

Reciprocal relations between interparental aggression and symptoms of oppositional defiant and conduct disorders: a seven-wave cohort study of within-family effects from preschool to adolescence

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Background: Interparental aggression is believed to increase the risk of behavioral disorders in offspring, and offspring behavioral problems may forecast interparental aggression. However, these assumptions have yet to be put to a strong test. This study, therefore, examined whether increased interparental aggression predicted increased symptoms of oppositional defiant disorder (ODD) and conduct disorder (CD) from preschool to adolescence and vice versa. **Methods:** A sample ($n = 1,077$; 49.6% girls) from two birth cohorts of children in Trondheim, Norway, was assessed biennially from age 4 to 16. Children's symptoms of ODD and CD were assessed using semi-structured clinical interviews of parents (from age 4) and children (from age 8). One of the parents reported on their own and their partner's verbal and physical aggression. A random intercept cross-lagged model was estimated to test the within-family relations between interparental aggression, CD, and ODD symptoms. **Results:** Across development, increased interparental aggression predicted increased CD symptoms 2 years later, whereas an increased number of ODD symptoms forecasted increased interparental aggression. **Conclusions:** The argumentative/defiant, aggressive, and vindictive behaviors seen in ODD are often directed toward parents and may take a toll on their relationship and possibly foster interparental aggression, whereas aggression between parents may promote symptoms of CD in their offspring, which commonly extend beyond the home. Incorporating effective and non-aggressive means to solve interparental conflict into parental management programs may reduce the development of symptoms of CDs in children. **Keywords:** Adolescent delinquency; child behavioral problems; conduct disorder; interparental conflict; interpersonal violence; interparental aggression; oppositional defiant disorder; within-family analysis.

Introduction

Childhood oppositional defiant disorder (ODD) and conduct disorder (CD) are associated with concurrent impairments and adverse psychosocial outcomes in adulthood (Fergusson, John Horwood, & Ridder, 2005; Leadbeater, Thompson, & Gruppuso, 2012), causing high costs to the individual, the family, and society (Foster & Jones, 2005). Efforts to redirect adverse trajectories in the development of ODD and CD should be based on solid etiological knowledge. A range of theories has set forth the critical role of parents in developing child behavioral problems, the majority focusing on the impact of parent-child interaction (i.e. child-parent relationship and parenting style; Pinquart, 2017). However, parents' conflicted interaction with each other (Harold & Sellers, 2018; Smokowski, Rose, Bacallao, Cotter, & Evans, 2017), and interparental aggression in particular, has also been suggested to promote the development of behavioral problems in offspring (Hosokawa & Katsura, 2019).

As detailed below, several studies have examined the relations between interparental aggression and child behavioral disorders. However, with one

exception (Zemp, Johnson, & Bodenmann, 2018), all have shortcomings limiting their ability to inform on the etiology of the constructs in question. These limitations include a cross-sectional design and prospective ones not accounting for previous levels of the variables (Benson, Buehler, & Gerard, 2008; Hosokawa & Katsura, 2019), and even when the design has been longitudinal, the analytic approaches employed do not position former studies to account for time-invariant confounding variables (Hamaker, Kuiper, & Grasman, 2015). Furthermore, most of those studies have used broad measures such as 'interparental conflict' and child 'externalizing behaviors', in contrast to more specific constructs such as interparental aggression, ODD, and CD; thus, we cannot know for sure whether some aspects of interparental conflict and behavior problems are driving the relation. We seek to overcome these limitations by analyzing seven waves of data from a cohort study followed from preschool to adolescence and employing a within-family analytic approach.

Interparental aggression and symptoms of ODD and CD in offspring

The Reformulation of Emotional Security Theory (EST-R; Davies & Martin, 2013) stipulates that a

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harmonious and non-hostile interparental relation is crucial in providing children with a safe home atmosphere and modeling adaptive conflict resolution. According to EST-R, children growing up in families with minimal interparental aggression are likelier to develop more effortful control – which predicts reduced symptoms of ODD and CD (Wichstrøm, Penelo, Rensvik Viddal, de la Osa, & Ezpeleta, 2018). Conversely, children growing up in families with anger escalation and hostility among parents are more prone to develop impulsivity, boldness, and anger proneness, which in turn may foster angry/irritable mood, argumentative/defiant behavior, or vindictiveness (ODD symptoms) and/or aggressiveness, destructiveness, deceitfulness, and violation of rules (CD symptoms; American Psychiatric Association, 2013).

Indeed, a recent meta-analysis (van Eldik et al., 2020) examining 231 empirical studies showed that hostile interparental relations, particularly physical and verbal aggressiveness, predict externalizing behaviors captured by the CD/ODD diagnoses. However, with one exception (Zemp et al., 2018), research has explored whether children whose parents have more aggression toward one another are likelier – compared to children whose parents have less aggression toward one another – to manifest more symptoms of ODD/CD than other children. Therefore, the associations reported in previous research portray what happens in one family compared to what happens in other families, thus reflecting a blend between within- and between-family associations. However, for the results to inform on the etiology of ODD and CD, the important question is rather, ‘If the interparental aggression in this family is reduced, will the child evince fewer symptoms of ODD and CD later on?’ – a purely within-family question. Notably, estimates from traditional cross-lagged approaches may not necessarily reflect what happens *within* each family (Keijsers, 2016). It should be acknowledged that a range of unmeasured factors can explain the relations between interparental aggression and offspring aggression-related behavior captured by ODD and CD. This includes common genes as variability in both inter-partner violence (Barnes, TenEyck, Boutwell, & Beaver, 2013), and ODD and CD (Azeredo, Moreira, & Barbosa, 2018; Kerekes et al., 2014; Salvatore & Dick, 2018) are explained by variability in genetics. Of note, within-family analyses adjust for all unmeasured time-invariant confounding effects.

In a study of 537 families, Zemp et al. (2018) employed a within-family approach. They reported that a two-item measure of parental verbal aggression was unrelated to prospective changes on a five-item scale of child behavioral problems throughout five measurements starting when the child was 10 years old (Zemp et al., 2018). Although being an important step toward informing on within-family

prospective links, the study was limited by the lack of power (within-family analyses are power-demanding; Masselink et al., 2018), very low reliabilities of the measures (i.e. = .40–.50), and having measured behavioral problems as a single construct. Although correlated, different types of behavior problems may relate differently to interparental aggression (van Eldik et al., 2020); thus, more refined measures should be applied. For example, ODD symptoms (e.g. arguing with adults and defying rules) do not necessarily imply physical aggression, whereas many CD symptoms do. Hence, to a greater extent, interparental aggression could serve as a model for CD-related behaviors than for oppositional behavior, indicating that interparental aggression is a stronger predictor of CD than ODD symptoms. Given the above uncertainties concerning confounding, power, and potential differential impact of interparental aggression on different types of behavioral problems, we examine the within-family predictive effect of interparental aggression on child symptoms of ODD and CD as defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) involving a large cohort sample, applying diverse and detailed reports about physical and verbal interparental aggression.

Bidirectional relations?

According to a transactional model of child development (Sameroff, 2009), children are not only affected by but also affect parenting behavior. Moreover, how parents behave toward each other may be influenced by child behavior (Jenkins, Simpson, Dunn, Rasbash, & O'Connor, 2005; Schermerhorn, Cummings, DeCarlo, & Davies, 2007). A child who displays argumentative and defiant behaviors can be challenging to handle, particularly for parents who are the ones interacting the most with the child throughout the day (Burke, Evans, & Carlson, 2022), although also for peers and teachers (Burke et al., 2022; Li et al., 2018). ODD symptoms have indeed been found to be a family stressor negatively impacting parental relations, even acting as a predictor of divorce (Wymbs et al., 2007). Similarly, the disruptive behaviors in CD may exacerbate comparable coercive family processes (Patterson, 1982) and increase parental stress and frustration (Damen, Scholte, Vermulst, van Steensel, & Veerman, 2021; McQuillan & Bates, 2017), which in turn may negatively impact the interparental relation and escalate interparental discord (e.g. increased disagreements about handling the child's behavior and reduced capacity to handle interparental difficulties).

Given the above reasoning, it is plausible for child behavioral problems to increase the risk of interparental aggression and conflict. However, there is a scarcity of empirical testing of this possibility. To our

knowledge, the above-mentioned Zemp et al. (2018) study is the only one, reporting that externalizing problems in offspring predicted more co-parenting conflicts reported by fathers, but not the focus of the present inquiry – interparental aggression. In addition to the above-mentioned power issues, this study did not account for the possibility that different behavioral problems may affect interparental aggression differently.

Interparental aggression tends to decrease with time (Vickerman & Margolin, 2008), ODD symptoms peak in middle childhood and decrease during adolescence (Ezpeleta, Penelo, Navarro, de la Osa, & Trepata, 2022), whereas CD usually emerges during middle childhood and adolescence (DSM-5, American Psychiatric Association, 2013). It is, therefore, viable that there are not only developmental changes in prevalence but also in the importance of interparental aggression for ODD/CD and vice versa, a prospect we will explore.

The aims of the present study

In sum, there are compelling reasons to believe that interparental aggression may increase the risk of behavior problems in children – and vice versa. However, due to methodological shortcomings, existing studies have not been positioned to put this proposition to a strong test. We, therefore, investigate the hypothesis that increased interparental aggression will predict increased symptoms of DSM-5-defined symptoms of ODD and CD in offspring and that increases in such symptoms will forecast increased interparental aggression. Additionally, we examine whether there are sex and developmental differences in these relations.

Methods

Participants and procedure

All children born in 2003 and 2004 ($N = 3,456$) and their parents in the city of Trondheim were invited to participate in the study (Wichstrøm et al., 2012). An invitation letter along with a copy of Strengths and Difficulties Questionnaire (SDQ; Goodman, Ford, Simmons, Gatward, & Meltzer, 2000) was mailed to their homes. The parents returned the completed SDQ when they attended their scheduled appointment for the health checkup for the 4-year-olds at their local well-child clinics. Of the 3,456 families invited to participate, 176 families were excluded due to parents' insufficient proficiency in Norwegian, and 166 families were missed being asked to participate by the health nurse. Thus, 3,016 families were approached, and 2,477 consented (82.1%) to participate. To increase statistical power, the study oversampled for children with emotional or behavioral problems based on their scores on SDQ. The children were divided into four strata based on their SDQ scores, which were used to calculate their drawing probabilities to participate using a random number generator. The oversampling was adjusted for in the analyses using probability weights to achieve representative population estimates (Steinsbekk & Wichstrøm, 2018). Among consenting families, 1,250 were drawn to participate. A flowchart of

recruitment and retention is depicted in Figure 1. The Regional Committee for Medical and Health Research Ethics approved the study.

Of the initial 1,250 families drawn to participate, 1,007 met for the first assessment (T1; age 4). The families were followed up biennially until the children were 16 years old. The analytical sample comprised 1,077 participants (544 boys and 534 girls) who had valid data on at least one measurement point. At the second assessment, when measures of interparental aggression were first introduced, 85.2% of biological parents were married or cohabitating, 13.0% were divorced or separated, 0.3% were widowed, and 1.5% had never lived together. In all, 41.1% of the divorced or separated parents lived together with a new partner. Retention at T2, T3, T4, T6, and T7 was not predicted by sex or any of the study variables at the preceding time point, with one exception – more girls were retained at T5 (14 years) ($OR = 2.06, p = .008$). The combined effect of predictors of attrition was low, with Cox and Snell proxy R^2 varying between .001 and .016. The Little's Missingness Completely at Random (MCAR) test showed that the attrition was indeed not missing completely at random ($\chi^2 = 2,227, df = 2087, p < .017$), and the normed test was thus 1.07, indicating that data were Missing at Random (MAR; Ullman, 2001).

Measures

Interparental aggression was assessed biennially from age 6 onward by The Conflict and Problem-Solving Scales (CPS; Kerig, 1996), which has been shown to have good internal consistency, test-retest reliability, and validity (Kerig, 1996). The parent accompanying the child to the testing (82.1% females) was asked to report on handling conflicts during the last year between them and the current partner they lived with. The reporting parent's average scores (from 1 – *never* to 4 – *often*) on their own and their partner's verbal (8 items) and physical (7 items) aggression were calculated. These four average scores were summed to create a total interparental aggression score. The scale showed good internal consistency in this sample (α ranging from .75 to .78 for self-report and .80 to .83 for other-report interparental aggression).

ODD and CD symptoms of children were assessed at ages 4 and 6 by The Preschool Age Psychiatric Assessment (PAPA; Egger et al., 2006), a semi-structured parent interview. From age 8 onward, parents and children were interviewed separately with the Child and Adolescent Psychiatric Assessment (CAPA; Angold & Costello, 2000). In both PAPA and CAPA, the interviewer asks pre-determined questions until enough information has been obtained to decide the presence or absence of a specific ODD or CD symptom as per DSM-5. An ODD or CD symptom was considered present whether reported by either the child or the parent. Blinded raters recoded 9% of the PAPA at age 4 and 15% of the CAPA interview audio recordings at ages 10 and 12. Intra-class correlations between ratings of the number of ODD and CD symptoms in the PAPA were .97 and .91, respectively, and .90 and .85 in the CAPA (Husby & Wichstrøm, 2016). At age 16, the Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children: Present and Lifetime Version (K-SADS-PL; Kaufman et al., 1997) was applied, interviewing parents and children separately. Blinded raters recoded interviews from 91 families, and the ICC was .92 and .84 for ODD and CD symptoms, respectively.

Analysis plan

Growth and decline in the study variables were analyzed by latent growth curves with slopes parameterized as yearly change. To explore cross-lagged relations between interparental aggression and symptoms of ODD and CD, a Random Intercept Cross-Lagged Panel Model (RI-CLPM; Hamaker

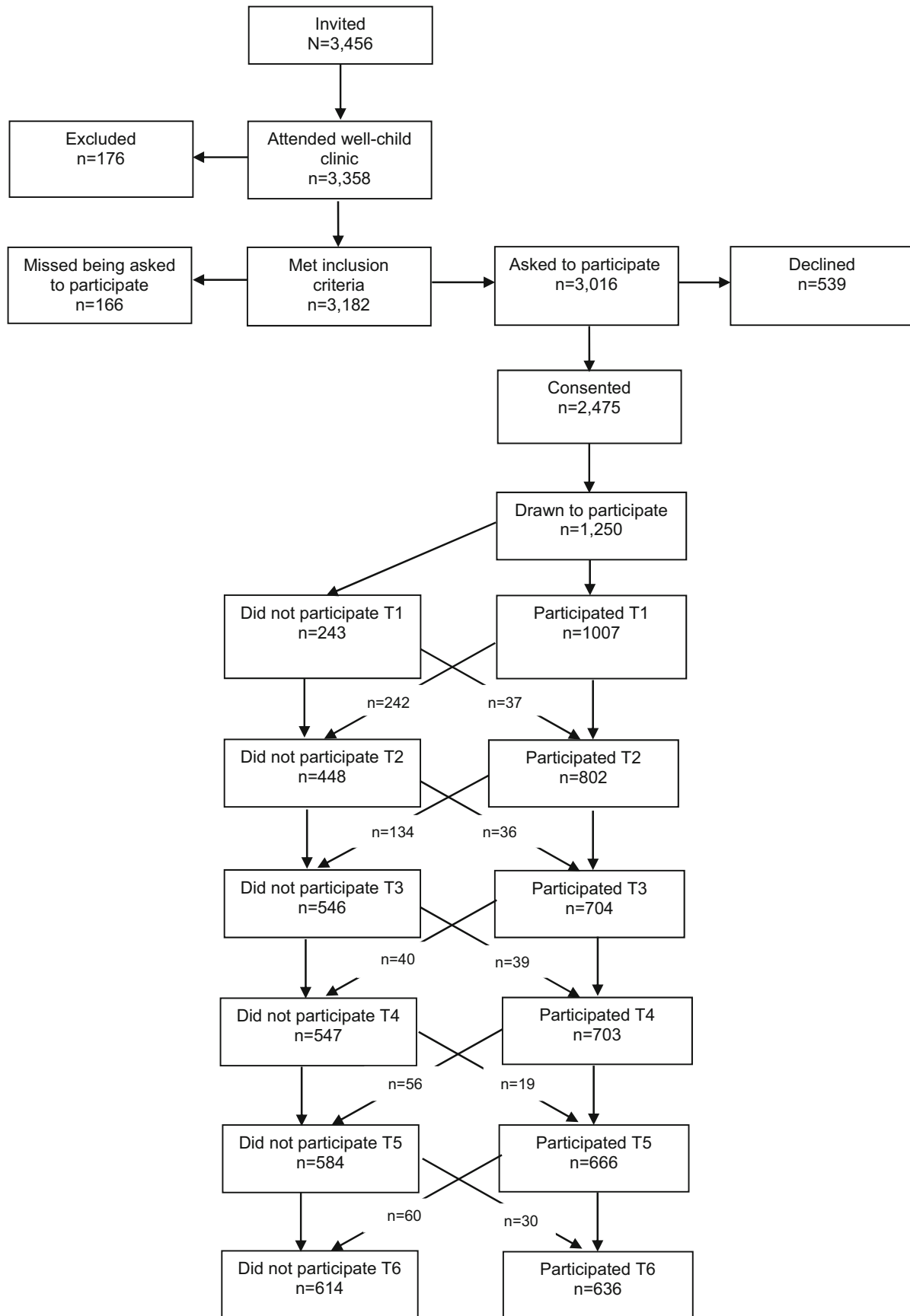


Figure 1 Flowchart of recruitment and follow-up

et al., 2015) was employed. The RI-CLPM consists of the following parts: A random intercept for each of the three study variables loading on the observed scores at each time point

with the factor loading set to 1. The random intercepts represent the between-person differences, and their correlations represent the between-person associations.

Furthermore, a latent variable was created for each observed variable, with the loading set to 1 and the variance in the observed variable fixed to 0. This allowed us to transfer the variance from the observed variable to its latent counterpart. These latent variables at each time point thus capture the change (increase or decrease) from the subject's mean value of the variable during the study period (i.e. using the participant as their control). Concurrent correlations were allowed between the residuals of these latent changes. Finally, the latent changes were regressed on the values at the previous time point. When interpreting standardized estimates regarding effect size, we followed recently developed guidelines for RI-CLPM, considering .03, .07, and .12 to represent small, medium, and large effects, respectively (Orth et al., 2022).

To test whether the strength of the relations differed by age, we examined whether a model where cross-lagged paths were constrained to be equal across time points evinced as good a model fit as a freely estimated model using the Satorra–Bentler scaled chi-square test (Bryant & Satorra, 2012). The procedure of setting each group of paths to be of equal strength and comparing their model fits to the model fit of a less-constrained model was repeated until an optimal parsimonious model was identified – a model in which a maximal number of cross-lagged paths could be fixed to be of equal strength without worsening the model fit. When the result of the chi-square comparison test is nonsignificant, the parsimonious model with more degrees of freedom will be preferred (Werner & Schermelleh-Engel, 2010). To investigate sex differences in these relations, separate RI-CLPMs were estimated on data from boys and girls by employing the same procedure as for the whole sample to identify parsimonious models that fitted boys' and girls' data best. To examine whether the strength of paths differed between sexes, we calculated *Z* scores and their corresponding *p* values, using unstandardized coefficients and standard errors (Paternoster, Brame, Mazerolle, & Piquero, 1998).

All analyses were conducted using Mplus 8.5 (Muthén & Muthén, 1998–2017) employing a robust Maximum Likelihood Estimator (MLE). To correct for the oversampling of children with emotional and behavioral problems and achieve corrected population estimates, probability weights were calculated by using weights proportional to the number of children in the population in a stratum divided by the number of participants in that stratum. Attrition was handled according to a Full Information Maximum Likelihood (FIML) procedure under the assumption that data were MAR, as indicated by the attrition analyses.

Results

Descriptive statistics for the study variables are presented in Table 1, and the growth curves are displayed in Figure 2. The freely estimated RI-CLPM of the relations between interparental aggression and symptoms of ODD and CD showed a good model fit (χ^2 (114) = 252.48, $p < .001$, RMSEA = .034, SRMR = .072, CFI = .948, TLI = .913). Following the steps described above, the parsimonious RI-CLPM (Figure 2) was reached, where all cross-lagged paths were fixed to be of equal strength, with one exception – ODD regressed on interparental aggression. This model evinced no deterioration of model fit compared to the unconstrained model ($\Delta\chi^2$ ($\Delta df = 24$) = 36.16, $p = .053$). The final parsimonious model fitted the data well (χ^2 (138) = 287.35, $p < .001$, RMSEA = .032, SRMR = .077, CFI = .944, TLI = .923). To be noted, when the paths where ODD

was regressed on interparental aggression were constrained to be equal, the model fit indices (χ^2 (142) = 301.01, $p < .001$, RMSEA = .032, SRMR = .083, CFI = .940, TLI = .920) differed significantly from the freely estimated model ($\Delta\chi^2$ ($\Delta df = 28$) = 49.48, $p = .007$) and from the parsimonious model ($\Delta\chi^2$ ($\Delta df = 4$) = 13.21, $p = .010$), indicating that the fully constrained model significantly worsened the model fit compared to both freely estimated model and the parsimonious model.

As hypothesized, increased interparental aggression predicted increased CD symptoms throughout childhood (β ranging from .04 to .12), but contrary to our hypotheses – not increased ODD symptoms. An increased number of ODD (but not CD) symptoms predicted increased interparental aggression two years later (β ranging from .11 to .18; Figure 3). Despite seemingly different patterns of significant cross-lagged relations among boys and girls (Appendix S1 and S2), the strengths of the paths did not differ in most cases. Specifically, there were no sex differences regarding the strengths of paths where interparental aggression was regressed on ODD and CD symptoms, CD symptoms on interparental aggression, and ODD symptoms on interparental aggression and CD symptoms. However, the paths from ODD to CD were stronger among boys than girls ($Z = 2.51$, $p = .01$; see Table S1).

Discussion

Utilizing data from a large birth cohort sample followed from preschool to adolescence and employing a within-family design, we tested whether increased interparental aggression predicted an increased number of ODD and CD symptoms in offspring and vice versa. Our hypotheses were partly supported in that increased interparental aggression predicted increased CD symptoms, whereas an increased number of ODD symptoms predicted increased interparental aggression. These effects were consistent across the period from preschool to adolescence and between boys and girls.

Our findings showed that when parents' interparental conflicts increased, their offspring were at higher risk for developing an increased number of CD symptoms throughout childhood. The same did not apply to ODD symptoms. Even though our study is the first to differentiate between ODD and CD, the overall finding that increased interparental aggression predicted increased child behavioral problems – CD symptoms in this case – aligns with results from studies exploring overlapping constructs (Hosokawa & Katsura, 2019; Towe-Goodman et al., 2011; van Eldik et al., 2020). Critically, our study extends the existing knowledge by showing that the revealed relations hold true at the within-family level and consistently and equally across child development, contrasting the results of a systematic review where intimate partner violence predicted child

Table 1 Sample description and mean and standard deviation for scores on interparental aggression, ODD symptoms, and CD symptoms ($n = 1,077$)

Time point	T1	T2	T3	T4	T5	T6	T7
Nominal age	4	6	8	10	12	14	16
Mean of age	4.4	6.7	8.8	10.5	12.5	14.4	17.0 ^a
SD of age	0.21	0.17	0.24	0.15	0.15	0.16	0.31
<i>N</i>	995	846	707	706	674	641	661
Interparental aggression							
Mean	n.a.	6.05	5.78	5.98	5.78	5.64	5.61
SD	n.a.	1.24	1.18	1.32	1.11	1.12	1.11
ODD symptoms							
Mean	0.90	1.18	1.19	1.39	1.15	1.07	.19
SD	1.25	1.34	1.52	1.62	1.53	1.39	.65
CD symptoms							
Mean	0.41	0.29	0.34	0.28	0.26	0.27	0.51
SD	0.70	0.54	0.65	0.62	0.59	0.61	1.23

n.a., not assessed.

^aData collection for age 16 was delayed due to the COVID-19 restrictions.

externalizing problems to a stronger extent at a younger age (Fong, Hawes, & Allen, 2019). Others have reported that intimate partner violence does not predict later conduct problems (McCabe, Lucchini, Hough, Yeh, & Hazen, 2005) and that increased interparental aggression does not forecast increased externalizing behavior (Zemp et al., 2018). These contradictory results may be due to methodological differences, such as the current inquiry's higher statistical power to detect what is a medium-sized prediction, and employing more reliable measurement of specific symptoms of ODD and CD by means of psychiatric interviews, as opposed to using composite measures of behavioral problems in the Zemp et al. study.

As regards the opposite direction of influence, we found that increased ODD symptoms predicted increased interparental aggression. This accords with previous studies where within-family relations were not separated from between-family estimates. For example, Jenkins et al. (2005) and Schermerhorn et al. (2007) also reported that child externalizing behaviors predicted marital discord. Notably, these findings contrast those of the only within-family exploration of relations between child externalizing problems and interparental aggression (Zemp et al., 2018), where no such relation was found, although more child externalizing problems were found to predict fathers' increased co-parenting conflict.

We extend existing findings not only by revealing within-family influences but also by adding more specificity by showing that the prediction from child behavioral problems to interparental aggression applies to ODD symptoms, not CD symptoms. We were not positioned to investigate the reasons for this discrepancy. However, when a child becomes more oppositional, defiant, and stubborn, it is common for the parents to experience the direct effect of these behaviors (Burke et al., 2022). This could thereby add extra stress to the parental relationship,

increasing the risk that the parents may revert to aggression when solving their disputes (McQuillan & Bates, 2017). Despite CD symptoms arguably being graver than ODD symptoms, CD-related behavior may not necessarily be directed toward parents (although their consequences may) and hence not directly affect interparental relations and fuel aggression between them.

Implications

As reported, across development, we found that increased interparental aggression predicted increased CD symptoms 2 years later, whereas an increased number of ODD symptoms forecasted increased interparental aggression. First, our findings indicate that efforts to reduce interparental aggression may be considered in family interventions for CD. Such endeavors could target parents' conflict-solving behaviors, aiming to promote more constructive and non-hostile ways to resolve discord (Harold & Sellers, 2018). Indeed, family-centered programs aimed at parental empowerment mitigate the impact of parental stress on child behavioral problems (Damen et al., 2021). Second, our findings imply that reduction in ODD symptoms could reduce parental aggression and thus promote family functioning. For example, Parent–Child Interaction Therapy (McNeil & Hembree-Kigin, 2010) may help reduce child disruptive behaviors by promoting a secure child–parent relationship (Lieneman, Brabson, Highlander, Wallace, & McNeil, 2017) and therefore create a harmonious home environment and minimize the risk of aggressive relations. Additionally, Parent Management Training: Oregon Model (Forgatch & Kjøbli, 2016) which encourages positive parental involvement, supervision, and interpersonal problem-solving aimed at preventing and remediating child externalizing problems are shown to result in favorable child outcomes. In future revisions of these programs, it may be

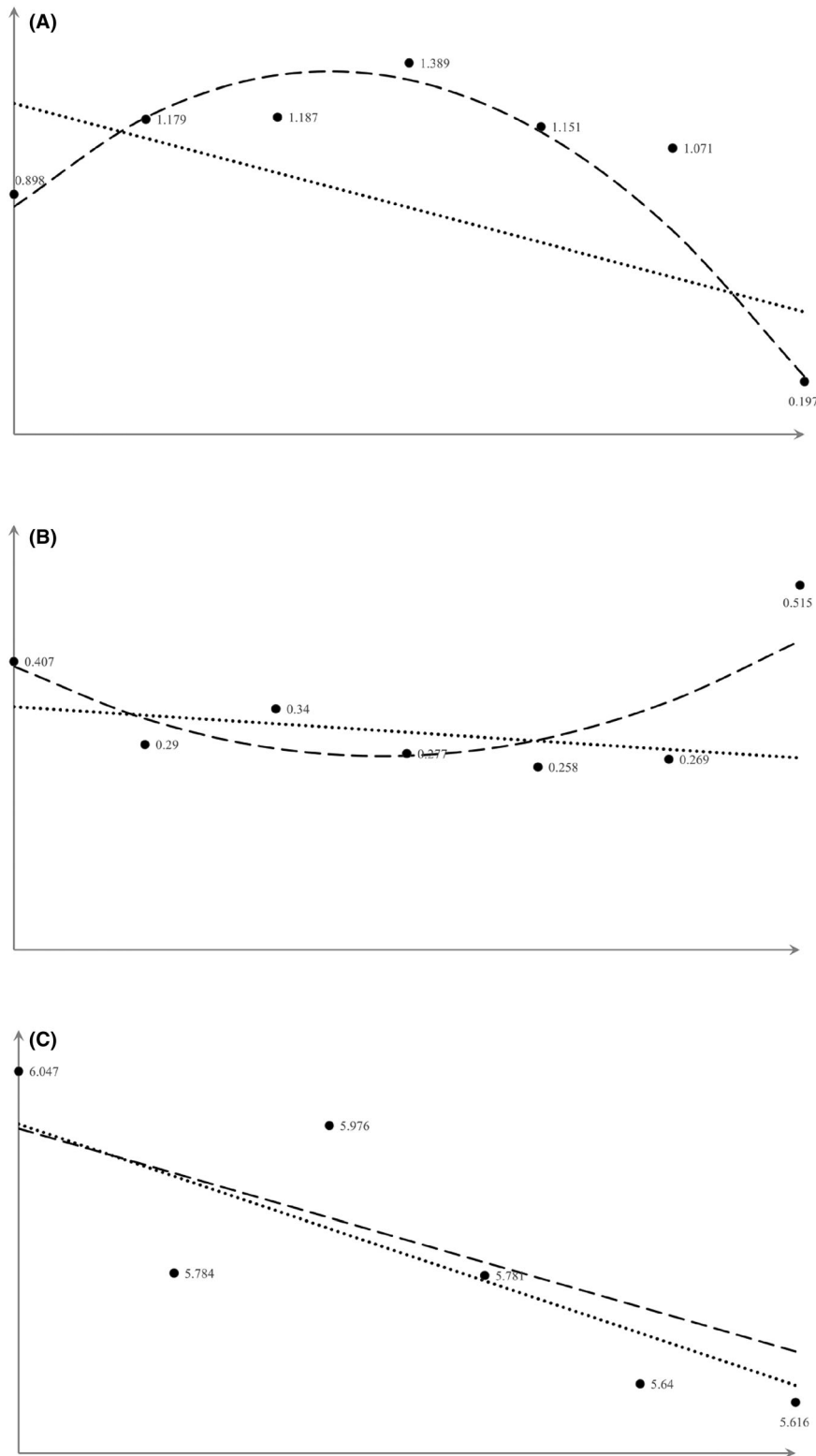


Figure 2 Growth curve of ODD and CD symptoms, and interparental aggression. (A) Observed mean (dots) and estimated linear growth (dotted) and quadratic growth (dashed) curves for ODD symptoms count every 2 years from ages 4 to 16. (B) Observed mean (dots) and estimated linear growth (dotted) and quadratic growth (dashed) curves for CD symptoms count every 2 years from ages 4 to 16. (C) Observed mean (dots) and estimated linear growth (dotted) and quadratic growth (dashed) curves for interparental aggression every two years from ages 6 to 16

beneficial to include elements that specifically target the reduction of ODD symptoms and improvement of interparental skills (e.g. cultivating problem-solving and conflict resolution). Finally, addressing CD

symptoms is a multidimensional endeavor that requires therapists to meticulously fulfill each treatment step and for parents to persistently engage, particularly in cases where there is no progress in

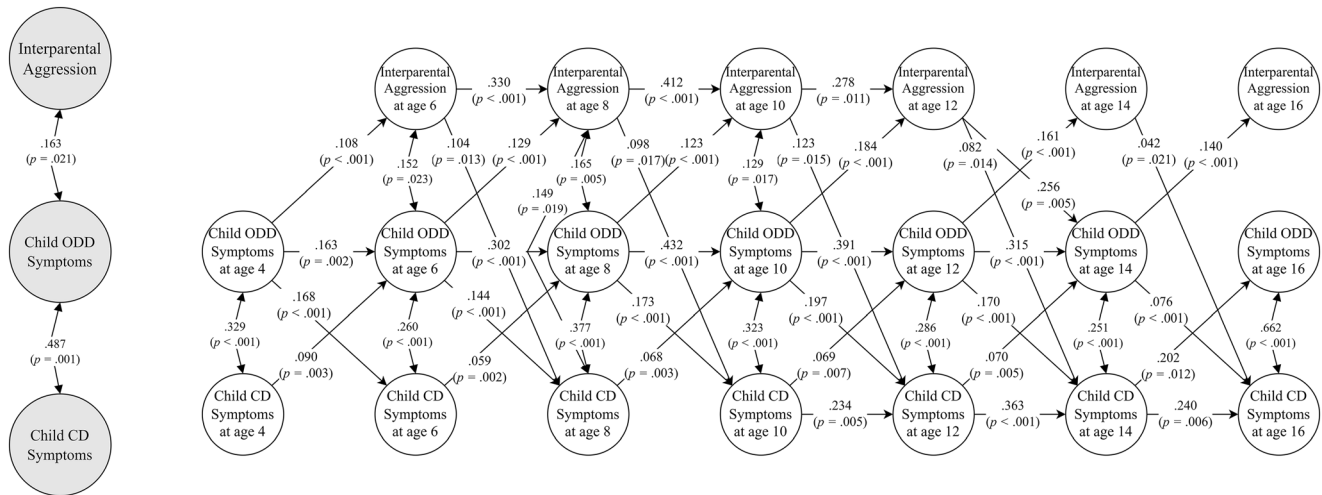


Figure 3 Relations between interparental aggression, child oppositional defiant disorder (ODD) symptoms, and child conduct disorder (CD) symptoms from age 4 to 16. Random intercept and within-family estimates are displayed in bigger gray circles and smaller circles, respectively. All arrows indicate significant paths. All values are standardized. Paths from random intercepts to their respective latent scores at each time point are significant but are not depicted here to simplify the figure. The standardized estimates of the paths fixed to be of equal strengths, are derived from unstandardized estimates and their standard errors, and thus may vary across time.

the child's behavior. This becomes even more important when considering the complexities in the treatment process that can arise from child resistance to change (Hawes & Dadds, 2021a, 2021b).

Limitations

The present study had many strengths, such as utilizing seven waves of data from a large community sample studied over 14 years from preschool to adolescence, clinical interviews to assess both ODD and CD symptoms, and employing an analytical approach that allowed for separating between-family differences from within-family changes. Even so, the results of this study should be viewed considering some limitations. First, we applied a dimensional measure of ODD and CD. Although there is nothing to indicate that these disorders are categorical in nature (Lindhiem, Bennett, Hipwell, & Pardini, 2015), we cannot be sure that the results will extend to clinical disorders – which also consider distress and impairments. Second, even though we adjusted for the confounding impacts of all time-invariant effects, we acknowledge that time-varying effects of unmeasured variables may have impacted our results. For example, interparental aggression covary with parental mental health and (Trevillion, Oram, Feder, & Howard, 2012) aggressive parenting practices, which are also implicated in the etiology of child aggressive behaviors (Stover et al., 2016). Since the present inquiry does not account for such time-varying factors, we are not positioned to conclude whether changes in interparental aggression are uniquely related to development of CD symptoms. Our results may also be influenced by time-varying effects of time-invariant factors such as coordination between stress

responsivity of the autonomic nervous system among adolescents, which has been shown to moderate the longitudinal effects of marital conflict on adolescent externalizing behaviors (Philbrook, Erath, Hinnant, & El-Sheikh, 2018). Third, the parent accompanying the child reported on the relationship to the current partner whom they lived with. Interparental aggression may change when partners depart, and a new partner moves in. Such changes may have affected the level of interparental aggression. However, changes in partners among parents are part of children's lives and might be one of the time-varying reasons why interparental aggression changes, for the better or worse.

Conclusions

A link between interparental aggression and offspring behavior problems is well documented. Here, we find that this link depends on the type of behavior problem. Increased interparental aggression predicted an increased number of CD – but not ODD – symptoms, whereas an increased number of ODD – but not CD – symptoms forecasted increased interparental aggression. Possibly, more interparental aggression may model aggression as a means to solve interpersonal conflicts, resulting in more CD symptoms in offspring. Further, child ODD behavior, which is often directed toward parents, may strain the interparental relationship so that when conflicts arise, parents may revert to aggressive means to solve them. Hence, targeting interparental conflict-resolving behavior could be considered in interventions for CD, whereas interventions to reduce ODD in children may serve as an adjunct measure when trying to minimize interparental aggression.

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article:

Appendix S1. The Boys' model.

Appendix S2. The Girls' model.

Table S1. Comparison of Strength of RI-CLPM Estimates among Boys and Girls.

Figure S1. Relations between interparental aggression, boys' oppositional defiant disorder (ODD) symptoms, and boys' conduct disorder (CD) symptoms from age 4 to 16 ($n = 544$).

Figure S2. Relations between interparental aggression, girls' oppositional defiant disorder (ODD) symptoms,

and girls' conduct disorder (CD) symptoms from age 4 to 16 ($n = 534$).

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Key points

- Interparental aggression is believed to promote behavioral problems in children.
- Such problems might also increase the risk of interparental aggression.
- Increased interparental aggression consistently predicted increased number of symptoms of conduct disorder, but not oppositional defiant disorder, throughout childhood and adolescence.
- Increased number of symptoms of oppositional defiant disorder, but not conduct disorder, predicted increased interparental aggression.
- Reducing interparental aggression might help reducing symptoms of conduct disorder in children and adolescents.
- Successfully decreasing the level of symptoms of oppositional defiant disorder in children may aid in reducing verbal and physical aggression between parents.

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