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## Reexamining the Association Between the Interparental Relationship and Parent–Child Interactions: Incorporating Heritable Influences

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### Abstract

Family systems research has identified two key processes (spillover and compensatory), linking interparental relationship quality to the parent–child relationship. However, previous research has focused on the parent as the sole initiator and had not often considered the role of the child in these processes. The present study adds to the literature by leveraging a genetically informed design to examine possible child evocative effects on spillover and compensatory processes. Participants were from a longitudinal parent-offspring adoption sample of 361 linked sets of adoptive parents of an adopted child (57% male), and the child’s birth parents. Adoptive parents reported on child pleasure and anger at 18 months and the interparental relationship at 27 months. Parent–child interactions were observed at child age 6 years, and heritable influences were assessed via birth mother self-report at 5 months. Our results indicated a dampening effect where higher interparental warmth at child age 27 months was associated with less adoptive mother–child coercion at child age 6 years, and a compensatory effect where higher interparental conflict was associated with more adoptive father–child positive engagement. Moreover, our results indicated child-driven effects via both genetic and environmental pathways. Specifically, higher levels of birth mother negative affect (heritable characteristic) were associated with lower levels of adoptive father–child coercion. Also, child anger was positively associated with interparental

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conflict, and child pleasure was positively associated with interparental warmth. These findings support findings from the family literature with evidence of compensatory mechanisms, while also highlighting the active role children play in shaping family interactions.

### Keywords

family systems; interparental relationship; evocative gene-environment correlation; parent-child relationship

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The interparental relationship has been shown to be associated with children's adjustment through the parent-child relationship (Buehler & Gerard, 2002; Davies et al., 2004; Erel & Burman, 1995; Krishnakumar & Buehler, 2000; Lindahl et al., 2004; Sturge-Apple et al., 2006). This association is often described as resulting from the interconnected nature of subsystems within the family. Specifically, each subsystem (e.g., interparental) influences how other subsystems (e.g., parent-child) function (Cox & Paley, 1997; Minuchin, 1985). At least one study found that the associations across subsystems are stronger during middle childhood than in early childhood (Krishnakumar & Buehler, 2000). One possible reason for this increased subsystem sensitivity during middle childhood could be that as children's cognitive and social skills develop, the children's behaviors begin to make a larger contribution to family dynamics (e.g., Schermerhorn et al., 2007). In addition, some of the child's behavioral influences on the parent-child relationship or interparental relationship could be partly due to heritable characteristics of the child. To date much of the literature examining how family subsystems are interconnected has not considered child-driven effects on these processes and whether these child-driven effects may differ for mothers and fathers. Therefore, the current study investigated environmental and heritable mechanisms for the interconnections among family subsystems using a prospective adoption design. This approach allowed us to examine both the associations between the interparental and parent-child relationships and the child's role in shaping family dynamics through evocative gene-environment correlation ( $r_{GE}$ ). Additionally, the current study allowed us to examine the potential for early risk factors (both child emotion and the interparental relationship) to influence parent-child relationships in middle childhood.

### The Influence of the Interparental Relationship on Parenting

The interparental relationship may influence child adjustment through spillover and compensatory processes. The *spillover process* refers to the transfer of affect from one relationship to another (Engfer, 1988; Krishnakumar & Buehler, 2000). and has typically been described in terms of interparental negativity resulting in—or “spilling over to”—increased negativity in the parent-child relationship. In contrast, a *compensatory process* may occur such that parents in conflictual relationships may invest more energy in their relationship with their child in an attempt to make up for negativity in the interparental relationship (Engfer, 1988). A compensatory process would be indicated by higher levels of interparental discord associated with higher levels of parent-child positivity. To date there is more support for a spillover process, rather than a compensatory process, in families from cross-sectional and longitudinal studies across early and middle childhood

(Buehler & Gerard, 2002; Davies et al., 2004; Erel & Burman, 1995; Gerard et al., 2006; Krishnakumar & Buehler, 2000; Owen & Cox, 1997). For example, several studies have reported that interparental conflict has been associated with a lack of parental acceptance and involvement, and increased harsh discipline toward the child during middle childhood (Buehler & Gerard, 2002; Davies et al., 2004; Gerard et al., 2006). This is also evident in some research suggesting that fathers' parenting is more vulnerable to the interparental relationship as compared with mothers' (Cummings et al., 2010; Dunn et al., 2005; Finger et al., 2010; Goeke-Morey & Cummings, 2007; Krishnakumar & Buehler, 2000; Stroud et al., 2015). In contrast, some studies have reported that interparental discord was positively associated with sensitive and warm parenting (Belsky & Fearon, 2004; Sturge-Apple et al., 2014), suggesting parents might also compensate for their negative partner relationship by interacting positively with their child. Whereas the majority of the literature supports the spillover process in families, the complex nature of family dynamics and findings of compensatory processes hints at the need to further consider multiple dimensions of the interparental relationship.

Family dynamics are complicated and interconnected, and whereas most of the literature focuses on the deleterious effects of disruptions within the family system, there are fewer studies examining the strengths evident within families that may also occur. Examining both positive and negative features of the interparental relationship would promote a more comprehensive understanding of the complex role that the interparental dyad plays in influencing parenting. For example, Warmuth et al. (2020) distinguished between constructive conflict (cooperation, warmth, and problem solving) and destructive conflict (verbal and physical aggression, and hostility) and examined their relationships with parenting. Constructive interparental conflict when the child was six, was negatively associated with mother and father unsupportive reactions approximately one year later (e.g., distress, punitive reactions), while destructive interparental conflict was positively associated with parents unsupportive reactions (Warmuth et al., 2020). Similarly, Stroud and colleagues (2015) found that a positive interparental relationship (warmth, low distress) was associated with lower levels of triadic hostility (among parents and child). This study also found that a positive interparental relationship was associated with higher levels of father responsiveness and triadic warmth. These studies provide support for both a dampening effect, such that positive interparental relationships decrease negative parenting behaviors, but also a positive spillover effect. By expanding the interparental relationship to include positive and negative features, such as conflict and warmth, research can gain further insight into the complex dynamics of the family system and mechanisms of influence that can differentially impact child development, and therefore allow for a strengths-based approach to models of the family. Therefore, this study sought to further clarify these processes and their respective roles in family dynamics by considering the role of the child and their heritable characteristics.

## The Role of Child Emotions in the Family

Most of the research examining spillover and compensatory processes examines interparental and parenting behavior without considering the roles that the child and developmental timing may play in shaping interactions in the parent-child and interparental

relationships. During the toddler years, children show rapid development in physical and mental (cognitive functioning and socially) capabilities (Campbell et al., 2000; Chang & Shaw, 2016). This normative developmental challenge puts an added level of stress on parents who have to navigate and adapt to the child's increased capacities. In particular, children's emotions and behaviors early in development can have a lasting influence on relationships within the family (i.e., interparental and parent-child relationships; Kiff et al., 2011), although there is less work examining differential effects on parents (mothers vs. fathers; e.g., Schermerhorn et al., 2007). For example, child dysregulation at 6 and 12 months of age was concurrently associated with lower levels of interparental satisfaction for both mothers and fathers, and the child's dysregulation was also associated with lower mother involvement at six-months, and lower father involvement at 12-months through the interparental relationship (Mehall et al., 2009). This work highlights that difficult children can strain the interparental relationship (Laxman et al., 2013; Leve et al., 2001; Mehall et al., 2009), possibly due to the competing interests of parenthood and the interparental relationship. In addition, the child's emotions can negatively impact the interparental relationship and those alterations in the interparental relationship can, in turn, have lasting effects on the parent-child relationship. Additionally, cross sectional and longitudinal work has found that child negative emotionality (in toddlerhood and preschool) has been associated with more parental (both mother and father) negativity and less sensitivity (Fields et al., 2017; Neitzel & Stright, 2004), while infant positive emotion expression was associated with less negative parenting when the child was 18 months old (Bridgett et al., 2013). These findings demonstrate that child emotions during early childhood can have both concurrent and lasting influences on parent behavior both within the interparental relationship and the parent-child relationship, highlighting the importance of incorporating the early behavior of children when examining family relationships longitudinally.

## **The Value of Incorporating Genetic Influences Within Family Process Models**

Most family studies do not take the genetic relatedness of family members into account and thus may overemphasize the presumed environmental influences of spillover effects. By using genetically informed designs, it is possible to better understand the processes that underlie associations between interparental and parent-child relationships. Parent-offspring adoption designs, specifically, help to provide a more comprehensive examination of how parents parent their child(ren) and how children influence their parents by disentangling heritable and environmental influences and their interplay on relationships within the family (Knopik et al., 2017; Shewark & Neiderhiser, 2019). For children placed at or near birth, birth parents provide genes, but not the rearing environment, and adoptive parents provide the rearing environment but not genes. This clear separation between the rearing environment and genetic influences makes the parent-offspring design ideal for examining evocative  $rGE$ , while ruling out passive  $rGE$ , to better distinguish child and parent effects. Passive  $rGE$  occurs when the child experiences their environment provided by their parents that are correlated with their genes, and since the adoptive parents do not share the same genes with the child this effect is ruled out (Knopik et al., 2017). Most relevant for understanding gene-environment interplay in the current study is evocative gene-BB

environment correlation ( $r_{GE}$ ), which occurs when individuals evoke responses from their environment partially due to their heritable characteristics (Knopik et al., 2017; Plomin et al., 1977; Scarr & McCartney, 1983). For example, children's characteristics, like anger and pleasure, can influence both parent-child interactions and interparental interactions by evoking more positivity or negativity from their parents (Horwitz & Neiderhiser, 2011; Reiss et al., 2000). These child characteristics are partially heritable (Tackett et al., 2013), thus, these associations may be due, in part, to evocative  $r_{GE}$ . Therefore, because previous research on family process has not accounted for shared genes within the family, such research may be missing an important mechanism by which children influence the family.

Although evocative  $r_{GE}$  is a potential mechanism of influence in the interparental relationship and parent-child relationship, it is frequently overlooked in the literature. There is limited research examining the influence of children's heritable characteristics on the interparental relationship during early childhood, with most research examining adolescents and their families. For example, studies have found that in adolescence, parental disagreement about the child was partially due to heritable characteristics of the child (evocative  $r_{GE}$ ; Reiss et al., 2000; Neiderhiser et al., 2013) and in one study, adolescent attention-deficit/hyperactivity disorder (ADHD) symptoms were associated with marital conflict after controlling for genetic influences (Schermerhorn et al., 2012). These studies provide support for the role of the child's heritable characteristics in the interparental relationship during adolescence and because this child is developing these behaviors in middle childhood, it is reasonable to assume these processes could be present in middle childhood as well.

In comparison, there is a substantial literature showing that children influence the parent-child relationship and that a portion of this is explained by heritable pathways via evocative  $r_{GE}$  in infancy and childhood (e.g., Harold et al., 2013; Klahr & Burt, 2014). Using data from the Early Growth and Development Study, several findings of evocative child effects have emerged (Hajal et al., 2015; Harold et al., 2013; Liu et al., 2020). For instance, negative emotionality during toddlerhood was associated with higher levels of parent overreactivity during toddlerhood (Liu et al., 2020), and children's impulsivity during preschool age was associated with higher levels of parental hostility at 6 years old (Harold et al., 2013). In both instances, this association was partially explained by heritable influences. Not only is evocative  $r_{GE}$  an important mechanism for understanding how children may be influencing their parents, it can also be differentially impact mothers and fathers. Indeed, Hajal et al. (2015) found that in infancy, birth mother reward dependence was negatively associated with adoptive fathers' harsh parenting at 9 months (evocative  $r_{GE}$  pathway), but not with adoptive mothers' harsh parenting. These findings also provide corroborating evidence that children are actively involved in structuring the parent-child interaction and that heritable characteristics are one mechanism through which family processes (i.e., spillover and compensatory) unfold.

Finally, there have been a few reports that examined the influence of the interparental relationship on parenting and parent-child relationships using genetically informed designs. One study found that as the interparental relationship quality declined, evocative effects of the child on the parent-child relationship increased (Ulbricht et al., 2013), highlighting that

challenges in the interparental relationship may increase parents' susceptibility to genetic effects. Two studies using the current sample found that interparental hostility in infancy was positively associated with mother and father harsh discipline during toddlerhood (Rhoades et al., 2011), and that concurrent interparental conflict was associated with mother and father hostility at child age 6 years (Harold et al., 2013). Although these studies found evidence of spillover effects in toddlerhood and middle childhood, evocative effects of the child on parenting and the interparental relationship were not assessed, nor were the potential longitudinal effects of the child and interparental influences on parent–child relationships. The current report extends prior investigations by considering how heritable characteristics of the child during infancy may influence the interparental relationship and the parent–child relationship into middle childhood.

## The Current Study

The current study expands on existing spillover and compensatory research by considering the role of early child emotion in evoking different types of interparental relationship quality and parenting in toddlerhood and parenting in middle childhood (Figure 1). Therefore, we examined if early factors (child emotion and the interparental relationship) have a lasting influence on the parent–child relationship in middle childhood. We also examined the degree to which the child's effects on parenting are accounted for by evocative, heritable influences (via birth mother negative emotionality). This study has three hypotheses.

1. We hypothesized multiple influences on parenting behaviors in middle childhood, including the following:
  - a. Spillover process—Interparental conflict at 27 months will be positively associated with later parent-child coercion and interparental warmth will be positively associated with later parent–child engagement.
  - b. Evocative  $r$ GE process—Birth mother (BM) negative affect will be positively associated with adoptive parent coercion through higher levels of child anger, while BM negative affect will be negatively associated with adoptive parent engagement through higher levels of child anger. BM negative affect will be positively associated with adoptive parent coercion, through lower levels of child pleasure and negatively associated with adoptive parent engagement, through lower levels of child pleasure.
2. We hypothesized differential longitudinal effects of the early interparental relationship on mother's and father's interactions with their child, such that interparental conflict will be associated with higher levels of later father coercion. We do not expect to see this association for mothers based on the previous literature.
3. We hypothesized an evocative  $r$ GE effect on the interparental relationship, such that higher levels of BM negative affect will be positively associated with interparental conflict through child anger.

## Method

### Participants and Procedure

The Early Growth and Development Study (EGDS) is a parent–offspring adoption study of 561 linked sets of families (adopted child, adoptive parents, and birth parents) in two cohorts (Leve et al., 2019). For the current study, we use Cohort I ( $N = 361$  families) only as the parent–child relationship interaction coding has not been completed for Cohort II at age 6. Most of the adoptive parents are Caucasian (mothers: 91.4%, fathers: 90.2%), married (mothers: 83.1%, fathers: 83.9%), have a household median income of between \$100,000 and \$125,000, are highly educated (median education level was some college), and were on average in their thirties at the child’s birth (mothers:  $M = 37.78$  years,  $SD = 5.54$  years; fathers:  $M = 38.46$  years,  $SD = 5.78$  years). Adopted children were majority male (57.3%) and Caucasian (57.1%). Most birth mothers were Caucasian (71.1%), with an income between \$15,000 and \$25,000, about half (52.7%) were married or living in a committed-like relationship and were younger than the adoptive parents at the time of the child’s birth (mothers:  $M = 24.12$  years,  $SD = 5.89$  years). Families were recruited through adoption agencies throughout the Mid Atlantic, the Northwest, and Southwest regions. The child was placed with a nonrelative within 3 months of birth ( $M = 7.11$  days,  $SD = 13.28$  days). More information about this sample, including specifics about recruitment, is provided in Leve et al. (2019). All participants were assessed longitudinally through in-person and phone interviews. Assessments covered a wide range of topics including family relationships, adoption planning, psychosocial behaviors, and child behaviors. The present study used the birth mother assessments at 5 and 18 months postpartum, and adoptive family assessments when the child was 18 months, 27 months, and 6 years of age. Because of the amount of missing data for birth fathers (~76% missing), they were excluded from the study. Additionally, due to the interest in differential influences on mothers and fathers, same sex parents and single parents were removed from the analysis. All procedures were approved by the University of Oregon Institutional Review Board (Project No.: 08082016.007; Title: *The Early Growth and Development Study Pediatric Cohort*) and informed consent was obtained from all participants. This study was not preregistered and the data are not publicly available due to privacy or ethical restrictions.

### Attrition

Of the sample of 361 families, 51 mothers (14.13%) and 70 fathers (19.40%) did not participate at the child age 6 assessment. Comparisons of demographic information (e.g., child sex, parent age, family income, openness of adoption, parent education) revealed only one predictor of attrition at this age: Older adoptive parents were more likely to not participate at this assessment,  $t(359) = 1.98$ ,  $p = .048$ ; however, after accounting for multiple testing this was not significant.

### Measures

**Birth Mother Negative Affect**—At 18 months postpartum birth mothers completed the 77-item short form of the Adult Temperament Questionnaire (Rothbart et al., 2000). The 26-item negative affect subscale was used in the current study ( $\alpha = .81$ ; example item: “It doesn’t take very much for me to feel frustrated or irritated”).

**Child Anger and Pleasure**—Adoptive parents reported on the child's anger and pleasure at 18 months using the Toddler Behavior Assessment Questionnaire (Goldsmith, 1996). The Anger and Pleasure subscales ( $\alpha = .87$  and  $.86$ ) were used for the current study. Example items include "How often did your child try to push you away?" and "When in the bathtub, how often did your child babble or talk happily?" Adoptive mother and father reports of temperament were correlated ( $r_s = .41-.56$ ); therefore, they were averaged to create composites for child anger and pleasure.

**Interparental Conflict and Warmth**—Adoptive parents self-reported on the interparental relationship at child age 27 months. The Behavior Affective Rating Scale (Melby et al., 1995) was used to assess conflict and warmth within the relationship. Each partner reported about their own behavior and their perception of their partner's behavior on a 7-point Likert scale (adoptive mother warmth: partner  $\alpha = .93$ , self  $\alpha = .92$ ; adoptive father warmth: partner  $\alpha = .93$ , self  $\alpha = .92$ ; adoptive mother hostility partner  $\alpha = .89$ , self  $\alpha = .89$ ; adoptive father hostility: partner  $\alpha = .92$ , self  $\alpha = .89$ , respectively). Example items include: "How often did your partner criticize you or your ideas," "Not listen to your partner but do all the talking yourself," and "Help your partner do something that was important to him/her." The Marital Instability Index (Booth et al., 1983) included five items on feelings about divorce completed by each partner, "thought about divorce" (adoptive mother  $\alpha = .84$ , adoptive father  $\alpha = .79$ ). Two latent variables (interparental warmth and interparental conflict) were created using self-reported marital quality and marital instability reported by each adoptive parent.

**Parental Coercion and Engagement**—Parent-child interaction quality was assessed for each dyad during a video recorded behavioral task when the adopted child was 6 years old. Parents were asked to help the child create objects using puzzle pieces (e.g., duck). The parent and child were video recorded for five minutes while they completed this puzzle together and the coding was completed using the Relationship Affect Coding System (Dishion et al., 2017). This coding system captures behaviors and affect within the parent-child interaction that are indicative of different types of interactions: positive engagement, neutral engagement, coercion, and noninteractive. For the purpose of this study, we focused on positive engagement and coercion. Positive engagement included the time that the caregiver and the child was either positive or neutral (e.g., positive affect, or saying things like "Good job!"). Coercion included the time that both the caregiver and child were negatively engaged and directive while the other person was not talking, ignoring, negative or directive (e.g., negative affect, or when the child says "This is dumb"). Mother-child dyads and father-child dyads were coded separately (mother-child  $\kappa = .91$ ; father-child  $\kappa = .94$ ). For this study, we used the proportion of time spent in positive engagement or coercion. Because of the positive skew of the coercive interactions, we used a log transformation.

**Covariates**—We included openness of adoption, obstetric complications, adoptive parent age, and sex of the child as covariates (Leve et al., 2019). Openness in adoption, the extent to which the birth mother and adoptive parents had contact and knowledge of one another, was included to control for the similarities between the birth parents and adoptive families that might have resulted due to contact between the two families. Obstetric complications



were included to control for any pregnancy-related problems that might confound child outcomes, including neonatal complications, pregnancy substance use, exposure to toxins, and pregnancy complications (Marceau et al., 2016).

### Analytic Plan

First, covariates were tested for significant associations with the study variables and significant covariates were residualized, and standardized residuals were used in subsequent analyses. For analyses, structural equation modeling techniques were conducted using Mplus 7 (Muthén & Muthén, 1998–2015). Models were estimated using full information maximum likelihood (FIML) estimation to reduce bias of missing data (Graham, 2003). Models of comparative fit were examined using chi-square goodness of fit index ( $p > .05$ ), the comparative fit index (CFI; .95 or above), SRMR (less than .07), and the root mean-square of error of approximation (RMSEA; less than .06). Power was determined by the criteria of 10:1 of participants to parameters. Within each of the models, birth mother negative affect, child anger and pleasure, and parental coercion and positive engagement were modeled as manifest variables, while interparental relationship was modeled as a latent variable. Due to issues of multicollinearity, interparental conflict and warmth were examined in separate models. We chose to examine conflict and warmth in separate models instead of combining them into a single interparental relationship construct because we wanted to examine the possibility that the interparental relationship can have positive and negative influences on the parent–child relationship and that child emotions can also have positive and negative influences on the interparental relationship. In these models, we interpret associations between adoptive parents' interparental relationship and parenting as environmental. Associations between birth parent characteristics and adoptive parents' interparental relationship or parenting are interpreted as heritable influences via the child because birth parents supply the heritable influences (and for birth mothers the prenatal environment), whereas adoptive parents provide the rearing environment (Knopik et al., 2017).

## Results

### Descriptive Statistics and Correlations

The means, standard deviations, and bivariate correlations among the key study variables are reported Table 1. Interparental positivity at child age 27 months was negatively associated with mother–child coercion at child age 6 and positively associated with mother–child positive engagement at age 6. Interparental conflict was also positively associated with father–child positive engagement. Birth mother negative affect was negatively associated with coercive father–child relationship. Child anger and pleasure at child age 18 months were associated with interparental positivity at 27 months, but only child anger was associated with most of the interparental discord constructs.

### Interparental Conflict model

The hypothesized model yielded a good fit to the data,  $\chi^2(41) = 127.38$ ,  $p < .001$ , CFI = .92, RMSEA = .08, SRMR = .04 (see Figure 2). Contrary to Hypothesis 1a, interparental conflict was not associated with mother–child or father coercion. Instead, interparental

conflict was positively associated with father positive engagement at child age 6 years supporting compensatory processes. Finally, we did not find support for Hypothesis 1b, as birth mother negative affect was negatively associated with father coercion, instead of positively associated, and child anger nor pleasure mediated the relationship. There was also no direct effect of birth mother negative affect on interparental conflict and there was no mediation by child anger or pleasure (Hypothesis 3). However, child anger was positively associated with interparental conflict and child pleasure was negatively associated with mother coercion and marginally associated with mother positive engagement.

### Interparental Warmth model

The hypothesized model provided a good fit to the data,  $\chi^2(21) = 52.62, p < .001, CFI = .97, RMSEA = .07, SRMR = .03$  (see Figure 3). The results partially supported Hypothesis 1c: interparental warmth was negatively associated with mother coercion, but not father coercion. Contrary to Hypothesis 1a, interparental warmth was not associated with mother positive engagement. There was also a negative association between interparental warmth and father positive engagement. Therefore, as it relates to interparental warmth, there is some support for differential effects on the parent–child relationship (Hypothesis 2). We also found partial support for our third hypothesis as birth mother negative affect was negatively associated with coercive father–child interaction; however, this association was not mediated by child anger or pleasure. However, we did not find an association between birth mother negative affect and interparental warmth (Hypothesis 3). Finally, child anger was negatively associated with interparental warmth and child pleasure was positively associated with interparental warmth. Child pleasure and anger were not associated with any parenting at 6 years old.

## Discussion

The current study examined associations between interparental and parent–child relationships, while considering child emotions and the child’s heritable influences (evocative *r*GE). Results indicated partial support for a compensatory effect, such that interparental conflict was positively associated with father positive engagement. When examining interparental warmth a dampening effect was supported, such that interparental warmth was negatively associated with mother coercion. Furthermore, there was an evocative effect of birth mother negative affect on father coercion, such that higher negative affect was associated with less father coercion, although no measured child characteristic accounted for this association. Finally, we found that the child behaviors were associated with the interparental relationship, such that the child’s anger was positively associated with interparental conflict and negatively associated with interparental warmth, while child pleasure was positively associated only with interparental warmth. Therefore, our results suggest that the effect of both interparental conflict and warmth on parenting in middle childhood is partially environmental. Additionally, this study demonstrates that the child’s emotions and heritable characteristics can influence family relationships.

While our work does not directly support the spillover process literature (e.g., Davies et al., 2004; Erel & Burman, 1995; Krishnakumar & Buehler, 2000), our results support previous

work that finds compensatory family processes (Belsky & Fearon, 2004; Kouros et al., 2014; Sturge-Apple et al., 2014). One potential reason that we did not find evidence of a spillover process may be because we accounted for confounding of heritable influences, as the adoptive parents only provide environmental influences and not genetics. While our study can rule out passive  $rGE$  potential confounding, it is still possible that passive  $rGE$  plays a role in the association between the interparental and parent-child relationship, as evinced by other genetically informed designs (i.e., adult twin studies). For example, one twin study found by examining the association between the interparental and parent-child relationship that parents' genes impact the environments that they provide their children (Ganiban et al., 2009). Therefore, the relationship examined here is unconfounded by shared heritable influences but does not discount the possibility that these processes are also partially explained by passive  $rGE$ . Additionally, it is also possible that these processes are not only parent-driven as previously thought, but children could be eliciting behaviors from their parents in the interparental relationship as well as the parent-child relationship; therefore, the children might partially drive the different processes (spillover vs. compensatory) that unfold in different families (Bell, 1979). Additionally, our finding of a compensatory process for fathers might be indicative of an effect on timing. Compared with Harold et al. (2013) which found spillover effects when examining the interparental relationship and parenting concurrently, this study examined longitudinal effects of the interparental relationship in early childhood on parenting behaviors at 6 years. This result instead might be indicative of a protracted process that parents find ways to be positive with their children regardless of the interparental relationship. Therefore, not only is it important to consider multiple factors that may influence family processes including heritable influences and child-driven effects, but it is also important to consider the timing of these processes.

A further unique aspect of this study is including both interparental conflict and warmth, which helped us to explore the multifaceted nature of the interparental relationship and its' associations with parenting. Our finding of higher interparental warmth being associated with less mother coercion is supported by prior work examining other negative parenting behaviors (Warmuth et al., 2020), and extends studies examining the influence of the marital relationship on positive parenting behaviors (Stroud et al., 2011, 2015). This highlights the importance of considering positive family relationships that can decrease negative parenting behaviors along with increasing positive behaviors. The current report is one of the first studies to examine how interparental positivity may be associated with parental coercion and also with parental positive engagement. It is important to examine positive aspects of relationships separately from negative aspects of relationships because the absence of discord is not equivalent to positivity within the interparental relationship. Therefore, these valence-specific dimensions of the interparental relationship might be capturing different dynamics within the family. Examining positive aspects of family dynamics could inform targets for interventions using strength-based approaches to positively impact children's outcomes.

We found that only higher interparental warmth was associated with less mother coercion, whereas higher levels of interparental conflict were associated with greater father engagement. These findings suggest that parents might be differentially influenced by positive or negative aspects of the interparental relationship. These findings were not

consistent with the father vulnerability hypothesis (Cummings et al., 2010). Instead, our findings suggest that while fathers are vulnerable to the interparental relationship, they are compensating for this negative interparental relationship by positively interacting with the child. Additionally, because of the age of the children in the interaction task (6 years old), fathers are becoming more engaged in their children's activities compared with younger ages (Maccoby, 1984). At earlier child ages, fathers' vulnerability to the interparental relationship manifest less specifically in his engagement with children. Therefore, more studies need to explore how the interparental relationship influences fathers parenting behaviors earlier in childhood while also accounting for the mother's behaviors.

Finally, this study examined the role of the child as an important component of family relationships. Albeit more research on evocative effects has been published in the past decade (e.g., Burke et al., 2008; Larsson et al., 2008), many studies examining the association between the interparental relationship and parent-child relationship continue to only consider parent-driven effects. Our findings show that toddler anger was associated with higher interparental conflict and that toddler pleasure was associated with higher interparental positivity and lower interparental conflict. These findings indicate that the child could be influencing the interparental relationship, along with the interparental relationship influencing the child, not just the parent-child relationship (e.g., Schermerhorn et al., 2007), possibly through the parent's inability to effectively coparent. Some studies have suggested that early childhood uniquely increases demands on parents (increasing stress), which can negatively influence the interparental relationship (Laxman et al., 2013; Leve et al., 2001). However, it is also possible that child anger is associated with the interparental relationship through the child's effect on the parent-child relationship. While we did not directly look at this relationship, this potential mediated effect could be examined in future studies to further understand how child emotions can be associated with the interparental relationship. Additionally, more work needs to explore the potential bidirectional associations between the interparental relationship and child behaviors to understand how the interparental relationship and child might be influencing one another over time. Although we did not find evocative *rGE* effects on the interparental relationship in this study, we found that higher levels of birth mother negative affect were associated with lower levels of father coercion with the child, which indicates evocative *rGE* for that specific parenting behavior. This finding supports previous literature showing that fathers are sensitive to the child's inherited characteristics (e.g., Hajal et al., 2015; Ulbricht et al., 2013). Specifically, during middle childhood, father's coercive behavior might be in direct response to the child's needs instead of their vulnerability to the interparental relationship. In this task, the father and child are completing a puzzle; hence, the father might be responding to a child behavior (e.g., frustration) with less coercion to reduce the child's frustration in the task. By considering the child's contribution, including heritable characteristics, we can better capture both contextually- and biologically-mediated process underlying family interactions, especially the relationship between parents and their children.

Although this study attempts to capture a more complete picture of family processes, there are some limitations. First, our sample might not be generalizable to other populations, including high-risk samples, because of the homogeneity of our sample (majority Caucasian, higher average income). Second, parent-child interactions were assessed during a single

observation and provides only a snapshot of a specific dimension of the relationship at six-years old; however, observational data are considered to be ecologically valid (Gardner, 2000). Additionally, because of the child's developmental level and limited assessment period (5 minutes), there was low frequency of coercive behaviors in the observations. Finally, due to the unique characteristics of these constructs (e.g., unique coding system for this parent-child observational task), we were unable to control for earlier parent-child relationship and the interparental relationship limiting our ability to examine potential bidirectional effects and examine developmental change over time in these relationships. Future studies should further explore these bidirectional family relationships in order to examine this specific question. Despite these limitations, our study also has several strengths, including its prospective longitudinal design, minimizing reporter (and method) bias by using both parent reports of the interparental relationship and coded observations of the parent-child relationship as well as our ability to control for passive rGE confounding.

In conclusion, some of our results confirm previous findings from the family process literature, while also showing that children might be actively involved in shaping family processes through their heritable characteristics and behavioral responses of their parents. We found support for the expectation that children's emotions are associated with both the interparental and parent-child relationship, while also finding compensatory and dampening processes of the interparental relationship on parent-child relationships. However, future studies should consider the potential bidirectional effects from the interparental relationship to parent-child relationship to child emotions and vice versa. Also, by finding differences in the association between the interparental relationship and adoptive mother and father's relationship with their child, this study provides support for the need to consider the role of both mothers' and fathers' relationships with each other and their child(ren). Overall, by incorporating child emotions and heritable characteristics, this study extends our understanding of family processes, and more specifically, why spillover and compensatory processes are found in studies—possibly because of the child's contribution in eliciting these behaviors. Therefore, this study demonstrates potential mechanisms of influence within the family at both the parent and child level that could be targeted within interventions to positively impact the family.

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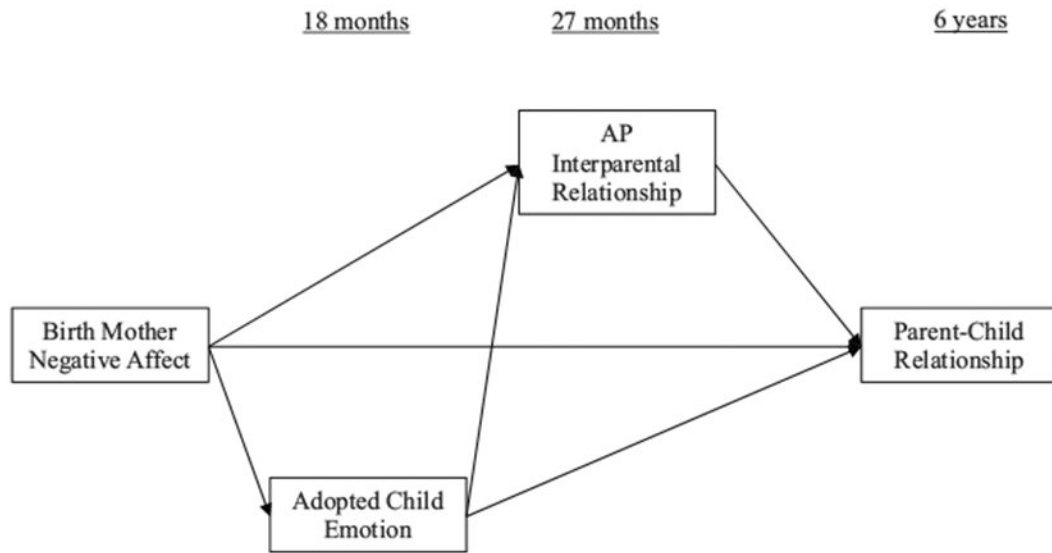
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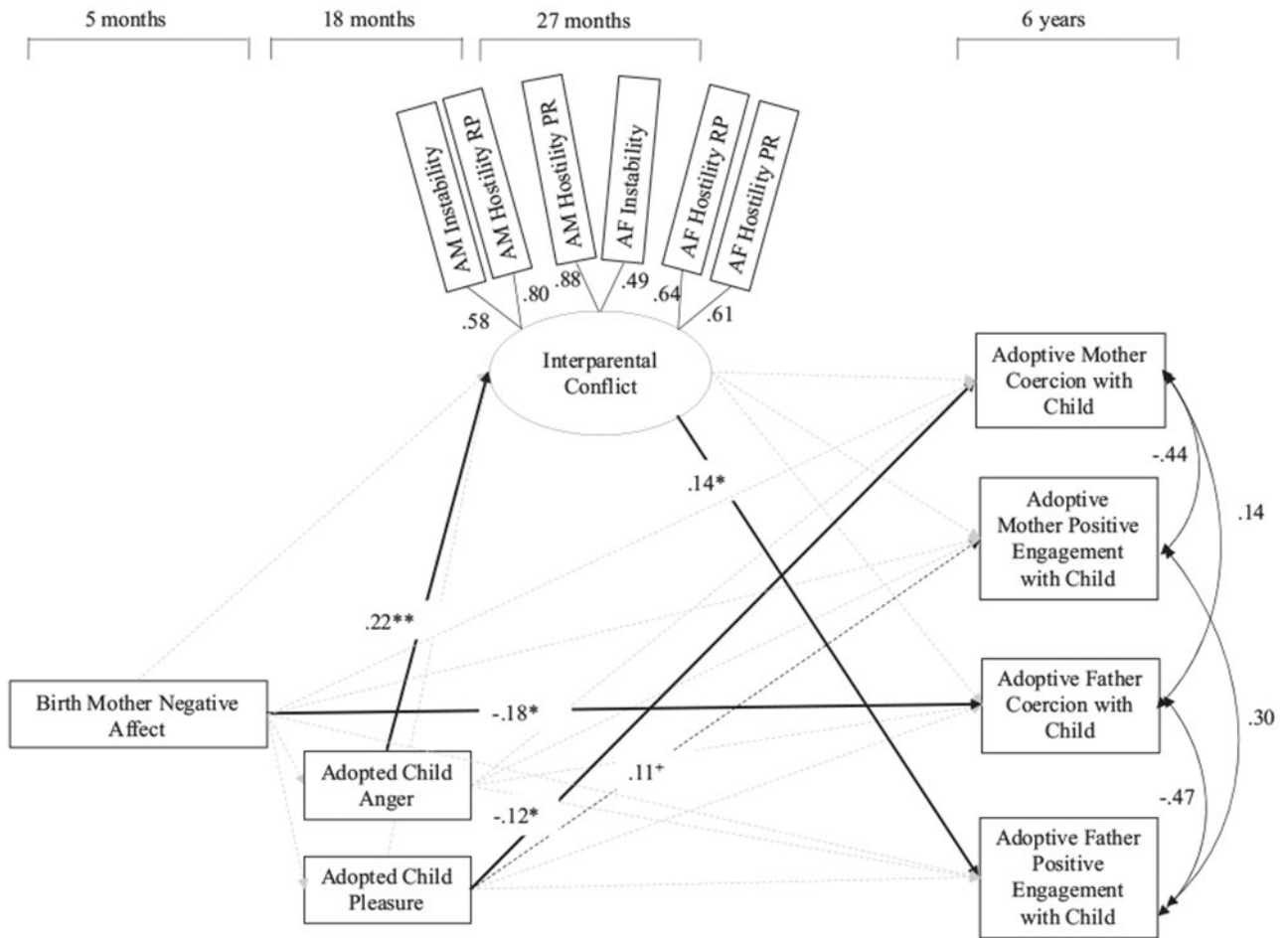
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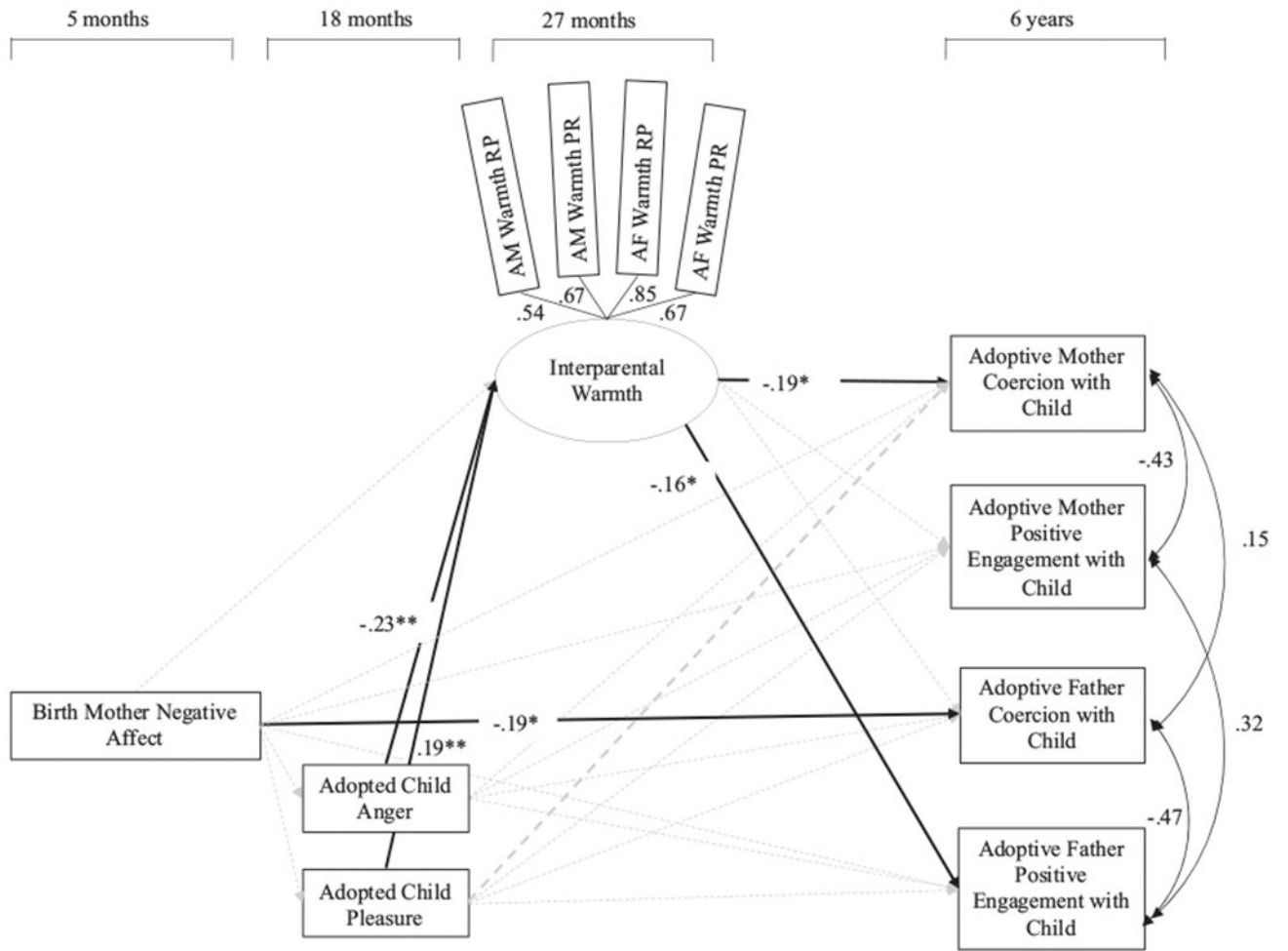
**Figure 1. Conceptual Model**  
*Note.* AP = adoptive parent.



**Figure 2. Heritable and Environmental Influences (Interparental Conflict) on Parent–Child Interaction Quality**

*Note.* AM = adoptive mother; AF = adoptive father; RP = responder about partner; PR = partner about responder.

†  $p < .07$ . \*  $p < .05$ . \*\*  $p < .01$ .



**Figure 3. Heritable and Environmental Influences (Interparental Warmth) on Parent–Child Interaction Quality**

*Note.* AM = adoptive mother; AF = adoptive father; RP = responder about partner; PR = partner about responder.

$^\dagger p < .07$ . \*  $p < .05$ . \*\*  $p < .01$ .

**Table 1**  
Means, Standard Deviations, and Bivariate Correlations for Study Variables (N = 361)

Variable	Interparental relationship							Parent-child relationship									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. BM negative affect	—																
2. AC anger	-.07	—															
3. AC pleasure	.001	-.07	—														
Interparental relationship																	
4. AM instability	-.01	.07	-.04	—													
5. AF instability	-.04	.09	.02	.57*	—												
6. AM hostility RP	-.01	.21*	-.14*	.38*	.34*	—											
7. AF hostility RP	.09	.15*	-.17*	.28*	.38*	.52*	—										
8. AM hostility PR	-.04	.22*	-.07	.52*	.40*	.75*	.56*	—									
9. AF hostility PR	.11	.15*	-.09	.25*	.43*	.58*	.76*	.49*	—								
10. AM warmth RP	.17	-.19*	.29*	-.45*	-.30*	-.56*	-.42*	-.58*	-.38*	—							
11. AF warmth RP	.02	-.24*	.22*	-.29*	-.40*	-.40*	-.54*	-.42*	-.54*	.47*	—						
12. AM warmth PR	.10	-.17*	.19*	-.47*	-.35*	-.52*	-.42*	-.64*	-.42*	.81*	.58*	—					
13. AF warmth PR	.01	-.12*	.17*	-.29*	-.46*	-.39*	-.52*	-.41*	-.66*	.47*	.80*	.48*	—				
Parent-child relationship																	
14. AM coercion proportion	-.08	.07	-.13*	.18*	.10	.08	.11	.06	.10	-.18*	-.18*	-.17*	-.16	—			
15. AF coercion proportion	-.18*	-.01	.04	-.02	-.05	-.07	-.10	-.06	-.11	.03	.08	.01	.09	.13*	—		
16. AM positive proportion	.06	-.04	.11	-.04	-.07	-.08	.002	-.01	-.08	.16*	.10	.15*	.07	-.46*	-.11	—	
17. AF positive proportion	.04	.003	.04	.07	.14*	.08	-.04	.13*	.02	.003	-.09	-.04	-.10	-.10	-.47*	.30*	—
<i>n</i>	277	320	320	302	293	293	286	302	294	292	286	303	294	274	251	274	251
<i>M</i>	4.04	3.37	5.12	6.01	5.80	26.27	24.80	24.53	27.99	51.00	49.25	24.53	48.69	.02	.03	.60	.59
<i>SD</i>	.75	.58	.61	2.39	2.04	7.90	7.29	7.84	9.41	7.72	7.78	7.84	8.39	.04	.05	.19	.19

Note. Means, standard deviations, and correlations are presented for the raw data. BM = birth mother; AC = adopted child; AM = adoptive mother; AF = adoptive father; RP = responder about partner; PR = partner about responder; prop = proportion.

$p < .05$   
\*

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