



Coparenting Conflict Behavior, Parent–Adolescent Attachment, and Social Competence with Peers: An Investigation of Developmental Differences

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Abstract

Coparenting conflict, which refers to the conflict between parents regarding parenting, has played a central role in children's development and adjustment. The perspective of family and peer systems linkage has suggested that coparenting conflict is linked to peer-related development, but this view has yet to be clarified. This study aimed to investigate the relationships among coparenting conflict behavior, parent–adolescent attachment, and social competence with peers as well as the developmental differences of these relationships in early, middle, and late adolescence within Chinese families. Families ($N = 808$) that included fathers, mothers, and focal adolescents (53% female, $M_{\text{age}} = 13.66 \pm 2.53$) participated in this study. Fathers and mothers reported their coparenting conflict behaviors separately, and the adolescents rated parent–adolescent attachment and social competence with peers. Results showed that fathers' overt coparenting conflict behavior was related to social competence with peers through the indirect effects of father– and mother–adolescent attachments, whereas mothers' covert coparenting conflict behavior was related to social competence with peers through the indirect effect of mother–adolescent attachment in the total sample. The multigroup analysis revealed that these relationships were significant in early and late adolescence. In addition, fathers' covert coparenting conflict behavior was related to mother–adolescent attachment in late adolescence and all the relationships were insignificant in middle adolescence. The findings support the systematic perspective of family–peer system linkage and highlight the gender differences of parents in the effects of coparenting conflict on social competence with peers and the developmental differences during adolescence.

Keywords Coparenting conflict behavior · Parent–adolescent attachment · Social competence with peers · Developmental difference

Introduction

Social competence with peers has been the center of adolescent development and has been identified as an important factor predicting individuals' current and future social adaptation (Buhs et al. 2018). By recognizing the important role played by peers on individuals' social adjustment during adolescence (Howes et al. 2017), researchers have attempted to explore the factors that influence such

individuals' interpersonal competence with peers. Given that parents and families exert an influential and persisting effect on offspring's development during adolescence, empirical studies have examined the possible links between family factors and children's social behaviors with peers under the framework of the family–peer system linkage (Kliewer et al. 2018). However, one of the limitations of this literature is that most studies have investigated a narrow range of family factors, primarily parent–child interaction. Although a clear documentation of the family system's effect on peer competence is important, a thorough understanding depends on the expansion of the family factors assessed. Therefore, the present study aimed to examine the relationships among coparenting conflict, which refers to the disagreements, hostility, or anger between fathers and mothers in their roles as parents (Feinberg 2003), parent–adolescent attachment, and social competence with

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peers. Moreover, this study aims to determine the differences of these relationships in relation to adolescents' developmental stages.

Family and Peer Systems Linkage

The perspective of family–peer system linkage draws on the views of family system theory, which provides a valuable theoretical base for the present study. First, family system theory asserts that a family can be divided into different hierarchical “energy” subsystems (Fiese et al. 2019). Each individual is a subsystem and interactions among individuals constitute larger and higher-order subsystems than individual ones (Stanton and Welsh 2012). For example, the coparenting subsystem represents the characteristic and function of interactions between fathers and mothers in their roles as parents as they manage family members' behaviors and regulate family interactions and outcomes, thereby playing central roles in family life (Feinberg 2003). The parent–child subsystem is formed by the interaction between one parent and the child (Martin et al. 2017), which provides the secure base for adolescent individual development. Second, the energy generated in one subsystem can be directly transferred to another, implying that family subsystems are mutually influential (Fiese et al. 2019). Accordingly, family–peer system linkage theory treats family systems and peer networks as independent systems. Simultaneously, this theory asserts that affect/behavior flows from family systems to peer system and vice versa (Ladd 2016). During the past few years, researchers have supported the pathway from family (or parent) factor to child development (Brown and Bakken 2011). Therefore, family factors, namely, coparenting conflict and parent–adolescent attachment are likely related to social competence with peers in the present study.

Family system theory also assumes that subsystems link with one another through direct and indirect processes (Holmes et al. 2013), with emphasis on examining the indirect effect of coparenting subsystem on offspring's adaptation and development (Feinberg 2003). The present study proposed that coparenting conflict contributes to the offspring's social competence with peers through the indirect effect of parent–adolescent attachment. First, attachment bonds with parents during infancy form the basis of individual's future development and adjustment based on attachment theory (Cassidy 2008). This theory assumes that individuals who have secure attachment bonds with their parents exhibit positive expectations about themselves and can improve the desire to social exploration; therefore, such individuals tend to ultimately practice and develop their social competence with peers. By contrast, individuals who have insecure attachment bonds with their parents have negative expectations about themselves and

see others as unreliable; thus, they are likely to withdraw from social interactions. In adolescence, attachment theorists hold that the attachment system operates as it constantly has and remains an important factor in one's future social development (Allen 2008). Therefore, parent–adolescent attachment can help improve the understanding of social competence with peers. Second, the coparenting subsystem—the family's executive subsystem that manages and regulates family boundary and relationships—can influence the function of the parent–adolescent subsystem (i.e., parent–adolescent attachment in the present study) from family system theory (Martin et al. 2017). Furthermore, the adolescents' cognitive and emotional development increase their capacity to reevaluate the nature of attachment relationship with parents (Allen 2008). That is, adolescents will monitor and ensure parents' availability to meet the former's attachment needs in the context of coparenting conflict, thereby affecting the development of parent–adolescent attachment during adolescence (Zou et al. 2019).

Coparenting Conflict and Social Competence with Peers

Coparenting occurs when fathers and mothers share the responsibility for rearing their children; this relationship is usually described as a triadic-level family construct rather than a dyadic-level construct, for instance, parents' individual parenting (Jia and Schoppe-Sullivan 2011). Simultaneously, coparenting relationship does not include the romantic and sexual aspects of adults' relationship that do not relate to childrearing (McHale and Lindahl 2011); therefore, coparenting is distinguished from marital relationship. Research on coparenting has demonstrated that this concept accounts for variance in child outcomes after controlling for individual parenting and marital quality (Feinberg et al. 2007). Coparenting conflict is a salient construct of coparenting, which is viewed as a basis for other aspects of coparenting (van Egeren and Hawkins 2004). Researchers have argued that coparenting conflict is an important factor that predicts the psychological adjustment of children and youth given the striking symptoms of conflict, which are most likely to be witnessed and noticed by young children (Teubert and Pinquart 2010). For instance, Stallman and Ohan (2016) found that coparenting conflict increased children's emotional and behavioral problems. Mothers' reported coparenting conflict with their child's father was also linked with children's academic and social school readiness at five years of age (Jahromi et al. 2018). In addition, coparenting conflict was related to children's symptoms of psychological problems (Umemura et al. 2015), such as attention deficit/hyperactivity disorders and oppositional

defiant disorders. Baril et al. (2007) showed a longitudinal relationship between coparenting conflict and risky behavior of adolescents after controlling marital relationship. In comparison, research on the relationship between coparenting conflict and peer competence has been largely neglected. To clarify, this relationship can verify the perspective of family–peer system linkage and advance an understanding of whether and how coparenting conflict undermines adolescent adjustment in the peer network. To date, studies substantiating relationships between coparenting conflict and child adjustment have typically involved samples of Western families. Only limited studies are available on coparenting in Asian families. Nonetheless, McHale et al. (2014) suggested that Western and Asian families show similar patterns of linkage between coparenting and children adjustment. Therefore, the present study aims to observe the significant linkage between coparenting conflictual behavior and social competences with peers within Chinese families.

Additionally, the current study plans to examine the effects of coparenting conflict behaviors on adolescent social competence with peers. Although previous studies have suggested that parental conflict between fathers and mothers in coparenting relationships can affect adolescent social competence with their peers (Stallman and Ohan 2016; Jahromi et al. 2018), few studies have investigated the effects of the individual behaviors of fathers and mothers in the coparenting process (i.e., coparenting conflict behaviors). Moreover, the existing literature addressing coparenting is limited given that most studies focus on mothers (McDaniel et al. 2017), while excluding or underrepresenting the fathers' role in the coparenting process. For example, the perspective of maternal gatekeeping focused on mothers' negative control and discouragement behaviors toward fathers (Puhlman and Pasley 2013), which revealed that maternal gatekeeping behavior was associated with child conduct behaviors (Zvara et al. 2016). However, fathers have been recognized as the forgotten contributors to children and adolescent development as they promote their offspring's positive development (Su et al. 2017) and protect against children's problem behaviors (Flouri et al. 2016). Research on the coparenting behavior of fathers and mothers, particularly negative coparenting conflict behavior, is scarce. Therefore, the current study included mother and father coparenting conflict behaviors in the same predictive model to control for shared variance between parents' coparenting behaviors. The unique contributions of fathers and mothers to their children's social competence with peers were also investigated. Considering the salient role of parents on children and adolescents' life, the study expected that the parents' coparenting conflict behaviors would separately be linked to their children's social competence with peers.

To further extend the literature on coparenting conflict and its potential influence on child and adolescent development, the study utilized the perspective of parental covert conflict (Rowen and Emery 2018) and measured overt and covert coparenting conflicts simultaneously. McHale (1997) developed a coparenting behavior scale, which assesses overt and covert coparenting behaviors, particularly undermining and disparaging behaviors in the absence of the other parent. However, since its proposal, little attention has been given to this innovative approach in constructing coparenting behaviors. In most cases, parental or coparenting conflict particularly refers to the disagreement and anger between fathers and mothers who are both present (Kopystynska et al. 2017). Rowen and Emery (2018) found that a parent's display of disparaging behaviors in front of his/her sons or daughters in the absence of the coparent is reciprocal and can be related to the children's distant feeling toward both parents, not just relating to poor relationship quality with the parent who was disparaged. Therefore, the authors argued that such a disparaging behavior is a component of parental conflict. The present study named such behaviors as covert coparenting conflict behavior, corresponding to the overt coparenting conflict behavior. Furthermore, Harman et al. (2018) highlighted the serious and negative consequences of disparaging behaviors for children and adolescent development. Therefore, to further understand the construct of coparenting conflict, the current study separately measured the overt and covert coparenting conflict behaviors of fathers and mothers.

Parent–Adolescent Attachment as a Mediator

From the aforementioned theory, the influential effects of coparenting conflict behaviors on children's social competence with peers can be observed through other constructs. Martin et al. (2017) proposed a process model of the consequences of coparenting conflict for adolescent development. This model emphasizes that such a conflict can disrupt adolescents' secure exploration, as represented by the poor-quality parent–adolescent attachment, which then negatively impacts their social skills and social adjustment. In addition, the model suggests that parent–adolescent attachment can be an important mechanism to understand the relationship between coparenting conflicts and social skills. Empirical studies have suggested that parent–child attachment plays an important role in promoting adolescent social competence with peers or peer competence during their life course. A meta-analytic study confirmed that parent–child attachment security was strongly associated with peer competence and that attachment avoidance, resistance, and disorganization were significantly associated with low peer competence (Groh et al. 2014). Attachment security to mothers was associated with friendship skills and

peer competence (Scharf et al. 2016). Studies suggested that fathers also serve as reliable attachment figures and that attachment to fathers acts as an important factor in child development (Bretherton 2010). Therefore, the current study assessed father– and mother–adolescent attachments separately to examine their joint and distinct contributions to social competence with peers.

Regarding the relationships between coparenting conflict behaviors and social competence with peers, the two processes derived from family system theory guided this study. First, spillover hypothesis proposes that an individual's mood, affect, and behavior can be transferred from one family subsystem to another (Zemp et al. 2018), thereby representing the intrapersonal transfer of affect and behavior (i.e., spillover effect). Hence, fathers' overt and covert coparenting conflict behaviors can be associated with father–adolescent attachment, whereas mothers' overt and covert coparenting conflict behaviors can be associated with mother–adolescent attachment. Second, crossover hypothesis proposes that an individual's affect and behavior can be transferred to another family member (Newland et al. 2015), thereby representing the interpersonal transfer of affect and behavior (i.e., crossover effect). Hence, fathers' overt and covert coparenting conflict behaviors can be associated with mother–adolescent attachment, and mothers' overt and covert coparenting conflict behaviors can be associated with father–adolescent attachment. In conclusion, the study proposed an indirect effect model that father– and mother–adolescent attachments can mediate the relationships between coparenting conflict behavior and adolescent social competence with peers (see Fig. 1). This indirect model links the family to peer systems and deepens the understanding of the coparenting conflict construct during adolescence. Finally, several important individual and family variables (i.e., adolescent age, gender, number of children, and subjective socioeconomic status) were controlled because these factors were previously linked to coparenting, parent–adolescent attachment, and social competence (Wang and Li 2016).

Developmental Differences

Adolescence is a period of rapid and profound changes in biological, cognitive, and social areas (Amanda and Kathryn 2018). A developmental perspective on social competence has viewed competence with respect to individuals' adaptation to age-appropriate developmental issues (Elicker et al. 2016). Given that peer relationships become prominent in adolescence, this perspective has revealed that the competence of individuals within peer networks during early adolescence establishes the foundation of peer competence development during late adolescence (Chango et al. 2015), suggesting that social competence with peers can

differ among early, middle, and late adolescence. In addition, the most rapid changes in adolescence are within the family. The early adolescent stage reflects the beginning of less dependence on parents, whereas the late adolescent stage reflects one's potential to function completely independently from his/her parents (Allen 2008). These stages indicate that the attachment bonds with parents become vulnerable in late adolescence and further show that the influence of family on an individual's development decreases from early to late adolescence as the adolescents and their parents spend less time together. Research on the relationships of family factors and adolescents' peer competence has found significant developmental differences. For instance, parental support is significantly linked to friendship quality during early adolescence but not during middle adolescence (Tian et al. 2014). Unfortunately, the findings that are specifically related to developmental differences in relationships between coparenting conflict behavior and adolescent social competence with peers remain unclear. However, previous studies have partly confirmed developmental differences in coparenting conflict behavior and parent–adolescent relationship. Maternal gate-closing behavior, a special conflictual behavior shown by mothers (Puhlman and Pasley 2013), was observed to be negatively correlated with the quality of mother–adolescent relationship in early adolescence (Holmes et al. 2013). However, this relationship is insignificant in middle adolescence (Tu 2015). Zou et al. (2019) replicated these results and further found that the maternal gate-closing behavior exhibited double-edged (i.e., positive and negative) effects on the mother–adolescent relationship during late adolescence. Therefore, developmental differences in coparenting conflict behavior effects must be studied to further promote the understanding of the coparenting subsystem function and family intervention programs targeted during adolescence.

Current Study

The current study initially aims to examine the indirect effect of parent–adolescent attachment between coparenting conflict and adolescent social competence with peers. Previous studies on coparenting conflict have largely excluded the effects of parents' individual behaviors in the coparenting conflict process (i.e., coparenting conflict behaviors) and have not utilized the perspective of parental covert conflict. Therefore, the current study measured the overt and covert coparenting conflict behaviors of fathers and mothers and further assessed adolescent attachment to fathers and mothers separately. These objectives allowed the investigation of the spillover and crossover effects of coparenting conflict on father– and mother–adolescent attachments, which were assumed to

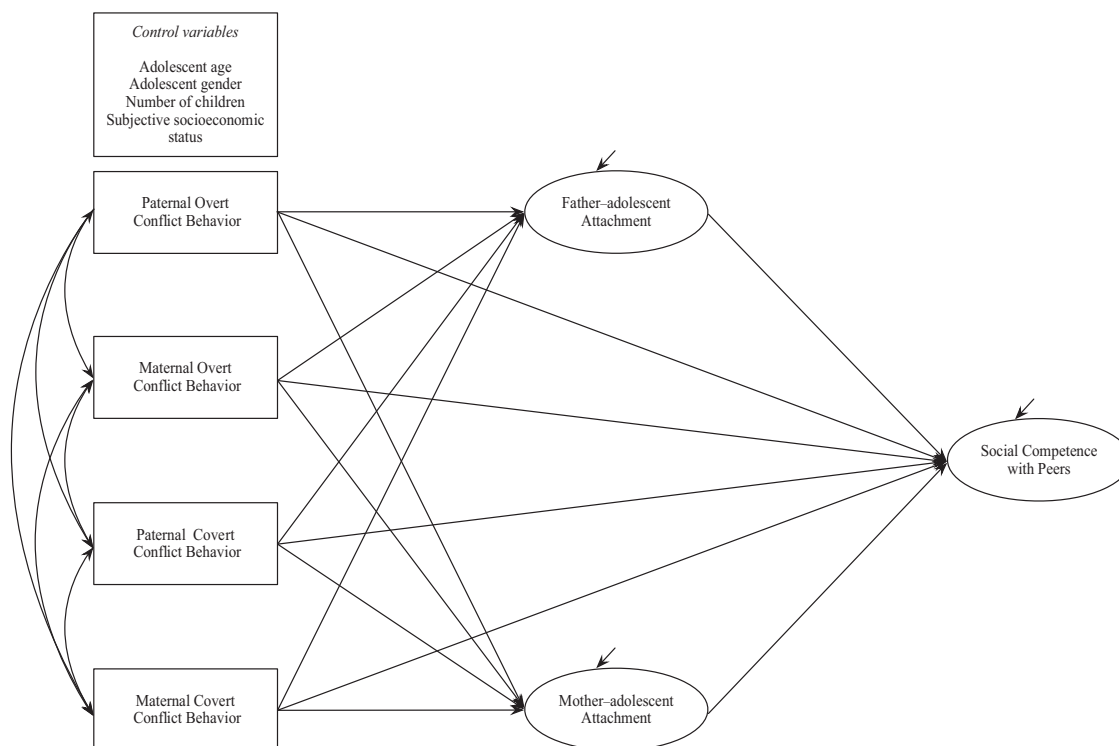


Fig. 1 Hypothesized indirect effect model

jointly and distinctly contribute to understanding adolescent social competence with peers. The current study hypothesized that fathers and mothers' overt and covert coparenting conflict behaviors will be negatively related to father- and mother-adolescent attachments and will thus be ultimately negatively related to adolescent social competence with peers. Second, this study aims to determine whether the relationships among coparenting conflict behavior, parent-adolescent attachment, and social competence with peers differed according to developmental stages (i.e., early, middle, and late adolescence). However, the limited number of previous studies has precluded specific predictions given to the developmental differences in these relationships. Considering the decreasing effect of family on an individual's development, the current study assumed that the direct and indirect effect of coparenting conflict behavior on social competence with peers during early adolescence is stronger than that during middle and late adolescence.

Methods

Participants

A total of 808 Chinese families, including fathers, mothers, and a focal adolescent offspring, participated in the present study. The adolescents were from intact families with

heterosexual, biological, and married parents (mean length of marriage = 16.40, $SD = 4.06$). The mean age of adolescents was 13.66 years old ($SD = 2.53$), and these adolescents belonged to the three developmental stages: early ($N = 363$; age range: 10 to 12 years, mean age = 11.21, $SD = 0.43$), middle ($N = 237$; age range: 13 to 15 years, mean age = 14.23, $SD = 0.47$), and late adolescence ($N = 208$; age range: 16 to 18 years, mean age = 17.28, $SD = 0.56$). In addition, 47% of the adolescents were boys, and 55% were the only-children. The mean scores of subjective socioeconomic status (SSS, ranging from 1 to 10) reported by adolescents compared with the members in the province and school were 6.24 ($SD = 1.55$) and 6.84 ($SD = 1.62$), respectively. Fathers' mean age was 43.05 years old ($SD = 4.29$) and they attained the following educational attainment levels: 24.5% were middle school graduates, 40.1% were high school graduates, and 33.3% held college degrees or above. The mean scores of SSS reported by fathers compared with the members in the province and community were 5.79 ($SD = 1.73$) and 5.18 ($SD = 1.80$), respectively. The mean age of mothers was 40.83 years old ($SD = 4.20$) and their educational attainment were as follows: 30.9% were middle school graduates, 34.6% were high school graduates, and 28.9% held college degrees or above. The mean scores of SSS reported by mothers compared with the members in the province and community were 5.82 ($SD = 1.57$) and 5.23 ($SD = 1.70$), respectively.

Procedures

The present study used a convenience sampling method involving a group of families, which included an adolescent offspring studying in either primary or secondary school. The study was approved by the Research Ethical Committee of Beijing Normal University and was conducted with the permission of the principals of the participating schools. All participants, including fathers, mothers, and adolescents, provided informed written consent. The participating students and parents were free to quit from the research at any time. The adolescents initially provided their demographic information that included gender, age, and SSS and subsequently completed the remaining measures that assessed their attachment to their fathers and mothers and their social competence with peers. Furthermore, the parents also initially provided demographic information about the family and themselves and subsequently completed the measures that assessed their conflictual behavior with their spouse.

Measures

Parent-reported coparenting overt and covert conflict behaviors

Paternal and maternal overt and covert conflictual behaviors were measured by the items from the adopted Chinese version of Coparenting Behavior Scale (Liu et al. 2017). Each overt and covert conflictual behavior consisted of six items. The scale is presented as two distinct sets of items: the first set measures a parent's conflictual behavior to the spouse, particularly, the condition that both parents and the adolescent are together (e.g., "How often in a typical week [when all 3 of you are together] do you argue with your partner?"), whereas the second set measures a parent's disparaging behavior to the spouse when the latter is absent (e.g., "How often in a typical week [when you are alone with your child] do you say something clearly negative or disparaging about your partner to your child?"). The parents' individually rated frequency with their own conflictual behavior on a seven-point Likert-type scale ranging from 1 (*absolutely never*) to 7 (*almost constantly*). A high score indicates high frequency of conflictual behaviors among fathers or mothers. In the present study, the Cronbach's alpha values of paternal overt and covert conflictual behaviors were 0.89 and 0.94, respectively, whereas those of maternal overt and covert conflictual behaviors were 0.89 and 0.93, respectively.

Adolescent-reported father– and mother–adolescent attachments

Father– and mother–adolescent attachments were measured using the Inventory of Parent and Peer Attachment (IPPA,

Armsden and Greenberg 1987). Adolescents self-reported their perceptions of affection and cognition of relationships with their father and mother separately. This inventory consists of three dimensions, namely, degree of mutual trust (e.g., "My father/mother respects my feelings"), quality of communication (e.g., "My father/mother can tell when I am upset about something"), and the extent of anger and alienation (e.g., "I get upset easily around my father/mother"). The inventory consisted of 25 items in each of the father and mother version. Response options for each item were provided using a five-point Likert-type scale ranging from 1 (*almost never or never true*) to 5 (*almost always or always true*). All items in each section were summed after reverse-scoring the negatively worded items, thereby yielding a total score for father– and mother–adolescent attachments. A high score indicates high-level secure attachment relationships with fathers and mothers. In the present study, the Cronbach's alpha values of the father– and mother–adolescent attachments were 0.78 and 0.77, respectively.

Adolescent-reported social competence with peers

Adolescent social competence with peers was measured by the subscale of interpersonal skills from the School Social Behavior Scale (Merrell 1997) consisting of 14 items (e.g., "To talk or join in a conversation skillfully with a classmate"). Adolescents rated the frequency of these behaviors on a five-point Likert-type scale ranging from 1 (*never*) to 5 (*always*). A high score indicates high-level interpersonal competence and skills with peers. The Cronbach's alpha values of adolescent social competence with peers was 0.91.

Data Analysis

Missing data (<5%) were imputed using the expectation maximization in the practical application. Descriptive and correlational analyses were conducted in SPSS 21.0. Structural equation modeling (SEM) was employed to test the indirect effect model, which was examined with adolescent characteristics as control variables by using the maximum likelihood estimation. The multigroup analysis in the indirect effect model was performed to explore the differences among three developmental stages during adolescence. First, the indirect effect model should be verified in three adolescent developmental stages prior to multigroup analysis. Second, two nested models (i.e., free estimated and constrained structural path models) were specified to determine whether the structural paths differ in three developmental stages as a whole. Third, the Wald chi-square test was employed to identify the specific paths that differed across three developmental stages (Wang and Wang 2012). The causal-steps approach was initially used to detect the significant indirect effects in total sample and each developmental stages, which

Table 1 Pearson correlations and descriptive statistics for the main study variables ($N = 820$)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. MA	1												
2. LA	−0.38***	1											
3. Gender	0.02	0.05	1										
4. OC	0.06	0.05	0.13***	1									
5. SSS-P	−0.06	−0.22***	0.06	0.11**	1								
6. SSS-C	−0.03	−0.14***	−0.01	0.10**	0.46***	1							
7. POCB	0.04	0.04	−0.01	0.02	−0.11**	−0.06	1						
8. MOCB	0.06	0.00	−0.03	0.03	−0.11**	−0.02	0.49***	1					
9. PCCB	0.05	0.07*	0.02	0.01	−0.09*	−0.06	0.69***	0.38***	1				
10. MCCB	0.05	0.03	0.02	0.01	−0.10*	−0.03	0.39***	0.69***	0.40***	1			
11. FAA	−0.16***	−0.06	0.05	0.08*	0.20**	0.16***	−0.20***	−0.18***	−0.15***	−0.19***	1		
12. MAA	−0.21***	−0.06	0.07*	0.13***	0.19***	0.13***	−0.21***	−0.14**	−0.17***	−0.13***	0.63***	1	
13. SCP	−0.11**	−0.08*	0.03	0.13***	0.27***	0.37***	−0.07*	−0.05	−0.04	−0.04	0.39***	0.36***	1
<i>M</i>	—	—	—	—	6.24	6.84	2.22	2.20	1.62	1.70	3.73	3.92	3.75
<i>SD</i>	—	—	—	—	1.55	1.62	0.97	0.97	0.88	0.85	0.64	0.62	0.55

Gender: 0 = boys, 1 = girls; Only child: 0 = yes, 1 = no

MA middle adolescence, LA late adolescence, OC only child, SSS-P subject social status in province, SSS-C subject social status in community, POCB paternal overt conflict behavior, MOCB maternal overt conflict behavior, PCCB paternal covert conflict behavior, MCCB maternal covert conflict behavior, FAA father–adolescent attachment, MAA mother–adolescent attachment, SCP social competence with peers

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

required significant relationships between coparenting conflict behavior and parent–adolescent attachment and between parent–adolescent and social competence with peers. Moreover, the bootstrap method (with 5000 replicates) was used to calculate the 95% confidence interval (CI) of the indirect effect and to compensate for the low statistical power of casual-steps approach (Zhao et al. 2010). The indirect effect is significant when the CI does not include zero. SEM and multigroup analyses were conducted in Mplus 7.11. The effect size for indirect effect was calculated with κ^2 . This is standardized and not wedded to the particular scale (Preacher and Kelley 2011).

Results

Preliminary Analysis

Table 1 presents the means, standard deviations, and Pearson correlations among the study variables. Paternal and maternal conflict behaviors, including overt and covert, were negatively and significantly related to father– and mother–adolescent attachments. Both attachments were positively and significantly related to adolescents' social competence with peers. Paternal overt conflict behavior was negatively and significantly related to social competence with peers. Similarly, paternal covert conflict behavior and maternal overt and covert conflict behaviors were not

related to adolescents' social competence with peers. The level of social competence with peers during early adolescence was significantly higher than that during middle and late adolescence. The non-only child possessed a high level of social competence with peers. Furthermore, the subjective socioeconomic status was positively related to social competence with peers. The variance inflation factor (VIF) was assessed to identify any possible multicollinearity among the predictor variables. Results revealed that all VIF values were less than three, indicating that collinearity was not a problem in this study (Dormann et al. 2013).

Testing the Indirect Effect of Parent–Adolescent Attachment

Figure 2 presents the standardized coefficient of the indirect effect model. The tested model obtained acceptable fit indices ($\chi^2/df = 2.29$, RMSEA = 0.04, CFI = 0.98, TLI = 0.97, SRMR = 0.02). Paternal overt and maternal covert conflict behaviors were negatively related to father–adolescent attachment ($\beta = -0.14$, $\beta = -0.12$, $p < 0.01$) and father–adolescent attachment was positively related to social competence with peers ($\beta = 0.25$, $p < 0.001$). Paternal overt conflict behavior was negatively related to mother–adolescent attachment ($\beta = -0.13$, $p < 0.001$) and mother–adolescent attachment was positively related to social competence with peers ($\beta = 0.19$, $p < 0.001$). Maternal overt and paternal covert conflictual

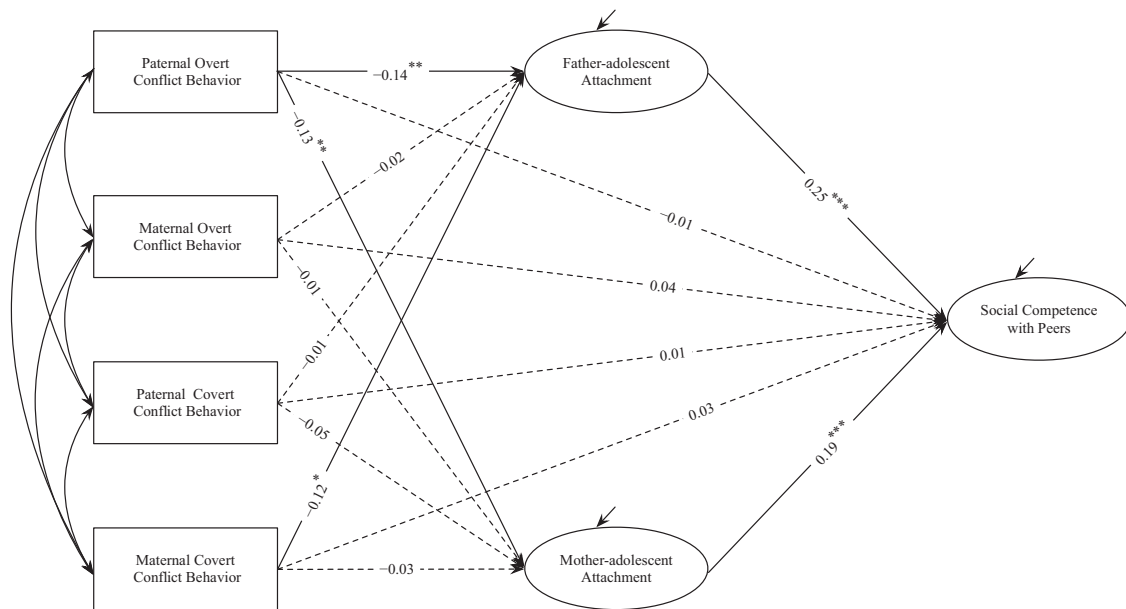


Fig. 2 Indirect effect model from parental conflictual behavior to social competence with peers in total sample. All the reported parameters are standardized. The controlled variables are not shown in the figure

behaviors were not related to father– and mother–adolescent attachments. Similarly, maternal covert conflict behavior was not correlated with mother–adolescent attachment. As shown in Table 2, the 95% bootstrap CI of the indirect effect of father– and mother–adolescent attachments between the relationship of paternal overt conflict behavior and adolescent social competence with peers did not include zero. Similarly, the 95% bootstrap CI of the indirect effect of father–adolescent attachment between the relationship of maternal covert conflict behavior and adolescent social competence with peers also did not include zero. Thus, these indirect effects were statistically significant with a small effect size according to the value of κ^2 .

Multigroup Analysis for the Adolescent Developmental Stages

The multigroup analysis was performed to examine whether the indirect effect model differed among the three adolescent developmental stages. First, the indirect effect model was verified in three adolescent developmental stages prior to multigroup analysis (early adolescence: $\chi^2/df = 1.47$, RMSEA = 0.04, CFI = 0.99, TLI = 0.98, SRMR = 0.02; middle adolescence: $\chi^2/df = 1.61$, RMSEA = 0.05, CFI = 0.98, TLI = 0.96, SRMR = 0.03; late adolescence: $\chi^2/df = 1.72$, RMSEA = 0.06, CFI = 0.97, TLI = 0.95, SRMR = 0.03). Second, the metric and scalar invariances of the measurement model among the three developmental stages were verified in the multigroup analysis. The model with free estimated structural paths fitted the data well ($\chi^2/df =$

1.75, RMSEA = 0.05, CFI = 0.97, TLI = 0.96, SRMR = 0.04). Third, the structural paths of the model were constrained to be equal across three developmental stages. The model fitted the data well ($\chi^2/df = 2.24$, RMSEA = 0.07, CFI = 0.93, TLI = 0.93, SRMR = 0.11). However, the constrained model assuming similar effects across developmental stages had significantly worse fit than the free estimated model ($\Delta\chi^2/df = 5.18$, Δ RMSEA = 0.02, Δ CFI = -0.04, Δ TLI = -0.03, Δ SRMR = 0.07), indicating that the effects varied across developmental stages.

Figure 3 illustrates the results of the multigroup analysis across developmental stages. Results showed that paternal overt conflict behavior was negatively related to father–adolescent attachment in early adolescence ($\beta = -0.16$, $p < 0.05$) and late adolescence ($\beta = -0.19$, $p < 0.05$), indicating no significant difference between these two developmental stages by Wald chi-square test (Wald $\chi^2 = 0.03$, $p = 0.87$). Similarly, maternal covert conflict behavior was negatively related to father–adolescent attachment in early adolescence ($\beta = -0.17$, $p < 0.05$) and late adolescence ($\beta = -0.27$, $p < 0.05$), which also showed no significant difference between early and late adolescence (Wald $\chi^2 = 0.24$, $p = 0.63$). Meanwhile, father–adolescent attachment was positively related to social competence with peers in early adolescence ($\beta = 0.37$, $p < 0.001$) and late adolescence ($\beta = 0.21$, $p < 0.05$). The relationship between father–adolescent attachment and social competence with peers in early adolescence was stronger than that in late adolescence (Wald $\chi^2 = 4.46$, $p < 0.05$). Meanwhile, paternal overt coparenting conflict behavior was negatively

Table 2 Bootstrap confidence interval and effect size of the indirect effect model

Mediation path	Total sample			Early adolescence			Middle adolescence			Late adolescence		
	Estimate	95% CI	κ^2	Estimate	95% CI	κ^2	Estimate	95% CI	κ^2	Estimate	95% CI	κ^2
POCB → FAA → SCP	-0.04	[-0.09, -0.01]	0.05	-0.06	[-0.14, -0.01]	0.09	-0.01	[-0.08, 0.01]	Ns	-0.04	[-0.14, 0.00]	0.07
POCB → MAA → SCP	-0.03	[-0.07, -0.01]	0.04	-0.03	[-0.08, -0.01]	0.04	-0.01	[-0.08, 0.01]	Ns	-0.02	[-0.10, 0.01]	Ns
MOCB → FAA → SCP	-0.01	[-0.04, 0.03]	Ns	-0.01	[-0.10, 0.06]	Ns	-0.01	[-0.09, 0.01]	Ns	0.02	[-0.03, 0.12]	Ns
MOCB → MAA → SCP	0.01	[-0.02, 0.03]	Ns	0.01	[-0.03, 0.03]	Ns	-0.01	[-0.06, 0.02]	Ns	0.01	[-0.06, 0.08]	Ns
PCCB → FAA → SCP	-0.01	[-0.03, 0.02]	Ns	0.02	[-0.04, 0.08]	Ns	0.01	[-0.02, 0.05]	Ns	-0.02	[-0.12, 0.01]	Ns
PCCB → MAA → SCP	-0.02	[-0.05, 0.01]	Ns	0.01	[-0.02, 0.04]	Ns	-0.02	[-0.04, 0.03]	Ns	-0.06	[-0.20, -0.02]	0.10
MCCB → FAA → SCP	-0.03	[-0.07, -0.01]	0.04	-0.06	[-0.14, -0.01]	0.12	0.00	[-0.04, 0.03]	Ns	-0.06	[-0.20, -0.01]	0.08
MCCB → MAA → SCP	-0.01	[-0.04, 0.01]	Ns	-0.01	[-0.05, 0.01]	Ns	-0.01	[-0.05, 0.02]	Ns	-0.04	[-0.16, 0.01]	Ns

related to mother–adolescent attachment in early adolescence ($\beta = -0.18, p < 0.05$) but was insignificant in late adolescence ($\beta = -0.09, p > 0.05$). Paternal covert conflict behavior was negatively related to mother–adolescent attachment in late adolescence ($\beta = -0.25, p < 0.01$) but was not significant in early adolescence ($\beta = 0.03, p > 0.05$). Mother–adolescent attachment was positively related to social competence with peers in early adolescence ($\beta = 0.15, p < 0.05$) and late adolescence ($\beta = 0.23, p < 0.05$), which indicated no significant difference between early and late adolescence (Wald $\chi^2 = 0.29, p = 0.59$). In middle adolescence, paternal and maternal conflict behaviors, including overt and covert, were not related to father– and mother–adolescent attachments. Moreover, both attachments were not related to adolescent social competence with peers. As shown in Table 2, the 95% bootstrap CI of the indirect effect of father– and mother–adolescent attachments between the relationship of paternal overt conflict behavior and adolescent social competence with peers and that of father–adolescent attachment between the relationship of maternal covert conflict behavior and adolescent social competence with peers in early adolescence did not include zero. Similarly, in late adolescence, the 95% bootstrap CI of the indirect effect of father–adolescent attachment in the relationships between paternal overt/maternal covert conflict behavior and adolescent social competence with peers also did not include zero. Similarly, the indirect effect of mother–adolescent attachment between the relationship of paternal covert conflict behavior and adolescent social competence with peers during late adolescence did not include zero. No additional significant indirect effects were verified by the bootstrap method in the early, middle, and late adolescence stages.

Sensitivity Analysis and Alternate Model Analysis

To test the robustness of the present findings, several alternate model analyses were conducted. First, missing data were imputed using multiple imputation (MI), which replaced the solution imputed by EM in the primary analysis. Second, the control variables (i.e., adolescent gender, the only-one child status, and SSSs) were removed in SEMs to examine the pattern of results. Third, SEMs were retested using the robust maximum likelihood estimation. Results showed that these solutions yielded similar results to the primary analysis. The present study further examined the adolescent gender differences of the indirect effect in boys and girls. First, the indirect effect model was individually tested among boys and girls prior to multigroup analysis, and this model obtained acceptable fit indices among boys and girls (boys: $\chi^2/df = 2.17, RMSEA = 0.06, CFI = 0.97, TLI = 0.95, SRMR = 0.03$; girls: $\chi^2/df = 2.30, RMSEA = 0.06, CFI = 0.97, TLI = 0.95, SRMR = 0.03$).

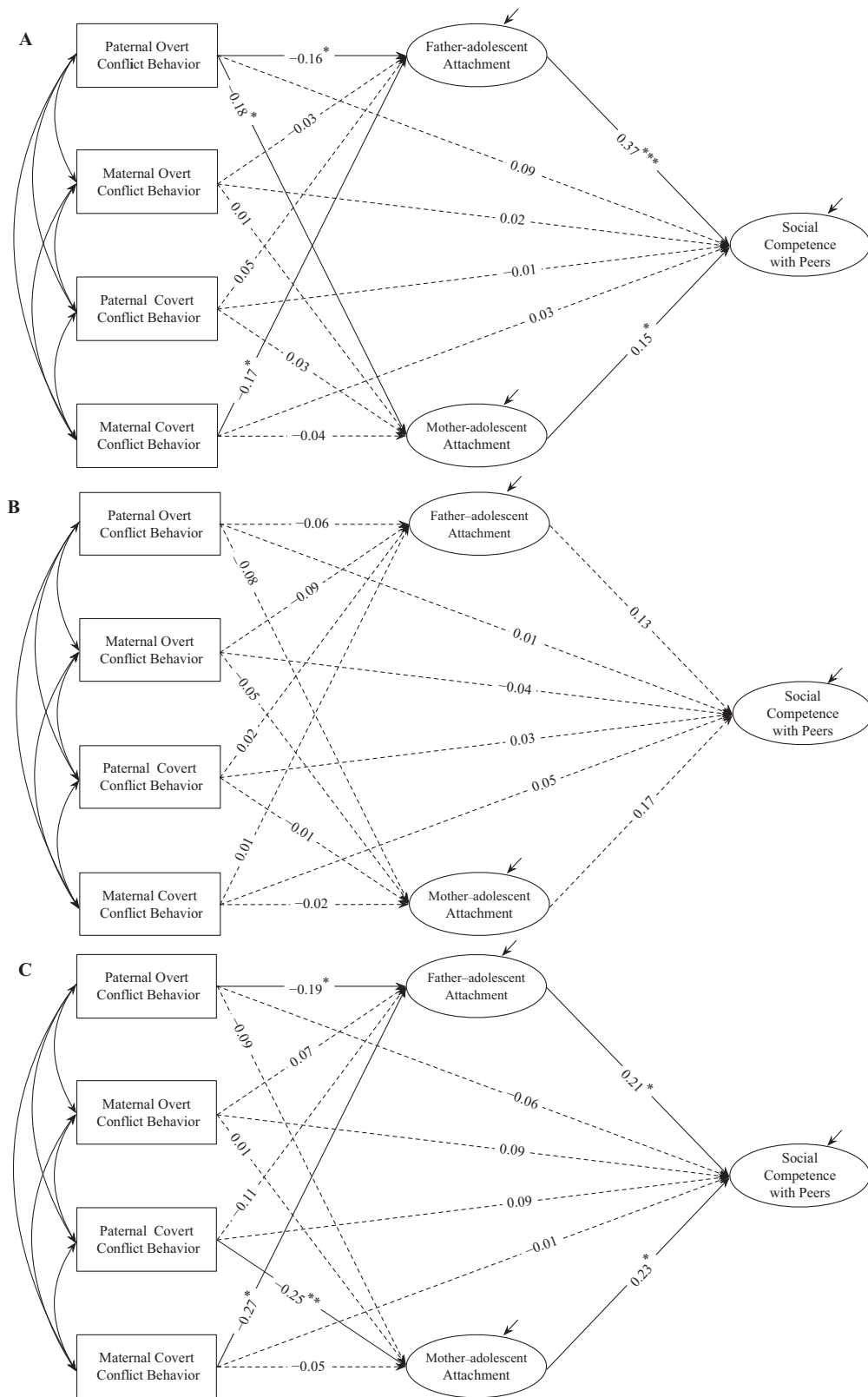


Fig. 3 Multigroup analysis of the indirect effect model across developmental stages. **a–c** represent the indirect effect model during early, middle, and late adolescence, respectively

Second, the metric and scalar invariances of the measurement model among boys and girls were verified in the multigroup analysis. The model with free estimated structural paths fitted the data well ($\chi^2/df = 2.23$, RMSEA = 0.05, CFI = 0.97, TLI = 0.95, SRMR = 0.03). Third, the structural paths of the model were constrained to be equal in boys and girls. The model also fitted the data well ($\chi^2/df = 2.14$, RMSEA = 0.05, CFI = 0.96, TLI = 0.95, SRMR = 0.05). The lack of significant fit index differences between the two nested models ($\Delta\chi^2/df = 1.67$, Δ RMSEA = 0.00, Δ CFI = -0.01, Δ TLI = 0.00, Δ SRMR = 0.02) indicated the equivalence of the structural paths constrained as a whole. However, results showed significant differences of specific paths between boys and girls. Paternal overt coparenting conflict behavior was significantly related to mother–adolescent attachment among boys ($\beta = -0.16$, $p < 0.05$) but was slightly related to that among girls ($\beta = -0.14$, $p = 0.06$). In comparison, maternal covert coparenting conflict behavior was significantly related to father–adolescent attachment among boys ($\beta = -0.18$, $p < 0.01$) but was not related to that among girls ($\beta = -0.06$, $p = 0.25$). Mother–adolescent attachment was significantly related to social competences with peers among boys ($\beta = -0.38$, $p < 0.001$) but was not related to that among girls ($\beta = 0.08$, $p = 0.20$). Moreover, paternal overt coparenting conflict behavior was related to father–adolescent attachment among boys and girls ($\beta = -0.20$, $p < 0.01$; $\beta = -0.19$, $p < 0.05$, respectively), and the Wald chi-square test showed that these two paths had no significant difference (Wald $\chi^2 = 0.08$, $p > 0.05$). Father–adolescent attachment was related to social competence with peers among boys and girls ($\beta = -0.23$, $p < 0.05$; $\beta = -0.30$, $p < 0.001$, respectively), and the Wald chi-square test also showed that these two paths exhibited no significant difference (Wald $\chi^2 = 1.42$, $p > 0.05$).

Discussion

The perspective of family–peer system linkage has emphasized the influential effect of family conflict on children and adolescents' peer-related development. However, previous studies have largely focused on the marital conflict and have neglected the effects of coparenting conflict, which refers to the disagreements and conflicts on parenting between fathers and mothers (Harold and Sellers 2018). Therefore, whether and how coparenting conflict is related to peer competence during adolescence has not been clarified. Furthermore, a thorough understanding of the influence of coparenting conflict on peer systems is necessary by expanding its scopes and constructs. First, the current study separately measured fathers and mothers' coparenting conflict behaviors to explore their individual

behaviors in the coparenting conflict process. Second, overt and covert coparenting conflict behaviors were distinguished to fully understand the construct of coparenting conflict. In conclusion, the study constructed an indirect effect model, which illustrates that fathers/mothers' overt and covert coparenting conflict behaviors are related to adolescent social competence with peers through the indirect effect of father– and mother–adolescent attachments within Chinese families. Moreover, this study clarified whether this indirect effect model showed differences among early, middle, and late adolescence stages that promote family intervention programs targeted in adolescence. The results revealed significant relationships among coparenting conflict behavior, parent–adolescent attachment, and social competence with peers, thereby supporting the systematic perspective of family–peer system linkage. The findings also revealed developmental differences in the effects of coparenting conflict behaviors during adolescence.

Fathers' overt coparenting conflict behavior was related to low-level father– and mother–adolescent attachments, whereas mothers' covert coparenting conflict behavior was related to low-level father–adolescent attachment, which ultimately related to low social competence with peers in Chinese families. This result supports the notion that coparenting conflict plays an important role on adolescent development and adjustment (Stallman and Ohan 2016). This finding also extended the research on the effects of family conflict. Previous studies have revealed that children's ability to resolve interpersonal conflicts and establish healthy peer relationships can be blocked by exposure to marital conflicts (Kinsfogel and Grych 2004), thereby neglecting the effect of coparenting conflict on peer systems. Coparenting conflict is directly related to children and adolescents compared with marital conflict (McHale and Lindahl 2011), indicating that this is a proximal and influential factor for adolescent social adjustment. The current study confirmed that interparental conflict specific to parenting (i.e., coparenting conflict) was related to social competence with peers. Unfortunately, this study did not assess marital conflict and could not reveal the relative importance between coparenting and marital conflicts. Thus, further comparing the extent of the effects of coparenting and marital conflicts on adolescents' peer competence in the same predictive model is a salient direction for future research. Furthermore, these findings are congruent with the two principles of family–peer system linkage (Ladd 2016). First, coparenting conflict behavior and parent–adolescent attachment as family factors were related to peer competence (i.e., social competence with peers), thereby suggesting that families exert persistent effects on adolescents despite the latter's attempt to be physically and psychologically independent. Second, parent–adolescent

attachment served as an important mediating mechanism by which to understand the relationships between coparenting conflict behavior and adolescent social competence with peers. A secure parent–adolescent attachment suggests that parents are a safe haven and secure base for supporting adolescents' autonomous and secure exploration outside the family (Kerns et al. 2015). Therefore, this secured attachment ultimately benefits the development of adolescent social competence with peers. However, conflict between fathers and mothers in the coparenting relationship may impair their ability to serve as reliable attachment figures (Martin et al. 2017), thereby reducing the secure base function that facilitates adolescents' autonomous exploration in peer system.

Notably, the results showed the significant gender differences of parents in the effects of coparenting conflict on social competence with peers in Chinese families. Fathers' (not mothers') overt (not covert) coparenting conflict behavior was related to adolescents' low social competence with peers through the indirect effects of father– and mother–adolescent attachments; mothers' (not fathers') covert (not overt) coparenting conflict behavior was related to adolescents' low social competence with peers, but only through the indirect effect of father–adolescent attachment. This study thus demonstrates the necessity of assessing fathers and mothers' individual conflict behaviors in the coparenting process and the significance of constructing coparenting conflict as overt and covert. Moreover, specific conditions and mechanisms whereby “energy” flows from the family system to peer system were illuminated within the framework of coparenting conflict perspective, thus promoting the understanding of the systematic perspective of family–peer system linkage. This perspective is a meta-theory that reveals the principles of interactions between a family and peer systems but does not specifically clarify which variables and family members may exert influences on peer systems. The research revealed an interaction effect of parent's gender (i.e., fathers or mothers) and conflict behavior characteristic (i.e., overt or covert) on adolescent social competence with peers. Only fathers' overt conflict behavior can spillover and crossover into father– and mother–adolescent interaction systems and consequently transfer into peer systems. Furthermore, mothers' covert conflict behaviors can only crossover into father–adolescent subsystems and consequently transfer into peer systems.

The study emphasized the effect of fathers' coparenting conflict behavior on adolescent social competence with peers. Zou et al. (2019) found the different effects of fathers and mothers in the coparenting process on adolescent adjustment and revealed that only fathers' negative coparenting behavior was related to low-quality peer relationships. However, they did not subdivide the nature of negative coparenting behaviors. The current study further

revealed that only fathers' overt coparenting conflict behavior was related to adolescent social competence with peers. This can be attributed to the children's different interpretations and expectations of their fathers and mothers' behaviors (Li and Meier 2017), given that children and adolescents tend to be less tolerant of and vulnerable to their fathers' conflicting and stressful behavior (Cummings et al. 2010). In addition, father– and mother–adolescent attachments enhanced the understanding of the relationship between fathers' overt coparenting conflict behavior and adolescent social competence with peers. Moreover, mothers' covert coparenting conflict behavior was related to adolescent social competence with peers through the indirect effect of father–adolescent attachment. First, the specific covert coparenting behavior, which refers to fathers and mothers' disparaging behaviors to their spouse when he/she is absent, has been reported (Rowen and Emery 2018). Mothers are the primary caregivers who have opportunities to show such behaviors and can develop a reliable and stable relationship with children (Makusha and Richter 2016), thereby exerting influence on the father–adolescent attachment relationship and consequently affecting peer competence. Second, this finding is consistent with the crossover and fathering vulnerability hypotheses (Ponnet 2014) stating that father–children relationship may be affected more significantly by marital and interparental conflicts than mother–children relationship. Only father–adolescent attachment mediated the relationship between mothers' covert coparenting behavior and social competence with peers.

Finally, this study revealed the significant developmental difference of the indirect effect model. In early and late adolescence, fathers' overt coparenting conflict behavior was related to low-level father– and mother–adolescent attachments, which ultimately related to low adolescent social competence with peers; mothers' covert coparenting conflict behavior was related to low-level father–adolescent attachment, ultimately leading to low adolescent social competence with peers. These results were consistent with those with the total sample, thereby indicating the robustness of the present findings in these two periods. However, in middle adolescence, the effect of coparenting conflict behavior and parent–adolescent attachment on adolescent social competence with peers and the relationships between coparenting conflict behavior and parent–adolescent attachment were insignificant. This finding was consistent with the study, which suggested that maternal gate-closing behavior was insignificant in middle adolescence (Tu 2015). The result also reflected the transformational and particularity of family relationship change during middle adolescence, which is characterized by an increase in the emotional intensity of the disagreements between parents and adolescents (Curtis 2015). Fang et al. (2003) revealed

that the frequency and intensity of parent–adolescent conflicts followed an inverted U-shaped function that peaked in middle adolescence. This situation can be attributed to the conflicts between parents and adolescents that keep adolescents independent from the family, thereby protecting them from the harm of the coparenting conflicts between fathers and mothers. Future studies should consider the moderating role of parent–adolescent conflict in the relationship between coparenting conflicts and peer competence. The current study also found that fathers' covert coparenting conflict behavior was negatively related to mother–adolescent attachment, which was consequently related to low social competence with peers in late adolescence. This result further supported the crossover effect of covert coparenting conflict behaviors.

The study supported the systematic perspective of family–peer system linkage, promoted the understanding of the coparenting behavior construct, and clarified its specific effects on peer system in different developmental stages of adolescence. However, certain limitations must be acknowledged. First, the current study used a self-reported method to rate fathers and mothers' coparenting conflict behaviors. This method may allow parents to underestimate the frequency of their conflict behavior to a spouse in the process of coparenting owing to social desirability. Future research can consider multi-informant (i.e., adolescents' or parents' mutual reported) and multimethod approaches. Second, the conclusions relied on cross-sectional data. On the one hand, the causal relationship between coparenting conflict behavior and adolescent social competence with peers cannot be investigated, and the effect size between these concurrent relationships may be overestimated. On the other hand, the system thinking in family–peer linkage implies that family–peer system linkage is a bidirectional process (Brown and Bakken 2011) and that the family system affects and is being affected by peer systems. Therefore, a longitudinal study and a cross-lagged model should be undertaken to investigate the causal and bidirectional relationships between coparenting conflict behavior and social competence with peers. Third, the study only explored the indirect effect of parent–adolescent attachment between the relationships of coparenting conflict behavior and adolescent social competence with peers. Whether the characteristic of peer systems (e.g., teacher–adolescent relationships and characteristics of friends) or other family factors (e.g., parenting behaviors and styles) may moderate or mediate the relationships between them remains unclear. Finally, the present study only included Chinese families and failed to capture the cultural diversity of the samples. Although a previous study revealed similar effects of coparenting on children adjustment between Western and Asian families (McHale et al. 2014), the generalizability of the conclusions must be further verified through cross-cultural study.

The study has implications for promoting targeted practice activities. The results revealed that coparenting conflict behaviors were related to adolescent social competence with peers. In addition, the findings suggested that reducing conflicts between fathers and mothers, particularly their conflict related to parenting adolescents, may be an effective way to intervene with adolescents' social adjustment at school or with peers. Specifically, the study found significant gender differences between parents in the effects of coparenting conflict and revealed that fathers' overt and mothers' covert coparenting behaviors were related to social competence with peers. Therefore, professionals and educators can give targeted recommendations for fathers and mothers, in particular, to prevent fathers from overtly pursuing conflicts with mothers and to persuade mothers to reduce the frequency of covertly disparaging and denigrating fathers in front of adolescents. Furthermore, enhancing the positive relationships between parents and adolescents may be effective in promoting adolescents' social adjustment. Family intervention programs should also be designed according to the characteristics of each developmental stage of adolescence. For example, efforts to prevent conflicts between fathers and mothers may slightly affect the promotion of middle adolescents' social adjustment. Conversely, preventing fathers and mothers from covertly disparaging and denigrating their spouse when he/she is absent may play an important role in promoting late adolescent social competence.

Conclusions

Marital conflict has been linked to peer competence under the framework of the family–peer system linkage perspective. However, whether and how coparenting conflict is related to adolescents' peer competence has yet to be clarified. In this regard, a thorough understanding of the effects of coparenting conflict on peer competence is necessary by considering fathers and mothers' individual behaviors in the coparenting conflict process and constructing from overt and covert dimensions. The first aim of this research was to examine a hypothesized indirect effect model, which indicated that father– and mother–adolescent attachments mediated the relationships between overt/covert coparenting conflict behavior and adolescent social competence with peers. Considering the developmental differences of social competence during adolescence, the second objective of the study was to determine whether this indirect effect model differed in the early, middle, and late adolescence stages. The results revealed that fathers' overt coparenting conflict behavior was related to adolescent social competence with peers through the indirect effects of father– and mother–adolescent attachments, whereas mothers' covert

coparenting conflict behavior was related to adolescent social competence with peers through the indirect effect of mother–adolescent attachment in the total sample, indicating that fathers and mothers exhibited different effects on adolescent social competence with peers through their different coparenting conflict behaviors within Chinese families. Developmental differences in the effects of coparenting conflict behavior on social competence with peers during their child's adolescence were also revealed, which highlighted middle adolescence as a special period when social competence with peers was unaffected by family factors within Chinese families. Thus, further investigations into developmental differences provide targeted recommendations for family intervention programs that aim to promote adolescent social competence in peer systems. Such programs can consequently facilitate the children's peer relationships and social adaptation in the future.

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Data Sharing and Declaration This manuscript's data will not be deposited.

Compliance with Ethical Standards

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

Ethical Approval All procedures performed in this study involving human participants were in accordance with the ethical standards of Beijing Normal University and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent All participants in the study provided informed consent.

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