenting Consistency and Coparenting Techniques Questionnaire	Newland, Coyle & Freeman (2008)	2
Marital Satisfaction Inventory- Revised	Snyder (1997)	2
Coparenting Division of Labor Scale	Parent, Jones, Forehand, Cuellar & Shoulberg (2013), adapted from Wood & Repetti (2004)	2
Parenting Style Questionnaire	Aunola & Nurmi (2004)	1
Barriers to Coparenting Contact Questionnaire	Braver et al. (1993)	1
The Parental Effort Scales	Cabeza De Baca, Figueredo & Ellis (2012)	1
Casey Foster Applicant Inventory-Applicant-Co-Parenting Scale (CFAI-CP)	Cherry & Orme (2011)	1
Parent Problems Checklist	Dadds & Powell (1991)	1
Family functioning Style Scale	Dunst, Trivette & Deal (1998)	1
Content of Conflict Checklist	Johnston (1996)	1
Coparenting Practices Scale	Linares et al. (2005)	1
Bengston Scale of Intergenerational Solidarity	Mangen, Benson & Landry (1988)	1
Family adaptability and cohesion scale	Olson (1986)	1
Mindfulness in coparenting scale (MICS)	Parent et al. (2016)	1
Parenting Style & Dimension Questionnaire	Robinson, Mandelco, Olsen & Hart (2001)	1

Post-Divorce Conflict Scale	Sonnenblick & Schwarz (1992)	1
Communication Danger Signs Scale	Stanley & Markman (1997)	1
The Confidence Scale	Stanley et al. (2001)	1
Structured Child Assessment of Relationships in Families (SCARF)	Strachen, Lund & Garcia (2010)	
Psychological Adjustment to Separation Test	Sweeper & Halford (2006)	1
The coparenting inventory for parents and adolescents (CI-PA)	Teubert & Pinquart (2011)	1
Adjustment to Divorce- Separation Questionnaire	Yárnoz-Yaben & Comino (2010)	1
Support Received from the Former Spouse Questionnaire	Yárnoz-Yaben (2010)	1
Multidimensional Co-parenting Scale for Dissolved Relationships (MCS-DR)	Ferraro, Malespin, Oehme, Bruker& Opel (2016)	1
Triadic Interaction Coding System (TICS).	Shapiro, 1996	1
Revised-Picnic Assessment Scale (Re-PAS)	Favez, Frascarolo & Grimard, 2016	1
System for Coding Interactions in Dyads.	Malik & Lindahl, 2004	1
Intergenerational Coparenting Incarceration Coding System	Baker, McHale, Strozier & Cecil, 2010	1
System for Coding Interactions and Family Functioning (SCIFF)	Lindahl & Malik, 1994	1
Kahen Affect Coding System	Kahen, 1993	1
Coparenting style ratings	Cowan and Cowan, 1987 (Cited in Katz & Gottman, 1996)	1

## Discussion

This review demonstrates the wide range of measurement tools used to examine the coparenting relationship. The review identified 376 articles measuring coparenting, 270 of which used questionnaires, 79 used observation coding schemes and 38 used qualitative methods. This review identified 44 quantitative questionnaire measures, 13 of which were utilized three or more times, and 30 of which only once or twice. Additionally, 74 articles were identified that use unspecified/bespoke questionnaire measures. This review also identified 11 observation coding schemes. Furthermore, 38 studies were identified that use qualitative methods to examine coparenting.

Findings demonstrate that studies use the same measure to assess different coparenting constructs and a wide range of measures to assess the same coparenting construct, highlighting the large discrepancies in coparenting measurement. For example, coparenting support and undermining was assessed using a range of observational and questionnaire measures, including the Coparenting Behavior Coding Scale (Schoppe-Sullivan et al., 2001), the Coparenting Relationship Scale (Feinberg et al., 2012), the Coparenting Questionnaire (Margolin et al., 2001) and the Quality of Coparenting Questionnaire (Stright & Bales, 2003). Additionally, although the Coparenting Questionnaire (Margolin et al., 2001) was designed to assess cooperation, conflict and triangulation, this measure was used to assess constructs such as coparenting support (Huntington & Vetere, 2015), coparenting alliance (Braver et al., 2016), undermining (Song & Volling, 2015) and overall coparenting (Rye et al., 2012). This finding is of key relevance for the interpretation of findings across the coparenting literature, particularly when examining associations between coparenting and child mental health and other family processes (e.g., the interparental and parent-child relationship). Specifically, it is important to recognize that studies examining a certain

defined coparenting construct may not be measuring the same behaviors, and that studies may be using the same measure but differing in their terminology of a coparenting construct (i.e., measuring the same construct but labelling it as a different coparenting construct). Associations between coparenting and family processes and child development across the coparenting literature may therefore represent distinct findings. It is important for future research to develop consistency of definition and operationalization of the coparenting relationship to enable a coherent understanding of the role that coparenting (and specific coparenting constructs) plays within the family system for children's development.

Limitations of this review should be acknowledged. Firstly, although the search term "co-parent\* OR coparent\*" was used with the intention of identifying as many measures as possible, it is possible that papers could have been examining core coparenting constructs without referring to the specific term coparenting. Additionally, the review may have identified additional measures by including articles published in languages other than English and by using additional databases for the search.

In conclusion, this review highlights the wide inconsistency in coparenting measurement and provides details of the 13 most-used coparenting questionnaire measures and the four most-used observation coding schemes, and outlines the different coparenting constructs that these scales have been used to examine. Findings from this review enable future research to develop consistency in definition and measurement of the coparenting relationship, and to interpret findings from past research within the coparenting relationship at face value (i.e., by recognizing the operational specification of the coparenting construct relative to construct terminology). This review enables future research to develop understanding of how the coparenting relationship (and specific coparenting constructs) relates to family processes and child mental health.

## **Appendix B: Additional results for chapter 4 (study 2)**

### **Model 1 – Interparental Conflict, Parent Hostility and Child Adjustment**

Figure 15 represents SEM results for the model examining composite parent hostility (mother and father hostility combined) as a mediator in the relationship between interparental conflict and child internalizing and externalizing problems. Figure 15 shows standardized beta coefficients, whilst the text shows standardized and unstandardized beta coefficients with 95% confidence intervals. Fit indices showed that the model had good fit to the data,  $\chi^2(35) = 61.59$ ,  $p < .01$ , CFI = .95, RMSEA = .05. Interparental conflict was associated with early child adjustment ( $\beta = .27$ , [ $b = 1.78$ , (.61, 2.90)],  $p < .01$ ). Early adjustment problems predicted more hostile parenting ( $\beta = .44$ , [ $b = .50$ , (.26, .73)],  $p < .01$ ), but interparental conflict did not predict hostility. Child internalizing problems were predicted by early adjustment ( $\beta = .52$ , [ $b = .10$ , (.06, .15)],  $p < .01$ ), but were not significantly predicted by parent hostility. Child externalizing problems were predicted by parent hostility ( $\beta = .36$ , [ $b = .97$ , (.23, 1.71)],  $p = .01$ ) and early adjustment ( $\beta = .48$ , [ $b = 1.46$ , (.86, 2.07)],  $p < .01$ ), with greater hostility and adjustment problems predicting higher externalizing problems.

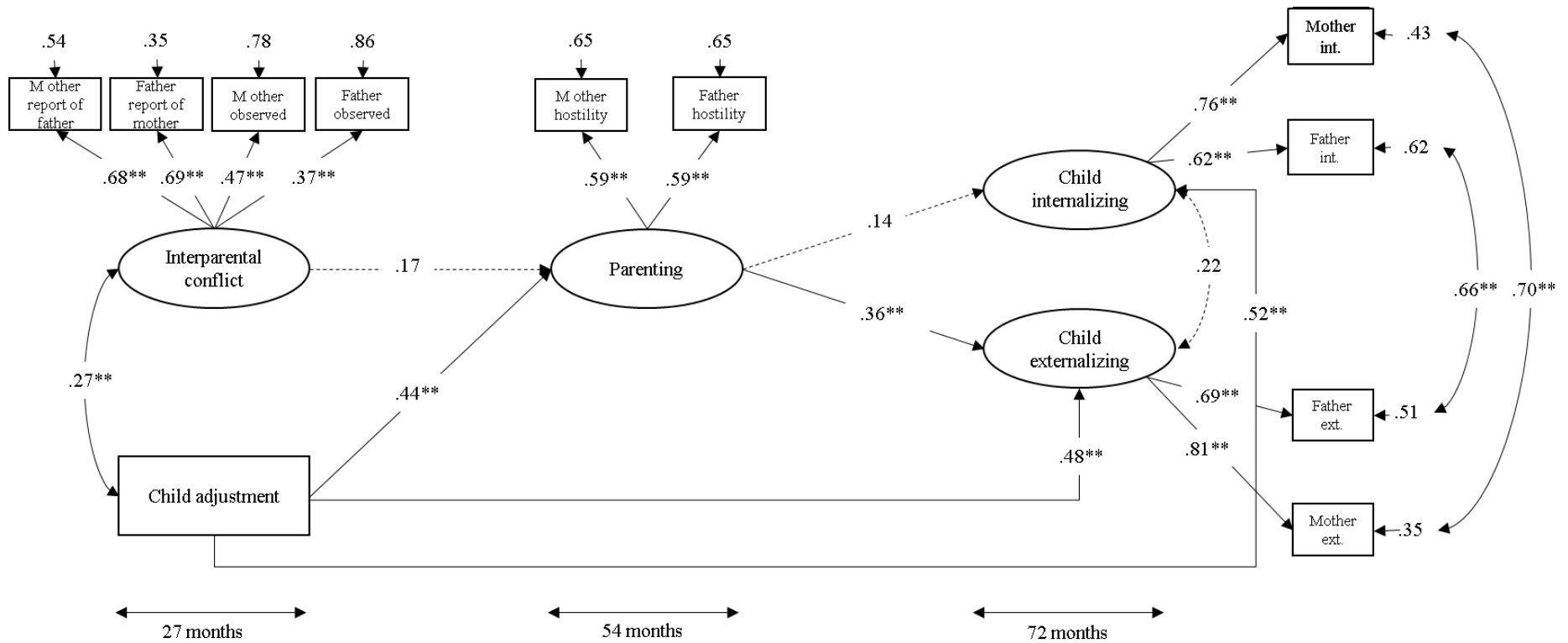


Figure 15. Model with results for associations between interparental conflict, composite parent hostility and child adjustment, showing standardized coefficients, \*  $p < .05$ , \*\*  $p < .01$ . Dashed lines represent non-significant paths. “int.” = internalizing, “ext.” = externalizing.

## **Model 2 – Interparental Conflict, Maternal and Paternal Hostility, and Child adjustment**

Figure 16 represents SEM results for the model examining mother and father hostility as mediators in the relationship between interparental conflict and child internalizing and externalizing problems. Figure 16 shows standardized beta coefficients, whilst the text shows standardized and unstandardized beta coefficients with 95% confidence intervals. Fit indices showed that the model had good fit to the data,  $\chi^2(32) = 53.75$ ,  $p < .01$ , CFI = .96, RMSEA = .05. Interparental conflict was significantly associated with child adjustment ( $\beta = .24$ , [ $b = 1.66$ , (.53, 2.78)],  $p < .01$ ). Early child adjustment problems predicted higher levels of mother-to-child hostility ( $\beta = .30$ , [ $b = .57$ , (.31, .83)],  $p < .01$ ), and father-to-child hostility ( $\beta = .20$ , [ $b = .36$ , (.11, .62)],  $p < .01$ ). Interparental conflict predicted higher levels of father-to-child hostility ( $\beta = .24$ , [ $b = .17$ , (.05, .29)],  $p < .01$ ) but did not predict mother hostility. Mother-to-child hostility was significantly associated with father-to-child hostility ( $\beta = .28$ , [ $b = 1.99$ , (.94, 3.05)],  $p < .01$ ). Child internalizing problems were predicted by early adjustment ( $\beta = .56$ , [ $b = .11$ , (.07, .15)],  $p < .01$ ), but were not significantly predicted by either mother-to-child hostility or father-to-child hostility. Child externalizing problems were significantly predicted by father-to-child hostility ( $\beta = .17$ , [ $b = .29$ , (.05, .53)],  $p = .02$ ) and early adjustment ( $\beta = .57$ , [ $b = 1.74$ , (1.22, 2.25)],  $p < .01$ ), but were not significantly predicted by mother-to-child hostility.

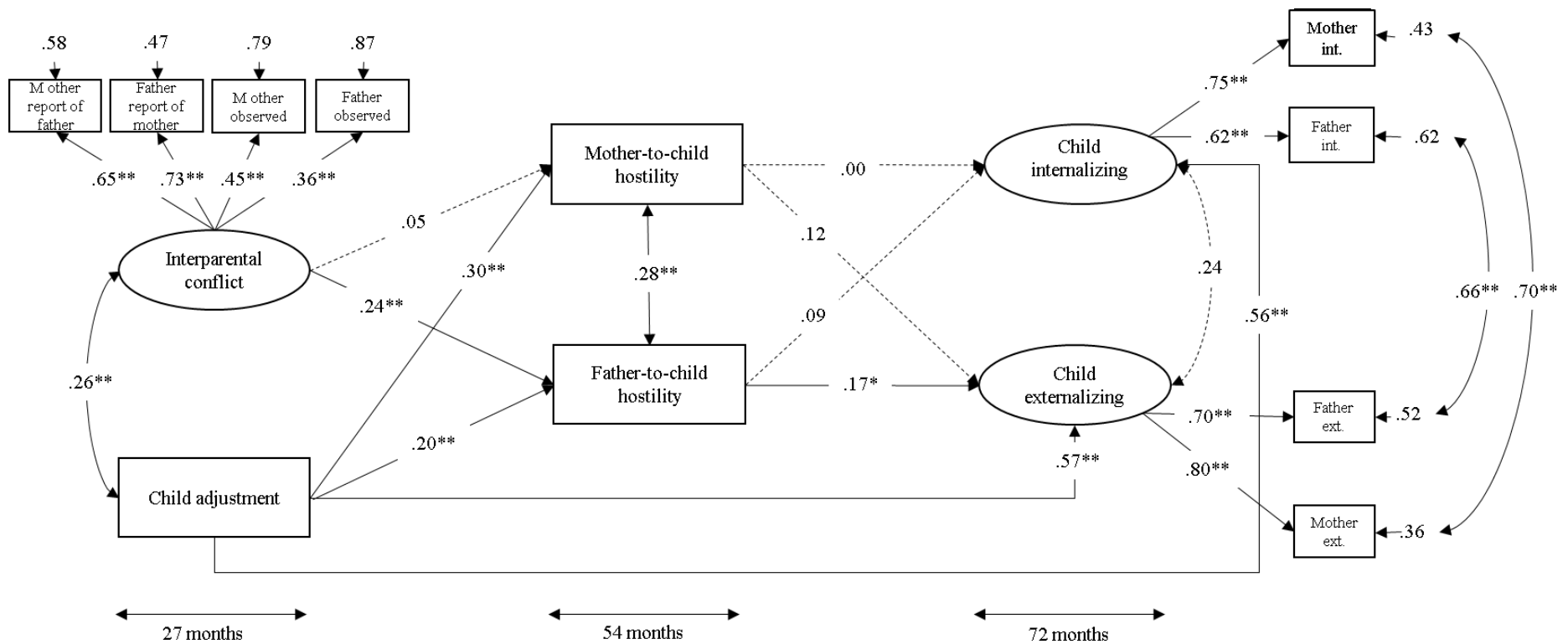


Figure 16. Model with results for associations between interparental conflict, maternal and paternal parenting, and child adjustment, showing standardized coefficients, \*  $p < .05$ , \*\* $p < .01$ . Dashed lines represent non-significant paths. “int.” = internalizing, “ext.” = externalizing.



### Model 3 – Interparental Conflict, Coparenting and Child Adjustment

Figure 17 represents SEM results for the model examining coparenting as a mediator in the relationship between interparental conflict and child internalizing and externalizing problems. Figure 17 shows standardized beta coefficients, whilst the text shows standardized and unstandardized beta coefficients with 95% confidence intervals. Fit indices showed that the model had adequate fit to the data,  $\chi^2(27) = 52.54$ ,  $p < .01$ , CFI = .95, RMSEA = .06. Interparental conflict was significantly associated with child adjustment ( $\beta = .27$ , [ $b = 1.72, (.62, 2.82)$ ],  $p < .01$ ). Poor coparenting was significantly predicted by higher levels of interparental conflict ( $\beta = .26$ , [ $b = .07, (.02, .11)$ ],  $p < .01$ ), but was not significantly predicted by early adjustment. Child internalizing problems were significantly predicted by child adjustment ( $\beta = .59$ , [ $b = .11, (.08, .15)$ ],  $p < .01$ ), but were not significantly predicted by coparenting. Similarly, child externalizing problems were significantly predicted by early adjustment ( $\beta = .64$ , [ $b = 1.94, (1.42, 2.47)$ ],  $p < .01$ ), but were not significantly predicted by coparenting.

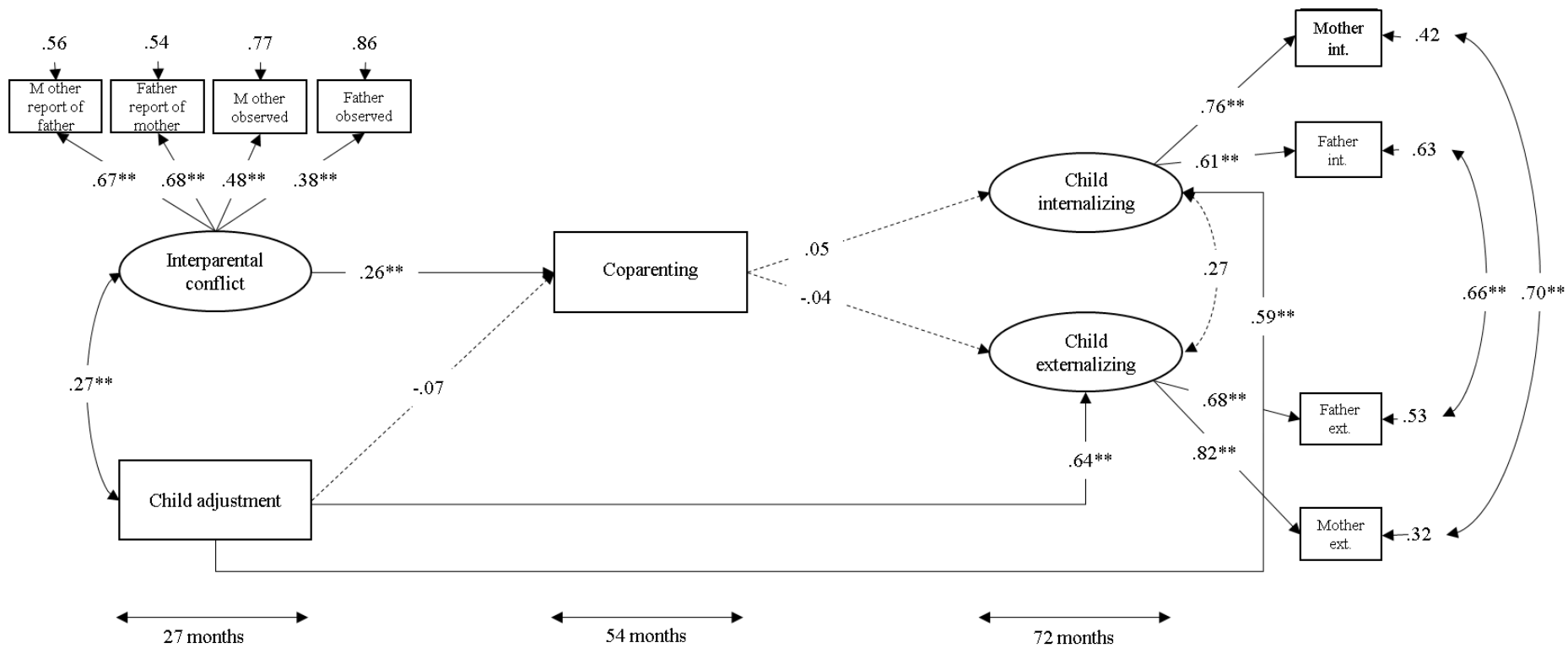


Figure 17. Model with results for associations between interparental conflict, coparenting and child adjustment, showing standardized coefficients, \*  $p < .05$ , \*\* $p < .01$ . Dashed lines represent non-significant paths. “int.” = internalizing, “ext.” = externalizing.

## Appendix C: Results from moderation analysis for chapter 5 (study 3)

Table 10

*Results from regression analyses showing moderating effects of coparenting in relationship between interparental conflict and maternal and paternal parenting practices.*

							95% Confidence intervals	
Dependent variable	Parameter	B	Std. Error	$\beta$	t	Sig.	Lower bound	Upper bound
M hostility	(Constant)	9.91	2.33		4.25	<.01	5.33	14.48
	IPC	.02	.01	.11	1.81	.07	-.00	.05
	Coparenting	-.05	.18	-.02	-.27	.79	-0.39	0.30
	Coparenting * IPC	.00	.01	.00	.05	.96	-0.02	.03
F hostility	(Constant)	9.05	2.45		3.70	<.01	4.22	13.88
	IPC	.06	.02	.26	3.67	<.01	.03	.09
	Coparenting	-.16	.18	-.06	-.86	.39	-.52	.20
	Coparenting * IPC	-.01	.01	-.03	-.49	.62	-.03	.02
M warmth	(Constant)	11.21	.76		14.81	<.01	9.72	12.70
	IPC	.00	.00	.01	.18	.86	-.01	.01
	Coparenting	.06	.06	.07	1.05	.30	-.05	.17
	Coparenting * IPC	-.001	.00	-.02	-.29	.77	-.01	.01
F warmth								

	(Constant)	29.24	2.81		10.42	<.01	23.71	34.78
	IPC	.02	.02	.09	1.32	.19	-.01	.053
	Coparenting	-.07	.21	-.02	-.32	.75	-.49	.35
	Coparenting * IPC	.01	.01	.04	.64	.52	-.02	.04
M positive parenting	(Constant)	12.33	.45		27.61	<.01	11.45	13.21
	IPC	0	.00	.00	.05	.96	-.01	.01
	Coparenting	.03	.03	.05	.72	.47	-.04	.09
	Coparenting * IPC	-.00	.00	-.02	-.35	.73	-.01	.00
F positive parenting	(Constant)	23.27	1.88		12.39	<.01	19.58	26.96
	IPC	.01	.01	.04	.58	.56	-.02	.03
	Coparenting	-.06	.14	-.03	-.39	.70	-.34	.23
	Coparenting * IPC	.03	.01	.02	.25	.80	-.02	.02
M inconsistent discipline	(Constant)	9.76	2.36		4.13	<.01	5.08	14.43
	IPC	.02	.01	.10	1.46	.14	-.01	.05
	Coparenting	.08	.18	.03	.45	.66	-.28	.44
	Coparenting * IPC	.01	.01	.07	1.03	.31	-.01	.03
F inconsistent discipline	(Constant)	9.50	2.28		4.17	<.01	4.99	14.01
	IPC	.05	.01	.26	3.94	<.01	.03	.08
	Coparenting	-.03	.17	-.01	-.15	.89	-.36	.31
	Coparenting * IPC	.01	.01	.05	.81	.42	-.01	0.03
M harsh discipline	(Constant)	8.75	1.63		5.36	<.01	5.54	11.96
	IPC	.01	.01	.05	.79	.43	-.01	.026

F harsh discipline	Coparenting	-.02	.12	-.01	-.18	.86	-.26	.22
	Coparenting * IPC	-.01	.01	-.07	-1.09	.28	-.03	.01
	(Constant)	7.58	1.86		4.08	<.01	3.92	11.24
	IPC	.02	.01	.13	2.00	.05	.00	.04
	Coparenting	.02	.14	.01	.16	.87	-.26	.30
	Coparenting * IPC	-.01	.01	-.01	-.28	.78	-.02	.02

M = mother, F = father, IPC = interparental conflict.

Table 11

*Results for regression showing moderating effect of coparenting in the relationship between parenting and internalizing problems.*

Parenting behavior	Parameter	B	Std. Error	$\beta$	t	Sig.	95% Confidence intervals	
							Lower bound	Upper bound
M hostility	(Constant)	31.81	.84		37.16	<.01	30.13	33.48
	M hostility	.05	.02	0.17	2.28	.03	.01	.10
	Coparenting	.03	.06	0.03	0.46	.65	-.09	.15
	Coparenting * M hostility	-.01	.02	-0.05	-0.67	.51	-.05	.03
F hostility	(Constant)	31.72	.86		36.79	<.01	30.01	33.44
	F hostility	.06	.02	0.21	2.73	.01	.02	.11
	Coparenting	.03	.06	0.04	0.45	.65	-.10	.15
	Coparenting * F hostility	-.02	.02	-0.06	-0.77	.45	-.07	.03
M warmth								

F warmth	(Constant)	30.36	1.16		26.28	<.01	28.07	32.66
	M warmth	.18	.08	0.19	2.35	.02	.03	.33
	Coparenting	.02	.06	0.02	0.24	.81	-.11	.14
	Coparenting * M warmth	-.05	.06	-0.05	-0.76	.45	-.17	.08
M positive parenting	(Constant)	31.96	1.05		30.51	<.01	29.87	34.05
	F warmth	.01	.02	.05	.63	.53	-.03	.05
	Coparenting	.03	.06	.04	.46	.65	-.10	.16
	Coparenting * F warmth	-.01	.02	-.03	-.50	.62	-.04	.02
F positive parenting	(Constant)	29.31	1.63		18.01	<.01	26.09	32.53
	M positive parenting	.25	.12	.15	2.15	.03	.02	.48
	Coparenting	.02	.06	.02	.31	.76	-.10	.14
	Coparenting * M positive parenting	-.07	.11	-.05	-.66	.51	-.29	.15
M inconsistent discipline	(Constant)	32.37	1.01		32.20	<.01	30.38	34.37
	F positive parenting	.00	.03	.00	-.02	.99	-.05	.05
	Coparenting	.03	.06	.03	.45	.66	-.10	.15
	Coparenting * F positive parenting	-.00	.02	.00	-.03	.98	-.05	.05
F inconsistent discipline	(Constant)	31.92	.82		38.94	<.01	30.30	33.54
	M inconsistent discipline	.05	.02	.16	2.11	.04	.00	.10
	Coparenting	.01	.06	.02	.24	.81	-.11	.14
	Coparenting * M inconsistent discipline	.02	.02	.05	.66	.51	-.03	.06
	(Constant)	31.99	.90		35.74	<.01	30.21	33.78
	F inconsistent discipline	.04	.03	.11	1.41	.16	-.02	.09

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
M harsh discipline	Coparenting	.02	.06	.03	.35	.73	-.10	.15
	Coparenting * F inconsistent discipline	.01	.02	.02	.35	.73	-.03	.05
	(Constant)	32.07	0.86		37.17	<.01	30.35	33.78
	M harsh discipline	.03	0.03	0.08	1.09	.28	-.03	.09
	Coparenting	.03	0.06	0.04	.45	.65	-.10	.15
F harsh discipline	Coparenting * M harsh discipline	.00	0.03	0	.01	1.00	-.05	.05
	(Constant)	32.13	0.82		39.00	<.01	30.50	33.77
	F harsh discipline	.03	0.03	0.08	1.04	.30	-.03	.09
	Coparenting	.03	0.06	0.03	.39	.70	-.10	.15
	Coparenting *F harsh discipline	-.01	0.03	-0.02	-.21	.83	-.06	.05

M = mother, F = father

Table 12

*Results for regression showing moderating effect of coparenting in the relationship between parenting and externalizing problems.*

Parenting behavior	Parameter	B	Std. Error	$\beta$	T	Sig.	95% confidence intervals lower bound upper bound
M hostility	(Constant)	61.48	10.09		6.09	<.01	41.52 81.43
	M hostility	1.24	.27	.31	4.64	<.01	.71 1.76
	Coparenting	-.57	.73	-.05	-.79	.43	-2.01 .87
	Coparenting * M hostility	-.22	.25	-.06	-.88	.38	-.71 .27
F hostility							

M warmth	(Constant)	60.27	9.45		6.38	<.01	41.65	78.88
	F hostility	1.35	.28	.33	4.83	<.01	.80	1.91
	Coparenting	-.53	.70	-.05	-.75	.45	-1.91	.85
	Coparenting * F hostility	-.17	.28	-.04	-.58	.56	-.72	.39
F warmth	(Constant)	44.19	13.62		3.24	<.01	17.34	71.04
	M warmth	2.76	.98	.21	2.82	.01	.82	4.70
	Coparenting	-.77	.74	-.07	-1.04	.30	-2.24	.70
	Coparenting * M warmth	-1.24	.83	-.10	-1.49	.14	-2.87	.40
M positive parenting	(Constant)	60.13	11.82		5.09	<.01	36.86	83.41
	F warmth	.49	.26	.14	1.90	.06	-.02	1.01
	Coparenting	-.57	.76	-.05	-.76	.45	-2.07	.92
	Coparenting * F warmth	-.05	.19	-.02	-.24	.81	-.43	.34
F positive parenting	(Constant)	45.91	19.92		2.31	.02	6.77	85.06
	M positive parenting	2.36	1.52	.11	1.56	.12	-.63	5.35
	Coparenting	-.65	.75	-.06	-.87	.39	-2.14	.83
	Coparenting * M positive parenting	-.34	1.46	-.02	-.23	.82	-3.21	2.53
M inconsistent discipline	(Constant)	72.91	11.80		6.18	<.01	49.71	96.12
	F positive parenting	.09	.37	.02	.23	.82	-.65	.82
	Coparenting	-.58	.75	-.05	-.78	.44	-2.06	.90
	Coparenting * F positive parenting	-.07	.31	-.02	-.24	.81	-.68	.53
M inconsistent discipline	(Constant)	67.86	9.98		6.80	<.01	48.20	87.53
	M inconsistent discipline	.71	.30	.16	2.34	.02	.11	1.31



	Coparenting	-.70	.75	-.07	-.93	.36	-2.17	.78
	Coparenting * M inconsistent discipline	-.08	.30	-.02	-.28	.78	-.68	.52
F inconsistent discipline	(Constant)	69.82	10.55		6.62	<.01	48.97	90.66
	F inconsistent discipline	.47	.30	.11	1.57	.12	-.12	1.07
	Coparenting	-.64	.76	-.06	-.84	.40	-2.13	.86
	Coparenting * F inconsistent discipline	-.02	.29	.00	-.05	.96	-.58	.55
M harsh discipline	(Constant)	67.15	9.98		6.73	<.01	47.49	86.81
	M harsh discipline	.83	.40	.14	2.07	.04	.04	1.63
	Coparenting	-.56	.75	-.05	-.74	.46	-2.05	.93
	Coparenting * M harsh discipline	-.07	.34	-.01	-.21	.83	-.73	.59
F harsh discipline	(Constant)	66.61	9.81		6.79	<.01	47.29	85.94
	F harsh discipline	1.01	.34	.19	2.92	<.01	.33	1.68
	Coparenting	-.65	.74	-.06	-.88	.38	-2.12	.82
	Coparenting * F harsh discipline	-.02	.37	.00	-.05	.96	-.74	.70

M = mother, F = fathers

## References

- Abidin, R. R., & Brunner, J. F. (1995). Development of a parenting alliance inventory. *Journal of Clinical Child Psychology*, 24(1), 31-40.
- Abidin, R. R., & Konold, T. R. (1999). *PAM: parenting alliance measure: professional manual*. Psychological Assessment Resources.
- Achenbach, T. M. (1990). Conceptualization of developmental psychopathology. In *Handbook of developmental psychopathology* (pp. 3-14). Springer US.
- Achenbach, T. M. (1991). *Manual for the Child Behavior Checklist/4-18 and 1991 Profile*. Burlington, VT: University of Vermont Department of Psychiatry
- Adler-Baeder, F., Garneau, C., Vaughn, B., McGill, J., Harcourt, K. T., Ketring, S., & Smith, T. (2016). The Effects of Mother Participation in Relationship Education on Coparenting, Parenting, and Child Social Competence: Modeling Spillover Effects for Low-Income Minority Preschool Children. *Family Process*, 57(1), 113-130.
- Ahrons, C. R. (1981). The continuing coparental relationship between divorced spouses. *American Journal of Orthopsychiatry*, 51(3), 415-428.
- Amato, P. R. (2001). Children of divorce in the 1990s: an update of the Amato and Keith (1991) meta-analysis. *Journal of Family Psychology*, 15(3), 355-370.
- Amato, P. R., & Keith, B. (1991). Parental divorce and the well-being of children: a meta-analysis. *Psychological bulletin*, 110(1), 26-46.

- American Psychological Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)*. American Psychiatric Pub.
- Angold, A., & Costello, E. (2001). The epidemiology of depression in children and adolescents. In *The depressed child and adolescent* (Vol. 2, pp. 143–178). New York: Cambridge University Press.
- Aronen, E. T., & Soininen, M. (2000). Childhood depressive symptoms predict psychiatric problems in young adults. *The Canadian Journal of Psychiatry*, 45(5), 465-470.
- Aunola, K., & Nurmi, J. E. (2004). Maternal psychological control moderates the impact of affection on children's math performance. *Developmental Psychology*, 40, 965–978. doi:10.1037/0012-1649.40.6.965
- Baker, J., McHale, J., Strozier, A., & Cecil, D. (2010). Mother–grandmother coparenting relationships in families with incarcerated mothers: A pilot investigation. *Family process*, 49(2), 165-184.
- Bandura, A. (1971). Vicarious and self-reinforcement processes. *The nature of reinforcement*. New York: Academic Press, Inc.
- Barbarese, W. J., Katusic, S. K., Colligan, R. C., Weaver, A. L., & Jacobsen, S. J. (2007). Long-term school outcomes for children with attention-deficit/hyperactivity disorder: a population-based perspective. *Journal of Developmental & Behavioral Pediatrics*, 28(4), 265-273.

- Baril, M. E., Crouter, A. C., & McHale, S. M. (2007). Processes linking adolescent well-being, marital love, and coparenting. *Journal of Family Psychology*, 21(4), 645-654.
- Barker, B., Iles, J. E., & Ramchandani, P. G. (2017). Fathers, fathering and child psychopathology. *Current Opinion in Psychology*, 15, 87-92.
- Barkley, R. A. (2002). Major life activity and health outcomes associated with attention-deficit/hyperactivity disorder. *The Journal of Clinical Psychiatry*, 63(12), 10-15.
- Barzel, M., & Reid, G. J. (2008). *Diabetes-Specific Coparenting Questionnaire (DCQ)*. Unpublished instrument. The University of Western Ontario.
- Basco, M. R., Prager, K. J., Pita, J. M., Tamir, L. M., & Stephens, J. J. (1992). Communication and intimacy in the marriages of depressed patients. *Journal of Family Psychology*, 6(2), 184-194.
- Bayer, J. K., Sanson, A. V., & Hemphill, S. A. (2006). Parent influences on early childhood internalizing difficulties. *Journal of Applied Developmental Psychology*, 27(6), 542-559.
- Becher, E. H., Cronin, S., McCann, E., Olson, K. A., Powell, S., & Marczak, M. S. (2015). Parents forever: Evaluation of an online divorce education program. *Journal of Divorce & Remarriage*, 56(4), 261-276.
- Beck, A., Steer, R. (1993) *Beck Depression Inventory Manual*. The Psychological Corporation. Harcourt Brace Jovanovich, Inc.

- Beckmeyer, J. J., & Arditti, J. A. (2014). Implications of in-person visits for incarcerated parents' family relationships and parenting experience. *Journal of Offender Rehabilitation*, 53(2), 129-151.
- Belsky, J., & Jaffee, S. R. (2006). The multiple determinants of parenting. In. Cicchetti, D. & Cohen, D.J., *Developmental Psychopathology, Risk, Disorder, and Adaptation*, pp. 39-86. New Jersey: John Wiley & Sons.
- Belsky, J., & Pluess, M. (2009). Beyond diathesis stress: differential susceptibility to environmental influences. *Psychological Bulletin*, 135(6), 885-908.
- Belsky, J., Putnam, S., & Crnic, K. (1996). Coparenting, parenting, and early emotional development. *New Directions for Child and Adolescent Development*, 1996(74), 45-55.
- Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development*, 62(4), 647-670.
- Bolhuis, J.J. & Hogan, J.A. (2017) Ethological theories. In Hopkins, B., Geangu, E. & Linkenauer, S. (Eds.) *The Cambridge Encyclopedia of Child development*. , Cambridge: Cambridge University press.
- Bonach, K. (2008). Empirical support for the application of the forgiveness intervention model to postdivorce coparenting. *Journal of Divorce & Remarriage*, 50(1), 38-54.

- Bonds, D. D., & Gondoli, D. M. (2007). Examining the process by which marital adjustment affects maternal warmth: The role of coparenting support as a mediator. *Journal of Family Psychology, 21*(2), 288-296.
- Bornovalova, M. A., Cummings, J. R., Hunt, E., Blazei, R., Malone, S., & Iacono, W. G. (2014). Understanding the relative contributions of direct environmental effects and passive genotype–environment correlations in the association between familial risk factors and child disruptive behavior disorders. *Psychological Medicine, 44*(4), 831-844.
- Bos, H. M., Van Balen, F., & Van den Boom, D. C. (2007). Child adjustment and parenting in planned lesbian-parent families. *American Journal of Orthopsychiatry 77*(1), 38.
- Bouchard, T. J., Lykken, D. T., McGue, M., Segal, N. L., & Tellegen, A. (1990). Sources of human psychological differences: The Minnesota study of twins reared apart. *Science, 250*(4978), 223-228.
- Bowers, J. R., Ogolsky, B. G., Hughes Jr, R., & Kanter, J. B. (2014). Coparenting Through Divorce or Separation: A Review of an Online Program. *Journal of Divorce & Remarriage, 55*(6), 464-484.
- Bowlby, J. (2012). *A secure base*. London: Routledge.
- Braver, S. L., Sandler, I. N., Cohen Hita, L., & Wheeler, L. A. (2016). A Randomized Comparative Effectiveness Trial of Two Court-Connected Programs for High-Conflict Families. *Family Court Review, 54*(3), 349-363.

Braver, S. L., Wolchick, S. A., Sandler, I. N., Sheets, V. L., Fogas, B., & Bay, R. C.

(1993). A longitudinal study of nonresidential parents: Parents without children.

*Journal of Family Psychology*, 7, 9–23.

Bronfenbrenner, U. (1979). *The ecology of human development*. London: Harvard University Press.

Bronfenbrenner, U. (1994). Ecological models of human development. *International Encyclopedia of Education*, 3(2), 37-43.

Bronfenbrenner, U., & Ceci, S. J. (1994). Nature-nuture reconceptualized in developmental perspective: A bioecological model. *Psychological Review*, 101(4), 568-586.

Bronte-Tinkew, J., Horowitz, A., & Carrano, J. (2010). Aggravation and stress in parenting: Associations with coparenting and father engagement among resident fathers. *Journal of Family Issues*, 31(4), 525-555.

Bronte-Tinkew, J., Scott, M. E., Horowitz, A., & Lilja, E. (2009). Pregnancy intentions during the transition to parenthood and links to coparenting for first-time fathers of infants. *Parenting: Science and Practice*, 9(1-2), 1-35.

Bruce, C., & Fox, G. L. (1999). Accounting for patterns of father involvement: age of child, father-child coresidence, and father role salience. *Sociological Inquiry*, 69(3), 458-476.

Buchanan, C. M., Maccoby, E. E., & Dornbusch, S. M. (1991). Caught between parents: Adolescents' experience in divorced homes. *Child Development*, 62(5), 1008-1029.

- Buehler, C., & Gerard, J. M. (2002). Marital conflict, ineffective parenting, and children's and adolescents' maladjustment. *Journal of Marriage and Family*, 64(1), 78-92.
- Buehler, C., & Welsh, D. P. (2009). A process model of adolescents' triangulation into parents' marital conflict: The role of emotional reactivity. *Journal of Family Psychology*, 23(2), 167-180.
- Buehler, C., Anthony, C., Krishnakumar, A., Stone, G., Gerard, J., & Pemberton, S. (1997). Interparental conflict and youth problem behaviors: A meta-analysis. *Journal of Child and Family Studies*, 6(2), 233-247.
- Bufferd, S. J., Dougherty, L. R., Carlson, G. A., Rose, S., & Klein, D. N. (2012). Psychiatric disorders in preschoolers: continuity from ages 3 to 6. *American Journal of Psychiatry*, 169(11), 1157-1164.
- Burchinal, M. R., Peisner-Feinberg, E., Pianta, R., & Howes, C. (2002). Development of academic skills from preschool through second grade: Family and classroom predictors of developmental trajectories. *Journal of School Psychology*, 40(5), 415-436.
- Burt, S. A., McGue, M., Krueger, R. F., & Iacono, W. G. (2007). Environmental contributions to adolescent delinquency: A fresh look at the shared environment. *Journal of Abnormal Child Psychology*, 35(5), 787-800.
- Cabeza De Baca, T., Figueredo, A. J., & Ellis, B. J. (2012). An evolutionary analysis of variation in parental effort: Determinants and assessment. *Parenting*, 12(2-3), 94-104.



Cabrera, N. J., Scott, M., Fagan, J., Steward-Streng, N., & Chien, N. (2012).

Coparenting and children's school readiness: A mediational model. *Family Process*, 51(3), 307-324.

Cabrera, N. J., Shannon, J. D., & La Taillade, J. J. (2009). Predictors of coparenting in Mexican American families and links to parenting and child social emotional development. *Infant Mental Health Journal*, 30(5), 523-548.

Cabrera, N. J., Volling, B. L., & Barr, R. (2018). Fathers Are Parents, Too! Widening the Lens on Parenting for Children's Development. *Child Development Perspectives*.

Caldera, Y. M., & Lindsey, E. W. (2006). Coparenting, mother-infant interaction, and infant-parent attachment relationships in two-parent families. *Journal of Family Psychology*, 20(2), 275-283.

Capaldi, D. M., & Clark, S. (1998). Prospective family predictors of aggression toward female partners for at-risk young men. *Developmental Psychology*, 34(6), 1175-1188.

Capaldi, D. M., Pears, K. C., Patterson, G. R., & Owen, L. D. (2003). Continuity of parenting practices across generations in an at-risk sample: A prospective comparison of direct and mediated associations. *Journal of Abnormal Child Psychology*, 31(2), 127-142.

Carbonneau, R., Boivin, M., Brendgen, M., Nagin, D., & Tremblay, R. E. (2016).

Comorbid development of disruptive behaviors from age 1½ to 5 years in a

population birth-cohort and association with school adjustment in first grade. *Journal of Abnormal Child Psychology*, 44(4), 677-690.

Carlson, M. J., McLanahan, S. S., & Brooks-Gunn, J. (2008). Coparenting and nonresident fathers' involvement with young children after a nonmarital birth. *Demography*, 45(2), 461-488.

Cartwright, C., & Gibson, K. (2013). The effects of co-parenting relationships with ex-spouses on couples in step-families. *Family Matters*, (92), 18.

Cartwright-Hatton, S., McNicol, K., & Doubleday, E. (2006). Anxiety in a neglected population: Prevalence of anxiety disorders in pre-adolescent children. *Clinical Psychology Review*, 26(7), 817-833.

Caspi, A., Moffitt, T. E., & Newman, D. L. (1998). Behavioral Observations at Age 3 Years Predict Adult Psychiatric Disorders: Longitudinal. In Farber, E. (Eds) *Annual Progress in Child Psychiatry and Child Development*. London: Taylor & Francis Ltd.

Chance, L. J., Costigan, C. L., & Leadbeater, B. J. (2013). Coparenting in immigrant Chinese Canadian families: the role of discrepancies in acculturation and expectations for adolescent assistance. *Journal of Family Psychology*, 27(6), 905-914.

Chen, B. B. (2017). Parent–adolescent attachment and academic adjustment: The mediating role of self-worth. *Journal of Child and Family Studies*, 26(8), 2070-2076.

- Cherry, D. J., & Orme, J. G. (2011). Validation study of a co-parenting scale for foster couples. *Journal of Public Child Welfare*, 5(5), 564-589.
- Christopher, C., Umemura, T., Mann, T., Jacobvitz, D., & Hazen, N. (2015). Marital quality over the transition to parenthood as a predictor of coparenting. *Journal of Child and Family Studies*, 24(12), 3636-3651.
- Cohen, O., & Levin, L. (2012). Impact of financial and employment status on the co-parenting of divorcing couples in Israel. *Journal of Family Studies*, 18(1), 47-61.
- Colman, I., Murray, J., Abbott, R. A., Maughan, B., Kuh, D., Croudace, T. J., & Jones, P. B. (2009). Outcomes of conduct problems in adolescence: 40 year follow-up of national cohort. *Bmj*, 338, a2981
- Coln, K. L., Jordan, S. S., & Mercer, S. H. (2013). A unified model exploring parenting practices as mediators of marital conflict and children's adjustment. *Child Psychiatry & Human Development*, 44(3), 419-429.
- Conger, R. D., & Conger, K. J. (2008). Understanding the processes through which economic hardship influences families and children. In D. R. Crane & T. B. Heaton (Eds.) *Handbook of Families and Poverty*, pp. 64-78. London: Sage Publications, Inc.
- Conger, R. D., Conger, K. J., & Martin, M. J. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage and Family*, 72(3), 685-704.

Conger, R. D., Ge, X., Elder Jr, G. H., Lorenz, F. O., & Simons, R. L. (1994).

Economic stress, coercive family process, and developmental problems of adolescents. *Child Development*, 65(2), 541-561.

Conger, R. D., Wallace, L. E., Sun, Y., Simons, R. L., McLoyd, V. C., & Brody, G. H.

(2002). Economic pressure in African American families: a replication and extension of the family stress model. *Developmental Psychology*, 38(2), 179-193.

Cook, J. C., Schoppe-Sullivan, S. J., Buckley, C. K., & Davis, E. F. (2009). Are some

children harder to coparent than others? Children's negative emotionality and coparenting relationship quality. *Journal of Family Psychology*, 23(4), 606-610.

Copeland, W. E., Miller-Johnson, S., Keeler, G., Angold, A., & Costello, E. J. (2007).

Childhood psychiatric disorders and young adult crime: a prospective, population-based study. *American Journal of Psychiatry*, 164(11), 1668-1675.

Copeland, W. E., Shanahan, L., Costello, E. J., & Angold, A. (2009). Childhood and

adolescent psychiatric disorders as predictors of young adult disorders. *Archives of General Psychiatry*, 66(7), 764-772.

Cosgrove, V. E., Rhee, S. H., Gelhorn, H. L., Boeldt, D., Corley, R. C., Ehringer, M. A.,

... & Hewitt, J. K. (2011). Structure and etiology of co-occurring internalizing and externalizing disorders in adolescents. *Journal of Abnormal Child Psychology*, 39(1), 109-123.

Costello, E. J., Copeland, W., & Angold, A. (2011). Trends in psychopathology across

the adolescent years: what changes when children become adolescents, and

when adolescents become adults? *Journal of Child Psychology and Psychiatry*, 52(10), 1015-1025.

Costello, E. J., Mustillo, S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General Psychiatry*, 60(8), 837-844.

Cowan, C. P., & Cowan, P. A. (1988). Who does what when partners become parents: Implications for men, women, and marriage. *Marriage & Family Review*, 12(3-4), 105-131.

Cowan, C. P., & Cowan, P. A. (1990). Who does what? In J. Touliatos, B. F. Perlmutter, & M. A. Straus (Eds.), *Handbook of family measurement techniques* (pp. 447-448). Newbury Park, CA: Sage.

Cowan, C. P., Cowan, P. A., & Heming, G. (2005). Two variations of a preventive intervention for couples: Effects on parents and children during the transition to school. In Cowan, P.A., Cowan, C.P., Ablow, J.C., Kahn Johnson, V. & Measelle, J.R. (Eds.) *The family context of parenting in children's adaptation to elementary school*, pp. 277-312. New Jersey: Routledge.

Cowan, P. A., and Cowan, C. P. (April, 1987) 'Couples Relationships, Parenting Styles and the Childs Development at Three." Paper presented at a meeting of the Society for Research in ChildDevelopment, Baltimore

Cowan, P., & McHale, J. (1996). Coparenting in a family context: Emerging achievements, current dilemmas, and future directions. In J. McHale, & P. Cowan (Eds.), *Understanding how family-level dynamics affect children's*

*development: Studies of two-parent families* (pp. 93–106). San Francisco: Jossey-Bass

Cox, M. J., & Paley, B. (1997). Families as systems. *Annual Review of Psychology*, 48(1), 243-267.

Cox, M. J., & Paley, B. (2003). Understanding families as systems. *Current directions in Psychological Science*, 12(5), 193-196.

Cox, M. J., Paley, B., & Harter, K. (2001). Interparental conflict and parent-child relationships. In J. H. Grych & F. D. Fincham (Eds.) *Interparental conflict and child development: Theory, research, and applications*, pp.249-272. Cambridge: Cambridge University Press.

Craig, L. (2006). Does father care mean fathers share? A comparison of how mothers and fathers in intact families spend time with children. *Gender & Society*, 20(2), 259-281.

Crain (2016) *Theories of Development: Concepts and Applications*. New York: Routledge.

Cui, M., Donnellan, M. B., & Conger, R. D. (2007). Reciprocal influences between parents' marital problems and adolescent internalizing and externalizing behavior. *Developmental Psychology*, 43(6), 1544-1552.

Cummings, E. M., & Davies, P. T. (2002). Effects of marital conflict on children: Recent advances and emerging themes in process-oriented research. *Journal of Child Psychology and Psychiatry*, 43(1), 31-63.

- Cummings, E. M., George, M. R., Koss, K. J., & Davies, P. T. (2013). Parental depressive symptoms and adolescent adjustment: responses to children's distress and representations of attachment as explanatory mechanisms. *Parenting, 13*(4), 213-232.
- Cummings, E. M., George, M. R., McCoy, K. P., & Davies, P. T. (2012). Interparental conflict in kindergarten and adolescent adjustment: Prospective investigation of emotional security as an explanatory mechanism. *Child Development, 83*(5), 1703-1715.
- Cummings, E. M., Goeke-Morey, M. C., & Papp, L. M. (2004). Everyday marital conflict and child aggression. *Journal of Abnormal Child Psychology, 32*(2), 191-202.
- Cummings, E. M., Goeke-Morey, M. C., & Raymond, J. (2004). Marital quality and conflict are related to children's functioning and adjustment 2001. In M. E. Lamb (Eds.) *The role of the father in child development*, pp.196-221. New Jersey: John Wiley & Sons, inc.
- Cummings, E. M., Merrilees, C. E., & George, M. W. (2010). Fathers, marriages, and families. In M.E. Lamb (Eds.). *The role of the father in child development*, (pp.154-176). New Jersey: John Wiley & Sons, inc.
- Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep Medicine Reviews, 10*(5), 323-337.

- Dadds, M. R., & Powell, M. B. (1991). The relationship of interparental conflict and global marital adjustment to aggression, anxiety, and immaturity in aggressive and nonclinic children. *Journal of Abnormal Child Psychology*, 19(5), 553-567.
- Dahl, R. E., & El-Sheikh, M. (2007). Considering sleep in a family context: introduction to the special issue. *Journal of Family Psychology*, 21(1), 1-3.
- Darwin, C. (1859). *The Origin of Species by Means of Natural Election, Or the Preservation of Favored Races in the Struggle for Life*
- Darwin, C. (1871). The descent of man.
- Davies, P. T., & Cicchetti, D. (2004). Toward an integration of family systems and developmental psychopathology approaches. *Development and Psychopathology*, 16(3), 477-481.
- Davies, P. T., & Cummings, E. M. (1994). Marital conflict and child adjustment: An emotional security hypothesis. *Psychological Bulletin*, 116(3), 387-411.
- Davies, P. T., Sturge-Apple, M. L., & Cummings, E. M. (2004). Interdependencies among interparental discord and parenting practices: The role of adult vulnerability and relationship perturbations. *Development and Psychopathology*, 16(3), 773-797.
- Davies, P. T., Sturge-Apple, M. L., Bascoe, S. M., & Cummings, E. M. (2014). The legacy of early insecurity histories in shaping adolescent adaptation to interparental conflict. *Child Development*, 85(1), 338-354.



- Davis, E. F., Schoppe-Sullivan, S. J., Mangelsdorf, S. C., & Brown, G. L. (2009). The role of infant temperament in stability and change in coparenting across the first year of life. *Parenting: Science and Practice*, 9(1-2), 143-159.
- Dekker, M. C., Ferdinand, R. F., Van Lang, N. D., Bongers, I. L., Van Der Ende, J., & Verhulst, F. C. (2007). Developmental trajectories of depressive symptoms from early childhood to late adolescence: gender differences and adult outcome. *Journal of Child Psychology and Psychiatry*, 48(7), 657-666.
- Demo, D. H., & Acock, A. C. (1988). The impact of divorce on children. *Journal of Marriage and the Family*, 619-648.
- Dette-Hagenmeyer, D. E., & Reichle, B. (2014). Parents' depressive symptoms and children's adjustment over time are mediated by parenting, but differentially for fathers and mothers. *European Journal of Developmental Psychology*, 11(2), 196-210.
- Dix, T., & Meunier, L. N. (2009). Depressive symptoms and parenting competence: An analysis of 13 regulatory processes. *Developmental Review*, 29, 45–68.
- Dogan, S., Lei, A., Milne-Kahn, J., Pong, H., Wu, E., & Conger, R. (2005). *Family interaction behavioral codes for the Early Growth and Development Study*. Unpublished coding manual.
- Doh, H. S., Kim, M. J., Shin, N., Song, S. M., Lee, W. K., & Kim, S. (2016). The effectiveness of a parenting education program based on respected parents & respected children for mothers of preschool-aged children. *Children and Youth Services Review*, 68, 115-124.

- Dopkins Stright, A., & Neitzel, C. (2003). Beyond parenting: Coparenting and children's classroom adjustment. *International Journal of Behavioral Development, 27*(1), 31-40.
- Downey, G., & Coyne, J. C. (1990). Children of depressed parents: an integrative review. *Psychological Bulletin, 108*(1), 50-76.
- Du Rocher Schudlich, T. D. & Cummings, E. M. (2007) Parental dysphoria and children's adjustment: marital conflict styles, children's emotional security, and parenting as mediators of risk. *Journal of Abnormal Child Psychology, 35*, 627–639.
- Dumka, L. E., Prost, J., & Barrera Jr, M. (2002). The parental relationship and adolescent conduct problems in Mexican American and European American families. *Journal of Couple & Relationship Therapy, 1*(4), 37-57.
- Dunst, C. J., Trivette, C. M., & Deal, A. G. (1988). Enabling and empowering families: Principles and guidelines for practice. Cambridge, MA: Brookline.
- Elam, K. K., Harold, G. T., Neiderhiser, J. M., Reiss, D., Shaw, D. S., Natsuaki, M. N., ... & Leve, L. D. (2014). Adoptive parent hostility and children's peer behavior problems: Examining the role of genetically informed child attributes on adoptive parent behavior. *Developmental Psychology, 50*(5), 1543-1552.
- Eley, T. C., McAdams, T. A., Rijdsdijk, F. V., Lichtenstein, P., Narusyte, J., Reiss, D., ... & Neiderhiser, J. M. (2015). The intergenerational transmission of anxiety: a children-of-twins study. *American Journal of Psychiatry, 172*(7), 630-637.

Elgar, F. J., Mills, R. S., McGrath, P. J., Waschbusch, D. A., & Brownridge, D. A.

(2007). Maternal and paternal depressive symptoms and child maladjustment: The mediating role of parental behavior. *Journal of Abnormal Child Psychology*, 35(6), 943-955.

Ellis, B. J., Boyce, W. T., Belsky, J., Bakermans-Kranenburg, M. J., & Van IJzendoorn,

M. H. (2011). Differential susceptibility to the environment: An evolutionary–neurodevelopmental theory. *Development and Psychopathology*, 23(1), 7-28.

Elliston, D., McHale, J., Talbot, J., Parmley, M., & Kuersten-Hogan, R. (2008).

Withdrawal from coparenting interactions during early infancy. *Family Process*, 47(4), 481-499.

El-Sheikh, M. (Ed.). (2011). *Sleep and development: Familial and socio-cultural considerations*. Oxford University Press.

El-Sheikh, M., & Elmore–Staton, L. (2004). The link between marital conflict and child adjustment: Parent–child conflict and perceived attachments as mediators, potentiators, and mitigators of risk. *Development and Psychopathology*, 16(3), 631-648.

El-Sheikh, M., Harger, J., & Whitson, S. M. (2001). Exposure to interparental conflict and children's adjustment and physical health: The moderating role of vagal tone. *Child Development*, 72(6), 1617-1636.

Emery, R. E. (1982). Interparental conflict and the children of discord and divorce. *Psychological Bulletin*, 92(2), 310-330.

- Erath, S. A., & Bierman, K. L. (2006). Aggressive marital conflict, maternal harsh punishment, and child aggressive-disruptive behavior: Evidence for direct and mediated relations. *Journal of Family Psychology*, 20(2), 217-226.
- Erel, O., & Burman, B. (1995). Interrelatedness of marital relations and parent-child relations: A meta-analytic review. *Psychological Bulletin*, 118(1), 108-132.
- Fagan, J., & Lee, Y. (2011). Do coparenting and social support have a greater effect on adolescent fathers than adult fathers? *Family Relations*, 60(3), 247-258.
- Fagan, J., & Lee, Y. (2014). Longitudinal associations among fathers' perception of coparenting, partner relationship quality, and paternal stress during early childhood. *Family Process*, 53(1), 80-96.
- Fagan, J., & Palkovitz, R. (2011). Coparenting and relationship quality effects on father engagement: Variations by residence, romance. *Journal of Marriage and Family*, 73(3), 637-653.
- Fagan, J., Levine, E. C., Kaufman, R., & Hammar, C. (2016). Low-income, nonresident fathers' coparenting with multiple mothers and relatives: Effects on fathering. *Journal of Family Psychology*, 30(4), 581-589.
- Fagan, J., Cherson, M., Brown, C., & Vecere, E. (2015). Pilot study of a program to increase mothers' understanding of dads. *Family Process*, 54(4), 581-589.
- Fairbairn, W. R. D. (1954). *An object-relations theory of the personality*.
- Farr, R. H. (2016). Factors associated with relationship dissolution and post-dissolution adjustment among lesbian adoptive couples. *Journal of Lesbian Studies*, 1-18.

- Farr, R. H., & Patterson, C. J. (2013). Coparenting among lesbian, gay, and heterosexual couples: Associations with adopted children's outcomes. *Child Development, 84*(4), 1226-1240.
- Farrington, D. P. (1991). Childhood aggression and adult violence: Early precursors and later life outcomes. In D. J. Pepler & K. H. Rubin (Eds.) *The development and treatment of childhood aggression* (pp.5-29). New York: Psychology Press.
- Favez, N., Frascarolo, F., & Grimard, N. (2016). The PicNic game: presentation of a situation of observation to assess family interactions. *Infant Mental Health Journal, 37*(3), 235-246.
- Feinberg, M. E. (2002). Coparenting and the transition to parenthood: A framework for prevention. *Clinical Child and Family Psychology Review, 5*(3), 173-195.
- Feinberg, M. E. (2003). The internal structure and ecological context of coparenting: A framework for research and intervention. *Parenting: Science and Practice, 3*(2), 95-131.
- Feinberg, M. E., & Kan, M. L. (2008). Establishing family foundations: intervention effects on coparenting, parent/infant well-being, and parent-child relations. *Journal of Family Psychology, 22*(2), 253-263.
- Feinberg, M. E., Brown, L. D., & Kan, M. L. (2012). A multi-domain self-report measure of coparenting. *Parenting, 12*(1), 1-21.
- Feinberg, M. E., Jones, D. E., Hostetler, M. L., Roettger, M. E., Paul, I. M., & Ehrental, D. B. (2016). Couple-focused prevention at the transition to

parenthood, a randomized trial: effects on coparenting, parenting, family violence, and parent and child adjustment. *Prevention Science*, 17(6), 751-764.

Feinberg, M. E., Jones, D. E., Kan, M. L., & Goslin, M. C. (2010). Effects of family foundations on parents and children: 3.5 years after baseline. *Journal of Family Psychology*, 24(5), 532-542.

Feinberg, M. E., Jones, D. E., Roettger, M. E., Solmeyer, A., & Hostetler, M. L. (2014). Long-term follow-up of a randomized trial of family foundations: Effects on children's emotional, behavioral, and school adjustment. *Journal of Family Psychology*, 28(6), 821-831.

Feinberg, M. E., Kan, M. L., & Goslin, M. C. (2009). Enhancing coparenting, parenting, and child self-regulation: Effects of family foundations 1 year after birth. *Prevention Science*, 10(3), 276-285.

Feinberg, M. E., Kan, M. L., & Hetherington, E. M. (2007). The longitudinal influence of coparenting conflict on parental negativity and adolescent maladjustment. *Journal of Marriage and Family*, 69(3), 687-702.

Feinberg, M. E., Reiss, D., Neiderhiser, J. M., & Hetherington, E. M. (2005). Differential association of family subsystem negativity on siblings' maladjustment: using behavior genetic methods to test process theory. *Journal of Family Psychology*, 19(4), 601-610.

Fendrich, M., Warner, V., & Weissman, M. M. (1990). Family risk factors, parental depression, and psychopathology in offspring. *Developmental Psychology*, 26(1), 40-50.

- Ferraro, A. J., Malespin, T., Oehme, K., Bruker, M., & Opel, A. (2016). Advancing Co-parenting Education: Toward a Foundation for Supporting Positive Post-Divorce Adjustment. *Child and Adolescent Social Work Journal*, 33(5), 407-415.
- Ferraro, A. J., Malespin, T., Oehme, K., Bruker, M., & Opel, A. (2016). Advancing Co-parenting Education: Toward a Foundation for Supporting Positive Post-Divorce Adjustment. *Child and Adolescent Social Work Journal*, 33(5), 407-415.
- Fincham, F. D., Beach, S. R., Harold, G. T., & Osborne, L. N. (1997). Marital satisfaction and depression: Different causal relationships for men and women?. *Psychological Science*, 8(5), 351-356.
- Finger, B., Eiden, R. D., Edwards, E. P., Leonard, K. E., & Kachadourian, L. (2010). Marital aggression and child peer competence: A comparison of three conceptual models. *Personal Relationships*, 17(3), 357-376.
- Finzi-Dottan, R., & Cohen, O. (2014). Predictors of parental Communication and cooperation among divorcing spouses. *Journal of Child and Family Studies*, 23(1), 39-51.
- Finzi-Dottan, R., & Cohen, O. (2016). Fatherhood: Comparison Between Divorced Custodial Fathers, Married Fathers, and Divorced Non-Custodial Fathers in Israel. *Marriage & Family Review*, 1-27.
- Fivaz-Depeursinge, E. & Favez, N. (2006). Exploring triangulation in infancy: Two contrasted cases. *Family Process*, 45(1), 3-18.

- Fletcher, R. J., Feeman, E., Garfield, C., & Vimpani, G. (2011). The effects of early paternal depression on children's development. *The Medical Journal of Australia*, 195(11-12), 685-689.
- Forehand, R., Parent, J., Golub, A., & Reid, M. (2014). Correlates of male cohabiting partner's involvement in child-rearing tasks in low-income urban Black stepfamilies. *Journal of Family Psychology*, 28(3), 336-345.
- Fosco, G. M., & Grych, J. H. (2010). Adolescent triangulation into parental conflicts: longitudinal implications for appraisals and adolescent-parent relations. *Journal of Marriage and Family*, 72(2), 254-266.
- Frank, S. J., Jacobson, S., & Avery, C. (1988). *The Family Experiences Questionnaire*. Unpublished manuscript, Department of Psychology, Michigan State University, East Lansing, MI.
- Freud, S. (1920). *A general introduction to psychoanalysis*.
- Freud, S. (1938) *The psychopathology of everyday life*. London: Penguin:
- Gable, S., Belsky, J., & Crnic, K. (1992). Marriage, parenting, and child development: Progress and prospects. *Journal of Family Psychology*, 5(3-4), 276.
- Gabriel, B., Beach, S. R., & Bodenmann, G. (2010). Depression, marital satisfaction and communication in couples: Investigating gender differences. *Behavior Therapy*, 41(3), 306-316.
- Gallegos, M. I., Murphy, S. E., Benner, A. D., Jacobvitz, D. B., & Hazen, N. L. (2017). Marital, parental, and whole-family predictors of toddlers' emotion regulation:



The role of parental emotional withdrawal. *Journal of Family Psychology*, 31(3), 294-303.

Gardner, F., & Scott, S. (2015). Parenting programs. In A. Thapar, D.S. Pine, J.F. Leckman, S. Scott, M.J. Snowling & E. Taylor (Eds.), *Rutter's child and adolescent psychiatry*. Chichester: John Wiley and Sons.

Ge, X., Conger, R. D., Cadoret, R. J., Neiderhiser, J. M., Yates, W., Troughton, E., & Stewart, M. A. (1996). The developmental interface between nature and nurture: a mutual influence model of child antisocial behavior and parent behaviors. *Developmental Psychology*, 32(4), 574-589.

Ge, X., Natsuaki, M. N., Martin, D. M., Leve, L. D., Neiderhiser, J. M., Shaw, D. S., ... & Reiss, D. (2008). Bridging the divide: openness in adoption and postadoption psychosocial adjustment among birth and adoptive parents. *Journal of Family Psychology*, 22(4), 529.

Gerard, J. M., Krishnakumar, A., & Buehler, C. (2006). Marital conflict, parent-child relations, and youth maladjustment: A longitudinal investigation of spillover effects. *Journal of Family Issues*, 27(7), 951-975.

Ghassabian, A., Székely, E., Herba, C. M., Jaddoe, V. W., Hofman, A., Oldehinkel, A. J., ... & Tiemeier, H. (2014). From positive emotionality to internalizing problems: the role of executive functioning in preschoolers. *European Child & Adolescent Psychiatry*, 23(9), 729-741.

- Ghazarian, S. R., & Buehler, C. (2010). Interparental conflict and academic achievement: An examination of mediating and moderating factors. *Journal of Youth and Adolescence*, 39(1), 23-35.
- Giallo, R., Cooklin, A., Wade, C., D'Esposito, F., & Nicholson, J. M. (2014a). Fathers' postnatal mental health and child well-being at age five: The mediating role of parenting behavior. *Journal of Family Issues*, 35(11), 1543-1562.
- Giallo, R., Cooklin, A., Wade, C., D'Esposito, F., & Nicholson, J. M. (2014b). Maternal postnatal mental health and later emotional-behavioural development of children: the mediating role of parenting behaviour. *Child: Care, Health and Development*, 40(3), 327-336.
- Gjone, H., & Stevenson, J. (1997). The association between internalizing and externalizing behavior in childhood and early adolescence: genetic or environmental common influences? *Journal of Abnormal Child Psychology*, 25(4), 277-286.
- Glendinning, A., Shucksmith, J., & Hendry, L. (1997). Family life and smoking in adolescence. *Social Science & Medicine*, 44(1), 93-101.
- Goeke-Morey, M. C., & Mark Cummings, E. (2007). Impact of father involvement: A closer look at indirect effects models involving marriage and child adjustment. *Applied Development Science*, 11(4), 221-225.
- Goldberg, J. S. (2015). Coparenting and nonresident fathers' monetary contributions to their children. *Journal of Marriage and Family*, 77(3), 612-627.

Goldsmith, J. (1980). Relationships between former spouses: Descriptive findings.

*Journal of Divorce*, 4, 1-20.

Gonzales, N. A., Pitts, S. C., Hill, N. E., & Roosa, M. W. (2000). A mediational model of the impact of interparental conflict on child adjustment in a multiethnic, low-income sample. *Journal of Family Psychology*, 14(3), 365-379.

Goodman, S. H., Rouse, M. H., Connell, A. M., Broth, M. R., Hall, C. M., & Heyward, D. (2011). Maternal depression and child psychopathology: A meta-analytic review. *Clinical Child and Family Psychology Review*, 14(1), 1-27.

Gordon, I., & Feldman, R. (2008). Synchrony in the Triad: A Microlevel Process Model of Coparenting and Parent-Child Interactions. *Family Process*, 47(4), 465-479.

Gosselin, J., & Gosselin, N. (2016). Women's Maternal Experiences in Canadian Stepfamilies: An Exploratory Study. *Journal of Divorce & Remarriage*, 57(6), 389-410.

Gregory, A. M., & Sadeh, A. (2016). Annual research review: sleep problems in childhood psychiatric disorders—a review of the latest science. *Journal of Child Psychology and Psychiatry*, 57(3), 296-317.

Grusec, J. E. (2011). Socialization processes in the family: Social and emotional development. *Annual Review of Psychology*, 62, 243-269.

Grych, J. H., & Fincham, F. D. (1990). Marital conflict and children's adjustment: A cognitive-contextual framework. *Psychological Bulletin*, 108(2), 267-290.

- Grych, J. H., Harold, G. T., & Miles, C. J. (2003). A prospective investigation of appraisals as mediators of the link between interparental conflict and child adjustment. *Child Development, 74*(4), 1176-1193.
- Gutierrez-Galve, L., Stein, A., Hanington, L., Heron, J., & Ramchandani, P. (2015). Paternal depression in the postnatal period and child development: mediators and moderators. *Pediatrics, 135*(2), e339-e347.
- Haas, S. A., & Fosse, N. E. (2008). Health and the educational attainment of adolescents: Evidence from the NLSY97. *Journal of Health and Social Behavior, 49*(2), 178-192.
- Hajal, N. J., Neiderhiser, J. M., Moore, G. A., Leve, L. D., Shaw, D. S., Ge, X., Scaramella, L. V., Ganiban, J. M., & Reiss, D. (2015). Angry responses to infant challenges: Parent, marital, and child genetic factors associated with harsh parenting. *Child Development, 86*, 80-93.
- Halme, N., Åstedt-Kurki, P., & Tarkka, M. T. (2009). Fathers' involvement with their preschool-age children: How fathers spend time with their children in different family structures. *In Child & Youth Care Forum, 38*(3), 103-119.
- Hammer-Helmich, L., Linneberg, A., Obel, C., Thomsen, S. F., Møllehave, L. T., & Glümer, C. (2016). Mental health associations with eczema, asthma and hay fever in children: a cross-sectional survey. *BMJ open, 6*(10), e012637.
- Han, Y., Rudy, D., & Proulx, C. M. (2017). Longitudinal Relationships Among Marital Conflict, Maternal and Paternal Warmth and Control, and Preschoolers'

Socioemotional Outcomes in South Korea. *Journal of Cross-Cultural Psychology*, 48(10), 1522-1536.

Hanington, L., Heron, J., Stein, A., & Ramchandani, P. (2012). Parental depression and child outcomes— Is marital conflict the missing link? *Child: Care, Health and Development*, 38, 520 –529.

Harman, J. J., Biringen, Z., Ratajack, E. M., Outland, P. L., & Kraus, A. (2016). Parents behaving badly: Gender biases in the perception of parental alienating behaviors. *Journal of Family Psychology*, 30(7), 866-874.

Harold, G. T., & Conger, R. D. (1997). Marital conflict and adolescent distress: The role of adolescent awareness. *Child Development*, 68(2), 333-350.

Harold, G. T., & Sellers, R. (2018). Annual Research Review: Interparental conflict and youth psychopathology: an evidence review and practice focused update. *Journal of Child Psychology and Psychiatry*, 59(4), 374-402.

Harold, G. T., Aitken, J. J., & Shelton, K. H. (2007). Inter-parental conflict and children's academic attainment: A longitudinal analysis. *Journal of Child Psychology and Psychiatry*, 48(12), 1223-1232.

Harold, G. T., Elam, K. K., Lewis, G., Rice, F., & Thapar, A. (2012). Interparental conflict, parent psychopathology, hostile parenting, and child antisocial behavior: Examining the role of maternal versus paternal influences using a novel genetically sensitive research design. *Development and Psychopathology*, 24(4), 1283-1295.

- Harold, G. T., Leve, L. D., & Sellers, R. (2017). How Can Genetically Informed Research Help Inform the Next Generation of Interparental and Parenting Interventions?. *Child Development*, 88(2), 446-458.
- Harold, G. T., Leve, L. D., Barrett, D., Elam, K., Neiderhiser, J. M., Natsuaki, M. N., ... & Thapar, A. (2013a). Biological and rearing mother influences on child ADHD symptoms: revisiting the developmental interface between nature and nurture. *Journal of Child Psychology and Psychiatry*, 54(10), 1038-1046.
- Harold, G. T., Leve, L. D., Elam, K. K., Thapar, A., Neiderhiser, J. M., Natsuaki, M. N., ... & Reiss, D. (2013b). The nature of nurture: Disentangling passive genotype–environment correlation from family relationship influences on children's externalizing problems. *Journal of Family Psychology*, 27(1), 12-21.
- Harold, G. T., Osborne, L. N., & Conger, R. D. (1997). Mom and dad are at it again: Adolescent perceptions of marital conflict and adolescent psychological distress. *Developmental Psychology*, 33(2), 333-350.
- Harold, G. T., Rice, F., Hay, D. F., Boivin, J., Van Den Bree, M., & Thapar, A. (2011). Familial transmission of depression and antisocial behavior symptoms: disentangling the contribution of inherited and environmental factors and testing the mediating role of parenting. *Psychological Medicine*, 41(6), 1175-1185.
- Harold, G. T., Shelton, K. H., Goeke-Morey, M. C., & Cummings, E. M. (2004). Marital conflict, child emotional security about family relationships and child adjustment. *Social Development*, 13(3), 350-376.

- Harold, G., Acquah, D., Sellers, R., Chowdry, H., & Feinstein, L. (2016). What works to enhance inter-parental relationships and improve outcomes for children.
- Harrington, R., Bredenkamp, D., Groothues, C., Rutter, M., Fudge, H., & Pickles, A. (1994). Adult outcomes of childhood and adolescent depression. III Links with suicidal behaviours. *Journal of Child Psychology and Psychiatry*, 35(7), 1309-1319.
- Harris, R. D. (2010). A meta-analysis on father involvement and early childhood social-emotional development. *Opus Issues*, 2, 21-39.
- Heming, G., Cowan, P. A., & Cowan, C. P. ~1991!. Ideas about parenting. In M. Touliatos & M. Perlmutter (Eds) *Handbook of family measurement techniques*. Newbury Park, CA: Sage
- Hetherington, E. M., & Clingempeel, G. (1992). Coping with marital transitions: A family systems perspective. *Monographs of the Society for Research in Child Development*, 57(2 – 3).
- Hock, R. M., & Mooradian, J. K. (2012). Co-parenting quality among adoptive mothers: contributions of socioeconomic status, child demands and adult relationship characteristics. *Child & Family Social Work*, 17(1), 85-95.
- Hoeve, M., Dubas, J. S., Eichelsheim, V. I., Van Der Laan, P. H., Smeenk, W., & Gerris, J. R. (2009). The relationship between parenting and delinquency: A meta-analysis. *Journal of Abnormal Child Psychology*, 37(6), 749-775.
- Hofstra, M. B., Van Der Ende, J. A. N., & Verhulst, F. C. (2002). Child and adolescent problems predict DSM-IV disorders in adulthood: a 14-year follow-up of a

- Dutch epidemiological sample. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(2), 182-189.
- Holland, A. S., & McElwain, N. L. (2013). Maternal and paternal perceptions of coparenting as a link between marital quality and the parent–toddler relationship. *Journal of Family Psychology*, 27(1), 117-126.
- Hosokawa, R., & Katsura, T. (2017). Marital relationship, parenting practices, and social skills development in preschool children. *Child and Adolescent Psychiatry and Mental Health*, 11(2).
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a Multidisciplinary Journal*, 6(1), 1-55.
- Huntington, C., & Vetere, A. (2015). From couples to coparents in England: Factors that contribute to the process of change in coparents' parenting practices. *Family Science*, 6(1), 219-228.
- Huston, T. L., McHale, S. M., & Crouter, A. C. (1986). When the honeymoon's over: Changes in the marriage relationship over the first year. *The emerging field of personal relationships*, 109-132.
- Hyde, L. W., Waller, R., Trentacosta, C. J., Shaw, D. S., Neiderhiser, J. M., Ganiban, J. M., . . . Leve, L. D. (2016). Heritable and nonheritable pathways to early callous-unemotional behaviors. *American Journal of Psychiatry*, 173(9), 903-910.



- Ippolito- Morrill, M. I., Hines, D. A., Mahmood, S., & Cordova, J. V. (2010). Pathways between marriage and parenting for wives and husbands: The role of coparenting. *Family Process*, 49(1), 59-73.
- Jacobvitz, D. B., & Bush, N. F. (1996). Reconstructions of family relationships: Parent–child alliances, personal distress, and self-esteem. *Developmental Psychology*, 32(4), 732-743.
- Jaffee, S. R., & Price, T. S. (2012). The implications of genotype–environment correlation for establishing causal processes in psychopathology. *Development and Psychopathology*, 24(4), 1253-1264.
- Jaffee, S. R., Moffitt, T. E., Caspi, A., Taylor, A., & Arseneault, L. (2002). Influence of adult domestic violence on children's internalizing and externalizing problems: An environmentally informative twin study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 41(9), 1095-1103.
- Jia, R., Kotila, L. E., & Schoppe-Sullivan, S. J. (2012). Transactional relations between father involvement and preschoolers' socioemotional adjustment. *Journal of Family Psychology*, 26(6), 848-857.
- Johnston, J. R. (1993). Family transitions and children's functioning: The case of parental conflict and divorce. In P. A. Cowan, D. Field, D. A. Hansen, A. Scholnick & G. E. Swanson (Eds.) *Family, self, and society: Toward a new agenda for family research*. pp.197-234. New York: Routledge.
- Johnston, J. R. (1996) Prevention of Parent or Family Abduction of Children Through Early Identification of Risk Factors: Stage II, Part B (Final report to the Office

of Juvenile Justice & Delinquency Prevention). Washington, DC: Department of Justice.

- Jones, D. J., Shaffer, A., Forehand, R., Brody, G., & Armistead, L. P. (2003). Coparent conflict in single mother-headed African American families: Do parenting skills serve as a mediator or moderator of child psychosocial adjustment?. *Behavior Therapy, 34*(2), 259-272.
- Jouriles, E. N., McDonald, R., Mueller, V., & Grych, J. H. (2012). Youth experiences of family violence and teen dating violence perpetration: Cognitive and emotional mediators. *Clinical Child and Family Psychology Review, 15*(1), 58-68.
- Jouriles, E. N., Murphy, C. M., Farris, A. M., Smith, D. A., Richters, J. E., & Waters, E. (1991). Marital adjustment, parental disagreements about child rearing, and behavior problems in boys: Increasing the specificity of the marital assessment. *Child Development, 62*(6), 1424-1433.
- Kaczynski, K. J., Lindahl, K. M., Malik, N. M., & Laurenceau, J. P. (2006). Marital conflict, maternal and paternal parenting, and child adjustment: A test of mediation and moderation. *Journal of Family Psychology, 20*(2), 199-208.
- Kahen, V. (1993) *The Kahen Affect and Engagement Coding Systems*. Unpublished paper, University of Washington.
- Kalil, A., Ziol-Guest, K. M., & Coley, R. L. (2005). Perceptions of father involvement patterns in teenage-mother families: Predictors and links to mothers' psychological adjustment. *Family Relations, 54*(2), 197-211.

- Kan, M. L., & Feinberg, M. E. (2015). Impacts of a coparenting-focused intervention on links between pre-birth intimate partner violence and observed parenting. *Journal of Family Violence*, 30(3), 363-372.
- Kan, M. L., Feinberg, M. E., & Solmeyer, A. R. (2012). Intimate partner violence and coparenting across the transition to parenthood. *Journal of Family Issues*, 33(2), 115-135.
- Kane, P., & Garber, J. (2004). The relations among depression in fathers, children's psychopathology, and father-child conflict: A meta-analysis. *Clinical Psychology Review*, 24(3), 339-360.
- Kane, P., & Garber, J. (2009). Parental depression and child externalizing and internalizing symptoms: Unique effects of fathers' symptoms and perceived conflict as a mediator. *Journal of Child and Family Studies*, 18(4), 465-472.
- Karreman, A., Van Tuijl, C., Van Aken, M. A., & Deković, M. (2008). Parenting, coparenting, and effortful control in preschoolers. *Journal of Family Psychology*, 22(1), 30-40.
- Katz, L. F., & Gottman, J. M. (1996). Spillover effects of marital conflict: In search of parenting and coparenting mechanisms. *New Directions for Child and Adolescent Development*, 1996(74), 57-76.
- Katz, L. F., & Low, S. M. (2004). Marital violence, co-parenting, and family-level processes in relation to children's adjustment. *Journal of family Psychology*, 18(2), 372-382.

- Keller, P. S., Cummings, M. E., Peterson, K. M., & Davies, P. T. (2009). Marital conflict in the context of parental depressive symptoms: Implications for the development of children's adjustment problems. *Social Development, 18*(3), 536-555.
- Keller, P. S., Mark Cummings, E., & Davies, P. T. (2005). The role of marital discord and parenting in relations between parental problem drinking and child adjustment. *Journal of Child Psychology and Psychiatry, 46*(9), 943-951.
- Kelly, R. J., & El-Sheikh, M. (2011). Marital conflict and children's sleep: Reciprocal relations and socioeconomic effects. *Journal of Family Psychology, 25*(3), 412-422.
- Kendler, K. S., Ohlsson, H., Sundquist, J., & Sundquist, K. (2016). The rearing environment and risk for drug abuse: A Swedish national high-risk adopted and not adopted co-sibling control study. *Psychological Medicine, 46*, 1359–1366.
- Kerig, P. K. (1995). Triangles in the family circle: Effects of family structure on marriage, parenting, and child adjustment. *Journal of Family Psychology, 9*(1), 28-43.
- Kessler, R. C., & Greenberg, D. F. (1981). *Linear panel analysis*. New York: Academic Press.
- Khazan, I., Mchale, J. P., & Decourcey, W. (2008). Violated wishes about division of childcare labor predict early coparenting process during stressful and nonstressful family evaluations. *Infant mental health journal, 29*(4), 343-361.

- Khoury-Kassabri, M., Attar-Schwartz, S., & Zur, H. (2014). Understanding the mediating role of corporal punishment in the association between maternal stress, efficacy, co-parenting and children's adjustment difficulties among Arab mothers. *Child abuse & neglect*, 38(6), 1073-1082.
- Kim, K. L., Jackson, Y., Conrad, S. M., & Hunter, H. L. (2008). Adolescent report of interparental conflict: The role of threat and self-blame appraisal on adaptive outcome. *Journal of Child and Family Studies*, 17(5), 735-751.
- King, S. M., Iacono, W. G., & McGue, M. (2004). Childhood externalizing and internalizing psychopathology in the prediction of early substance use. *Addiction*, 99(12), 1548-1559.
- Kirby, J N., & Sanders, M. R. (2012). Using consumer input to tailor evidence-based parenting interventions to the needs of grandparents. *Journal of Child and Family Studies*, 21(4), 626-636.
- Klahr, A. M., & Burt, S. A. (2014). Elucidating the etiology of individual differences in parenting: A meta-analysis of behavioral genetic research. *Psychological Bulletin*, 140(2), 544-586.
- Kohut, H. (2011). *The Search for the Self: Selected Writings of Heinz Kohut, 1978-1981* (Vol. 4). London: Karnac Books.
- Kolak, A. M., & Volling, B. L. (2013). Coparenting moderates the association between firstborn children's temperament and problem behavior across the transition to siblinghood. *Journal of Family Psychology*, 27(3), 355-364.

- Kopala-Sibley, D. C., Jelinek, C., Kessel, E. M., Frost, A., Allmann, A. E., & Klein, D. N. (2017). Parental depressive history, parenting styles, and child psychopathology over 6 years: The contribution of each parent's depressive history to the other's parenting styles. *Development and Psychopathology*, 29(4), 1469-1482.
- Kouros, C. D., Cummings, E. M., & Davies, P. T. (2010). Early trajectories of interparental conflict and externalizing problems as predictors of social competence in preadolescence. *Development and Psychopathology*, 22(3), 527-537.
- Krishnakumar, A., & Buehler, C. (2000). Interparental conflict and parenting behaviors: A meta-analytic review. *Family Relations*, 49(1), 25-44.
- Kristoffersen, J. H., Obel, C., & Smith, N. (2015). Gender differences in behavioral problems and school outcomes. *Journal of Economic Behavior & Organization*, 115, 75-93.
- Kwan, R. W., Kwok, S. Y., & Ling, C. C. (2015). The moderating roles of parenting self-efficacy and co-parenting alliance on marital satisfaction among Chinese fathers and mothers. *Journal of Child and Family Studies*, 24(12), 3506-3515.
- Kwon, K. A., Jeon, H. J., & Elicker, J. (2013). Links among coparenting quality, parental gentle guidance, and toddlers' social emotional competencies: Testing direct, mediational, and moderational models. *Journal of Family Studies*, 19(1), 19-34.

- Lamb, M. E. (Ed.). (2004). *The role of the father in child development*. John Wiley & Sons.
- Lamela, D., & Figueiredo, B. (2011). Post-divorce representations of marital negotiation during marriage predict parenting alliance in newly divorced parents. *Sexual and Relationship Therapy*, 26(2), 182-190.
- Lamela, D., Figueiredo, B., & Bastos, A. (2013). Perfis de vinculação, coparentalidade e ajustamento familiar em pais recém-divorciados: diferenças no ajustamento psicológico. *Psicologia: Reflexão e Crítica/Psychology: Research and Review*, 26(1), 19-28.
- Lamela, D., Figueiredo, B., Bastos, A., & Feinberg, M. (2016). Typologies of post-divorce coparenting and parental well-being, parenting quality and children's psychological adjustment. *Child Psychiatry & Human Development*, 47(5), 716-728.
- Laskey, B. J., & Cartwright-Hatton, S. (2009). Parental discipline behaviours and beliefs about their child: Associations with child internalizing and mediation relationships. *Child: Care, Health and Development*, 35(5), 717-727.
- Latham, R. M., Mark, K. M., & Oliver, B. R. (2017). A harsh parenting team? Maternal reports of coparenting and coercive parenting interact in association with children's disruptive behaviour. *Journal of Child Psychology and Psychiatry*, 58(5), 603-611.
- Latham, R. M., Mark, K. M., & Oliver, B. R. (2018). Coparenting and children's disruptive behavior: Interacting processes for parenting sense of competence. *Journal of Family Psychology*, 32(1), 151-156.

- Laurent, H. K., Leve, L. D., Neiderhiser, J. M., Natsuaki, M. N., Shaw, D. S., Harold, G. T., & Reiss, D. (2013). Effects of prenatal and postnatal parent depressive symptoms on adopted child HPA regulation: Independent and moderated influences. *Developmental Psychology*, 49(5), 876-886.
- Lavanchy Scaiola, S. C., Favez, N., Tissot, H., & Frascarolo, F. (2008). Family alliance assessment scale (FAAS). Coding manual. Deutsche Übersetzung: Schwinn L (2008) *Institut für Psychosomatische Kooperationsforschung und Familientherapie, Universitätsklinikum Heidelberg*, unveröffentlicht.
- Le, Y., McDaniel, B. T., Leavitt, C. E., & Feinberg, M. E. (2016). Longitudinal associations between relationship quality and coparenting across the transition to parenthood: A dyadic perspective. *Journal of Family Psychology*, 30(8), 918-926.
- Leary, A., & Katz, L. F. (2004). Coparenting, family-level processes, and peer outcomes: The moderating role of vagal tone. *Development and Psychopathology*, 16(3), 593-608.
- Leinonen, J. A., Solantaus, T. S., & Punamäki, R. L. (2003). Parental mental health and children's adjustment: The quality of marital interaction and parenting as mediating factors. *Journal of Child Psychology and Psychiatry*, 44(2), 227-241.
- LeRoy, M., Mahoney, A., Pargament, K. I., & DeMaris, A. (2013). Longitudinal links between early coparenting and infant behaviour problems. *Early Child Development and care*, 183(3-4), 360-377.



- Leschied, A., Chiodo, D., Nowicki, E., & Rodger, S. (2008). Childhood predictors of adult criminality: A meta-analysis drawn from the prospective longitudinal literature. *Canadian Journal of Criminology and Criminal Justice*, 50(4), 435-467.
- Leve, L. D., Harold, G. T., Ge, X., Neiderhiser, J. M., Shaw, D., Scaramella, L. V., & Reiss, D. (2009). Structured parenting of toddlers at high versus low genetic risk: two pathways to child problems. *Journal of the American Academy of Child and Adolescent Psychiatry*, 48(11), 1102–1109.
- Leve, L. D., Harold, G. T., Van Ryzin, M. J., Elam, K., & Chamberlain, P. (2012). Girls' tobacco and alcohol use during early adolescence: prediction from trajectories of depressive symptoms across two studies. *Journal of Child & Adolescent Substance Abuse*, 21(3), 254-272.
- Leve, L. D., Neiderhiser, J. M., Ge, X., Scaramella, L. V., Conger, R. D., Reid, J. B., ... & Reiss, D. (2007). The early growth and development study: A prospective adoption design. *Twin Research and Human Genetics*, 10(1), 84-95.
- Leve, L. D., Neiderhiser, J. M., Shaw, D. S., Ganiban, J., Natsuaki, M. N., & Reiss, D. (2013). The Early Growth and Development Study: A prospective adoption study from birth through middle childhood. *Twin Research and Human Genetics*, 16(1), 412-423.
- Lewin, A., Mitchell, S. J., Beers, L. S., Feinberg, M. E., & Minkovitz, C. S. (2012). Coparenting in teen mothers and their children's fathers: Evidence from the early childhood longitudinal study–birth cohort. *Academic Pediatrics*, 12(6), 539-545.

- Lewis, G., Rice, F., Harold, G. T., Collishaw, S., & Thapar, A. (2011). Investigating environmental links between parent depression and child anxiety/depression symptoms using a genetic design. *Journal of the American Academy of Child & Adolescent Psychiatry*, 50, 451–459.
- Lifford, K. J., Harold, G. T., & Thapar, A. (2009). Parent–child hostility and child ADHD symptoms: A genetically sensitive and longitudinal analysis. *Journal of Child Psychology and Psychiatry*, 50(12), 1468-1476.
- Lim, J., Wood, B. L., Miller, B. D., & Simmens, S. J. (2011). Effects of paternal and maternal depressive symptoms on child internalizing symptoms and asthma disease activity: Mediation by interparental negativity and parenting. *Journal of Family Psychology*, 25(1), 137-146.
- Linares, L. O., Rhodes, J., & Montalto, D. (2005). *The Coparenting Practices Scale*. Unpublished scale. New York University Child Study Center, New York, NY.
- Lindahl, K., & Malik, N. (1994). *System for coding interactions and family functioning (SCIFF)*. Coral Gables, FL: Author.
- Lipscomb, S. T., Leve, L. D., Harold, G. T., Neiderhiser, J. M., Shaw, D. S., Ge, X., & Reiss, D. (2011). Trajectories of parenting and child negative emotionality during infancy and toddlerhood: A longitudinal analysis. *Child Development*, 82(5), 1661-1675.
- Liu, J. (2004). Childhood externalizing behavior: theory and implications. *Journal of Child and Adolescent Psychiatric Nursing*, 17(3), 93-103.

- Lorenz, K. (1965). *Evolution and modification of behavior* (No. 150 L6). Chicago: University of Chicago Press.
- Low, S. M., & Stocker, C. (2005). Family functioning and children's adjustment: associations among parents' depressed mood, marital hostility, parent-child hostility, and children's adjustment. *Journal of Family Psychology, 19*(3), 394-403.
- Low, S., Katz, L. F., Young, L., & Kahm, N. (1997). *Family-level interaction co-parenting system*. Unpublished manuscript, University of Washington.
- Luby, J. L. (2010). Preschool depression: The importance of identification of depression early in development. *Current Directions in Psychological Science, 19*(2), 91-95.
- Lynch, F. L., & Clarke, G. N. (2006). Estimating the economic burden of depression in children and adolescents. *American Journal of Preventive Medicine, 31*(6), 143-151.
- Mackenbach, J. D., Ringoot, A. P., van der Ende, J., Verhulst, F. C., Jaddoe, V. W., Hofman, A., ... & Tiemeier, H. W. (2014). Exploring the relation of harsh parental discipline with child emotional and behavioral problems by using multiple informants. The generation R study. *PloS one, 9*(8), e104793.
- Mahoney, A., Jouriles, E. N., & Scavone, J. (1997). Marital adjustment, marital discord over childrearing, and child behavior problems: Moderating effects of child age. *Journal of Clinical Child Psychology, 26*(4), 415-423.

- Malik, N. M., & Lindahl, K. M. (2004). System for coding interactions in dyads (SCID). *Couple observational coding systems*, 173-188.
- Malmberg, L. E., & Flouri, E. (2011). The comparison and interdependence of maternal and paternal influences on young children's behavior and resilience. *Journal of Clinical Child & Adolescent Psychology*, 40(3), 434-444.
- Mangen, D., Bengtson, V. L., Landry, P. H., Jr. (Eds.). 1988. *The measurement of intergenerational relations*. Beverly Hills, CA: Sage.
- Mannering, A. M., Harold, G. T., Leve, L. D., Shelton, K. H., Shaw, D. S., Conger, R. D., ... & Reiss, D. (2011). Longitudinal associations between marital instability and child sleep problems across infancy and toddlerhood in adoptive families. *Child Development*, 82(4), 1252-1266.
- Marceau, K., De Araujo-Greecher, M., Miller, E. S., Massey, S. H., Mayes, L. C., Ganiban, J. M., ... & Neiderhiser, J. M. (2016). The perinatal risk index: early risks experienced by domestic adoptees in the United States. *PloS one*, 11(3), e0150486.
- Marceau, K., Laurent, H. K., Neiderhiser, J. M., Reiss, D., Shaw, D. S., Natsuaki, M. N., ... & Leve, L. D. (2015). Combined influences of genes, prenatal environment, cortisol, and parenting on the development of children's internalizing versus externalizing problems. *Behavior Genetics*, 45(3), 268-282.
- Marczak, M. S., Becher, E. H., Hardman, A. M., Galos, D. L., & Ruhland, E. (2015). Strengthening the Role of Unmarried Fathers: Findings from the Co-Parent Court Project. *Family Process*, 54(4), 630-638.

- Margolin, G., Gordis, E. B., & John, R. S. (2001). Coparenting: a link between marital conflict and parenting in two-parent families. *Journal of Family Psychology, 15*(1), 3-21.
- Masten, A. S., & Cicchetti, D. (2010). Developmental cascades. *Development and Psychopathology, 22*(3), 491-495.
- Masten, A. S., Roisman, G. I., Long, J. D., Burt, K. B., Obradović, J., Riley, J. R., ... & Tellegen, A. (2005). Developmental cascades: linking academic achievement and externalizing and internalizing symptoms over 20 years. *Developmental Psychology, 41*(5), 733-746.
- Mazza, J. J., Abbott, R. D., Fleming, C. B., Harachi, T. W., Cortes, R. C., Park, J., ... & Catalano, R. F. (2009). Early predictors of adolescent depression: A 7-year longitudinal study. *The Journal of Early Adolescence, 29*(5), 664-692.
- McAdams, T. A., Neiderhiser, J. M., Rijdsdijk, F. V., Narusyte, J., Lichtenstein, P., & Eley, T. C. (2014). Accounting for genetic and environmental confounds in associations between parent and child characteristics: a systematic review of children-of-twins studies. *Psychological Bulletin, 140*(4), 1138-1173.
- McBride, B. A., & Rane, T. R. (1998). Parenting alliance as a predictor of father involvement: An exploratory study. *Family Relations, 229*-236.
- McConnell, M. C., & Kerig, P. K. (2002). Assessing coparenting in families of school-age children: Validation of the Coparenting and Family Rating System. *Canadian Journal of Behavioural Science 34*(1), 44-58.

- McCoy, K. P., George, M. R., Cummings, E. M., & Davies, P. T. (2013). Constructive and destructive marital conflict, parenting, and children's school and social adjustment. *Social Development, 22*(4), 641-662.
- McHale, J. P. (1995). Coparenting and triadic interactions during infancy: The roles of marital distress and child gender. *Developmental Psychology, 31*(6), 985-996.
- McHale, J. P. (1997). Overt and covert coparenting processes in the family. *Family Process, 36*(2), 183-201.
- McHale, J. P. (1999). *The Coparenting Scale-Revised*. Unpublished manuscript.
- McHale, J. P., & Rasmussen, J. L. (1998). Coparental and family group-level dynamics during infancy: Early family precursors of child and family functioning during preschool. *Development and Psychopathology, 10*(1), 39-59.
- McHale, J. P., & Rotman, T. (2007). Is seeing believing?: Expectant parents' outlooks on coparenting and later coparenting solidarity. *Infant Behavior and Development, 30*(1), 63-81.
- McHale, J. P., Johnson, D., & Sinclair, R. (1999). Family dynamics, preschoolers' family representations, and preschool peer relationships. *Early Education and Development, 10*(3), 373-401.
- McHale, J. P., Kuersten-Hogan, R., Lauretti, A., & Rasmussen, J. L. (2000). Parental reports of coparenting and observed coparenting behavior during the toddler period. *Journal of Family Psychology, 14*(2), 220-236.

- McKee, L., Roland, E., Coffelt, N., Olson, A. L., Forehand, R., Massari, C., ... & Zens, M. S. (2007). Harsh discipline and child problem behaviors: The roles of positive parenting and gender. *Journal of Family Violence*, 22(4), 187-196.
- McTavish, J. R., MacGregor, J. C., Wathen, C. N., & MacMillan, H. L. (2016). Children's exposure to intimate partner violence: an overview. *International Review of Psychiatry*, 28(5), 504-518.
- Mednick, S. A., Gabrielli, W. F., & Hutchings, B. (1984). Genetic influences in criminal convictions: Evidence from an adoption cohort. *Science*, 224(4651), 891-894.
- Melby, J. N., Conger, R. D., Book, R., Rueter, M., Lucy, L., Repinski, D., & Scaramella, L. (1989). *The Iowa Family Interaction Rating Scales (editions 1–4)*. Ames: Institute for Social and Behavioral Research, Iowa State University.
- Melby, J. N., Ge, X., Conger, R. D., & Warner, T. D. (1995). The importance of task in evaluating positive marital interactions. *Journal of Marriage and the Family*, 981-994.
- Mendes, A. V., Loureiro, S. R., Crippa, J. A., de Meneses Gaya, C., García-Esteve, L., & Martín-Santos, R. (2012). Mothers with Depression, School-Age Children with Depression? A Systematic Review. *Perspectives in Psychiatric Care*, 48(3), 138-148.
- Merrifield, K. A., & Gamble, W. C. (2013). Associations among marital qualities, supportive and undermining coparenting, and parenting self-efficacy: Testing

spillover and stress-buffering processes. *Journal of Family Issues*, 34(4), 510-533.

Metz, M., Majdandžić, M., & Bögels, S. (2016). Concurrent and Predictive Associations Between Infants' and Toddlers' Fearful Temperament, Coparenting, and Parental Anxiety Disorders. *Journal of Clinical Child & Adolescent Psychology*, 1-12.

Meunier, J. C., Roskam, I., Stievenart, M., Van de Moortele, G., Browne, D. T., & Kumar, A. (2011). Externalizing behavior trajectories: The role of parenting, sibling relationships and child personality. *Journal of Applied Developmental Psychology*, 32(1), 20-33.

Miller, N. B., Cowan, P. A., Cowan, C. P., Hetherington, E. M., & Clingempeel, W. G. (1993). Externalizing in preschoolers and early adolescents: A cross-study replication of a family model. *Developmental Psychology*, 29(1), 3-18.

Minuchin, S. (1974). *Families and family therapy*. Harvard University Press.

Mistry, R. S., Lowe, E. D., Benner, A. D., & Chien, N. (2008). Expanding the family economic stress model: Insights from a mixed-methods approach. *Journal of Marriage and Family*, 70(1), 196-209.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group. (2009). Reprint-preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Physical therapy*, 89(9), 873-880.



- Möller, E. L., Nikolić, M., Majdandžić, M., & Bögels, S. M. (2016). Associations between maternal and paternal parenting behaviors, anxiety and its precursors in early childhood: A meta-analysis. *Clinical Psychology Review, 45*, 17-33.
- Montgomery, S. M., Bartley, M. J., & Wilkinson, R. G. (1997). Family conflict and slow growth. *Archives of Disease in Childhood, 77*(4), 326-330.
- Mullett, E. K., & Stolberg, A. (1999). The development of the Co-parenting Behaviors Questionnaire: An instrument for children of divorce. *Journal of Divorce & Remarriage, 31*(3-4), 115-137.
- Murphy, S. E., Jacobvitz, D. B., & Hazen, N. L. (2016). What's so bad about competitive coparenting? Family-level predictors of children's externalizing symptoms. *Journal of Child and Family Studies, 25*(5), 1684-1690.
- Murray, L., Sinclair, D., Cooper, P., Ducournau, P., & Turner, P. (1999). The socioemotional development of 5 year old children of postnatally depressed mothers. *Journal of Child Psychology and Psychiatry, 40*, 1259-1271.
- Nath, S., Russell, G., Kuyken, W., Psychogiou, L., & Ford, T. (2016). Does father-child conflict mediate the association between fathers' postnatal depressive symptoms and children's adjustment problems at 7 years old? *Psychological Medicine, 46*(8), 1719-1733.
- Natsuaki, M. N., Shaw, D. S., Neiderhiser, J. M., Ganiban, J. M., Harold, G. T., Reiss, D., & Leve, L. D. (2014). Raised by depressed parents: is it an environmental risk?. *Clinical Child and Family Psychology Review, 17*(4), 357-367.

- Neiderhiser, J. M., Marceau, K., & Reiss, D. (2013). Four factors for the initiation of substance use by young adulthood: A 10-year follow-up twin and sibling study of marital conflict, monitoring, siblings, and peers. *Development and Psychopathology*, 25(1), 133-149.
- Nelson, C. A., Thomas, K. M., & De Haan, M. (2012). *Neuroscience of cognitive development: The role of experience and the developing brain*. John Wiley & Sons.
- Nelson, L. E., Thach, C. T., Shelton, M. M., & Boyer, C. B. (2015). Co-Parenting Relationship Experiences of Black Adolescent Mothers in Active Romantic Partnerships With the Fathers of Their Children. *Journal of family nursing*, 21(3), 413-442.
- Newland, L. A., Coyl, D. D., & Freeman, H. (2008). Predicting preschoolers' attachment security from fathers' involvement, internal working models, and use of social support. *Early Child Development and Care*, 178(7-8), 785-801.
- Nock, M. K., Kazdin, A. E., Hiripi, E., & Kessler, R. C. (2007). Lifetime prevalence, correlates, and persistence of oppositional defiant disorder: results from the National Comorbidity Survey Replication. *Journal of Child Psychology and Psychiatry*, 48(7), 703-713.
- O'Donnell, E. H., Moreau, M., Cardemil, E. V., & Pollastri, A. (2010). Interparental conflict, parenting, and childhood depression in a diverse urban population: The role of general cognitive style. *Journal of Youth and Adolescence*, 39(1), 12-22.

- O'leary, S. G., & Vidair, H. B. (2005). Marital adjustment, child-rearing disagreements, and overreactive parenting: predicting child behavior problems. *Journal of Family Psychology, 19*(2), 208-216.
- Paley, B., Conger, R. D., & Harold, G. T. (2000). Parents' affect, adolescent cognitive representations, and adolescent social development. *Journal of Marriage and Family, 62*(3), 761-776.
- Panter-Brick, C., Burgess, A., Eggerman, M., McAllister, F., Pruett, K. & Leckman, J.F. (2014). Practitioner review: engaging fathers – recommendations for a game change in parenting interventions based on a systematic review of the global evidence. *Journal of Child Psychology and Psychiatry, 55*, 1187–1212.
- Paquette, D. (2004). Theorizing the father-child relationship: Mechanisms and developmental outcomes. *Human Development, 47*(4), 193-219.
- Parent, J., Jones, D. J., Forehand, R., Cuellar, J., & Shoulberg, E. K. (2013). The role of coparents in african american single-mother families: The indirect effect of coparent identity on youth psychosocial adjustment. *Journal of Family Psychology, 27*(2), 252-262.
- Parent, J., McKee, L. G., Anton, M., Gonzalez, M., Jones, D. J., & Forehand, R. (2016). Mindfulness in parenting and coparenting. *Mindfulness, 7*(2), 504-513.
- Patterson, G. R. (1976). The aggressive child: Victim and architect of a coercive system. *Behavior modification and families, 1*, 267-316.

- Patterson, G. R. (2016). Coercion theory: The study of change. *In*. T. J. Dishion & J. J. Snyder (Eds.) *The Oxford handbook of coercive relationship dynamics*, pp. 7-22. Oxford: Oxford University Press.
- Patterson, G. R., & Stoolmiller, M. (1991). Replications of a dual failure model for boys' depressed mood. *Journal of Consulting and Clinical Psychology*, 59(4), 491-498.
- Patterson, G. R., Forgatch, M. S., & DeGarmo, D. S. (2010). Cascading effects following intervention. *Development and Psychopathology*, 22(4), 949-970.
- Pavlov, I.P. (1928). *Conditioned reflexes: An investigation of the physiological activity of the cerebral cortex*. London: Oxford University Press.
- Pearce, P. (2003) Psychoanalytic/psychodynamic developmental theories. *In*. Simanowitz, V. & Pearce, P. (Eds.) *Personality Development*. Berkshire: Open University Press.
- Pears, K., Capaldi, D. M., & Owen, L. D. (2007). Substance use risk across three generations: the roles of parent discipline practices and inhibitory control. *Psychology of Addictive Behaviors*, 21(3), 373-386.
- Pedersen, N. L., McClearn, G. E., Plomin, R., Nesselroade, J. R., Berg, S., & DeFaire, U. (1991). The Swedish adoption twin study of aging: an update. *Acta Geneticae Medicae et Gemellologiae: Twin Research*, 40(1), 7-20.
- Pedro, M. F., Ribeiro, T., & Shelton, K. H. (2012). Marital satisfaction and partners' parenting practices: The mediating role of coparenting behavior. *Journal of Family Psychology*, 26(4), 509-522.

- Pemberton, C. K., Neiderhiser, J. M., Leve, L. D., Natsuaki, M. N., Shaw, D. S., Reiss, D., & Ge, X. (2010). Influence of parental depressive symptoms on adopted toddler behaviors: An emerging developmental cascade of genetic and environmental effects. *Development and Psychopathology*, 22(4), 803-818.
- Pesenti-Gritti, P., Spatola, C. A., Fagnani, C., Ogliari, A., Patriarca, V., Stazi, M. A., & Battaglia, M. (2008). The co-occurrence between internalizing and externalizing behaviors. *European Child & Adolescent Psychiatry*, 17(2), 82-92.
- Pine, D. S., Cohen, E., Cohen, P., & Brook, J. (1999). Adolescent depressive symptoms as predictors of adult depression: moodiness or mood disorder?. *American Journal of Psychiatry*, 156(1), 133-135.
- Pinquart, M. (2017). Associations of parenting dimensions and styles with externalizing problems of children and adolescents: An updated meta-analysis. *Developmental Psychology*, 53(5), 873-932.
- Polanczyk, G. V., Salum, G. A., Sugaya, L. S., Caye, A., & Rohde, L. A. (2015). Annual Research Review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. *Journal of Child Psychology and Psychiatry*, 56(3), 345-365.
- Power, J. J., Perlesz, A., Brown, R., Schofield, M. J., Pitts, M. K., McNair, R., & Bickerdike, A. (2012). Bisexual parents and family diversity: Findings from the work, love, play study. *Journal of Bisexuality*, 12(4), 519-538.
- Price, S., Serovich, J. M., Chapman, S. F., & Wright, D. W. (1992). Attachment between former spouses: Impact on co-parental communication and parental involvement. *Journal of Divorce & Remarriage*, 17(3-4), 109-119.

- Price-Robertson, R., Baxter, J., & Mathews, S. (2015). Longitudinal associations between fathers' mental health and the quality of their coparenting relationships. *Clinical psychologist*.
- Prinstein, M. J., & La Greca, A. M. (2004). Childhood peer rejection and aggression as predictors of adolescent girls' externalizing and health risk behaviors: a 6-year longitudinal study. *Journal of Consulting and Clinical Psychology*, 72(1), 103-112.
- Pruett, M. K., Ebling, R., & Cowan, P. A. (2011). Pathways from a US co-parenting intervention to legal outcomes. *International Journal of Law, Policy and the Family*, 25(1), 24-45.
- Pruett, M. K., Ebling, R., & Cowan, P. A. (2011). Pathways from a US co-parenting intervention to legal outcomes. *International Journal of Law, Policy and the Family*, 25(1), 24-45.
- Pudasainee-Kapri, S., & Razza, R. A. (2015). Associations Among Supportive Coparenting, Father Engagement and Attachment: The Role of Race/Ethnicity. *Journal of Child and Family Studies*, 24(12), 3793-3804.
- Quach, J. L., Nguyen, C. D., Williams, K. E., & Sciberras, E. (2018). Bidirectional associations between child sleep problems and internalizing and externalizing difficulties from preschool to early adolescence. *JAMA Pediatrics*, 172(2), e174363-e174363.

- R Core Team (2017). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <https://www.R-project.org/>.
- Ramchandani, P. G., Stein, A., O'connor, T. G., Heron, J. O. N., Murray, L., & Evans, J. (2008). Depression in men in the postnatal period and later child psychopathology: a population cohort study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 47(4), 390-398.
- Ramchandani, P., Stein, A., Evans, J., O'Connor, T. G., & ALSPAC Study Team. (2005). Paternal depression in the postnatal period and child development: a prospective population study. *The Lancet*, 365(9478), 2201-2205.
- Rector LaGraft, M., Stolz, H. E., & Brandon, D. J. (2015). Longitudinal Program Evaluation of "Parenting Apart: Effective Co-Parenting". *Journal of Divorce & Remarriage*, 56(2), 117-136.
- Reinherz, H. Z., Giaconia, R. M., Hauf, A. M. C., Wasserman, M. S., & Paradis, A. D. (2000). General and specific childhood risk factors for depression and drug disorders by early adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(2), 223-231.
- Reiss, D., Neiderhiser, J., Hetherington, E. M., & Plomin, R. (2000). The relationship code: Deciphering genetic and social patterns in adolescent development.
- Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: family social environments and the mental and physical health of offspring. *Psychological Bulletin*, 128(2), 330-366.

- Rhoades, K. A., Leve, L. D., Harold, G. T., Mannering, A. M., Neiderhiser, J. M., Shaw, D. S., ... & Reiss, D. (2012). Marital hostility and child sleep problems: Direct and indirect associations via hostile parenting. *Journal of Family Psychology*, 26(4), 488-498.
- Rhoades, K. A., Leve, L. D., Harold, G. T., Neiderhiser, J. M., Shaw, D. S., & Reiss, D. (2011). Longitudinal pathways from marital hostility to child anger during toddlerhood: Genetic susceptibility and indirect effects via harsh parenting. *Journal of Family Psychology*, 25(2), 282-291.
- Rice, F., Harold, G. T., Shelton, K. H., & Thapar, A. (2006). Family conflict interacts with genetic liability in predicting childhood and adolescent depression. *Journal of the American Academy of Child & Adolescent Psychiatry*, 45(7), 841-848.
- Rice, F., Lewis, G., Harold, G. T., & Thapar, A. (2013). Examining the role of passive gene–environment correlation in childhood depression using a novel genetically sensitive design. *Development and Psychopathology*, 25(01), 37-50.
- Riglin, L., Petrides, K. V., Frederickson, N., & Rice, F. (2014). The relationship between emotional problems and subsequent school attainment: A meta-analysis. *Journal of Adolescence*, 37(4), 335-346.
- Riina, E. M., & McHale, S. M. (2014). Bidirectional influences between dimensions of coparenting and adolescent adjustment. *Journal of Youth and Adolescence*, 43(2), 257-269.



- Rinaldi, C. M., & Howe, N. (2012). Mothers' and fathers' parenting styles and associations with toddlers' externalizing, internalizing, and adaptive behaviors. *Early Childhood Research Quarterly*, 27(2), 266-273.
- Ringoot, A. P., Tiemeier, H., Jaddoe, V. W., So, P., Hofman, A., Verhulst, F. C., & Jansen, P. W. (2015). Parental depression and child well-being: young children's self-reports helped addressing biases in parent reports. *Journal of Clinical Epidemiology*, 68(8), 928-938.
- Robinson, C. C., Mandelco, B., Olsen, S. F., & Hart, C. H. (2001). The parenting styles and dimensions questionnaire (PSDQ). In B. F. Perlmutter, J. Touliatos & G. W. Holden (Eds.), *Handbook of Family Measurement Techniques*. Vol. 2: Instruments and Index (p. 190).
- Rodriguez, A., Järvelin, M. R., Obel, C., Taanila, A., Miettunen, J., Moilanen, I., ... & Linnet, K. M. (2007). Do inattention and hyperactivity symptoms equal scholastic impairment? Evidence from three European cohorts. *BMC Public Health*, 7(1), 327.
- Roggman, L. A., Boyce, L., Cook, G. A., Christiansen, K., & Jones, D. (2007). Playing with daddy: Social toy play, early head start, and developmental outcomes. *Fathering: A Journal of Theory, Research, and Practice about Men as Fathers*, 2(1), 83-108.
- Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, 48(2), 1-36.

- Russell, L. T., Beckmeyer, J. J., Coleman, M., & Ganong, L. (2016). Perceived Barriers to Postdivorce Coparenting: Differences Between Men and Women and Associations with Coparenting Behaviors. *Family Relations*, 65(3), 450-461.
- Rutter, M. (2013). Developmental psychopathology: A paradigm shift or just a relabeling?. *Development and Psychopathology*, 25(4pt2), 1201-1213.
- Rutter, M., & Silberg, J. (2002). Gene-environment interplay in relation to emotional and behavioral disturbance. *Annual Review of Psychology*, 53(1), 463-490.
- Rye, M. S., Fleri, A. M., Moore, C. D., Worthington Jr, E. L., Wade, N. G., Sandage, S. J., & Cook, K. M. (2012). Evaluation of an intervention designed to help divorced parents forgive their ex-spouse. *Journal of Divorce & Remarriage*, 53(3), 231-245.
- Sadeh, A., Keinan, G., & Daon, K. (2004). Effects of stress on sleep: the moderating role of coping style. *Health Psychology*, 23(5), 542-545.
- Samek, D. R., & Hicks, B. M. (2014). Externalizing disorders and environmental risk: Mechanisms of gene-environment interplay and strategies for intervention. *Clinical Practice (London, England)*, 11(5), 537-547.
- Sasser, T. R., Bierman, K. L., & Heinrichs, B. (2015). Executive functioning and school adjustment: The mediational role of pre-kindergarten learning-related behaviors. *Early Childhood Research Quarterly*, 30, 70-79.
- Scaramella, L. V., Sohr-Preston, S. L., Callahan, K. L., & Mirabile, S. P. (2008). A test of the Family Stress Model on toddler-aged children's adjustment among

Hurricane Katrina impacted and nonimpacted low-income families. *Journal of Clinical Child & Adolescent Psychology*, 37(3), 530-541.

Schacht, P. M., Cummings, E. M., & Davies, P. T. (2009). Fathering in family context and child adjustment: A longitudinal analysis. *Journal of Family Psychology*, 23(6), 790-797.

Schermerhorn, A. C., D'onofrio, B. M., Turkheimer, E., Ganiban, J. M., Spotts, E. L., Lichtenstein, P., ... & Neiderhiser, J. M. (2011). A genetically informed study of associations between family functioning and child psychosocial adjustment. *Developmental Psychology*, 47(3), 707-725.

Schoppe, S. J., Mangelsdorf, S. C., & Frosch, C. A. (2001). Coparenting, family process, and family structure: Implications for preschoolers' externalizing behavior problems. *Journal of Family Psychology*, 15(3), 526-545.

Schoppe-Sullivan, S. J., Schermerhorn, A. C., & Cummings, E. M. (2007). Marital conflict and children's adjustment: Evaluation of the parenting process model. *Journal of Marriage and Family*, 69(5), 1118-1134.

Schoppe-Sullivan, S. J., Weldon, A. H., Claire Cook, J., Davis, E. F., & Buckley, C. K. (2009). Coparenting behavior moderates longitudinal relations between effortful control and preschool children's externalizing behavior. *Journal of Child Psychology and Psychiatry*, 50(6), 698-706.

Schrodt, P. (2011). Stepparents' and nonresidential parents' relational satisfaction as a function of coparental communication in stepfamilies. *Journal of Social and Personal Relationships*, 28(7), 983-1004.

- Schrodt, P., & Shimkowski, J. R. (2015). Family Communication Patterns and Perceptions of Coparental Communication. *Communication Reports*, 1-12.
- Scott, K. L., & Lishak, V. (2012). Intervention for maltreating fathers: Statistically and clinically significant change. *Child abuse & neglect*, 36(9), 680-684.
- Scott, S., Knapp, M., Henderson, J., & Maughan, B. (2001). Financial cost of social exclusion: follow up study of antisocial children into adulthood. *Bmj*, 323(7306), 191.
- Scrimgeour, M. B., Blandon, A. Y., Stifter, C. A., & Buss, K. A. (2013). Cooperative coparenting moderates the association between parenting practices and children's prosocial behavior. *Journal of Family Psychology*, 27(3), 506-511.
- Sellers, R., Harold, G. T., Elam, K., Rhoades, K. A., Potter, R., Mars, B., ... & Collishaw, S. (2014). Maternal depression and co-occurring antisocial behaviour: testing maternal hostility and warmth as mediators of risk for offspring psychopathology. *Journal of Child Psychology and Psychiatry*, 55(2), 112-120.
- Sellers, R., **Smith, A. F.**, Leve, L. D., Nixon, L., Cane, T., Cassell, J. A., Harold, G. T. (in press, 2019). Utilising Genetically-Informed Research Designs to Better Understand Family Processes and Child Development: Implications for Adoption and Foster-Care Focused Interventions. *Adoption and Fostering*.
- Seltzer, M. M., Shattuck, P., Abbeduto, L., & Greenberg, J. S. (2004). Trajectory of development in adolescents and adults with autism. *Mental Retardation and Developmental Disabilities Research Reviews*, 10(4), 234-247.

- Serbin, L.A., Moskowitz, D.S., Schwartzman, A.E., & Ledingham J.E. (2013) In K. H. Rubin, & D. J. Pepler (Eds.). *The development and treatment of childhood aggression* (pp.55-70). New York: Psychology Press.
- Shapiro, A. F. (1996). The triadic interaction coding system. Unpublished laboratory manual, Tempe: Arizona State University.
- Shaw, D. S., & Emery, R. E. (1987). Parental conflict and other correlates of the adjustment of school-age children whose parents have separated. *Journal of Abnormal Child Psychology*, 15(2), 269-281.
- Shelton, K. H., & Harold, G. T. (2008). Interparental conflict, negative parenting, and children's adjustment: Bridging links between parents' depression and children's psychological distress. *Journal of Family Psychology*, 22(5), 712- 724.
- Shelton, K.K., Frick, P.J., & Wootton, J. (1996). Assessment of Parenting Practices in Families of Elementary School-Age Children. *Journal of Clinical Child Psychology*, 25(3), 317-329.
- Silk, J. S., Shaw, D. S., Prout, J. T., O'Rourke, F., Lane, T. J., & Kovacs, M. (2011). Socialization of emotion and offspring internalizing symptoms in mothers with childhood-onset depression. *Journal of Applied Developmental Psychology*, 32(3), 127-136.
- Sivertsen, B., Harvey, A. G., Reichborn-Kjennerud, T., Torgersen, L., Ystrom, E., & Hysing, M. (2015). Later emotional and behavioral problems associated with sleep problems in toddlers: a longitudinal study. *JAMA Pediatrics*, 169(6), 575-582.

Skinner, B. F. (1958). Teaching machines. *Science*, 128(3330), 969-977.

Slemming, K., Sørensen, M. J., Thomsen, P. H., Obel, C., Henriksen, T. B., & Linnet, K. M. (2010). The association between preschool behavioural problems and internalizing difficulties at age 10–12 years. *European Child & Adolescent Psychiatry*, 19(10), 787-795.

Snell, T., Knapp, M., Healey, A., Guglani, S., Evans-Lacko, S., Fernandez, J. L., ... & Ford, T. (2013). Economic impact of childhood psychiatric disorder on public sector services in Britain: estimates from national survey data. *Journal of Child Psychology and Psychiatry*, 54(9), 977-985.

Snyder, D. K. (1997). *Marital satisfaction inventory, revised (MSI-R)*. Los Angeles, CA: Western Psychological Services.

Sobolewski, J. M., & King, V. (2005). The importance of the coparental relationship for nonresident fathers' ties to children. *Journal of Marriage and Family*, 67(5), 1196-1212.

Solmeyer, A. R., & Feinberg, M. E. (2011). Mother and father adjustment during early parenthood: The roles of infant temperament and coparenting relationship quality. *Infant Behavior and Development*, 34(4), 504-514.

Solmeyer, A. R., Feinberg, M. E., Coffman, D. L., & Jones, D. E. (2014). The effects of the Family Foundations prevention program on coparenting and child adjustment: A mediation analysis. *Prevention Science*, 15(2), 213-223.

- Song, J. H., & Volling, B. L. (2015). Coparenting and children's temperament predict firstborns' cooperation in the care of an infant sibling. *Journal of Family Psychology*, 29(1), 130-135.
- Sonnenblick, R., & Schwarz, J. C. (1992). The Development of the Post-Divorce Parental Conflict Scale.
- Sroufe, L. A. (2005). Attachment and development: A prospective, longitudinal study from birth to adulthood. *Attachment & Human Development*, 7(4), 349-367.
- Sroufe, L. A. (2013). The promise of developmental psychopathology: Past and present. *Development and Psychopathology*, 25(4pt2), 1215-1224.
- Sroufe, L. A., & Rutter, M. (1984). The domain of developmental psychopathology. *Child Development*, 17-29.
- Stallman, H. M., & Ohan, J. L. (2016). Parenting Style, Parental Adjustment, and Co-Parental Conflict: Differential Predictors of Child Psychosocial Adjustment Following Divorce. *Behaviour Change*, 1-15.
- Stanley, S. M., & Markman, H. J. (1997). Marriage in the 90s: A nationwide random phone survey. Denver, CO: PREP.
- Stanley, S. M., Markman, H. J., Prado, L. M., Olmos-Gallo, P. A., Tonelli, L., St Peters, M., ... & Whitton, S. W. (2001). Community-based premarital prevention: Clergy and lay leaders on the front lines. *Family Relations*, 50(1), 67-76.
- Stevens, R. (1983). *Freud and psychoanalysis: an exposition and appraisal*. Taylor & Francis Group.

- Stiles, M. M. (2002). Witnessing domestic violence: the effect on children. *American Family Physician*, 66(11), 2052-2055.
- Stover, C. S., Connell, C. M., Leve, L. D., Neiderhiser, J. M., Shaw, D. S., Scaramella, L. V., ... & Reiss, D. (2012). Fathering and mothering in the family system: Linking marital hostility and aggression in adopted toddlers. *Journal of Child Psychology and Psychiatry*, 53(4), 401-409.
- Stover, C. S., Zhou, Y., Kiselica, A., Leve, L. D., Neiderhiser, J. M., Shaw, D. S., ... & Reiss, D. (2016). Marital hostility, hostile parenting, and child aggression: Associations from toddlerhood to school age. *Journal of the American Academy of Child & Adolescent Psychiatry*, 55(3), 235-242.
- Strachan, A., Lund, M. E., & Garcia, J. A. (2010). Assessing Children's Perceptions of Family Relationships: An Interactive Instrument for Use in Custody Disputes. *Journal of Child Custody*, 7(3), 192-216.
- Stright, A. D., & Bales, S. S. (2003). Coparenting quality: Contributions of child and parent characteristics. *Family Relations*, 52(3), 232-240.
- Stroud, C. B., Durbin, C. E., Wilson, S., & Mendelsohn, K. A. (2011). Spillover to triadic and dyadic systems in families with young children. *Journal of Family Psychology*, 25(6), 919-930.
- Stroud, C. B., Meyers, K. M., Wilson, S., & Durbin, C. E. (2015). Marital quality spillover and young children's adjustment: Evidence for dyadic and triadic parenting as mechanisms. *Journal of Clinical Child & Adolescent Psychology*, 44(5), 800-813.



- Sturge-Apple, M. L., Davies, P. T., & Cummings, E. M. (2006). Impact of hostility and withdrawal in interparental conflict on parental emotional unavailability and children's adjustment difficulties. *Child Development*, 77(6), 1623-1641.
- Sweeney, S., & MacBeth, A. (2016). The effects of paternal depression on child and adolescent outcomes: a systematic review. *Journal of Affective Disorders*, 205, 44-59.
- Sweeper, S., & Halford, K. (2006). Assessing adult adjustment to relationship separation: the psychological adjustment to separation test (PAST). *Journal of Family Psychology*, 20(4), 632-640.
- Talbot, J. A., Baker, J. K., & McHale, J. P. (2009). Sharing the love: Prebirth adult attachment status and coparenting adjustment during early infancy. *Parenting: Science and Practice*, 9(1-2), 56-77.
- Teti, D. M., Shimizu, M., Crosby, B., & Kim, B. R. (2016). Sleep arrangements, parent–infant sleep during the first year, and family functioning. *Developmental Psychology*, 52(8), 1169-1181.
- Teubert, D., & Pinquart, M. (2010). The association between coparenting and child adjustment: A meta-analysis. *Parenting: Science and Practice*, 10(4), 286-307.
- Thapar, A., & van Goozen, S. (2018). Conduct disorder in ADHD. In T. Banaschewski, D. Coghill & A. Zuddas (Eds.) *Oxford Textbook of Attention Deficit Hyperactivity Disorder* (pp. 193-199). Oxford: Oxford University Press.
- Thapar, A., Harold, G., Rice, F., Ge, X., Boivin, J., Hay, D., ... & Lewis, A. (2007). Do intrauterine or genetic influences explain the foetal origins of chronic disease? A

novel experimental method for disentangling effects. *BMC Medical Research Methodology*, 7(1), 25.

Tinbergen, N. (1963). On aims and methods of ethology. *Zeitschrift für Tierpsychologie*, 20(4), 410-433.

Togliatti, M. M., Lavadera, A. L., & Benedetto, R. (2011). How couples re-organized themselves following divorce: Adjustment, co-parenting and family alliance. *Life Span and Disability*, 14(1), 55-74.

Touchette, É., Petit, D., Séguin, J. R., Boivin, M., Tremblay, R. E., & Montplaisir, J. Y. (2007). Associations between sleep duration patterns and behavioral/cognitive functioning at school entry. *Sleep*, 30(9), 1213-1219.

Troxel, W. M., & Matthews, K. A. (2004). What are the costs of marital conflict and dissolution to children's physical health?. *Clinical Child and Family Psychology Review*, 7(1), 29-57.

Ullsperger, J. M., Nigg, J. T., & Nikolas, M. A. (2016). Does child temperament play a role in the association between parenting practices and child attention deficit/hyperactivity disorder?. *Journal of Abnormal Child Psychology*, 44(1), 167-178.

Umemura, T., Christopher, C., Mann, T., Jacobvitz, D., & Hazen, N. (2015). Coparenting problems with toddlers predict children's symptoms of psychological problems at age 7. *Child Psychiatry & Human Development*, 46(6), 981-996.

Üstün, T. B., Ayuso-Mateos, J. L., Chatterji, S., Mathers, C., & Murray, C. J. (2004).

Global burden of depressive disorders in the year 2000. *The British Journal of Psychiatry*, 184(5), 386-392.

van Buuren, S., & Groothuis-Oudshoorn, K. (2011). Mice: multivariate imputation by

chained equations in R. *Journal of Statistical Software*, 45(3), 1–67.

Van Egeren, L. A. (2004). The development of the coparenting relationship over the

transition to parenthood. *Infant Mental Health Journal: Official Publication of The World Association for Infant Mental Health*, 25(5), 453-477.

Van Egeren, L. A., & Hawkins, D. P. (2004). Coming to terms with coparenting:

Implications of definition and measurement. *Journal of Adult Development*, 11(3), 165-178.

Vera, J., Granero, R., & Ezpeleta, L. (2012). Father's and mother's perceptions of

parenting styles as mediators of the effects of parental psychopathology on antisocial behavior in outpatient children and adolescents. *Child Psychiatry & Human Development*, 43(3), 376-392.

Verboom, C. E., Sijtsma, J. J., Verhulst, F. C., Penninx, B. W., & Ormel, J. (2014).

Longitudinal associations between depressive problems, academic performance, and social functioning in adolescent boys and girls. *Developmental Psychology*, 50(1), 247-257.

Verhoeven, M., Junger, M., van Aken, C., Deković, M., & van Aken, M. A. (2010).

Parenting and children's externalizing behavior: Bidirectionality during toddlerhood. *Journal of Applied Developmental Psychology*, 31(1), 93-105.

- Viry, G. (2014). Coparenting and children's adjustment to divorce: The role of geographical distance from fathers. *Journal of Divorce & Remarriage*, 55(7), 503-526.
- Waller, M. R. (2012). Cooperation, conflict, or disengagement? Coparenting styles and father involvement in fragile families. *Family Process*, 51(3), 325-342.
- Wallerstein, J. S., & Lewis, J. (1998). The long-term impact of divorce on children: A first report from a 25-year study. *Family Court Review*, 36(3), 368-383.
- Wang, C., Xia, Y., Li, W., Wilson, S. M., Bush, K., & Peterson, G. (2016). Parenting behaviors, adolescent depressive symptoms, and problem behavior: the role of self-esteem and school adjustment difficulties among Chinese adolescents. *Journal of Family Issues*, 37(4), 520-542.
- Wang, M. T., Chow, A., Hofkens, T., & Salmela-Aro, K. (2015). The trajectories of student emotional engagement and school burnout with academic and psychological development: Findings from Finnish adolescents. *Learning and Instruction*, 36, 57-65.
- Watson, J.B. (1924) Behaviorism, New York: Routledge.
- Wehmeier, P. M., Schacht, A., & Barkley, R. A. (2010). Social and emotional impairment in children and adolescents with ADHD and the impact on quality of life. *Journal of Adolescent Health*, 46(3), 209-217.
- Weinfield, N. S., Ingerski, L. & Moreau, S. C. (2009) Maternal and paternal depressive symptoms as predictors of toddler adjustment. *Journal of Child and Family Studies*, 18, 39-47.

- Whisman, M. A., & Beach, S. R. (2012). Couple therapy for depression. *Journal of Clinical Psychology*, 68(5), 526-535.
- Whisman, M. A., Uebelacker, L. A., & Weinstock, L. M. (2004). Psychopathology and marital satisfaction: The importance of evaluating both partners. *Journal of Consulting and Clinical Psychology*, 72(5), 830-838.
- Wiesner, M., Capaldi, D.M. & Patterson, G.R. (2003) Development of antisocial behaviour and crime afros the life-span from a social interaction perspective: The coercion model. In Akers, R.L. & Jensen, G.F. (Eds.) *Social Learning Theory and the Explanation of Crime*. New Jersey: Transaction Publishers.
- Williams, Deadric T., Jacob E. Cheadle, and Bridget J. Goosby (2015) Hard times and heart break: Linking economic hardship and relationship distress. *Journal of Family Issues* 36(7), 924-950.
- Winnicott, D. W. (2012). *Playing and reality*. London: Routledge.
- Woltering, S., Lishak, V., Hodgson, N., Granic, I., & Zelazo, P. D. (2016). Executive function in children with externalizing and comorbid internalizing behavior problems. *Journal of Child Psychology and Psychiatry*, 57(1), 30-38.
- Wood, J. J., & Repetti, R. L. (2004). What gets dad involved? A longitudinal study of change in parental child caregiving involvement. *Journal of Family Psychology*, 18(1), 237.
- Yárnoz-Yaben, S. (2010). Attachment style and adjustment to divorce. *The Spanish Journal of Psychology*, 13(1), 210-219.

Yárnoz-Yaben, S., & Comino, P. (2010). El CAD-S, un cuestionario para la evaluación de la adaptación al divorcio-separación. (The CAD-S, an instrument for the assessment of adaptation to divorce-separation). *Psicothema*, 22, 157–162.