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Parent–Adolescent Conflict in Adolescents with ADHD: Rater Agreement and Associated Factors

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Abstract

Few studies have assessed parent–adolescent conflict in adolescents with ADHD, potential related factors to this conflict and parent–adolescent agreement on their conflicts. This study compared parent–adolescent conflict in a large sample of adolescents with ADHD/ODD, ADHD only and a sample of typically developing [TD] adolescents. Further, informant discrepancies between parents and adolescents regarding conflict and factors (ODD, planning problems, depression and anxiety) relating to this parent–adolescent conflict were investigated. Adolescents (50 ADHD/ODD, 109 ADHD, 34 TD) aged 12 to 17 years old and their parents completed questionnaires on parent–adolescent conflict, ADHD symptoms, ODD symptoms, planning problems, depression and anxiety symptoms. Significant differences in conflict between all groups were found; the ADHD/ODD group showed most parent–adolescent conflict and the TD group the least. In the total ADHD sample (ADHD only combined with ADHD/ODD adolescents), no informant discrepancies between parents and adolescents were found on conflict measures. Within the total ADHD sample, parent–adolescent conflict was related to parent-reported ODD symptoms and planning problems. Parent–adolescent conflict is pronounced in adolescents with ADHD and even more in adolescents with ADHD/ODD. Parents and adolescents agree on the frequency of conflict. ODD symptoms and planning problems are related factors to conflict and could be important aims for treatment in adolescents with ADHD.

Keywords ADHD · Parent–adolescent conflict · Rater agreement · ODD · Planning problems

Highlights

- Adolescents with ADHD show heightened frequency of parent–adolescent conflict.
- Comorbid ODD heightens this conflict in adolescents with ADHD even more.
- Parents and adolescents agree on how frequent they have conflicts.
- Planning problems and ODD symptoms predict frequency of parent–adolescent conflict.

Supplementary information The online version of this article (<https://doi.org/10.1007/s10826-020-01801-6>) contains supplementary material, which is available to authorized users.

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Attention deficit/hyperactivity disorder [ADHD] is a frequently occurring neurodevelopmental disorder with a worldwide prevalence estimate of 5% (Polanczyk et al. 2007). ADHD is characterized by persistent symptoms of inattention, hyperactivity and impulsivity that interfere with functioning and/or development (5th ed., *Diagnostic and Statistical Manual of Mental Disorders [DSM-5]*; American Psychiatric Association 2013). Family functioning and parent–child relationships are often troubled in families of children with ADHD: within these families poorer parenting practices and more stressful and conflicted family environments are reported (Johnston and Mash 2001). In school-aged children with ADHD, higher levels of parent–child conflict and conflict related behavior are well documented (Battle and Lacey 1972; Cunningham and Barkley 1979; Schroeder and Kelly 2009).

These studies show more aggressive and noncompliant behavior, more negative behavior and less behavioral control in the interaction between children with ADHD and their parents compared to Typically Developing [TD] children (Battle and Lacey 1972; Cunningham and Barkley 1979; Schroeder and Kelly 2009).

Adolescence in general is a developmental period characterized by a growing need for autonomy and independence from parents, which in many families causes an increase in parent–adolescent conflict (Christie and Viner 2005). Although parent–adolescent conflict is clinically well documented and often reason for clinical referral in adolescents with ADHD, few studies have assessed parent–adolescent conflict specifically in adolescents with ADHD, using parent- as well as adolescent-report. This is surprising, as parent–adolescent conflict alone poses risk for youth maladjustment and for example development of depressive symptomatology in TD adolescents (Hollenstein and Loughheed 2013; Reinherz et al. 2003). As adolescents with ADHD are even more vulnerable for developing comorbid disorders than their TD peers, it seems important to investigate parent–adolescent conflict in this particular group (Biederman et al. 2006; Yoshimasu et al. 2012).

The few studies that have been conducted in adolescents with ADHD indeed indicate that adolescents with ADHD and their parents show more conflict-related behavior compared to their TD counterparts (Barkley et al. 1992; Edwards et al. 2001; Pelham et al. 2017). Some of these studies suggest that comorbid Oppositional Defiant Disorder [ODD] and not ADHD is driving this parent–adolescent conflict; a significant difference in parent–adolescent conflict was found between an ADHD/ODD and TD group (Barkley et al. 1992; Edwards et al. 2001) but not between an ADHD only and the TD group (Barkley et al. 1992). As adolescents with ADHD show a heightened risk for comorbid ODD (Biederman et al. 2006; Yoshimasu et al. 2012) and ODD is being characterized by argumentativeness, disobedience, and resistance to parental authorities (Battle and Lacey 1972; Cunningham and Barkley 1979), the influence of ODD on the levels of parent–child conflict is not surprising. In addition, dimensional analyses show that adolescents with ADHD with more aggressive symptoms reported more frequent arguments with their parents (Garcia et al. 2019). However, few studies to date on this topic were conducted and all were without or with only a small ADHD only group or without a TD group (Barkley et al. 1992; Edwards et al. 2001; Garcia et al. 2019; Pelham et al. 2017). Also, although there is some evidence on the important role of comorbid ODD symptoms in parent–adolescent conflict in families of adolescents with ADHD (Barkley et al. 1992; Edwards et al. 2001), there certainly is more research needed to investigate

other contributing factors as it gives insight into the mechanisms that may play a role in this relation (Pelham et al. 2017).

Next to externalizing symptoms (Barkley et al. 1992; Cunningham and Barkley 1979; Edwards et al. 2001), also internalizing symptoms or disorders, known to have increasing prevalence from childhood to adolescence in ADHD (Angold et al. 1999; Yoshimasu et al. 2012), may be related to parent–adolescent conflict. For example, depressive symptoms in the adolescent may cause negative reactions from parents because these adolescents tend to rely on maladaptive strategies (Brière et al. 2013). Also, stress in the adolescent due to anxiety may lead to maladaptive reactions and in turn to heightened family conflict (Tanaka et al. 2010). Previous longitudinal research in samples of non-ADHD adolescents (Brière et al. 2013) showed that there were reciprocal prospective associations between depressive symptoms and perceived conflict with parents. Also, research shows that in adolescents with ADHD there is a significant positive association between depressive symptomatology and frequency of parent–adolescent conflict (Garcia et al. 2019). Regarding the role of anxiety symptoms, no studies have assessed the role of anxiety in parent–adolescent conflict in adolescent ADHD samples, but a positive association between family conflict and anxiety symptoms was reported in a TD sample of children (age range 7 to 13 year; Tanaka et al. 2010). Therefore in this study, in addition to externalizing symptoms, also the relation between internalizing symptoms and parent–adolescent conflict will be studied.

Moreover, several important changes take place in the daily life of the adolescent that could also influence the levels of conflict with their parents. The transition from primary to secondary school makes it necessary for adolescents to organize their daily school life independently (e.g., plan homework, travel to school, etc.). For adolescents with ADHD, with their characteristic difficulties in self-regulation and executive functioning (Barkley 1997; Sonuga-Barke 2003; Willcutt et al. 2005), this transition puts a large burden on their planning capacities (Boyer et al. 2018; Wolraich et al. 2005). Moreover, parents often struggle with balancing between controlling their child and letting go, also regarding assistance with planning related issues (e.g., with planning of homework; Evans et al. 2018), potentially increasing conflict. A study analyzing topics of conflict between adolescents with ADHD and their parents showed homework and related planning problems to be a major topic of conflict (Garcia et al. 2019). Therefore, planning problems may be related to higher levels of parent–adolescent conflict. In sum, different factors (ODD symptoms, depressive symptoms, anxiety symptoms and planning problems) may be related to the amount of parent–adolescent conflict in ADHD samples.

Finally, research often finds differences between TD adolescents and parents in their perception of family functioning and parent–adolescent conflict (De Los Reyes and Ohannessian 2016). In ADHD samples, informant disagreement between youth and parents has been shown on other domains, for example on ADHD symptomatology and academic and social competence (Barkley et al. 2002; Fefer et al. 2018; Fischer et al. 1993; Hoza et al. 2002, 2004; Sibley et al. 2017, 2010). A lot of these studies report more positive reporting of competencies or symptoms by children or adolescents with ADHD compared to parental reports, also called a positive illusory bias (Barkley et al. 2002; Fefer et al. 2018; Hoza et al. 2000; Sibley et al. 2017, 2010; but Fischer et al. 1993). Regarding parent–adolescent conflict, a study of adolescents with ADHD found differential views between parent- and adolescent-report (Barkley et al. 1992), indicating the relevance to investigate informant discrepancies in this matter. Also, not all informants may be equally reliable in reporting symptoms and associated problems (Sibley et al. 2012). Besides, a study in adolescents with ADHD on the positive illusory bias effect (with regards to adolescents' reporting of social skills, aggressive behaviors and antisocial behaviors) found a vicious circle where inadequate self-reporting was a longitudinal predictor of dysfunction in other areas of functioning, such as aggression and social skills (Murray-Close et al. 2010). In case of parent–adolescent conflict, an underestimation of conflict could cause even more family stress and conflict, also with others. All of this highlights the importance of investigating the views of different informants also on reporting of conflict.

All in all, although parent–adolescent conflict is highly impairing and often a reason for clinical referral for adolescents with ADHD, very few studies have assessed parent–adolescent conflict in large adolescent samples with both parent and adolescent ratings and differentiating between those with ADHD only and comorbid ODD. Moreover, very little is known about differences between adolescents and their parents in their perception of parent–adolescent conflict. Further, factors relating to this parent–adolescent conflict are barely explored. Therefore, the current study has three aims. The first aim is to replicate and extend results from the sparse previous research (Barkley et al. 1992; Edwards et al. 2001, Pelham et al. 2017). It is investigated whether there is a difference in parent–adolescent conflict between adolescents with ADHD only, adolescents with ADHD/ODD and TD adolescents as rated by parents and adolescents. We expect that adolescents with ADHD will differ significantly from TD adolescents in perceived parent–adolescent conflict and that the difference is more outspoken in the sample of adolescents with ADHD/ODD on both parent and adolescent ratings. Second, given the heterogeneity of ADHD symptoms within the group of adolescents with ADHD, it is

investigated whether discrepancies between adolescent- and parent-report on conflict depend on the severity of ADHD symptomatology in adolescents with ADHD (the ADHD only and the ADHD/ODD group taken together). We expect greater informant discrepancy between parents and adolescents depending on the severity of ADHD (i.e., more ADHD symptoms, more discrepancy between parent and adolescent on conflict). Lastly, it is investigated what factors are related to a higher frequency of parent–adolescent conflict in adolescents with ADHD (the ADHD only and the ADHD/ODD group taken together), above and beyond the potential effect of demographic variables (e.g., age, gender, educational level of the mother and father) and severity of ADHD symptoms and ODD symptoms. We expect planning problems, depression and anxiety to have significant impact above and beyond these demographic variables and ADHD and ODD severity.

Method

Participants and Procedure

Thirty-four TD adolescents, 109 adolescents with ADHD only and 50 adolescents with ADHD/ODD participated. All participants met the following inclusion criteria: (1) age range between 12 and 17 years old (2) attending a regular middle- or high-school, (3) IQ above 80, measured by two subtests (Vocabulary and Block Design) of the Dutch Wechsler Intelligence Scale for Children (WISC-III-NL; Kort et al. 2005), these two subtests correlate highly with Full Scale IQ (FSIQ; Sattler 2001). Before pre-test started, both the parent and the adolescent gave their informed consent. Educational level of both parents was collected (using the Dutch education system) and transformed to a 4 point-scale: (1) low, (2) average, (3) higher and (4) highest. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (Ethics Committee of the University of Amsterdam 2010-KP-1079) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Adolescents with ADHD

The data from this study are part of the pretest data of a larger study on the effectiveness of two nonpharmacological treatments for adolescents with ADHD (Boyer et al. 2015). Sixteen participating mental health care institutes in the Netherlands recruited adolescents and their parents through flyers and posters in waiting rooms and therapists attended their clients to the possibility of participating. Adolescents and their parents then applied for the study. For inclusion in the

study, adolescents had to meet the following criteria: (1) a prior DSM-IV-TR diagnosis of ADHD (American Psychiatric Association 2000), by an independent child psychiatrist or certified psychologist, (2) confirmed ADHD diagnosis on the ADHD sections of the Diagnostic Interview Schedule for Children for DSM-IV parent version (DISC-IV; Shaffer et al. 2000). The DISC-IV is a structured diagnostic interview based on the DSM-IV, which establishes ADHD group membership based on a diagnostic algorithm, including a check for the presence of cross-situational impairment, (3) in case the adolescent already received pharmacological treatment for ADHD, it had to be stable for four weeks prior to assessment. Participants on methylphenidate discontinued medication at least 24 h before assessment, allowing for wash-out of medication (Greenhill 1998).

Adolescents were excluded if: (1) the adolescents themselves or their parents received nonpharmacological treatment aimed at the participating adolescent. This included treatment in mental health care, but also out-of-school tutoring and in-school remedial services, (2) they had comorbid autism spectrum disorder, (3) they had predominant addiction, depression with suicidal ideations, acute familial crisis or Conduct Disorder [CD] (DISC-IV-criteria were used to detect comorbid CD).

Of 201 adolescents that underwent screening, one adolescent withdrew from pretest and 41 adolescents were excluded from the study: 27 adolescents did not reach ADHD criteria on the DISC-IV, 8 adolescents had an FSIQ under 80 and 6 had comorbid CD on the DISC-IV, resulting in 109 participants with ADHD only and 50 participants with ADHD and comorbid ODD (based on DISC-IV-criteria).

Typically developing adolescents (TD)

TD adolescents were recruited from a community school in the Netherlands ($n = 39$). All TD subjects scored below the 90th percentile on both ADHD scales of the parent version of the Disruptive Behavior Disorder Rating Scale. Parents of one adolescent failed to complete the questionnaires, one adolescent had a prior ADHD diagnosis and three adolescents had a FSIQ below 80: they were excluded from the study, resulting in 34 TD adolescents that completed questionnaires for this study.

Materials

Disruptive Behavior Disorder Rating Scale (DBDRS), parent version

The DBDRS is a parent rating scale, which includes four scales, existing out of DSM-IV criteria for ADHD inattention, ADHD hyperactivity and impulsivity, ODD and CD. Adequate psychometric properties have been reported ($\alpha =$

0.96 for ADHD scales; $\alpha = 0.95$ for ODD scale) and Dutch norms are available (Oosterlaan et al. 2000; Pelham et al. 1992; Van Eck et al. 2010). Good to excellent internal consistency was found in our sample for both ADHD scales (ADHD inattention: $\alpha = 0.93$; ADHD hyperactivity and impulsivity: $\alpha = 0.90$) and the ODD scale ($\alpha = 0.89$).

Behavior Rating Inventory of Executive Function (BRIEF), Plan/Organize scale

The BRIEF is a normative behavioral parent rating scale to obtain insight into everyday observable planning behavior (Gioia et al. 2000). Higher scores indicate more executive functioning problems. Adequate internal consistency and test-retest reliability have been reported (Gioia et al. 2002). The Plan/Organize scale assesses the adolescent's capacity to anticipate future events, set goals, develop appropriate steps to carry out associated tasks or actions, and manage current and future-oriented task demands (Gioia et al. 2000). Excellent internal consistency was found in our sample for the Plan/Organize scale ($\alpha = 0.90$).

Child depression inventory (CDI)

The CDI is a self-report questionnaire of 27 items, assessing the presence of affective, cognitive, and behavioral signs of depression among children and adolescents, observed in the past two weeks (Kovacs 1992). Scores range from 0 to 54, where higher scores indicate more depressive symptoms. Adequate internal consistency, test-retest reliability, convergent validity and discriminant validity have been reported (Kovacs 1992). Good internal consistency was found in our sample ($\alpha = 0.85$).

Screen for child anxiety related emotional disorders (SCARED)

The SCARED is a self-report questionnaire of 69 items, assessing anxiety symptoms (Birmaher et al. 1997; Muris et al. 2007). Scores range from 0 to 138, where higher scores indicate more internalizing symptoms. Good internal consistency, test-retest reliability and discriminative validity have been reported (Birmaher et al. 1997). Excellent internal consistency was found in our sample ($\alpha = 0.95$).

Conflict Behavior Questionnaire (CBQ), parent and adolescent version

The CBQ is a questionnaire, measuring the perceived communication and conflict behavior at home (Robin and Foster 1989). It is assumed to give a general estimate of the degree of conflict and negative communication a certain family experiences through two potential sources of complaints: (1)

dissatisfaction with the other person's behavior and (2) evaluations of the interaction between the two members (Prinz et al. 1979; Robin and Foster 1989). A shorter version was used, consisting of 44 items of the original 73 items, consisting out of the items that best correlated with scale totals in a sample that was used to validate the longer version (Prinz et al. 1979). All items were given in statement form, with an answer format of 'yes' or 'no' (Prinz et al. 1979). Parents and adolescents completed parallel versions of the questionnaire. Total scores were calculated, ranging from 0 to 44, for which some items were rescored leading to higher scores indicating more conflict. Also, two subscales for each respondent were calculated: report on the other and report on the dyad, conform the potential sources of complaints. The items of the subscale measuring dissatisfaction with the other person's behavior (the Other subscale), differed a lot between the parent (e.g., 'My teenager acts impatient when I talk', 'My teenager usually listens to what I tell him/her' etc.) and the adolescent (e.g., 'If I have problems, my parent comes to help me', 'My mom always seems to be complaining about me' etc.). The subscale measuring evaluations of the interaction between the two (the Interaction subscale) consisted of the same items for parents and adolescents (e.g., 'I enjoy the conversations we have', 'We often do things together', 'My child/parent and I only talk to each other when it is necessary' etc.). Adequate internal consistency had been reported (Parent report-Other $\alpha = 0.88$; Parent report-Interaction $\alpha = 0.90$; Adolescent report-Other $\alpha = 0.95$; Adolescent report-Interaction $\alpha = 0.94$; Prinz et al. 1979) and was also found in our sample (Parent report-Total $\alpha = 0.90$; Parent report-Other $\alpha = 0.87$; Parent report-Interaction $\alpha = 0.75$; Adolescent report-Total $\alpha = 0.91$; Adolescent report-Other $\alpha = 0.88$; Adolescent report-Interaction $\alpha = 0.79$).

Statistical Analysis

First, a one-way ANOVA was used to compare baseline characteristics between the three groups (TD; ADHD only; ADHD/ODD) for the continuous variables and chi squared tests for categorical variables. The two ADHD groups were additionally compared on the number of adolescents currently taking medication and the amount of presentations of ADHD using a chi squared test.

To investigate the first research question, first correlations between the different subscales of the CBQ scales were calculated. Thereafter, the three groups were compared on the CBQ scales. When assumptions were violated, non-parametric Kruskal–Wallis tests were used. Effect sizes were calculated. As multiple tests were conducted, a Bonferroni-corrected p value was calculated.

To investigate the second research question, two different polynomial regression analysis were performed using the total ADHD sample (ADHD only group together with ADHD/

ODD group). Polynomial regression analyses are recommended to assess informant discrepancies (Fefer et al. 2018; Laird and LaFleur 2016). This polynomial regression model, as shown in Eq. (1), tests ADHD symptoms (S) (both inattention problems and problems with hyperactivity/impulsivity) and parent conflict report (P) as predictors of adolescent conflict report (A) regarding the Interaction subscale of the CBQ (as the Other subscale has different items for the different informants, informant agreement was not calculated):

$$A = b_0 + b_1P + b_2P^2 + b_3S + b_4S^2 + b_5SP + e. \quad (1)$$

In this model, regression coefficients estimate the linear (b_1) and quadric (b_2) effects of parent-reported conflict as predictors of adolescent-reported conflict at mean levels of ADHD symptoms, the linear (b_3) and quadric (b_4) effects of ADHD symptoms as predictors of adolescent-reported conflict at mean levels of parent-reported conflict, and the interaction between ADHD symptoms and parent-reported conflict (b_5) as a predictor of adolescent-reported conflict. The interaction term (b_5) tests if there is a significant difference in reported conflict between adolescent and parent, because it represents the extent to which parent- and adolescent-reports correlate at various levels of the predictor (the amount of ADHD symptoms). More precisely, it provides a direct test whether high (or low) scores from one informant are more or less strongly associated with the outcome (ADHD symptomatology) when the scores from the other informant are also high (or low), thus if associations between ADHD symptomatology and reports provided by one informant vary as a function of the other informants' reports (Laird and De Los Reyes 2013).

Last, to investigate the third research question, different linear regression analyses were conducted using the total ADHD sample with the scales from the CBQ as the outcome variable and following predictors: (1) age, (2) gender, (3) educational level of the mother, (4) educational level of the father [block 1], (5) the inattention subscale of the DBDRS, (6) the hyperactivity/impulsivity subscale of the DBDRS, (7) the ODD subscale of the DBDRS [block 2], (8) the Plan/Organize scale of the BRIEF, (9) the CDI and (10) the SCARED [block 3].

Results

Sample Description

There were no differences between the TD, the ADHD only and the ADHD/ODD groups in age, gender, educational level of the parents and FSIQ (see Table 1). Between the ADHD only and the ADHD/ODD group, there was no

Table 1 Comparison of baseline characteristics between the three groups and descriptive statistics for predictor variables

| | TD (<i>n</i> = 34) | | ADHD only (<i>n</i> = 109) | | ADHD/ODD (<i>n</i> = 50) | | <i>F</i> / χ^2 | <i>p</i> |
|-----------------------------|------------------------|-----------|--------------------------------|-----------|------------------------------|-----------|---------------------|----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> | | |
| Age | 14.66 | 1.20 | 14.33 | 1.27 | 14.48 | 1.24 | 1.01 | 0.37 |
| FSIQ | 106.85 | 13.95 | 103.96 | 11.77 | 103.97 | 12.22 | 1.58 | 0.21 |
| Gender (<i>n</i>) | | | | | | | 2.38 | 0.30 |
| Male | 21 | | 82 | | 35 | | | |
| Female | 13 | | 27 | | 15 | | | |
| Education mother | 3.42 | 0.75 | 3.06 | 0.84 | 3.24 | 0.85 | 2.78 | 0.07 |
| Education father | 3.03 | 0.73 | 3.14 | 0.92 | 3.09 | 0.93 | 0.21 | 0.81 |
| Medication (<i>n</i> /%) | | | 85 | 77.98 | 39 | 78.00 | 0.00 | 0.99 |
| Presentation (<i>n</i> /%) | | | | | | | 11.92 | 0.00** |
| Inattentive | | | 86 | 78.90 | 26 | 52.00 | | |
| Hyperactive/impulsive | | | 4 | 3.67 | 4 | 8.00 | | |
| Combined | | | 19 | 17.43 | 20 | 40.00 | | |
| Inattention | 10.91 | 1.38 | 15.65 | 1.82 | 15.89 | 1.87 | | |
| Hyperactivity/impulsivity | 10.41 | 0.74 | 13.32 | 2.60 | 14.36 | 2.75 | | |
| ODD | 10.38 | 0.82 | 12.16 | 2.00 | 13.93 | 2.06 | | |
| Planning problems | 17.38 | 4.99 | 28.03 | 4.21 | 28.52 | 4.76 | | |
| Anxiety | 19.64 | 15.45 | 27.09 | 22.61 | 23.55 | 17.10 | | |
| Depression | 7.16 | 5.58 | 9.92 | 5.79 | 10.30 | 6.78 | | |

ADHD attention deficit/hyperactivity disorder, FSIQ full scale IQ, ODD oppositional deviant disorder, TD typically developing

**p* < 0.05

***p* < 0.01

difference in number of adolescents that used medication. However, there was a difference between both ADHD groups in prevalence of ADHD presentation (see Table 1). There were more adolescents with the inattentive presentation in the ADHD only group (*n* = 86; 78.90%) compared to the ADHD/ODD group (*n* = 26, 52.00%). In addition, in the ADHD/ODD group, there were more adolescents with the combined presentation (*n* = 20, 40.00%) compared to the ADHD only group (*n* = 19, 17.43%).

Group Comparison on Conflict Measures

For the different scales of the CBQ, first bivariate correlations were calculated of the CBQ scales (see Table 2). As the Total scale of the CBQ for both parent- and adolescent-report was a summary of items of both subscales and thus showed high correlations with the subscales, the Total scales of both adolescent and parent were not analyzed, leading to analysis of group differences of four subscales: (1) Parent questionnaire, Other subscale; (2) Parent questionnaire, Interaction subscale; (3) Adolescent questionnaire, Other subscale and (4) Adolescent questionnaire, Interaction subscale. The assumption of homogeneity of variance was violated for all parent scales (parents of the ADHD only group showed significant more variance

compared to the other groups), thus Kruskal–Wallis tests were used. Bonferroni-correction was performed on the *p* value (*p* < 0.013).

Results showed that there was a significant difference between the three groups on three out of four measures of conflict (Table 3). However, effect sizes of differences were larger for the parent-reported subscales (in the medium range), compared to the adolescent-reported subscales (Table 3). Also, all pairwise comparisons were significant (Bonferroni-corrected *p*-value for the multiple comparisons; *p* < 0.004), except for the adolescent rated Other subscale and Interaction subscale, where only the ADHD/ODD group and the TD group differed significantly from each other (Table 3). Effect sizes for pairwise comparisons ranged from 0.018 (TD sample compared to ADHD sample on Adolescent Other and Interaction subscale) to 0.461 (TD sample compared to ADHD/ODD sample on Parent Other subscale).

Informant Discrepancies of Parent–Adolescent Interaction

For research question two, only data of those families were selected where there was a match between the parent who rated the interaction (mother/father) and the parent the

Table 2 Correlations between the different CBQ scales for both parent and adolescent report

| | Parent-Total | Parent-Other | Parent-Interaction | Adolescent-Total | Adolescent-Other | Adolescent-Interaction |
|------------------------|--------------|--------------|--------------------|------------------|------------------|------------------------|
| Parent-Total | 1 | 0.970 | 0.863 | 0.507 | 0.512 | 0.379 |
| Parent-Other | 0.970 | 1 | 0.716 | 0.430 | 0.457 | 0.287 |
| Parent-Interaction | 0.863 | 0.716 | 1 | 0.568 | 0.532 | 0.486 |
| Adolescent-Total | 0.507 | 0.430 | 0.568 | 1 | 0.952 | 0.862 |
| Adolescent-Other | 0.512 | 0.457 | 0.532 | 0.952 | 1 | 0.664 |
| Adolescent-Interaction | 0.379 | 0.287 | 0.486 | 0.862 | 0.664 | 1 |

Different questionnaires or items from the CBQ were incomplete for certain participants, leading to missing data, resulting in smaller samples for different research questions or different analysis within a research question

CBQ Conflict Behavior Questionnaire

Table 3 Comparison of the four conflict scales between the three groups and effect sizes

| Conflict scale | TD | | ADHD only | | ADHD/ODD | | Group comparisons | p | r ^a |
|------------------------|------|------|-----------|------|----------|------|-----------------------------|--------|----------------|
| | M | SD | M | SD | M | SD | | | |
| Parent-Other | 2.19 | 3.11 | 5.89 | 4.78 | 10.23 | 5.17 | ADHD/ODD > ADHD only > TD** | 0.00** | 0.29 |
| Parent-Interaction | 1.06 | 1.14 | 2.63 | 2.51 | 4.00 | 2.68 | ADHD/ODD > ADHD only > TD** | 0.00** | 0.20 |
| Adolescent-Other | 3.50 | 3.95 | 4.91 | 4.52 | 6.91 | 6.04 | ADHD/ODD > ADHD only = TD** | 0.02 | 0.05 |
| Adolescent-Interaction | 1.96 | 2.11 | 2.80 | 2.80 | 4.24 | 3.41 | ADHD/ODD > ADHD only = TD** | 0.00** | 0.08 |

Different questionnaires or items from the CBQ were incomplete for certain participants, leading to missing data for certain scales and subscales, resulting in smaller samples for different research questions or different analysis within a research question. Results were similar integrating levels of inattention and/or hyperactivity/impulsivity as covariate in the analysis

ADHD attention deficit/hyperactivity disorder, *FSIQ* full scale IQ, *ODD* oppositional deviant disorder, *TD* typically developing, *CBQ* Conflict Behavior Questionnaire

^aEffect sizes. Small effect: $r = 0.10$; medium effect: $r = 0.30$; large effect: $r = 0.50$

* $p < 0.013$

** $p < 0.004$

adolescent rated the interaction on (as the adolescents chose themselves on which parent they wanted to report the frequency of conflict on). This resulted in 93 suitable parent–adolescent pairs in total. No assumptions for regression analysis were violated.

For both inattention ($R^2 = 0.25$, $p = 0.00$) and hyperactivity/impulsivity symptoms ($R^2 = 0.26$, $p = 0.00$) polynomial prediction models were significant with parent-reported conflict and ADHD symptomatology as predictors of adolescent-reported conflict (see Table 4). In this model, both parent-reported conflict and ADHD symptomatology were no significant predictors of adolescent-reported conflict (Table 4). Also, interaction terms in both models were not significant, indicating no significant informant discrepancies associated with the severity of ADHD (Table 4).

Factors Related to Parent–Adolescent Conflict

For the final research question, no assumptions for linear regression were violated. Linear regression analyses showed that ODD symptoms were a significant predictor of all the conflict measures for both parent (Table 5) and adolescent (Table 6) subscales with more ODD symptoms being

Table 4 Polynomial regression with parental reported conflict and ADHD symptomatology (both inattention and hyperactivity symptoms separately) as predictors of adolescent reported conflict (both inattention and hyperactivity/impulsivity symptoms)

| Parameter | Inattention symptoms (n = 93) | | Hyperactivity/impulsivity symptoms (n = 93) | |
|-------------------------------------|-------------------------------|--------|---|--------|
| | β | p | β | p |
| Parent report | −0.26 | 0.86 | −0.41 | 0.55 |
| ADHD symptomatology | −1.39 | 0.53 | −0.76 | 0.52 |
| Parent report squared | 0.05 | 0.80 | 0.05 | 0.16 |
| ADHD symptomatology squared | 0.04 | 0.20 | 0.02 | 0.61 |
| Parent report × ADHD symptomatology | 0.02 | 0.38 | 0.04 | 0.36 |
| Model R ² | 0.25 | 0.00** | 0.26 | 0.00** |

Different questionnaires or items from the CBQ were incomplete for certain participants, leading to missing data, resulting in smaller samples for different research questions or different analysis within a research question

CBQ Conflict Behavior Questionnaire

* $p < 0.05$

** $p < 0.01$

Table 5 Predictors of parent–adolescent conflict in the ADHD group for the two parent-reported CBQ scales

| Predictors | Other (<i>n</i> = 124) | | Interaction (<i>n</i> = 129) | |
|--|----------------------------|----------|----------------------------------|----------|
| | β^a | <i>p</i> | β^a | <i>p</i> |
| Block 1 | | | | |
| Age | 0.16 | 0.08 | 0.12 | 0.17 |
| Gender | 0.06 | 0.54 | 0.00 | 0.97 |
| Education mother | 0.14 | 0.22 | 0.03 | 0.81 |
| Education father | −0.07 | 0.56 | −0.02 | 0.87 |
| Block 2 | | | | |
| Inattention ^b | 0.14 | 0.08 | 0.00 | 0.99 |
| Hyperactivity/impulsivity ^b | 0.00 | 0.99 | 0.04 | 0.70 |
| ODD ^b | 0.59 | 0.00** | 0.47 | 0.00** |
| Block 3 | | | | |
| Planning problems | 0.23 | 0.01** | 0.20 | 0.04* |
| Anxiety | −0.07 | 0.41 | −0.05 | 0.61 |
| Depression | 0.10 | 0.20 | 0.09 | 0.31 |

Different questionnaires or items from the CBQ were incomplete for certain participants, leading to missing data for certain scales and subscales, resulting in smaller samples for different research questions or different analysis within a research question. Also, following questionnaires were incomplete: the DBDRS (the inattention subscale, the hyperactivity/impulsivity subscale and the ODD subscale) (*n* = 10), the BRIEF Planning problems subscale (*n* = 8) and the SCARED (*n* = 5). *CBQ* Conflict Behavior Questionnaire, *ODD* oppositional defiant disorder

^a β , standardized regression coefficient

^bSymptoms according to the DBDRS

**p* < 0.05

***p* < 0.01

related to more conflict. In adolescent-report, age was a significant predictor for both subscales (Other: $\beta = 0.25$, *p* = 0.00; Interaction: $\beta = 0.19$, *p* = 0.02), with age being positively related to the frequency of conflict. For parent-report, age was not a significant predictor, but planning problems were a significant predictor for both parent-reported conflict measures (Other: $\beta = 0.23$, *p* = 0.01; Interaction: $\beta = 0.20$, *p* = 0.04), with more planning problems predicting more conflict. Furthermore, in adolescent-report, depressive symptoms almost reached significance as a predictor of conflict for the Other subscale ($\beta = 0.18$, *p* = 0.05). In none of the regression analyses, ADHD symptoms and anxiety symptoms were a significant predictor of conflict (Tables 5 and 6).

Discussion

The first aim of this study was to compare ADHD only, ADHD/ODD and TD samples on parent–adolescent

Table 6 Predictors of parent–adolescent conflict in the ADHD group for the two adolescent-reported CBQ scales

| Predictors | Other (<i>n</i> = 133) | | Interaction (<i>n</i> = 137) | |
|--|----------------------------|----------|----------------------------------|----------|
| | β^a | <i>p</i> | β^a | <i>p</i> |
| Block 1 | | | | |
| Age | 0.25 | 0.00** | 0.19 | 0.02* |
| Gender | 0.00 | 0.99 | 0.10 | 0.25 |
| Education mother | 0.02 | 0.88 | 0.03 | 0.79 |
| Education father | −0.09 | 0.40 | 0.00 | 0.97 |
| Block 2 | | | | |
| Inattention ^b | 0.09 | 0.35 | 0.11 | 0.21 |
| Hyperactivity/impulsivity ^b | 0.03 | 0.77 | 0.03 | 0.75 |
| ODD ^b | 0.29 | 0.00** | 0.20 | 0.03* |
| Block 3 | | | | |
| Planning problems | 0.01 | 0.91 | 0.08 | 0.43 |
| Anxiety | 0.02 | 0.80 | 0.08 | 0.40 |
| Depression | 0.18 | 0.05 | 0.13 | 0.18 |

Different questionnaires or items from the CBQ were incomplete for certain participants, leading to missing data for certain scales and subscales, resulting in smaller samples for different research questions or different analysis within a research question. Also, following questionnaires were incomplete: the DBDRS (the inattention subscale, the hyperactivity/impulsivity subscale and the ODD subscale) (*n* = 10), the BRIEF Planning problems subscale (*n* = 8) and the SCARED (*n* = 5).

CBQ Conflict Behavior Questionnaire, *ODD* oppositional defiant disorder

^a β , standardized regression coefficients

^bSymptoms according to the DBDRS

**p* < 0.05

***p* < 0.01

conflict. Furthermore, parent and adolescent informant discrepancies related to ADHD symptomatology on parent–adolescent conflict were investigated. Also, factors (planning problems, anxiety symptoms and depressive symptoms) potentially associated with this parent–adolescent conflict were investigated within the total ADHD sample. In line with our predictions, results showed a significant higher level of parent–adolescent conflict in adolescents with ADHD only, compared to TD adolescents and an even higher frequency of conflict in adolescents with ADHD and comorbid ODD, both on parent and adolescent rated conflict. This difference between the groups could be potentially related to the difference in presence of hyperactive/impulsive symptoms in the ADHD/ODD group as there were significant less adolescents with the inattentive presentation and more with the combined presentation in the ADHD group with comorbid ODD as compared to the ADHD only group. Yet, including levels of hyperactivity/impulsivity as a covariate did not change the results and the severity of ADHD (i.e., number of symptoms) was not

significantly related to parent–adolescent conflict, making this explanation less likely.

In ADHD, as with symptomatology and associated problems (Castellanos et al. 2006; Nigg et al. 2005), heterogeneity is also seen in levels of conflict. For example, within the ADHD only sample, parent ratings of conflict showed significant greater variance compared to the ADHD/ODD and the TD sample. Also, effect sizes of differences between the three groups were small to medium, whilst conflict score variability within the ADHD group was high. As results indicate that not all adolescents with ADHD show a higher frequency of parent–adolescent conflict, it is important to investigate this and associated factors in these samples in order to tailor treatment to their needs.

This study showed a significant positive relation between the age of the adolescent with ADHD (ADHD only and ADHD/ODD sample taken together) and adolescent-rated conflict. This is not surprising as adolescence is a highly transitional period with an important need for autonomy, often influencing the relationships of these adolescents with their parents, leading to higher levels of conflict as they develop (Christie and Viner 2005). Over and above the effect of age, results showed a significant association between ODD symptoms and the frequency of parent–adolescent conflict rated by parents and adolescents, confirming that ODD symptoms play an important role in parent–adolescent conflict experienced by both parents and adolescents. One might argue that this finding is related to the overlap between the content of the ODD symptoms and some items of the parent–adolescent conflict questionnaire. However, although there is some overlap between ODD symptoms and the conflict questionnaire (e.g., ‘My child slams the door after an argument’, ‘My child lies to me often’), other items are distinctive enough from ODD symptomatology (e.g., ‘My mom understands me’, ‘If I have problems, my parent comes to help me’, ‘My parent sees when something is bothering me’).

Also, from a parental point of view, planning problems appeared to be an important predictor of parent–adolescent conflict. This is in line with the study of Garcia et al. (2019) in adolescents with ADHD that analyzed topics of dispute between parents and adolescents and showed planning problems (e.g., homework) to be a major topic of dispute. In our study, from an adolescent point of view, planning problems were not related to parent–adolescent conflict. An explanation for this discrepancy might be that the parents experience the discussions due to the planning problems of their adolescents (e.g., about their homework or grades) as more important and frustrating compared to the adolescents themselves. Another possible explanation is a rater bias of the parent (i.e., the parent rated both parent–adolescent conflict and planning problems, where a higher rating on

one questionnaire may lead to a higher rating on the other questionnaire). However, in our regression analyses, subscales of other parent-rated questionnaires (i.e., inattention, hyperactivity and impulsivity) were not associated with conflict, making this explanation less likely. In sum, parental ratings of planning problems are related to higher levels of dispute. Even though the direction of this significant relation cannot be determined due to the correlational design, this result may have implications for clinical treatment. Tentatively, it may be that focusing on planning in treatment for adolescents may positively affect the level of conflict. A recent treatment study supports this view: parent–adolescent conflict improved after training the planning skills of adolescents with ADHD (Boyer et al. 2015).

Garcia et al. (2019) reported depressive symptoms to be associated with more frequent conflict in families of children with ADHD. In our study, a similar trend was seen but this association between depressive symptoms (by adolescent report) and conflict did not reach significance ($p = 0.05$). Tentatively, rater biases (rating of one questionnaire leads to higher ratings on another questionnaire) or depression-distortion processes are at stake, in which the depressive symptomatology leads to a distorted, negatively biased perception in ratings of behavior (Gartstein et al. 2009). Alternatively, the perceived level of parent–adolescent conflict can lead to higher levels of depression. However, as this association did not reach significance, these interpretations are highly speculative.

With regards to parent–adolescent agreement on the level of conflict, contrary to previous research on overestimation of for example social functioning and academic competence in adolescent report (Barkley et al. 2002; Fefer et al. 2018; Hoza et al. 2000, 2004; Sibley et al. 2017, 2010), no significant informant discrepancy in reporting of conflict was found. It may be that different processes/attributions are at stake when reporting about the frequency of conflict, as compared to reporting on your own social functioning, academic competence or symptoms. Reporting on conflict may not be an evaluation of your own competency or functioning but of interactive processes between you and your parents, thereby reducing the need for self-serving bias (Hoza et al. 2000). Another potential explanation may be that the adolescents with ADHD that participated in our study were enrolled for a treatment study (although whilst filling in the questionnaires they did not get any treatment yet), indicating there may have been a certain awareness of the problems experienced by both adolescents and parents, resulting in higher agreement. Also, as only informant agreement in the clinical sample was investigated, a lack of variability in ADHD symptoms may be the reason for the absence of an effect. However, inspection of means and standard deviations within our ADHD groups showed that

there was enough variability in ADHD symptoms in our ADHD sample. Further, additional analysis investigating agreement in our total sample (including also the TD sample to increase variability) showed that in this sample no significant discrepancy was found either (for additional analysis: see Supplementary 1).

This study has some limitations. First, only adolescent and demographic factors were included as factors related to parent–adolescent conflict, whilst other factors may also be of influence. It is plausible that parent- or parenting-related factors may also be related to the frequency of parent–adolescent conflict, as higher levels of parenting problems and more negative parenting are generally found in samples of children and adolescents with ADHD (Daley et al. 2003; Park et al. 2017). Further, ADHD shows high heritability, indicating that parents of adolescents with ADHD possibly share the same characteristics and even the same comorbid problems (Faraone et al. 2005). In line with this, if factors such as ODD symptoms and planning problems (and depressive symptoms to a lesser degree) in the adolescent are linked to the degree of conflict, the same factors could be present in the parents and potentially linked to parent–adolescent conflict as well. Second, as our different questionnaires were measured at one time-point, causal inferences could not be made. Longitudinal designs in samples of adolescents with ADHD could gain insight in more causal relations. Third, in the majority of parent–adolescent couples (88.11%) the frequency of conflict was rated by mothers. However, different studies showed distinctive parenting of fathers with their adolescents as compared to parenting of mothers (Martin et al. 2010; Milevsky et al. 2008; Vera et al. 2012), which may also distinctively influence the frequency of conflict experienced. Fourth, our conflict measure assesses the frequency of conflict, not the intensity of conflict (Robin and Foster 1989). Previous research highlighted the importance of investigating both frequency and intensity of conflict (Allison and Schultz 2004); future studies on this topic should assess both. Also, a meta-analysis showed that during adolescence there is a linear decline in the frequency of parent–adolescent conflict while on the other hand there is an increase of the intensity of conflict (Larsen et al. 1998), pointing out even more the importance to investigate intensity of conflict too. Last, the focus on planning problems as compared to other executive functions is a potential weakness, given that individuals with ADHD also show for example working memory and inhibitory problems (Willcutt et al. 2005). Although in the daily life of adolescents with ADHD especially planning problems are pronounced (Boyer et al. 2015), future research should investigate the role of other executive functions such as working memory and inhibitory problems in relation to parent–adolescent conflict.

This study has some clinical implications. Parent–adolescent conflict is often a reason for referral and is pronounced in adolescents with ADHD (also in the absence of comorbid ODD). As parent–adolescent conflict poses risk for maladjustment and for development of depressive symptomatology (Hollenstein and Lougheed 2013; Reinherz et al. 2003), comorbid problems that are prevalent in adolescents with ADHD and conflict should be routinely assessed in samples of adolescents with ADHD. Based on the present study, adolescents with ADHD can be seen as reliable informants when it comes to frequency of conflict with their parents, as both showed comparable ratings. When parent–adolescent conflict is present in families of adolescents with ADHD, this study indicates that assessment of planning problems, ODD symptoms and potentially depression symptoms of the adolescent could be important. Even though the causality of the relation between conflict and ODD and planning problems (and possibly depression symptoms) is still unknown, taking them into account when constructing a treatment plan for these families seems worthwhile.

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Compliance with Ethical Standards

Conflict of Interest B.E.B. is co-developer and author of the manuals ‘Plan My Life’ and ‘Solution Focused Treatment’. She receives royalties for the sales of both interventions. S.V.d.O. is co-developer and author of the manuals ‘Plan My Life’ and ‘Solution Focused Treatment’. However, she has no financial interest in the sales of any of the interventions. Other author (A.-K.H.) declares no conflict of interest.

Ethics Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (Ethics Committee of the University of Amsterdam 2010-KP-1079) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study. The parents and adolescents both signed informed consent regarding publishing their data.

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References

- Allison, B. N., & Schultz, J. B. (2004). Parent-adolescent conflict in early adolescence. *Adolescence*, 39(153), 101–119.
- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders*, 4th edn. Text rev. Washington, DC.
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental diseases* (5th ed.). Washington: American Psychiatric Association.

- Angold, A., Costello, E., & Erkanli, A. (1999). Comorbidity. *Journal of Child Psychology and Psychiatry*, 40(1), 57–87. <https://doi.org/10.1111/1469-7610.00424>.
- Barkley, R. A. (1997). Behavioral inhibition, sustained attention, and executive functions; constructing a unifying theory of ADHD. *Psychological Bulletin*, 121(1), 825–836. <https://doi.org/10.1037/0033-2909.121.1.65>.
- Barkley, R. A., Anastopoulos, A., Guevremont, A., & Fletcher, D. (1992). Adolescents with attention deficit hyperactivity disorder: mother-adolescent interactions, family beliefs and conflicts, and maternal psychopathology. *Journal of Abnormal Child Psychology*, 20(3), 263–288. <https://doi.org/10.1007/BF00916692>.
- Barkley, R. A., Fischer, M., Smallish, L., & Fletcher, K. (2002). The persistence of attention-deficit/hyperactivity disorder into young adulthood as a function of reporting source and definition of disorder. *Journal of Abnormal Psychology*, 111(2), 279–289. <https://doi.org/10.1037/0021-843X.111.2.279>.
- Battle, E., & Lacey, B. (1972). A context for hyperactivity in children, over time. *Child Development*, 43(3), 757–773.
- Biederman, J., Monuteaux, M. C., Mick, E., Spencer, T., Wilens, T. E., Silva, J. M., Snyder, L. E., & Faraone, S. V. (2006). Young adult outcome of attention deficit hyperactivity disorder: a controlled 10-year follow-up study. *Psychological Medicine*, 36(2), 167–179. <https://doi.org/10.1017/S0033291705006410>.
- Birmaher, B., Khetarpal, S., Brent, D., Cully, M., Balach, L., Kaufman, J., & Neer, S. M. (1997). The screen for child anxiety related emotional disorders (SCARED): scale construction and psychometric characteristics. *Journal of the American Academy of Child & Adolescent Psychiatry*, 36(4), 545–553. <https://doi.org/10.1097/00004583-199704000-00018>.
- Boyer, B., Geurts, H., Prins, P., & Van der Oord, S. (2015). Two novel CBTs for adolescents with ADHD: the value of planning skills. *European Child & Adolescent Psychiatry*, 24(9), 1075–1090. <https://doi.org/10.1007/s00787-014-0661-5>.
- Boyer, B. E., Geurts, H. M., & Van der Oord, S. (2018). Planning skills of adolescents with ADHD. *Journal of Attention Disorders*, 22(1), 46–57. <https://doi.org/10.1177/1087054714538658>.
- Brière, F., Archambault, K., & Janosz, M. (2013). Reciprocal prospective associations between depressive symptoms and perceived relationship with parents in early adolescence. *The Canadian Journal of Psychiatry*, 58(3), 169–176. <https://doi.org/10.1177/070674371305800307>.
- Castellanos, F. X., Sonuga-Barke, E. J. S., Milham, M. P., & Tannock, R. (2006). Characterizing cognition in ADHD: beyond executive dysfunction. *Trends in Cognitive Sciences*, 10(3), 117–123. <https://doi.org/10.1016/j.tics.2006.01.011>.
- Christie, D., & Viner, R. (2005). Adolescent development. *British Medical Journal*, 330(7486), 301–304. <https://doi.org/10.1136/bmj.330.7486.301>.
- Cunningham, C. E., & Barkley, R. A. (1979). The interactions of normal and hyperactive children with their mothers in free play and structured tasks. *Child Development*, 50(1), 217–224.
- Daley, D., Sonuga-Barke, E. J. S., & Thompson, M. (2003). Assessing expressed emotion in mothers of preschool AD/HD children: psychometric properties of a modified speech sample. *British Journal of Clinical Psychology*, 42, 53–65. <https://doi.org/10.1348/014466503762842011>.
- De Los Reyes, A., & Ohannessian, C. (2016). Introduction to the special issue: discrepancies in adolescent–parent perceptions of the family and adolescent adjustment. *Journal of Youth and Adolescence*, 45(10), 1957–1972. <https://doi.org/10.1007/s10964-016-0533-z>.
- Edwards, G., Barkley, R., Laneri, A., Fletcher, M., & Metevia, K. (2001). Parent–adolescent conflict in teenagers with ADHD and ODD. *Journal of Abnormal Child Psychology*, 29(6), 557–572. <https://doi.org/10.1023/A:1012285326937>.
- Evans, S., Van der Oord, S., & Rogers, E. (2018). Academic functioning and interventions for adolescents with ADHD. In S. Becker (Ed.), *ADHD in adolescence: a developmental psychopathology approach* (pp 149–169). New York, NY: Guilford Press.
- Faraone, S. V., Perlis, R. H., Doyle, A. E., Smoller, J. W., Goralnick, M. A., Holmgren, M. A., & Sklar, P. (2005). Molecular genetics of attention-deficit/hyperactivity disorder. *Biological Psychiatry*, 57, 1313–1323. <https://doi.org/10.1016/j.psc.2009.12.004>.
- Fefer, S., Ogg, J., & Dedrick, R. (2018). Use of polynomial regression to investigate biased self-perceptions and ADHD symptoms in young adolescents. *Journal of Attention Disorders*, 22(12), 1113–1122. <https://doi.org/10.1177/1087054715573993>.
- Fischer, M., Barkley, R., Fletcher, K., & Smallish, L. (1993). The stability of dimensions of behavior in ADHD and normal children over an 8-year followup. *Journal of Abnormal Child Psychology*, 21, 315–337. <https://doi.org/10.1007/BF00917537>.
- Garcia, A. M., Medina, D., & Sibley, M. H. (2019). Conflict between parents and adolescents with ADHD: situational triggers and the role of comorbidity. *Journal of Child and Family Studies*, 28(12), 3338–3345. <https://doi.org/10.1007/s10826-019-01512-7>.
- Gartstein, M. A., Bridgett, D. J., Dishion, T. J., & Kaufman, N. K. (2009). Depressed mood and maternal report of child behavior problems: another look at the depression–distortion hypothesis. *Journal of Applied Developmental Psychology*, 30(2), 149–160. <https://doi.org/10.1016/j.appdev.2008.12.001>.
- Gioia, G. A., Isquith, P. K., Guy, S. C., & Kenworthy, L. (2000). *Behavior rating inventory of executive function*. Odessa: Psychological Assessment Resources.
- Gioia, G., Isquith, P., Kenworthy, L., & Barton, R. (2002). Profiles of everyday executive function in acquired and developmental disorders. *Child Neuropsychology*, 8(2), 121–137. <https://doi.org/10.1076/chin.8.2.121.8727>.
- Greenhill, L. L. (1998). Childhood attention deficit hyperactivity disorder: pharmacological treatments. In P. E. Nathan, J. Gorman (Eds). *A guide to treatments that work*. (pp. 42–64). New York: Oxford University Press.
- Hollenstein, T., & Loughheed, J. P. (2013). Beyond storm and stress: typicality, transactions, timing, and temperament to account for adolescent change. *The American Psychologist*, 68(6), 444–454. <https://doi.org/10.1037/a0033586>.
- Hoza, B., Gerdes, A. C., Hinshaw, S. P., Arnold, L. E., Pelham, W. E. J., Molina, B. S. G., & Wigal, T. (2004). Self-perceptions of competence in children with ADHD and comparison children. *Journal of Consulting and Clinical Psychology*, 72, 382–391. <https://doi.org/10.1037/0022-006X.72.3.382>.
- Hoza, B., Waschbusch, D. A., Pelham, W. E., Molina, B. S., & Milich, R. (2000). Attention-deficit/hyperactivity disorder and control boys' responses to social success and failure. *Child Development*, 71, 432–446. <https://doi.org/10.1111/1467-8624.00155>.
- Johnston, C., & Mash, E. (2001). Families of children with attention-deficit/hyperactivity disorder: review and recommendations for future research. *Clinical Child and Family Psychology Review*, 4(3), 183–207. <https://doi.org/10.1023/A:1017592030434>.
- Kort, W., Compaan, E. L., Bleichrodt, N., Resing, W. C. M., Schittekatte, M., Bosmans, M., ... Verhaeghe, P. (2005). *WISC-III NL handleiding [WISC-III Dutch manual]*. Amsterdam: NIP.
- Kovacs, M. (1992). *Children's depression inventory manual*. New York, NY: Multi-health Systems.
- Laird, R., & De Los Reyes, A. (2013). Testing informant discrepancies as predictors of early adolescent psychopathology: why difference scores cannot tell you what you want to know and how polynomial regression may. *Journal of Abnormal Child Psychology*, 41, 1–14. <https://doi.org/10.1007/s10802-012-9659-y>.
- Laird, R., & Lafleur, L. (2016). Disclosure and monitoring as predictors of mother–adolescent agreement in reports of early

- adolescent rule-breaking behavior. *Journal of Clinical Child & Adolescent Psychology*, 45(2), 1–13. <https://doi.org/10.1080/15374416.2014.963856>.
- Laurson, B., Coy, K. C., & Collins, W. A. (1998). Reconsidering changes in parent-child conflict across adolescence: a meta-analysis. *Child Development*, 69(3), 817–832. <https://doi.org/10.1111/j.1467-8624.1998.tb06245.x>.
- Martin, A., Ryan, R. M., & Brooks-Gunn, J. (2010). When fathers' supportiveness matters most: Maternal and paternal parenting and children's school readiness. *Journal of Family Psychology*, 24(2), 145–155. <https://doi.org/10.1037/a0018073>.
- Milevsky, A., Schlechter, M., Netter, S., & Keehn, D. (2007). Maternal and paternal parenting styles in adolescents: associations with self-esteem, depression and life-satisfaction. *Journal of Child and Family Studies*, 16(1), 39–47. <https://doi.org/10.1007/s10826-006-9066-5>.
- Muris, P., Bodden, D., Hale, W., Birmaher, B., & Mayer, B. (2007). *SCARED-NL: handleiding bij de gereviseerde Nederlandse versie van de screen for child anxiety related emotional disorders*. Amsterdam: Boom Test Uitgevers.
- Murray-Close, D., Hoza, B., Hinshaw, S. P., Arnold, L. E., Swanson, J., Jensen, P., & Wells, K. (2010). Developmental processes in peer problems of children with attention-deficit/hyperactivity disorder in the multimodal treatment study of children with ADHD: developmental cascades and vicious cycles. *Development and Psychopathology*, 22, 785–802. <https://doi.org/10.1017/S0954579410000465>.
- Nigg, J. T., Willcutt, E. G., Doyle, A. E., & Sonuga-Barke, E. J. S. (2005). Causal heterogeneity in attention-deficit/hyperactivity disorder: do we need neuropsychologically impaired subtypes? *Biological Psychiatry*, 57(11), 1224–1230. <https://doi.org/10.1016/j.biopsych.2004.08.025>.
- Oosterlaan, J., Scheres, A., Antrop, I., Roeyers, H., & Sergeant, J. A. (2000). *Handleiding bij de vragenlijst voor gedragsproblemen bij kinderen VvGK*. Lisse: Swets Test Publishers.
- Park, J. L., Hudec, K. L., & Johnston, C. (2017). Parental ADHD symptoms and parenting behaviors: a meta-analytic review. *Clinical Psychological Review*, 56, 25–39. <https://doi.org/10.1016/j.cpr.2017.05.003>.
- Pelham, W. E., Gnagy, E. M., Greenslade, K. E., & Milich, R. (1992). Teacher ratings of DSM-III-R symptoms for the disruptive behavior disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, 31(2), 210–218. <https://doi.org/10.1097/00004583-199203000-00006>.
- Pelham, W. E., Meichenbaum, D. L., Smith, B. H., Sibley, M. H., Gnagy, E. M., & Bukstein, O. (2017). Acute effects of MPH on the parent-teen interactions of adolescents with ADHD. *Journal of Attention Disorders*, 21(2), 158–167. <https://doi.org/10.1177/1087054713480833>.
- Polanczyk, G., De Lima, M., Horta, B., Biederman, J., & Rohde, L. (2007). The worldwide prevalence of ADHD: a systematic review and meta-regression analysis. *American Journal of Psychiatry*, 164(6), 942–948. <https://doi.org/10.1176/ajp.2007.164.6.942>.
- Prinz, R., Foster, S., Kent, R., & O'Leary, K. (1979). Multivariate assessment of conflict in distressed and nondistressed mother-adolescent dyads. *Journal of Applied Behavior Analysis*, 12(4), 691–700. <https://doi.org/10.1901/jaba.1979.12-691>.
- Reinherz, H. Z., Paradis, A. D., Giaconia, R. M., Stashwick, C. K., & Fitzmaurice, G. (2003). Childhood and adolescent predictors of major depression in transition to adulthood. *American Journal of Psychiatry*, 160(12), 2142–2147. <https://doi.org/10.1176/appi.ajp.160.12.2141>.
- Robin, A. L., & Foster, S. L. (1989). *Negotiating parent-adolescent conflict. A behavioral-family systems approach*. New York: The Guilford Press.
- Sattler, J. M. (2001). *Assessment of children: cognitive applications* (4th ed.). San Diego, CA: Jerome M. Sattler Publisher.
- Schroeder, V. M., & Kelley, M. L. (2009). Associations between family environment, parenting practices, and executive functioning of children with and without ADHD. *Journal of Child and Family Studies*, 18(2), 227–235. <https://doi.org/10.1007/s10826-008-9223-0>.
- Shaffer, D., Fisher, P., Lucas, C. P., Dulcan, M. K., & Schwab-Stone, M. E. (2000). NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *Journal of the American Academy of Child & Adolescent Psychiatry*, 39(1), 28–38. <https://doi.org/10.1097/00004583-200001000-00014>.
- Sibley, M. H., Campey, M., & Raiker, J. S. (2017). Reexamining ADHD-related self-reporting problems using polynomial regression. *Assessment*, 26(2), 305–314. <https://doi.org/10.1177/1073191117693349>.
- Sibley, M. H., Pelham, W. E., Molina, B. S., Gnagy, E. M., Waschbusch, D. A., Garefino, A. C., Kuriyan, A. B., Babinski, D. E., & Karch, K. M. (2012). Diagnosing ADHD in adolescence. *Journal of Consulting and Clinical Psychology*, 80, 139–150. <https://doi.org/10.1037/a0026577>.
- Sibley, M. H., Pelham, W. E., Molina, B. S. G., Waschbusch, D. A., Gnagy, E., Babinski, D. E., & Biswas, B. (2010). Inconsistent self-report of delinquency by adolescents and young adults with ADHD. *Journal of Abnormal Child Psychology*, 38, 645–656. <https://doi.org/10.1007/s10802-010-9404-3>.
- Sonuga-Barke, E. J. S. (2003). The dual pathway model of AD/HD: an elaboration of neurodevelopmental characteristics. *Neuroscience and Biobehavioral Reviews*, 27(7), 593–604. <https://doi.org/10.1016/j.neubiorev.2003.08.005>.
- Tanaka, A., Raishevich, N., & Scarpa, A. (2010). Family conflict and childhood aggression: the role of child anxiety. *Journal of Interpersonal Violence*, 25(11), 2127–2143. <https://doi.org/10.1177/0886260509354516>.
- Van Eck, K., Finney, S. J., & Evans, S. W. (2010). Parent report of ADHD symptoms of early adolescents: a confirmatory factor analysis of the disruptive behavior disorders scale. *Educational and Psychological Measurement*, 70, 1042–1059. <https://doi.org/10.1177/0013164410378093>.
- Vera, J., Granero, R., & Ezpeleta, L. (2012). Father's and mother's perceptions of parenting styles as mediators of the effects of parental psychopathology on antisocial behavior in outpatient children and adolescents. *Child Psychiatry and Human Development*, 43(3), 376–392. <https://doi.org/10.1007/s10578-011-0272-z>.
- Willcutt, E. G., Doyle, A. E., Nigg, J. T., Faraone, S. V., & Pennington, B. F. (2005). Validity of the executive function theory of attention-deficit/hyperactivity disorder: a meta-analytic review. *Biological Psychiatry*, 57, 1336–1346. <https://doi.org/10.1016/j.biopsych.2005.02.006>.
- Wolraich, M. L., Wibbelsman, C. J., Brown, T. E., Evans, S. W., Gotlieb, E. M., Knight, J. R., Ross, E. C., Shubiner, H. H., Wender, E. H., & Wilens, T. (2005). Attention-deficit/hyperactivity disorder among adolescents: a review of the diagnosis, treatment, and clinical implications. *Pediatrics*, 115(6), 1734–1746. <https://doi.org/10.1542/peds.2004-1959>.
- Yoshimasu, K., Barbaresi, W. J., Colligan, R. C., Voigt, R. G., Killian, J. M., Weaver, A. L., & Katusic, S. K. (2012). Childhood ADHD is strongly associated with a broad range of psychiatric disorders during adolescence: a population-based birth cohort study. *Journal of Child Psychology and Psychiatry*, 53(10), 1036–1043. <https://doi.org/10.1111/j.1469-7610.2012.02567.x>.