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EMPIRICAL RESEARCH

Bidirectional Associations between Youth Adjustment and Mothers' and Fathers' Coparenting Conflict

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Abstract

Research demonstrates significant associations between coparenting conflict and child adjustment problems. However, the implications of youth adjustment for coparenting, especially during youth's adolescence, remain poorly understood. Addressing several gaps in the literature, this study examines the longitudinal trajectory of mothers' and fathers' reported coparenting conflict from youth ages 10–17 and tests bidirectional associations between youth social anxiety, hostility, risk-taking behaviors, and mothers' and fathers' coparenting conflict. Participants include 757 mothers, fathers, and youth in two-parent families (M youth age = 11.28, SD = 0.49; 53% female) who participated in 5 waves of data collection when youth were in the 6th to 9th grades. Multilevel growth curve models revealed significant non-linear change in mothers' and fathers' coparenting conflict, such that coparenting conflict declined through youth's transition to adolescence, leveled off in early adolescence, and declined in the mid-late adolescent years. Cross-lagged models showed significant positive associations between youth social anxiety and hostility and coparenting conflict at the following time point, but coparenting conflict did not predict later youth adjustment problems in these domains. There were significant bidirectional associations between mother-reported coparenting conflict and youth risk-taking behaviors; the associations between coparenting conflict and risk-taking were not significant for fathers. The findings demonstrate that investigating longitudinal associations between youth adjustment and coparenting conflict may provide new insights into the role of child effects for mothers' and fathers' coparenting experiences.

Keywords Coparenting conflict · Youth adjustment · Adolescent development · Bidirectional associations · Mother-father differences

Introduction

Coparenting, defined by the ways that parents coordinate their parenting efforts (McHale 1995), has been identified as a fundamental family systems dynamic. Coparenting consists of several key dimensions including support and solidarity, joint management of family interactions, division of child-related labor, and conflict or disagreement surrounding childrearing (Feinberg 2003). Coparenting has been identified as a stronger predictor of child adjustment than marital or individual parenting qualities alone (Margolin et al. 2001). Coparenting conflict, in particular, has been linked with a range of emotional and behavioral adjustment problems among children (Teubert and Pinquart 2010) and adolescents (Feinberg et al. 2007). However, relatively little research has examined longitudinal changes in coparenting conflict, particularly during youth's adolescence, and most studies focus on unidirectional associations between coparenting and later child adjustment. As a result, the contribution of youth adjustment to coparenting dynamics is not well understood, despite a recognition of child effects in family systems (Cox and Paley 2003) and coparenting frameworks (Feinberg 2003). Taking a family systems perspective, this study expands the scope of research on coparenting and youth adjustment in several ways. To understand the developmental course of coparenting conflict during adolescence, the first aim is to examine the trajectory of mothers' and fathers' reported coparenting conflict during youth's adolescent transition (ages 10–17). To elucidate

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the potential mutual influences between coparenting and youth adjustment, the second aim is to examine bidirectional associations between mothers' and fathers' coparenting conflict and youth social anxiety, hostility, and risk-taking behaviors.

Family Systems Theory

Family systems theory posits several principles that are relevant to the understanding of coparenting conflict during adolescence (Cox and Paley 2003). The first principle is that developmental transitions reverberate through the family. Coparenting is most often studied during infancy and early childhood as parents navigate the transition to coparenting for the first time. Adolescence is another key period in development, marked by new challenges including youth's growing autonomy, independence, and risk for behavior problems (Steinberg and Silk 2002). These changes may require parents to adapt their parenting strategies and renegotiate their coordinated coparenting efforts. As such, individual differences in youth's adolescent development may disrupt the ways parents work as a coparenting team, bringing about increased coparenting conflict.

Another family systems principle posits that influences within families are often bidirectional, meaning that coparenting and youth adjustment are mutually influential. Difficulties in one subsystem can spill over to affect other aspects of family functioning through bidirectional influences. Although little research has applied this perspective to coparenting, there is evidence for bidirectional exchanges between youth adjustment problems and levels of family conflict (Lubenko and Sebre 2010) and coparenting dynamics (Riina and McHale 2014). Accordingly, it may be expected that coparenting conflict and youth adjustment exert bidirectional influences over time.

Coparenting Conflict during Adolescence

In spite of recent growth in research on coparenting, understanding of the development of coparenting dynamics through youth's adolescence remains limited. Given normative stressors and changes in family processes that often coincide with adolescence, adolescence brings likely challenges to coparenting dynamics. As such, the transition to adolescence may disrupt previously established coparenting practices and agreements. Although there is little evidence for longitudinal change in coparenting quality during earlier developmental transitions, such as from pregnancy to infancy (Van Egeren 2004), prior research points to coparenting differences between families with young children and those with preadolescents. Specifically, parents with preschoolers tend to report higher levels of coparenting cooperation and support, compared to parents of early adolescents who report more triangulation and family alliances (Margolin et al. 2001). Prior research also suggests that coparenting quality may suffer during youth's adolescence with findings that coparenting satisfaction (Riina and McHale 2014) and coparenting support (Riina and Feinberg 2018) decline during youth's adolescence. Therefore, to the extent that youth characteristics play an increasingly prominent and disruptive role in coparenting, it may be expected that coparenting conflict increases during this time.

Bidirectional Associations between Coparenting Conflict and Youth Adjustment

Research establishes that coparenting dynamics are critical for child adjustment. For the most part, this body of work has focused on unidirectional associations between coparenting and youth adjustment. Coparenting conflict, in particular, has been linked to adjustment problems such as internalizing symptoms and externalizing behaviors among young children (Jones et al. 2003) and adolescents (Baril et al. 2007). However, a literature on "child effects" suggests that children are active agents in their own development and not simply passive recipients of parenting (Bell 1968). Coparenting is recognized as a triadic family construct meaning that child characteristics play an inherent role in parents' efforts to coordinate strategies and support one another (Feinberg 2003). Thus, a better understanding of the bidirectional associations between youth adjustment and coparenting conflict is needed, especially during adolescence when youth have more autonomy and potentially become increasingly influential in coparenting dynamics.

Although relatively little coparenting research takes a child effects perspective, there is some support for the idea that youth adjustment contributes to later coparenting qualities. Evidence from cross-lagged analysis shows that adolescent externalizing behaviors, such as risk-taking and delinquency were related to declines in mothers' and fathers' shared decision-making (Riina and McHale 2014) and higher levels of father-reported coparenting conflict (Zemp et al. 2018). In turn, higher levels of coparent shared decision-making (Riina and McHale 2014) and greater coparenting conflict (Zemp et al. 2018) were linked to reduced externalizing, but not internalizing, behavior problems. In general, fewer studies demonstrate associations between coparenting and youth internalizing problems such as anxiety or depressive symptoms, in line with the notion that youth internalizing problems are less likely than externalizing behaviors to interfere with the parental union (Jenkins et al. 2005) or invoke couple conflict (Feinberg 2003). However, the findings from one study show that adolescent depressive symptoms were related to lower levels of coparental joint involvement one year later (Riina

and McHale 2014). Further, the findings from a small body of work on the role of child anxiety for coparenting suggest that behavioral inhibition in infancy and early childhood—an indicator of later anxiety (Clauss and Blackford 2012)—negatively interfered with the coparenting relationship (see Majdandzic et al. 2012 for a review). Together, past research suggests that the bidirectional associations between youth adjustment and coparenting are not entirely straightforward. More generally, youth internalizing and externalizing behaviors have been linked to later inter-parental and marital conflict (Cui et al. 2007) and individual parenting practices (Serbin et al. 2015). Expanding on existing research, this study examines bidirectional associations between multiple domains of adolescent adjustment, including both externalizing (hostility, risk-taking behaviors) and internalizing (social anxiety) behaviors and coparenting conflict to strengthen understanding of the mutual influences between adolescent adjustment and coparenting dynamics. It is expected that youth social anxiety, hostility, and risk-taking behaviors will be associated with greater coparenting conflict.

Mother-Father Differences

Family systems theory draws attention to the distinct family experiences of mothers and fathers. However, there is mixed evidence for mother-father differences in coparenting. Some studies find that fathers report more positive coparenting qualities than mothers in infancy (Lindsey et al. 2005) and adolescence (Baril et al. 2007). In contrast, a longitudinal study of coparenting during youth's adolescence showed significant declines in reported coparenting satisfaction for fathers, but not mothers (Riina and McHale 2012). Still others have failed to find significant mother-father differences in coparenting (Solmeyer and Feinberg 2011). Thus, additional research is needed to shed light on mothers' and fathers' reports of coparenting conflict over time.

Greater insight into gender differences in the links between coparenting and youth adjustment is needed because mothers and fathers often have different expectations, roles, and approaches to parenting (Parke 2002). Mothers who are more often primary caregivers may have a greater investment in parenting and childrearing roles, compared to fathers (Yavorsky et al. 2015). In addition, mothers tend to have more knowledge about youth's whereabouts, activities, and subsequent adjustment, compared to fathers (Crouter and Head 2002). Accordingly, mothers may face greater coparenting difficulties in the face of youth adjustment problems due to a greater investment in parenting, which is more central to their everyday experiences. Consequently, conflicts around parenting and the child may be more salient and upsetting for mothers' coparenting experiences. In contrast, the father vulnerability hypothesis (Davies et al. 2009) suggests that family experiences have stronger consequences for fathers' parenting than mothers, due to their less scripted family roles. In support of this perspective, some findings suggest that fathers may be more susceptible to positive and negative family experiences. For example, there is evidence that associations between supportive coparenting and infant attachment (Brown et al. 2010) and adolescent externalizing behaviors and coparenting conflict (Zemp et al. 2018) were significant for fathers but not mothers. This study aims to resolve inconsistencies in past research by exploring mother-father differences in patterns of association between youth adjustment and coparenting conflict.

The Current Study

Taking a family systems approach, this study expands coparenting research by examining the longitudinal course of coparenting conflict through youth's adolescence and testing bidirectional associations between youth adjustment and mothers' and fathers' reported coparenting conflict. The first aim is to chart the longitudinal trajectory of coparenting conflict during youth's adolescence, from ages 10–17. It is expected that coparenting conflict will increase during this time as parents navigate new parenting challenges, including increased autonomy and risk-taking behaviors, that accompany adolescence. Aim two is to test bidirectional associations between youth social anxiety, hostility, and risk-taking behaviors and mothers' and fathers' reported coparenting conflict, across five years. On the basis of prior research that youth behaviors disrupt coparenting dynamics, it is hypothesized that youth adjustment problems will be associated with higher levels of later coparenting conflict. Relationship satisfaction is included as a control to identify the associations between adjustment and coparenting conflict independent of parents' relationship quality. The third aim is to explore mother-father differences with the expectation that associations between youth adjustment and coparenting conflict will vary for mothers versus fathers.

Method

Study Design

Data for this study came from the PROSPER (Promoting School-Community-University Partnerships to Enhance Resilience) project. PROSPER is a community-randomized trial to evaluate a model for disseminating evidence-based prevention programs targeting substance misuse among rural adolescents (e.g., Spoth et al. 2004). Participants lived

in 28 rural and small-town communities, 14 each in Pennsylvania and Iowa. Community eligibility was determined on the basis of school district enrollment ($n = 1300–2500$) and proportion of student population eligible for free or reduced-cost lunch (>15%). The predominant race of selected communities was White (61–96%). Communities were matched on school district size and geographic location and randomly assigned to intervention or control conditions. Given that the present study does not consider prevention program effects, study condition was included as a covariate in all models.

The PROSPER project focused on testing a model of substance use dissemination centered on university Cooperative-Extension educators as local prevention catalysts. The research study involved youth from two consecutive cohorts of sixth graders from the 28 participating communities. The first 6th grade cohort was enrolled in the study in the Fall of 2002. A subsample of youth's families were recruited for more in-depth in-home assessments. This study draws on the five waves of in-home data, which began in the Fall of 6th grade, and then continued in the Spring of that grade and the following Springs through 9th grade. Of the 2267 families recruited for in-home family assessments, 980 (43%) completed at least one in-home assessment. Paired samples t-test revealed that youth in the in-home subsample were slightly younger ($M = 11.28$ years, $SD = 0.49$) relative to youth in the larger PROSPER sample ($M = 110.80$ years, $SD = 0.43$). At Time 5, average youth age was $M = 14.89$, $SD = 0.47$. Age ranged from 10–17 years across the study period.

Sample

The sample for this study was limited to families who participated in in-home family assessments and were married or partnered at Wave 1 ($n = 757$). Of those 757 two-parent families, 757 mothers (100%) and 630 fathers (83%) had complete data on coparenting at Wave 1. At Wave 5, 501 (66%) of mothers and 421 (56%) of fathers from the Wave 1 sample of 757 families provided coparenting data. Attrition analysis revealed that mothers who dropped out were younger, $t = 3.47$, $p < 0.01$, had higher marital satisfaction, $t = 3.34$, $p < 0.01$, lower income, $t = 2.93$, $p < 0.01$, and lower education, $t = 3.02$, $p < 0.01$. Fathers who dropped out were younger, $t = 3.11$, $p < 0.01$, had lower income, $t = 2.71$, $p < 0.01$, and lower education, $t = 4.87$, $p < 0.01$. These variables were included as controls.

At Wave 1, youth were on average 11.28 years old ($SD = 0.49$) and ranged in age from 10–17 across the study period. Youth in the sample were approximately equally divided by gender ($n = 400$ females; 53% at Wave 1). Sixty-one percent of the participating families lived in Iowa and 39% lived in Pennsylvania. At Wave 1, the mothers were on average 38.29 years old ($SD = 6.65$) and fathers were on average 41.21 years old ($SD = 7.43$). Families were working and middle class. Sixty percent of mothers and 48% of fathers had some education beyond high school. Average household income at Wave 1 was $57,033 ($SD =$ $32,981). At Wave 1, 89% of parents in the sample were married and the rest were living with a romantic partner; 85% were married at Wave 5. Households had about 3 children on average ($SD = 1.57$).

Procedures

In-home assessments consisted of written questionnaires, which were completed independently by mothers, fathers, and youth, and videotaped family interaction. This study draws on self-reported questionnaire data from mothers, fathers and target youth at each of five waves of data collection.

Measures

Coparenting conflict was assessed at each time point using a validated measure of coparenting (Feinberg et al. 2012). Mothers and fathers reported on their perception of coparenting conflict with 3 items on a scale from 1 = *strongly disagree* to 7 = *strongly agree*. The items used to index coparenting conflict include: "My spouse argues with me about our child"; "My spouse says cruel or hurtful things about me in front of our child"; and "My spouse tries to get our child to take sides when we argue". Items were averaged so that higher scores reflected higher levels of coparenting conflict. Alphas ranged from $\alpha = 0.76–0.83$ across parents and time points.

Youth social anxiety was measured at each time point using 18 items from the Social Anxiety Scale for Adolescents (SAS-A; LaGreca and Lopez 1998). Youth reported on their general feelings of anxiety in social situations and with peers (e.g., "I worry about what others think of me") on a scale from 1 = *not at all* to 5 = *all the time*. Items were averaged so that higher scores reflected higher levels of social anxiety. Alphas for social anxiety ranged from 0.93–0.94 across study waves.

Youth hostility was assessed at each time point using 9 items adapted from the Buss-Durkee Hostility Inventory (BDHI; Buss and Durkee 1957). Youth reported on how much each statement of hostile behavior was like them (e.g., "When people yell at me, I yell back") using a scale where 1 = not at all to 5 = exactly. Items were averaged and higher scores reflected greater hostility. Alphas ranged from 0.79–0.88 across waves.

Youth risky behavior was measured at each time point using youth reports of how many times they had engaged in each of 36 different risky behaviors (i.e., stealing, violence,

drug use, lying, and cheating) during the past year. Items were adapted from validated sources including the National Youth Survey (Elliott 1985) and the Iowa Youth and Families Project (Conger 1989; McMahon and Metzler 1998; Spoth et al. 1998). Items were averaged such that higher scores represented more risk behaviors.

Control variables

All analyses included controls for the following family and individual background characteristics measured at Time 1: Study condition (0 = *control*; 1 = *intervention*); State (0 = *Pennsylvania*; 1 = *Iowa*); Household income (estimated raw household income); Parent education (0 = *high school or less*; 1 = *more than high school*); Household size; Marital status (0 = *married*; 1 = *divorced*) and Child sex (0 = *female*; 1 = *male)*. To ensure that the findings reflected coparenting independent of marital quality, mothers' and fathers' relationship satisfaction was included as a control. Using a scale ranging from 1 = *not at all satisfied* to 5 = *completely satisfied*, mothers and fathers described relationship satisfaction using a single item ("All in all, how satisfied are you with your relationship?").

Results

Analytic Strategy

The results are organized around the study aims. Multilevel growth curve modeling (MLM) was used to chart the trajectory of coparenting conflict across youth's adolescence. An MLM approach extends multiple regression by accounting for dependencies in the data that may exist between members of the same family (i.e., mothers versus fathers) and within person over time. This approach also provides for the use of cases with one or more observations missing at random (Raudenbush and Bryk 2002), allowing for all 757 families to be included in the analysis. Further, MLM allows for the use of unbalanced data meaning that participants can differ in age at the first point of data collection and do not need to be measured at the same point in time. This feature of MLM allows change in coparenting to be indexed as a function of youth age, aiding in the detection of developmental patterns of interest that might otherwise be obscured by using wave of data collection as the metric of time. A three-level model was tested for coparenting conflict using Proc Mixed in SAS 9.4. The Level 1, or within-person model, captured changes in coparenting conflict in relation to youth age. Polynomial age terms (linear, quadratic, and cubic) were included at Level 1 to chart the pattern of change over time. The Level 2, or between-person, model accounts for dependencies between members of the same family. Here, mothers and fathers were included in the same analysis and the moderating role of parent gender was tested to determine whether there were differences between mothers' versus fathers' reports of change in coparenting conflict.

Cross-lagged panel models (CLP) were used to test longitudinal associations between youth adjustment and coparenting conflict across five waves of data. CLP is an extended path model that can control the stability of a key variable across time when testing the causality from another key variable in the previous wave (Kearney 2017). The degree of stability of the key variable is shown as the coefficient of the autoregressive path of the variable between time T and time $T + 1$. CLP was appropriate to use in this study, as youth adjustment and coparenting conflict variables were repeatedly measured at multiple time points. Including stability pathways allows for the detection of cross-lagged associations between youth adjustment and coparenting conflict, independent of their stability and any cross-lagged contributions of other variables. Another benefit of CLP is the ability to test bidirectional paths between two or more key variables across time (Selig and Little 2012). In this study, youth adjustment at time T might influence youth adjustment at time $T + 1$, and there might be simultaneous associations between coparenting conflict at T and youth adjustment at $T + 1$. CLP moves beyond limitations of multivariate regression or multilevel modeling to examine bidirectional paths between two variables. If the path from youth adjustment at T to coparenting conflict at $T + 1$ has a larger coefficient than the path from coparenting conflict to youth adjustment between T and $T + 1$, then youth adjustment is regarded as the source variable and coparenting conflict is regarded as the effect variable (Kearney 2017). Residuals for coparenting conflict and each adjustment domain were correlated within time point (e.g., the residual for coparenting conflict at Wave 2 was correlated with the residual for social anxiety at Wave 2) to account for the time-specific association between coparenting and adjustment, independent of their correlation at the previous time point.

Time-varying and time-invariant covariates were included to control for the influence of confounding variables on youth adjustment and coparenting conflict at Waves 2, 3, 4, and 5. Parent demographic characteristics at Wave 1, which tended to be stable over time, were treated as time-invariant covariates; relationship satisfaction was examined as a time-varying covariates. Associations between each covariate and study variable were examined at Waves 2, 3, 4, and 5. Since a non-positive definite error may appear if a CLP includes too many paths within observations, only significant covariates for key variables were retained in each CLP model. Parent gender, child gender, and relationship satisfaction were included as significant covariates for

coparenting conflict. Relationship quality was accounted for in models for each adjustment outcome (hostility, social anxiety, and risk-taking behaviors); household income was controlled for hostility and risk-taking behaviors and child gender was controlled for hostility and social anxiety.

Differences by parent gender were assessed using multigroup analysis. Parent gender was treated as a group variable in comparing between two models—an unconstrained model and a constrained model. Model fit was assessed by comparing the difference in chi-squares. In the unconstrained model, all parameters were freed to vary across mothers and fathers, which assumed that the association between youth adjustment and coparenting conflict differed by parent gender. In the constrained model, paths were set to be equal for mothers and fathers which assumed there were no significant differences for mothers and fathers. The difference in chi-squares was compared to see if there was a significant difference between the two groups. Multigroup analyses showed that mothers and fathers did not differ in the association between coparenting conflict and youth hostility or social anxiety. However, a significant gender difference was found in the association between coparenting conflict and risk-taking behaviors.

All CLP models were tested using MPlus 8.3. Missing data was estimated with maximum likelihood (Enders and Bandalos 2001). Model fit was assessed using four indices as suggested by Kline (2005): (1) chi-squared (χ^2), with high levels indicative of poor fit; (2) the comparative fit index (CFI; Bentler 1990), which assesses model fit in relation to an uncorrelated model; (3) root mean squared error of approximation (RMSEA; Steiger 1990), which assesses model fit, accounting for complexity; (4) standardized root mean square residual (SRMR), which models the square root of the difference between residuals of the sample covariance matrix and the hypothesized model. A χ^2 that is non-significant, a CFI above 0.95, an RMSEA below 0.05, and SRMR below 0.08 indicate good model fit (Kline 2005; MacCallum et al. 1996). Adequate model fit is indicated by a CFI between 0.90 and 0.95 or an RMSEA between 0.05 and 0.08. Each indicator of youth adjustment was tested in a separate model.

Descriptive Statistics and Correlations

Descriptive statistics for study variables are presented in Table 1 and correlations are shown in Table 2. Average levels of coparenting conflict were low, consistent with levels that have been presented in other non-clinical samples (e.g., Zemp et al. 2018). Youth adjustment problems were also relatively low on average, falling below the midpoints of their scales. Correlations between mothers' and fathers' coparenting conflict ranged from r = 0.15 to 0.29 across time points, and r = 0.21 to r = 0.29 within time points. As shown in Table 2, youth adjustment problems were low to moderately correlated with mothers' and fathers' reports of coparenting conflict.

Table 1 Means, standard deviations, and ranges for study variables

Variable	*n*	*M*	*SD*	Range
Mothers' coparenting conflict				
Wave 1	757	2.27	1.39	1–7
Wave 2	600	2.16	1.27	1–7
Wave 3	579	2.15	1.29	1–7
Wave 4	547	2.22	1.30	1–7
Wave 5	501	2.14	1.24	1–7
Fathers' coparenting conflict				
Wave 1	630	2.26	1.35	1–7
Wave 2	506	2.06	1.89	1–7
Wave 3	498	2.27	1.37	1–7
Wave 4	460	2.17	1.22	1–7
Wave 5	441	2.13	1.25	1–7
Youth social anxiety				
Wave 1	732	2.25	0.77	1–5
Wave 2	627	2.21	0.77	1–4.67
Wave 3	619	2.16	0.77	1–5
Wave 4	601	2.12	0.77	1–4.67
Wave 5	566	2.11	0.78	1–5
Youth hostility				
Wave 1	756	2.12	0.76	1–5
Wave 2	628	2.05	0.77	1–5
Wave 3	607	2.19	0.82	1–5
Wave 4	601	2.29	0.86	1–5
Wave 5	565	2.31	0.87	1–5
Youth risk-taking behaviors				
Wave 1	756	2.17	2.58	0–20.49
Wave 2	627	2.01	2.52	0–21.19
Wave 3	607	2.63	3.18	0–20.54
Wave 4	601	3.16	3.38	0–20.02
Wave 5	565	3.91	3.96	0–24.72
Youth age				
Wave 1	757	11.27	0.49	10–13
Wave 2	626	11.95	0.47	11–14
Wave 3	617	12.95	0.43	12–15
Wave 4	599	13.94	0.47	13–16
Wave 5	561	14.91	0.45	14–17

Change in Coparenting Conflict across Youth Adolescence

The growth trajectory of coparenting conflict was examined using MLM to address Aim 1. The best fitting unconditional growth model for estimated random intercepts at Level 2 and Level 3, indicating that an intercept was estimated for

Table 2 Correlations among study variables at each time point

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
1. Cop conflict W1	–	0.44	0.35	0.45	0.34	0.07	0.12	0.07	0.07	0.07	0.03	0.09	0.08	0.11	0.11	0.02	0.02	0.08	0.06	0.07
2. Cop conflict W2	0.43	–	0.39	0.51	0.38	0.11	0.13	0.16	0.11	0.12	−0.03	0.07	0.07	0.15	0.14	0.07	−0.00	0.10	0.11	0.09
3. Cop conflict W3	0.36	0.49	–	0.37	0.40	0.13	0.12	0.14	0.09	0.11	0.09	0.12	0.14	0.12	0.11	0.07	0.05	0.04	0.04	0.05
4. Cop conflict W4	0.36	0.43	0.44	–	0.47	0.09	0.15	0.08	0.10	0.06	0.09	0.08	0.13	0.16	0.09	0.08	0.05	0.09	0.13	0.12
5. Cop conflict W5	0.37	0.42	0.44	0.50	–	0.18	0.18	0.18	0.13	0.12	0.11	0.10	0.13	0.09	0.13	0.06	−0.01	−0.01	0.06	0.06
6. Social anx W1	0.12	0.11	0.19	0.12	0.06	–	0.63	0.55	0.47	0.43	0.07	0.09	0.03	0.03	0.03	0.06	0.03	0.04	0.02	0.01
7. Social anx W2	0.14	0.16	0.17	0.17	0.08	0.63	–	0.63	0.55	0.51	0.09	0.14	0.09	0.11	0.10	0.11	0.08	0.02	0.03	0.04
8. Social anx W3	0.09	0.10	0.18	0.12	0.10	0.55	0.63	–	0.64	0.59	0.07	0.13	0.13	0.12	0.12	0.09	0.08	0.08	0.09	0.07
9. Social anx W4	0.08	13	0.14	0.08	0.10	0.47	0.55	0.64	–	0.71	0.09	0.14	0.10	0.10	0.07	0.09	0.09	0.10	0.09	0.09
10. Social anx W5	0.07	0.03	0.10	0.05	0.07	0.43	0.51	0.59	0.71	–	0.06	0.10	0.08	0.07	0.07	0.08	0.06	0.11	0.06	0.05
11. Hostility W1	0.09	0.06	0.10	0.08	0.14	0.07	0.09	0.07	0.09	0.06	–	0.55	0.52	0.48	0.44	0.41	0.39	0.39	0.36	0.37
12. Hostility W2	0.07	0.13	0.11	0.13	0.15	0.09	0.14	0.13	0.14	0.10	0.55	–	0.58	0.58	0.52	0.37	0.50	0.41	0.47	0.43
13. Hostility W3	0.06	0.08	0.10	0.11	0.20	0.03	0.09	0.13	0.10	0.08	0.52	0.58	–	0.66	0.62	0.35	0.46	0.54	0.53	0.48
14. Hostility W4	0.10	0.10	0.10	0.10	0.22	0.03	0.11	0.12	0.10	0.07	0.48	0.58	0.66	–	0.71	0.29	0.39	0.41	0.53	0.48
15. Hostility W5	0.08	0.09	0.03	0.09	0.17	0.03	0.10	0.12	0.07	0.07	0.44	0.52	0.62	0.71	–	0.22	0.30	0.38	0.42	0.51
16. Risky beh W1	0.04	0.05	0.06	0.01	0.06	0.06	0.11	0.09	0.09	0.08	0.41	0.37	0.35	0.29	0.22	–	0.49	0.51	0.42	0.37
17. Risky beh W2	−0.02	0.05	0.07	0.01	0.18	0.03	0.08	0.08	0.09	0.06	0.39	0.50	0.46	0.39	0.30	0.49	–	0.61	0.57	0.56
18. Risky beh W3	0.07	0.01	0.04	0.03	0.21	0.04	0.02	0.08	0.10	0.11	0.39	0.41	0.54	0.41	0.38	0.51	0.61	–	0.66	0.62
19. Risky beh W4	0.09	0.06	0.03	0.08	0.19	0.02	0.03	0.09	0.09	0.06	0.36	0.47	0.53	0.53	0.42	0.42	0.57	0.66	–	0.69
20. Risky beh W5	0.00	0.03	0.00	0.04	0.13	0.01	0.04	0.07	0.09	0.05	0.37	0.43	0.48	0.48	0.51	0.37	0.56	0.62	0.69	–

Correlations above the diagonal are for fathers' coparenting, correlations below the diagonal are for mothers' coparenting

Cop conflict coparenting conflict, *Social anx* social anxiety, *Risky beh* risk-taking behaviors, W1–W5 denote wave of data collection

All correlations 0.09 and larger are significant at $p < 0.05$.

Table 3 Multilevel model coefficients for the unconditional growth curve of coparenting conflict

Variable	γ	*SE*	*p*
Fixed effects			
Intercept	2.23	0.04	<0.01
Age (Linear)	0.05	0.02	<0.01
Age × Age (Quadratic)	0.00	0.01	ns
Age × Age × Age (Cubic)	−0.01	0.00	<0.05
Covariance parameter estimates (random effects)			
Level 1	0.97	0.02	<0.01
Level 2	0.33	0.03	<0.01
Level 3	0.42	0.04	<0.01

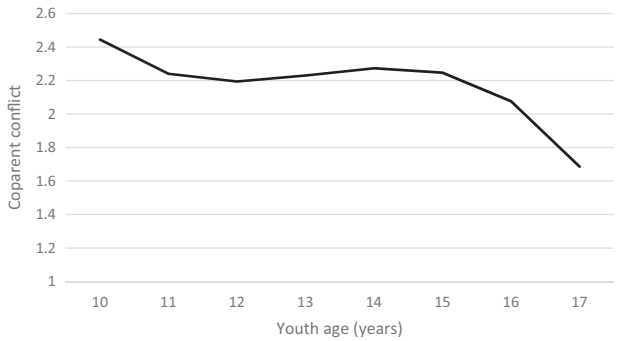

Fig. 1 Unconditional growth model of coparenting conflict across youth age

each parent and each family. As shown in Table 3, the slope for coparenting conflict was cubic. Coparenting conflict was at its highest average level during pre-adolescence (around age 10), declined through youth's transition to adolescence (ages 10–12), leveled off during early adolescence (ages 12–15), and declined again when youth approached mid-late adolescence (ages 15–17) (Fig. 1). There was no significant interaction with parent gender suggesting that the pattern of change in coparenting conflict was similar for mothers and fathers.

Bidirectional Associations between Youth Adjustment and Coparenting Conflict

To test Aims 2 and 3, bidirectional associations between each domain of youth adjustment and coparenting conflict were examined using cross-lagged panel models. The moderating role of parent gender was examined using multigroup analysis.

Youth social anxiety

Cross-lagged associations between youth reported social anxiety and mother and father reported coparenting conflict were tested in Model 1. The constrained model provided the best fit (details available upon request). Model fit was good, χ^2 (56) = 704.15, RMSEA = 0.08, CFI = 0.88, SRMR = 0.07. Multigroup analysis revealed no significant differences between mothers and fathers, $\chi^2 = 41.88$, $df = 42$, $p > 0.05$. Youth social anxiety and coparenting conflict were stable across time. As shown in Fig. 2, youth social anxiety at Waves 1 and 2 was marginally related to greater coparenting conflict at the following time point ($\beta = 0.05$, $p < 0.10$, respectively), and youth social anxiety at Wave 4 was significantly related to higher levels of coparenting conflict at Wave 5 ($\beta = 0.06$, $p < 0.05$). In contrast, the pathways from mother and father coparenting conflict to subsequent youth social anxiety were non-significant at any time point. These findings suggest that youth social anxiety gives rise to later coparenting conflict for mothers and fathers, and the association is stronger when youth are in middle adolescence.

Youth hostility

Model 2 tested cross-lagged associations between youth reported hostility and mother and father reported coparenting conflict. The constrained model provided the best fit to the data; model fit was good, χ^2 (61) = 828.51, RMSEA = 0.08, CFI = 0.85, SRMR = 0.07. Multigroup analysis revealed no significant differences between mothers and fathers, $\chi^2 = 56.60$, $df = 47$, $p > 0.05$. Youth hostility and coparenting conflict were stable over time. As shown in Fig. 3, there was a significant positive association between youth hostility at Wave 2 and coparenting conflict at Wave 3 ($\beta = 0.07$, $p < 0.05$); the same pattern was evident between Waves 3 and 4 ($\beta = 0.07$, $p < 0.05$), and Waves 4 and 5 ($\beta = 0.10$, $p < 0.01$). Coparenting conflict did not predict youth hostility at any time point. These findings suggest that youth hostility is related to higher levels of mothers' and fathers' coparenting conflict one year later, but coparenting conflict does not predict levels of youth hostility.

Risk-taking behavior

Model 3 examined cross-lagged associations between youth reported risk-taking behaviors and mother and father reported coparenting conflict. The unconstrained model provided the best fit to the data; fit statistics were good, χ^2 (110) = 528.20, RMSEA = 0.07, CFI = 0.86, SRMR = 0.07. Youth risk-taking and coparenting conflict were stable over time. Multigroup analysis revealed significant differences by parent gender ($\chi^2 = 93.71$, $df = 37$, $p < 0.001$), so separate models were tested for mothers versus fathers. As shown in Fig. 4, mother-reported coparenting conflict at Wave 3 was positively related to youth risk-taking behaviors at Wave 4 ($\beta = 0.11$, $p < 0.05$). In turn, youth

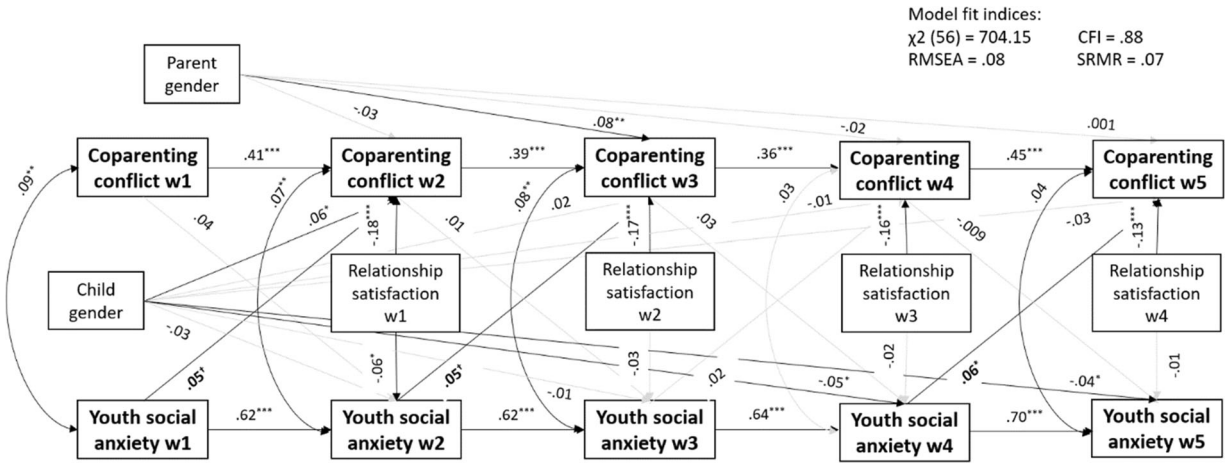

Fig. 2 Cross-lagged panel model between coparenting conflict and youth social anxiety. Black arrows indicate significant paths while gray arrows indicate non-significant paths. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; †$p < 0.10$

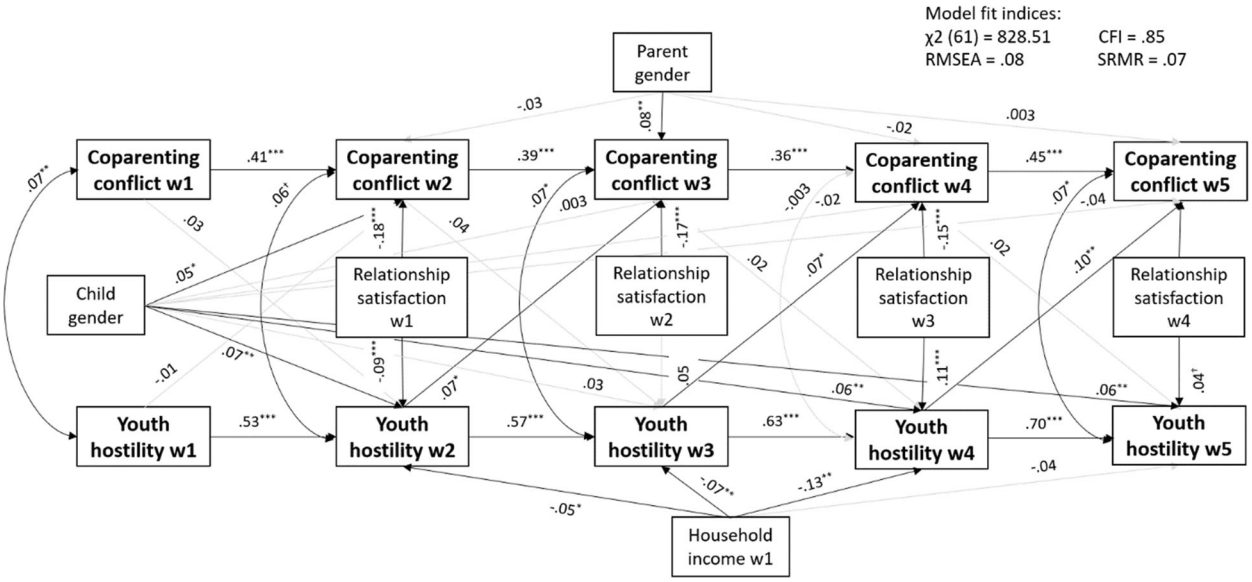

Fig. 3 Cross-lagged panel model between coparenting conflict and youth hostility. Black arrows indicate significant paths while gray arrows indicate non-significant paths. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; †$p < 0.10$

risk-taking at Wave 4 predicted higher levels of mother-reported coparenting conflict at Wave 5 ($\beta = 0.13$, $p < 0.001$). In contrast, there were no significant associations ($p < 0.05$) between youth risk-behaviors and father reports of coparenting conflict. These findings indicate that youth risk-taking behaviors are related to later coparenting conflict according to mother-reports but not father-reports.

Post-hoc analysis

Growth curves on each indicator of youth adjustment was examined in post-hoc analysis, given the significant associations between adjustment problems and later coparenting conflict. The findings revealed a significant linear decrease in youth social anxiety, $\gamma = -0.04$, $SE = 0.01$, $p < 0.01$, and significant linear increases in youth hostility, $\gamma = 0.08$, $SE = 0.01$, $p < 0.01$, and risk-taking behaviors, $\gamma = 0.21$, $SE = 0.02$, $p < 0.01$, across adolescence. These findings suggest that average levels of youth-reported social anxiety decreased from ages 10–17, whereas average hostility and risk-taking behaviors increased during this time period.

Discussion

Growing research establishes that coparenting is a key element of family systems. However, research remains limited by inadequate attention to the changes in

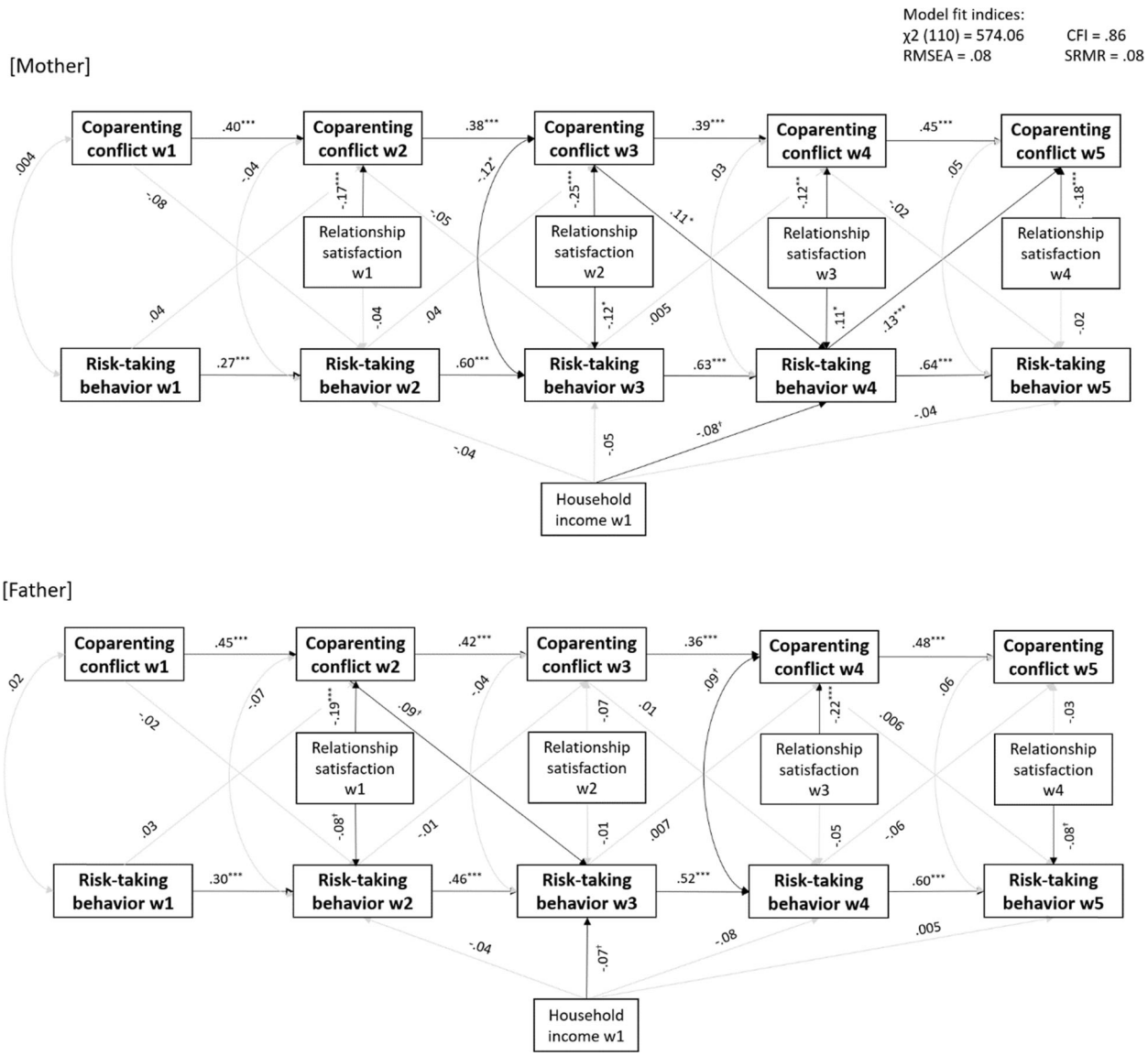

Fig. 4 Multigroup cross-lagged panel model examining the association between coparenting conflict and youth risk-taking behaviors by parent gender. Black arrows indicate significant paths while gray arrows indicate non-significant paths. ***$p < 0.001$; **$p < 0.01$; *$p < 0.05$; †$p < 0.10$

coparenting that coincide with youth's adolescent development. Adolescence is a period that often brings new challenges to the family system, which can undermine parents' coordinated efforts and give rise to disagreements surrounding childrearing. Further, the implications of child effects for coparenting during adolescence are poorly understood, despite a recognition that youth assume an important position in coparenting. This study examines coparenting through a family systems lens wherein family dynamics change as a function of development. The findings from this study extend research on coparenting—which has largely focused on families with young children—to shed light on the longitudinal course of mothers' and fathers' coparenting conflict during youth's adolescence, and its bidirectional associations with three domains of youth adjustment (social anxiety, hostility, and risk-taking behaviors).

Longitudinal Change in Coparenting Conflict

The results indicated that there was significant change in coparenting conflict from pre- to mid-adolescence best described by a cubic curve. The highest levels of coparenting conflict were evident in the early years of youth's adolescent transition (ages 10–12), conflict declined and leveled off in early-adolescence (around ages 12–15), and declined further in mid-adolescence (ages 15–17). This pattern of change is somewhat inconsistent with the

expectation that coparenting conflict would increase in adolescence with growing youth autonomy and risk for behavior problems. It is possible that as youth develop increasing autonomy with age and require less "hands-on" parenting in adolescence (Smetana et al. 2005), there are fewer opportunities for coparenting conflict to arise as fewer parenting decisions and actions are required. In this view, there is an ongoing declining secular trend in coparenting conflict due to a declining need for active parenting across adolescence (a combination of increases in capacity for self-care (e.g., executive functioning), practice and rehearsal of self-directed behavior, and changing social expectations). However, in mid-adolescence, the ongoing declining need for active child-rearing may be accompanied by increases in youth's risky decision-making, and challenges to authority (Littlefield et al. 2016). Such factors may elicit greater parent involvement and stress (Anderson 2008), which likely lead to the opportunity for increased coparenting conflict.

In this dataset, there was no evidence that average levels or rates of change in coparenting conflict differed for mothers' and fathers' reports. In general, it appears that mothers and fathers are on the same page in their views of coparenting conflict during this time. Given mixed evidence for mother-father differences in reports of coparenting, research should continue to explore whether gender plays a role in coparenting conflict, particularly during youth's adolescence.

Bidirectional Associations between Youth Adjustment and Coparenting Conflict

In line with family systems theory and the expectation that youth adjustment problems would give rise to greater coparenting conflict, the findings showed that social anxiety and hostility were related to higher levels of coparenting conflict one year later, and risk-taking behaviors were related to later coparenting conflict as reported by mothers but not fathers. Evidence for the influence of coparenting conflict on later youth adjustment was weaker, with only one association between mother-reported coparenting conflict and later youth risk-taking behavior. By controlling for associations at prior time points, the bidirectional links between youth adjustment and coparenting conflict were specific to particular time points. Together, these findings offer preliminary evidence into the role of child effects for coparenting conflict during adolescence.

The findings for youth social anxiety and hostility and coparenting conflict were consistent with a child effects perspective, in that youth adjustment gave rise to later coparenting conflict when youth were approximately 15–17 years old. For both social anxiety and hostility, it appears that these adjustment problems contributed to greater disagreements surrounding childrearing. These findings are in line with prior research, that suggests that adolescent internalizing and externalizing problems negatively interfere with coparenting, leading to increases in coparenting conflict (Zemp et al. 2018) and undermining coordinated parenting efforts (Riina and McHale 2014). It also appears that associations with hostility and social anxiety and coparenting conflict grew stronger with youth age. It is possible that parents are less concerned with adjustment problems early on. Post-hoc analysis revealed that average levels of hostility increased with youth age; it could be that parents worry more about the implications of growing hostile behaviors as youth get older, and their stress interferes with the ability to coparent effectively. In contrast, levels of social anxiety decreased with age despite a strong association with coparenting conflict at middle adolescence. As others have suggested (Jenkins et al. 2005), internalizing problems such as social anxiety may be less visible to parents than other types of behavior problems (Feinberg et al. 2007). If this is the case, coparents may not be aware of social anxiety at the early stages of adolescence; accordingly, its implications for coparenting conflict may not manifest until later on. Further research should explore other possible mechanisms, including the role of individual parenting responses, in these associations. Together, these findings show that—even within a non-clinical sample of relatively high-functioning families—youth social anxiety and hostility played a prominent role in coparenting conflicts surrounding childrearing.

The findings for youth risk-taking behaviors showed that risk-taking was associated with higher levels of mother-reported coparenting conflict, but not for father reports of coparenting. As with social anxiety and hostility, these associations were evident at mid-adolescence, when youth were approximately 15–17 years old. In addition, one significant pathway emerged between mother-reported coparenting conflict, when youth were approximately 13–14 years old, and risk-taking behaviors around ages 14–15, indicating that mothers' perceptions of coparenting conflict were related to higher levels of risk-taking behaviors at this time. To the extent that mothers in this sample are primary caregivers, their coparenting interactions may be more visible to youth than those of fathers; in turn, perceptions of higher coparenting conflict may undermine youth emotional security, which can result in more risk-taking behaviors (Harold et al. 2004).

Mothers may be more susceptible to youth risk-taking behaviors for several reasons. It is possible that mothers are less comfortable or more stressed in managing youth's risk-taking behaviors due to differences in how men and women cope with stress. In support of the idea that gender differences in coping mechanisms may affect coparenting, there is evidence that mothers may be less likely than fathers to

use problem-focused coping strategies, which aim to eliminate stress by seeking specific solutions (Marceau et al. 2015). Mothers, who are more likely to rely on emotion-focused coping strategies to enhance communication and support, may feel less efficacious in parenting when youth partake in risk-taking behaviors; in turn their reduced sense of self-efficacy surrounding youth behavior problems may lead mothers to feel powerlessness and blame, resulting in greater perceptions of coparenting conflict. Along the lines of gender differences in parents' attitudes towards youth behaviors, these findings suggest that mothers may be less tolerant of risk-taking behaviors than fathers (Fagot et al. 1985). Accordingly, when youth engage in higher levels of risk-taking, mothers may not feel supported in their parenting approach, leading them to report heightened coparenting conflict.

Strengths, Limitations, and Future Directions

This study overcame limitations of past research by examining the role of youth characteristics, including age and adjustment problems, for mothers' and fathers' coparenting conflict. Accordingly, the findings shed light on the role of youth development for coparenting conflict as youth undergo the transition to adolescence, an understudied period in coparenting research. A strength of these analyses was consideration of multiple domains of adjustment problems that are common during adolescence. The findings underscore the implications of youth social anxiety, hostility, and risk-taking behaviors for coparenting conflict in demonstrating more numerous and stronger associations between youth adjustment and later coparenting than the other direction of effect. In addition, significant mother-father differences in response to risk-taking behaviors point to one discrepancy in how mothers and fathers may approach different types of adjustment problems. Further, the findings draw attention to connections between adjustment problems and later coparenting conflict in middle adolescence but not at earlier time points. Additional research can aid in understanding the timing of associations in middle, but not early, adolescence, and help to elucidate similarities and differences between mothers and fathers in these patterns of association. Next steps include investigating the mechanisms that underlie these patterns of association so specific processes can be targeted. Future research should also examine the role of child adjustment at other ages and include other relevant domains of coparenting.

In light of the new insights it provides, this study was not without limitations. First, although the sample shared many characteristics with the general population from which it was drawn, it was not nationally representative. In addition, the sample was mostly composed of White, two-parent families; the findings should be replicated in more ethnically diverse groups and in families where coparenting is shared by parents other than mothers and fathers. Further, this study was unable to determine whether parents had any prior experience coparenting an adolescent, which could play a role in their approach to coparenting in the face of adolescent adjustment problems. Finally, although the study design was able to illuminate direction of effect, inferences about causality cannot be drawn.

Conclusion

This study advances a family systems perspective by going beyond parent-driven family processes to examine the role of youth adjustment in family dynamics. The findings from this study suggest that coparenting relationships continue to change in accordance with adolescent development. Of note, this study provides insights into adolescence by highlighting the role of child effects for coparenting interactions. Specifically, the findings draw attention to the contributions of different domains of adolescent adjustment for the coparenting experiences of mothers and fathers. In addition, this work makes an important contribution to the coparenting literature, which has tended to overlook the challenges that parents face during youth's adolescent years. Recognition of the role of youth adjustment problems for coparenting conflict is of key interest to family practitioners and program developers. The findings from this study suggest that working to reduce adjustment problems during adolescence can benefit the coparenting relationship. In turn, awareness of the implications of youth adjustment for coparenting conflict can be used to develop supports for parents to help them navigate a potentially challenging period.

Authors' Contributions E.R. conceived of the study, participated in its design and coordination and drafted the manuscript; J.L. participated in statistical analysis and interpretation of the data; M.F. was co-PI on the original grant, participated in the design of the study and helped to interpret data and draft the manuscript. All authors read and approved the final manuscript.

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Data Sharing and Declaration Data from this manuscript is not available.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures described in the study were approved by the local IRB(s).

Informed Consent All parent and youth study participants were provided with informed consent about the study as part of recruitment procedures.

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