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Mother and Adolescent Reports of Interparental Discord among Parents of Adolescents with and without Attention-Deficit Hyperactivity Disorder

Brian T. Wymbs,
University at Buffalo, SUNY

William E. Pelham Jr.,
University at Buffalo, SUNY

Elizabeth M. Gnagy, and
University at Buffalo, SUNY

Brooke S. G. Molina
University of Pittsburgh

Abstract

Evidence is scarce regarding the prevalence of interparental discord in families of adolescents with attention-deficit hyperactivity disorder (ADHD). Using data collected from adolescents with childhood ADHD and comorbid oppositional-defiant disorder (ODD; $n = 46$) or conduct disorder (CD; $n = 23$), with childhood ADHD-only ($n = 26$), and without ADHD ($n = 88$), and their mothers, maternal and adolescent reports of interparental discord were compared. Adolescents with ADHD + CD reported witnessing more frequent and unresolved interparental conflict than adolescents without ADHD and with ADHD-Only. Adolescents with ADHD + CD also indicated more frequent conflict than adolescents with ADHD + ODD. However, differences in conflict resolution were nonsignificant when household income was covaried and maternal ratings of interparental discord did not differ across groups. Findings highlight the potential utility of adolescents with ADHD as informants of interparental relationship quality.

Attention-deficit hyperactivity disorder (ADHD) is one of the most prevalent chronic health conditions among children, with an estimated 4–12% of school age children exhibiting developmentally inappropriate levels of inattention, hyperactivity and impulsivity (American Academy of Pediatrics, 2000). ADHD tends to co-occur with oppositional-defiant disorder or conduct disorder (ODD/CD; MTA Cooperative Group, 1999; Pelham, Gnagy, Greenslade, & Milich, 1992), academic difficulties (DuPaul & Stoner, 2003), and impaired social relationships with peers (Mrug, Hoza, & Gerdes, 2001). Not surprisingly, research suggests that parental functioning appears to be adversely affected in these families. Relative to parents of children without ADHD, parents of children with ADHD experience elevated levels of distress (Fischer, 1990) and are more likely to react negatively in response to child misbehavior (Whalen & Henker, 1999). Of note, parents of children with ADHD are also at-risk for experiencing interparental discord (Johnston & Mash, 2001). Studies have shown that parents of children with ADHD, especially those with comorbid ODD, report lower marital satisfaction, engage in more frequent acts of overt interparental conflict, and use more negative verbalizations during childrearing discussions than parents of children without ADHD (e.g., Befera & Barkley, 1985; Johnston & Behrenz, 1993; Lindahl, 1998).

Curiously, very few studies have assessed the level of discord between parents of adolescents with ADHD. This gap in the literature is worth exploring for several reasons. First,

researchers have shown that negative parent-adolescent interactions mediate the relationship between interparental conflict and adolescent externalizing behavior (e.g., Fauber, Forehand, Thomas, & Wierson, 1990; Harold, Fincham, Osborne, & Conger, 1998). Although this relationship has been established already in studies with pre-adolescents and their parents (e.g., Gonzales, Pitts, Hill, & Roosa, 2000; Mann & MacKenzie, 1996), it is more concerning in families of adolescents considering that adolescents have better developed social-cognitive skills and are more rebellious with their parents than pre-adolescents (Dishion & Kavanagh, 2003; Robin, 1998; Robin & Foster, 1989). Given the heightened challenge of parenting cognitively adept, willful teenagers, parents of adolescents are at greater risk for discord than parents of pre-adolescents. Further, since adolescents with ADHD, especially those with comorbid ODD/CD, engage in more frequent conflictual interactions with their parents than adolescents without ADHD (e.g., Barkley, Anastopoulos, Guevremont, & Fletcher, 1992; Barkley, Fischer, Edelbrock, & Smallish, 1990), parents of adolescents with ADHD appear more likely to experience discord than parents of adolescents without ADHD. Second, adolescents are more likely to involve themselves in interparental discord than pre-adolescents (Cummings, Ballard, & El-Sheikh, 1991; see also Cummings & Davies, 1994), which is worrisome for discordant parents since adolescents with histories of witnessing intense and unresolved interparental conflict respond to recurring discord with heightened emotional and disruptive behavior (Davies & Windle, 2001). Moreover, because aggressive youth exhibit more emotional and behavioral distress in response to recurring interparental conflict than those without conduct problems (Cummings, Ianotti, & Zahn-Waxler, 1985; Klaczynski & Cummings, 1989), adolescents with ADHD and comorbid CD are likely to exhibit more severe disruptive behavior with discordant parents and may require more intensive treatment as a result than adolescents with ADHD whose parents have harmonious relationships. Taken together, for the reasons listed above, research is clearly needed to flesh out the prevalence of discord between parents of adolescents with ADHD.

Interparental Discord among Parents of Adolescents with ADHD

Only two studies have compared the quality of interparental relations in families of adolescents with and without ADHD. Barkley, Fischer, Edelbrock, and Smallish (1991) found that mothers of adolescents with ADHD, both with and without comorbid ODD, reported lower marital satisfaction than mothers of adolescents without ADHD. Somewhat differently, Barkley and colleagues (1992) indicated that only mothers of adolescents with ADHD and comorbid ODD, *not* mothers of adolescents with ADHD-only, experienced lower marital satisfaction than mothers of adolescents without ADHD. Thus, while research highlights how dissatisfying marital relationships are in families of adolescents with ADHD and comorbid ODD, evidence remains mixed regarding whether parents of adolescents with ADHD-only are at any greater risk for experiencing interparental discord than parents of adolescents without ADHD. Studies are needed to clarify the degree to which ADHD-alone portends risk for interparental relationship quality. Further, no studies have evaluated whether parents of adolescents with ADHD and either comorbid ODD or CD differ in level of discord. In view of the fact that oppositional behavior is somewhat developmentally-appropriate throughout adolescence, it appears worthwhile to examine whether parents of adolescents with ADHD and more severe conduct problems (i.e. CD) report greater conflict than parents of adolescents with ADHD and less severe conduct problems (i.e. ODD).

Of note, despite substantial evidence highlighting the utility of assessing properties (i.e., frequency, intensity, degree of resolution) of interparental conflict relative to assessing marital satisfaction (Grych & Fincham, 1990), very few studies have compared interparental conflict properties among families of pre-adolescents with and without ADHD (e.g., Johnston & Behrenz, 1993; Lindahl, 1998) and *no* studies have compared conflict properties reported by parents of adolescents with and without ADHD. This gap in the literature is conspicuous for

three reasons. First, interparental conflict properties are more strongly and reliably linked with child and adolescent behavior problems than marital satisfaction (Grych & Fincham, 1990). Unlike acts of interparental conflict, according to Grych and Fincham (1990), marital satisfaction is, at best, indirectly linked with youth behavior problems. Second, while convincing evidence highlights how children and adolescents witnessing frequent, intense, and unresolved interadult conflict respond immediately with elevated externalizing and internalizing behavior problems (Cummings & Davies, 1994), *no* data indicates that marital dissatisfaction exacerbates youth behavior problems. Third, given research highlighting the potential utility of adding behavioral couples therapy components (e.g., problem-solving skills; Jacobson & Margolin, 1977) to enhance the outcome of treatments for ADHD (e.g., behavioral parent training; Chronis, Chacko, Fabiano, Wymbs, & Pelham, 2004), it seems logical to measure properties of interparental conflict targeted by marital therapy (e.g., resolution of conflict) in this population. In sum, studies are needed to characterize the quality of interparental conflict, not just the level of relationship satisfaction, in families of adolescents with ADHD.

Youth Reports of Interparental Conflict

Studies investigating the link between interparental conflict and youth behavior problems often rely solely on maternal reports of both conflict and behavior problems (Emery, Joyce, & Fincham, 1987). In order to control for potential single-reporter bias, researchers have instead utilized child and adolescent reports of interparental conflict. Impressive evidence suggests that reports of interparental conflict made by non-referred youth account for more of the variance in parent-reported child and adolescent behavior problems than parents' own reports of marital satisfaction or conflict (Cummings, Davies, & Simpson, 1994; Emery & O'Leary, 1982; Grych, Seid, & Fincham, 1992; Wierson, Forehand, & McCombs, 1988).

To our knowledge, only one study has utilized clinic-referred children as informants of the level of discord between their parents. Counts, Nigg, Stawicki, Rappley, & Von Eye (2005) found that children with ADHD-Combined type reported greater interparental conflict than children with ADHD-Primarily Inattentive type and children without ADHD. J. T. Nigg (personal communication, September 14, 2005) specified that children with ADHD-Combined type in their study reported witnessing significantly more frequent, intense, and less frequently resolved interparental conflict than children with ADHD-Inattentive type or without ADHD. These intriguing data highlight the opportunity for clinicians and researchers assessing interparental relationship quality in families of children with ADHD to control for single-reporter bias by using child reports of conflict. Additional investigations are needed to extend Counts et al.'s work by evaluating 1) the utility of youth with ADHD as informants of interparental discord, 2) whether adolescents with ADHD report more interparental conflict than adolescents without ADHD, and 3) whether youth with ADHD and comorbid ODD/CD indicate different levels of interparental conflict than youth with ADHD-Only or without ADHD. Given the dearth of studies assessing conflict between parents of adolescents with ADHD, reports of interparental discord made by adolescents in these families is an intriguing research direction for the field.

One possible issue with using adolescents with ADHD as informants of conflict between their parents is that youth with ADHD are poor evaluators of their own functional impairment (e.g., Hope et al., 1999; Smith, Pelham, Gnagy, Molina, & Evans, 2000), likely due to a "positive illusory" bias (e.g., Hoza, Pelham, Dobbs, Owens, & Pillow, 2002; Owens & Hoza, 2003). Research suggests that children with ADHD are more likely than comparison children to inflate self-competencies (i.e., exhibit positive illusions) across domains (e.g., peer relations, academic performance), especially in areas of greatest deficit, according to parents and teacher reports (Hoza et al., 2004). Interestingly, Gerdes, Hoza, and Pelham (2003) revealed that

children with ADHD also have positive illusions regarding the quality of relations they have with their parents. In sum, youth with ADHD tend to be inaccurate reporters of their own behavior and relations with their parents and peers. However, it is unclear whether these biases extend to reports about the behavior of others. Thus, there may be merit in examining youth report of interparental discord in this population.

In an effort to address gaps in the extant literature discussed above, this study sought to investigate whether parent reports of interparental relationship satisfaction and aggressive behavior during conflicts as well as adolescent reports of interparental conflict properties differed between families of adolescents with ADHD+CD, ADHD+ODD, ADHD-only, and without ADHD. We hypothesized that mothers of adolescents with ADHD, especially those with comorbid ODD/CD, would report lower levels of interparental relationship satisfaction and indicate using more verbal and physical aggression during arguments with their partners than mothers of adolescents without ADHD. Further, adolescents with ADHD, especially those with comorbid ODD/CD, were expected to report witnessing significantly more frequent, more intense, and less often resolved interparental conflict between their parents than adolescents without ADHD. Finally, given the positive illusory bias found among youth with ADHD, we expected parent and adolescent reports of interparental discord to be less strongly correlated for adolescents with ADHD compared to adolescents without ADHD.

Method

Participants

Adolescents with ADHD in this study were selected from a larger pool of adolescent and young adult participants in the Pittsburgh ADHD Longitudinal Study (PALS; for a description, see Faden et al., 2004; Molina, Pelham, Gnagy, Thompson, & Marshal, 2007), a follow-up study of individuals who participated as children in the 1987–1996 Summer Treatment Programs (for a description, see Pelham, Fabiano, Gnagy, Greiner, & Hoza, 2005) conducted at the ADD Clinic at the Western Psychiatric Institute and Clinic.

Briefly, all adolescents with ADHD met diagnostic criteria for ADHD in childhood according to the guidelines in the *Diagnostic and Statistical Manual of Mental Disorders*, 3rd revised or 4th editions (*DSM-III-R* and *DSM-IV*; American Psychiatric Association [APA], 1987, 1994) depending on their year of assessment. Diagnostic information was collected using several sources, including the parent and teacher Disruptive Behavior Disorder Rating Scale (Pelham et al., 1992), and a structured interview with parents consisting of the *DSM-III-R* or *DSM-IV* symptoms of ADHD, ODD, and CD, with supplemental probe questions regarding situational and severity factors. Following *DSM-III-R* or *DSM-IV* guidelines, diagnoses were made if a sufficient number of symptoms were endorsed (considering information from both parents and teachers) to result in diagnosis. Exclusionary criteria for participation in the study included a full scale IQ less than 80, a history of seizures or other neurological problems, and/or a history of pervasive developmental disorder, schizophrenia, or other psychotic or organic mental disorders.

In addition to the adolescents with ADHD, a sample of adolescents and young adults without ADHD were also participants in PALS at time of follow-up. Adolescents without ADHD were recruited through several large pediatric practices in Allegheny County, advertisements in local newspapers and the university hospital staff newsletters, and from the Pittsburgh Public Schools. Telephone screening interviews administered to parents of potential adolescents without ADHD gathered basic demographic characteristics, history of diagnosis and treatment for ADHD and other behavior problems, presence of exclusionary criteria as previously listed for adolescents with ADHD, and a checklist of ADHD symptoms. Individuals who met *DSM-III-R* criteria for ADHD (presence of eight or more symptoms), either currently or historically,

were excluded. In order to ensure similar proportions of youth within each of the demographic characteristics, adolescents without ADHD were matched as a group to adolescents with ADHD based on age (within one year), gender, ethnicity, and parent level of education.

Given the hypotheses of this study, only PALS follow-up data collected from adolescents (age 11–18) and their mothers were analyzed. Data from families of young adults and adolescents no longer living at home were excluded to control for the opportunity of adolescents with and without ADHD to observe interparental conflict. Further, because relatively few fathers of adolescents participated in PALS, only data collected from mothers were included. In sum, 95 adolescents with ADHD (23 ADHD+CD, 46 ADHD+ODD, 26 ADHD-Only) and 88 adolescents without ADHD and their mothers completed all of the dependent measures analyzed as part of this study. Prior to testing the study hypotheses, demographic variables were examined for potential between-group differences using a series of univariate analyses of variance and post-hoc Tukey tests (see Table 1). Race of the adolescents with ADHD+CD, ADHD+ODD, ADHD-only, and without ADHD did not differ. However, adolescents with ADHD-only were significantly older than adolescents with ADHD+ODD and ADHD+CD and there was a trend for adolescent gender to differ across groups. With this in mind, adolescent age and gender were covaried throughout the remaining between-group analyses.

Maternal race, marital status, and education level did not significantly differ across groups. Given a trend for maternal age to differ across groups this variable was covaried for the remainder of the analyses. Further, mothers of adolescents with ADHD+ODD and ADHD+CD reported significantly lower household (mother plus partner) incomes than mothers of adolescents without ADHD. [Income reported by mothers of adolescents with ADHD-only did not significantly differ from the other groups.] However, because some mothers (13 of adolescents without ADHD, 4 with ADHD-only, 9 with ADHD + ODD, 4 with ADHD+CD) were simply unaware of their partner's income or refused to report their family income, the main between-group analyses will be presented with *and* without covarying household income given the amount of missing income data.

Finally, as would be expected, adolescents with childhood ADHD, especially those diagnosed with comorbid ODD/CD in adolescence, were reported by their mothers and teachers to exhibit more inattention, hyperactivity/impulsivity, oppositional/defiance, conduct problems, and internalizing symptoms at follow-up than adolescents without ADHD (see Table 1).

Procedures

The PALS study protocol was approved by the University of Pittsburgh Institutional Review Board. Following collection of written informed consent (assent for minors) from the participants and their parents separately, participants and their parents were interviewed individually by post-baccalaureate research staff. In cases where distance prevented participant travel to the ADD Clinic, information was collected through a combination of mailed and telephone correspondence; home visits were offered as need dictated. Self-report questionnaires were completed either with pencil and paper or computer-assisted versions.

Measures

Adolescent behavior problems—Mothers and teachers completed the Disruptive Behavior Disorder (DBD) Rating Scale (Pelham et al., 1992), a 45-item questionnaire assessing how often (0=Not at All, 1=Just a Little, 2=Pretty Much, and 3=Very Much) the adolescents exhibited DSM-IV symptoms of ADHD, ODD, and CD (APA, 1994). Parent and teacher responses to items assessing inattention, hyperactivity/impulsivity, oppositional-defiance, and conduct problems in adolescence were averaged within domain for youth without childhood ADHD and those with childhood ADHD-Only, ADHD+ODD, and ADHD+CD. Like other

DSM-based ADHD rating scales (e.g., DuPaul et al., 1998; see Pelham, Fabiano, & Massetti, 2005 for a review), the DBD has displayed excellent internal consistency (Cronbach's alphas $> .90$) and reliability (e.g., test-retest r 's $> .50$; concurrent r 's $> .40$ with parent ratings of ADHD on Diagnostic Interview Schedule for Children) for parent and teacher reports of elementary school-aged children (e.g., Pelham et al., 1992) and adolescents (e.g., Molina, Smith, & Pelham, 2001). Furthermore, Molina et al. (2001) demonstrated criterion validity of the DBD (e.g., correlations with adolescent IQ, academic achievement, and delinquency) and Pelham and colleagues (1992) displayed the positive predictive power of its inattention, hyperactivity/impulsivity, and disruptive behavior factors. Finally, Atkins, Pelham and Licht (1985) as well as Power and colleagues (1998) found that parent and teacher ratings on DSM-based ADHD scales formatted exactly like the DBD (for a discussion, see Pelham et al., 2005) predicted diagnostic status gleaned from an independent interview.

Mothers also reported their perceptions of adolescent externalizing and internalizing symptoms on the Child Behavior Checklist (CBCL; Achenbach, 1991a), and teachers reported likewise on the Teacher Report Form (TRF; Achenbach, 1991b). The TRF and CBCL are widely-used, empirically-validated, psychometrically sound measures of child internalizing and externalizing behavior problems (Achenbach, 1991a, 1991b). Recent investigations highlight the stability of CBCL externalizing and internalizing scores in youth with ADHD (Biederman et al., 2001) as well as significant associations between externalizing and internalizing behaviors reported on the TRF and interparental conflict (Jenkins, Simpson, Dunn, Rasbash, & O'Connor, 2005). Higher CBCL and TRF scores indicate a greater amount of externalizing and internalizing symptoms.

Interparental discord—Mothers self-reported their use of aggressive behavior during interparental conflict on the Conflict Tactics Scale (CTS; Straus, 1979). The CTS includes 14 items assessing the frequency of conflict reasoning, verbal aggression, and physical aggression. Only the 5-item verbal (CTS-VA) and physical aggression (CTS-PA) subscales were used in the present study. Higher scores on these scales indicate more frequent use of aggressive behaviors during arguments. The CTS-VA/PA subscales have adequate internal consistency (Cronbach's alphas exceed $.79$) as well as adequate content and construct validity (Straus, 1979). In this study, only mothers with spouses or partners in the last year completed the CTS-VA/PA. Cronbach's alphas for CTS-VA and CTS-PA in this study were $.80$ and $.95$, respectively.

Interparental relationship satisfaction was assessed with the "dyadic satisfaction" subscale of the Dyadic Adjustment Scale (DAS-S; Spanier, 1976). The 9-item DAS-S utilizes a 6-point Likert scale (0=All the time to 5=Never) and focuses on general aspects of the relationship (e.g., "Do you ever regret that you married?"). Spanier (1976) reported strong internal consistency for the full DAS (alpha $=.96$) and the dyadic satisfaction subscale (alpha $=.94$). Recent evidence suggests that the construct validity of the DAS-S is consistent with the full DAS (Hunsley, Pinsent, Lefebvre, James-Tanner, & Vito, 1995). Higher scores on the DAS-S indicate greater dyadic satisfaction. Like the CTS-VA/PA, only mothers with spouses or partners in the last year completed the DAS-S. Cronbach's alpha for DAS-S in the present study was $.92$.

Adolescents reported the presence of interparental conflict using the Children's Perceptions of Interparental Conflict Scale (CPIC; Grych et al., 1992). For this study, only items assessing the frequency (CPIC-F; "I often see my parents arguing"), intensity (CPIC-I; "When my parents have an argument, they yell a lot"), and degree of resolution (CPIC-R; "Even after my parents stop arguing, they stay mad at each other") of interparental conflict were examined. Respondents were asked to choose whether statements were True, Sort of True, or False. Items were scored from 1 to 3, with 3 indicating more negative forms of conflict. The CPIC conflict

properties scales (i.e. frequency, intensity, resolution) have adequate internal consistency (alphas $> .80$), test-retest reliability ($r = .70$), and construct validity (e.g., $r = .39$ between CPIC and CTS) in samples of children (Grych et al., 1992) and adolescents (Bickham & Fiese, 1997). Higher CPIC scores indicate worse interparental functioning. Only data from adolescents whose mothers completed the DAS and CTS were analyzed. Cronbach's alphas for CPIC-F, CPIC-I, and CPIC-R in this study were .83, .84, and .86, respectively.

Results

Between-group differences across interparental discord measures

A series of univariate analyses of covariance (ANCOVAs), controlling for adolescent age, gender, and maternal age, were conducted to test between-group differences for the adolescent and maternal reports of interparental conflict. As discussed earlier, ANCOVAs will be presented with and without covarying income. Given the plan to use ANCOVAs to test each of the three measures of discord for adolescents and mothers, a Bonferroni adjustment was used, ultimately setting the acceptable alpha at .016 for each test.

ANCOVAs covarying adolescent age, gender, and maternal age (but not income) indicated significant between-group differences in adolescent perceptions of interparental conflict frequency and resolution (see Table 2). Post hoc analyses (Tukey comparisons) revealed that adolescents with ADHD+CD reported witnessing significantly more frequent and less often resolved interparental conflict in their households than adolescents without ADHD and with ADHD-Only. Further, adolescents with ADHD+CD indicated that their parents argued more frequently than adolescents with ADHD+ODD. Effect sizes, estimated using Cohen's d (Cohen, 1988), suggested large differences between adolescents with ADHD+CD and the remaining groups on interparental conflict frequency ($d > .90$) and resolution ($d > .70$). Despite effects in the expected direction, especially between adolescents with ADHD+CD and adolescents without ADHD or with ADHD-Only, reports of interparental conflict intensity did not differ significantly across adolescents with and without ADHD (when minding the Bonferroni adjustment).

Conversely, ANCOVAs covarying income in addition to adolescent age, gender, and maternal age only indicated significant between-group differences for adolescent reports of interparental conflict frequency (see Table 2). Post hoc analyses revealed that adolescents with ADHD+CD reported witnessing significantly more frequent interparental conflict than the remaining groups. Unlike above, ANCOVAs covarying income (minding the Bonferroni adjustment) only approached significant between-group differences in conflict resolution. Thus, between-group differences in income appear to explain, at least in part, observable differences in adolescent reports of interparental conflict resolution but not frequency. Lastly, ANCOVAs covarying income did not suggest between group differences in conflict intensity.

ANCOVAs assessing for between-group differences in maternal ratings of interparental discord with or without covarying income did not reveal significant between-group differences in mother-reported relationship satisfaction, verbally aggressive conflict behaviors, or physically aggressive conflict behaviors (see Table 2). Effect sizes for these analyses were mostly small between the comorbid and remaining groups.

Correspondence of adolescent and maternal reports of interparental discord

Similar to methods used by Epstein and colleagues (2004), correspondence of adolescent and maternal reports of interparental discord was assessed by computing bivariate correlations for CPIC-F, CPIC-I, and CPIC-R scores and CTS-VA, CTS-PA, and DAS-S scores. Like above, correlations were considered significant if $p < .01$. Subsequently, correlations between reports

of interparental relationship quality made by mother-adolescent with ADHD dyads were compared to reports made by mother-adolescent without ADHD dyads using Fisher's z' transformations (Cohen & Cohen, 1983). Correlations between dyads were considered significantly different if the derived z -score was greater than or equal to 1.96 (i.e. $p < .05$). Since the magnitude of correlations did not differ appreciably across the ADHD subgroups, they were combined into one group for these analyses in order to properly compare the ADHD dyads with the control dyads.

Correlations for adolescents with and without ADHD and their mothers are provided in Table 3. Eleven of the fifteen reports of the frequency, intensity and resolution of interparental conflict made by adolescents with ADHD were significantly associated with verbal aggression, physical aggression, and interparental relationship satisfaction reported by their mothers. Similarly, 13 of the 15 measures of interparental conflict properties completed by adolescents without ADHD were significantly correlated with their mother's report of interparental relationship quality.

Results of the Fisher's z' transformations indicated only one significant difference in correlations involving reports of interparental relationship quality made by adolescents with and without ADHD and their mothers. Reports of conflict resolution made by adolescents without ADHD were more strongly negatively associated with reports of interparental relationship satisfaction made by their mothers ($r = -.39$, $p < .01$) than reports made by adolescents with ADHD and their mothers ($r = -.12$, $p = .26$; $Z = 1.96$, $p = .05$). Relative to adolescents with ADHD and their mothers, adolescents without ADHD were less likely to report that their parents exhibited worse conflict resolution skills when their mothers also reported lower interparental relationship satisfaction. Otherwise, there were *no* significant differences between adolescents with or without ADHD and their mothers among any of the interparental relationship correlations. Thus, reports of interparental discord made by adolescents with and without ADHD appear to be similarly parallel to their mothers' reports of discord.

Discussion

Despite many studies highlighting the discordant relations between parents of pre-adolescents with ADHD, remarkably few studies have examined the level of interparental discord in families of adolescents with ADHD. Further, research assessing interparental relationship quality among parents of adolescents with ADHD is limited in that no studies have used multiple informants of interparental discord or utilized adolescents as informants, and only ratings of marital *satisfaction*, not marital *conflict*, have been measured. The present study not only addressed these gaps in the literature, but also compared reports of interparental conflict made by adolescents with and without ADHD to their mother's reports of relationship satisfaction and aggressive behavior exhibited during conflict.

As expected, adolescents with ADHD and comorbid conduct problems reported qualitatively worse interparental discord in their families than adolescents without ADHD. Specifically, adolescents with ADHD and CD reported significantly more frequent and less often resolved interparental conflicts than adolescents without ADHD and with ADHD-only. These findings extend the work of Counts and colleagues (2005), who asked pre-adolescents to report on interparental conflict, by using a sample of adolescents with and without ADHD as informants of the differential levels of discord between their parents. Further, our data also highlight that parents of youth with ADHD-Only are not necessarily characterized by discordant marital relations. Rather, our findings indicate that elevated levels of interparental conflict may only be present in families of youth with ADHD *and* comorbid conduct problems. Interestingly, adolescents with ADHD and comorbid CD also reported witnessing more frequent

interparental conflicts than adolescents with ADHD and comorbid ODD. To our knowledge, this is the first study to report differences in interparental functioning between parents of youth with ADHD and either comorbid ODD or CD. These findings raise additional issues about CD comorbidity and its connection with interparental discord in families of youth with ADHD.

First, CD comorbidity is known to be an indicator of additional parent and environmental stressors in families of youth with ADHD (for a review, see Frick, 1994), and it is likely that these factors contribute to the link between interparental discord and adolescents with ADHD and CD. For example, evidence from a host of studies suggests that parents of children and adolescents with ADHD and comorbid CD are more likely to exhibit antisocial behavior/conduct problems (Waschbusch, 2002) and live amid greater socioeconomic hardship (e.g., Schachar & Wachsmuth, 1991) than parents of youth with ADHD-Only or without ADHD. Not surprisingly, parental antisocial behavior and household income are both risk factors for interparental discord, and ultimately, divorce (e.g., Lahey et al., 1988; for reviews, see Emery, 1999; Karney & Bradbury, 1995). With this in mind, it is worth noting that analyses accounting for income in this study eliminated significant between-group differences in interparental conflict resolution. Thus, variables other than the severity of youth disruptive behavior household income in our study likely explain at least some of the association between interparental discord and presence of ADHD and CD in their teenage offspring.

Second, youth with ADHD and comorbid CD tend to exhibit more severe inattentive and hyperactive/impulsive behavior than youth with ADHD-only or without ADHD (for a review, see Waschbusch, 2002). In fact, mothers and teachers of adolescents with ADHD and comorbid CD in our sample not only reported that these children exhibited more conduct problems than the other adolescents, but also indicated that they were more hyperactive/impulsive than the adolescents in the other subgroups (including those with ADHD and comorbid ODD). Given this, adolescents with ADHD and CD might report witnessing more frequent and unresolved interparental conflicts because their own conduct problems *and* overactivity in response to observing interadult discord (Davies & Windle, 2001; see also Pelham et al., 1991) actually worsens already difficult situations, further reducing the likelihood that their parents can resolve their own disagreements. Indeed, youth with clinically significant externalizing behavior problems are more likely to respond with heightened sensitivity and, consequently, greater emotional and behavioral distress in response to witnessing recurring interparental conflict than youth without externalizing behavior problems (Cummings et al., 1985; Klaczynski & Cummings, 1989).

In sum, additional work is needed to determine the degree to which child, parent, and environmental risk factors, as well as shared mechanisms (e.g., parent-adolescent relations), explain the association between interparental conflict and CD comorbidity in families of adolescents with ADHD. Addressing this very issue, we are currently conducting studies to evaluate the degree to which youth behavior, relative to parent externalizing (e.g., ADHD) and internalizing (e.g., depression) problems as well as environmental variables (e.g., socioeconomic status), predicts interparental discord (Wymbs et al., 2006) and divorce (Wymbs, Pelham, Molina, Gnagy, & Wilson, 2007) in families of youth with and without ADHD. It is expected that results from these studies will contribute significantly to our understanding of the causal pathways between interparental and youth behavior in families of children and adolescents with ADHD.

Unexpectedly, we did *not* find that ADHD worsened correspondence between mother and adolescent reports of interparental discord. Correspondence between reports of interparental discord made by youth with *and* without ADHD and their mothers were both modest, with correlations between .20 and .40. These cross-informant ratings are consistent with associations between adolescent and mother ratings of interparental conflict in non-referred families ($r=$.

43; Epstein, Renk, Duhig, Bosco, & Phares, 2004) and interrater reliability reported between self and informant reports of interpersonal problems ($r_s=.20-.42$; Foltz, Morse, & Barber, 1999; Hill, Zrull, & McIntire, 1998). Thus, our results appear to demonstrate the potential utility of employing adolescents with ADHD as informants of the level of conflict between their parents. Additional studies requiring adolescents with ADHD and their parents to rate interparental relationship quality using the same measures are warranted in order to confirm the validity of their reports.

Of note, unlike the group differences found in adolescent reports of interparental conflict frequency and resolution, differences were not found when maternal reports of conflict behavior and relationship satisfaction were analyzed. Despite observing effects in the expected direction, mothers of adolescents with ADHD and comorbid CD were not significantly more likely to report using verbally and physically aggressive behaviors than mothers of adolescents with ADHD-Only or without ADHD. These null findings mirror the nonsignificant between-group differences in ratings of conflict intensity made by adolescents with and without ADHD. As such, data gathered from multiple informants in our study suggest that arguments between parents of adolescents with or without ADHD are similar in their intensity and potential to include acts of aggression. Nonetheless, these results were unexpected given prior studies finding that parents of children with ADHD and comorbid ODD utilize more negative verbalizations during arguments than parents of children without ADHD or with ADHD-Only (Johnston & Behrenz, 1993; Lindahl, 1998). Perhaps the absence of significant between-group differences in our study resulted from studying the quality of interparental relations among intact couples *with adolescents*. Since marital violence is a significant risk factor for divorce (e.g., Rogge & Bradbury, 1999), we speculate that aggressive relationships may end before offspring reach adolescence. If so, it is likely that rates of verbal and physical aggression did not differ between groups in our study because of low base rates of these behaviors in couples whose relationships remained intact. Additional studies are needed to investigate whether rates of marital violence differ among parent couples of youth with and without ADHD as a function of the age of their children (i.e. length of their relationship).

Our findings indicating nonsignificant between-group differences in maternal reports of relationship satisfaction are inconsistent with Barkley et al (1992), who found that parents of adolescents with ADHD and ODD are less maritally-satisfied than parents of adolescents without ADHD or with ADHD-only. However, our results are in agreement with evidence summarized by marital conflict researchers who contend that *acts of interparental conflict* are more reliably present among families of children and adolescents with externalizing behavior problems than is *relationship dissatisfaction* (Grych & Fincham, 1990). Again, parents of disruptive children are not consistently dissatisfied with their relationship because feelings of dissatisfaction are, at best, indirectly related to child misbehavior while properties of interparental conflict are directly associated with child behavior problems (Cummings & Davies, 1994). Taken together, given the inconsistent performance of marital satisfaction measures, clinicians and researchers interested in sensitively assessing the level of discord between parents of children or adolescents with ADHD should not only gather reports of interparental relationship quality from multiple informants, but should also prioritize measures assessing conflict (e.g., frequency, intensity, and resolution) ahead of questionnaires assessing satisfaction.

Notably, results of the present study have treatment implications for adolescents with ADHD and CD. First, our data highlighting the prevalence of frequent and unresolved interparental conflicts in families of adolescents with ADHD and comorbid CD should concern clinicians using traditional behavioral parent training (BPT) to treat youth with ADHD and CD (Brestan & Eyberg, 1998; Pelham, Wheeler, & Chronis, 1998). Since evidence indicates that negative interparental relationship quality commonly predicts poor long-term child response to BPT

(e.g., Reid, Webster-Stratton, & Hammond, 2003), clinicians may need to include adjunct interventions focused on interparental discord to make BPT effective with disruptive youth (e.g., Dadds, Schwartz, & Sanders, 1987; see also Chronis et al., 2004). Second, in the event that the negative response of adolescents with ADHD and CD to repeatedly witnessing interparental discord actually makes the problem more difficult for their parents to resolve, these adolescents may benefit from treatment focused on enhancing their coping strategies and/or desensitizing them to problem-solving strategies used by their parents. Indeed, in another study of a separate follow-up sample of adolescents with childhood ADHD, we found fewer adaptive coping skills (behavioral and cognitive) among the adolescents with ADHD than demographically similar adolescents without ADHD (Molina, Marshal, Pelham, & Wirth, 2005). Perhaps interventions for youth experiencing parental divorce (e.g., Pedro-Carroll, 1997), which commonly include treatment modules teaching children skills on how to handle observing their parents argue, would effectively reduce negative responses of adolescents with ADHD and CD. Research examining the efficacy of desensitization treatment and coping skills enhancement for adolescents with ADHD responding adversely to interparental discord is a novel and important future direction for the field.

Conclusions drawn from this study are limited in some respects. First, fathers were excluded from this study. Thus, results should not necessarily be interpreted to reflect paternal perceptions of interparental functioning. Second, because the sample includes only clinic-referred adolescents with ADHD and their mothers, caution is warranted when attempting to generalize the results to the entire population of youth with ADHD and their families. Third, because mothers and adolescents reported on the quality of interparental relations using different measures, the strength of correlations between adolescent and maternal reports of interparental discord may have been limited. Fourth, as mentioned earlier, only analyses withholding household income as a covariate found significant between-group differences in adolescent reports of interparental conflict resolution. Given that covarying income resulted in nonsignificant differences in conflict resolution, it is recommended that readers interpret the significant differences reported for this variable, in part, as a consequence of greater overall adversity faced by families of adolescents with ADHD and comorbid CD, rather than as a consequence of more severe adolescent behavior-alone. Lastly, because this study included both married and unmarried parents, it is possible that the levels of intense, unresolved, or aggressive conflict were inflated, especially in families of adolescents with ADHD and ODD/CD. However, because analyses only included data collected from adolescents living at home with at least one parent in contact with the other parent, we assert that these findings accurately reflect the level of interparental discord occurring between the relevant adults in the lives of adolescents with and without ADHD and comorbid ODD/CD.

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References

- Achenbach, T.M. Manual for the Child Behavior Checklist 4–18 and 1991 Profile. Burlington: University of Vermont, Department of Psychiatry; 1991a.

- Achenbach, TM. Manual for the Teacher Report Form 4–18 and 1991 Profile. Burlington: University of Vermont, Department of Psychiatry; 1991b.
- American Academy of Pediatrics. Clinical practice guideline: Diagnosis and evaluation of the child with attention-deficit/hyperactivity disorder. *Pediatrics* 2000;105:1158–1170. [PubMed: 10836893]
- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Vol. 3 Revised. Washington, DC: Author; 1987.
- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Vol. 4. Washington, DC: Author; 1994.
- Atkins MS, Pelham WE, Licht MH. A comparison of objective classroom measures and teacher ratings of attention deficit disorder. *Journal of Abnormal Child Psychology* 1985;13:155–167. [PubMed: 3973249]
- Barkley RA, Anastopoulos AD, Guevremont DC, Fletcher KE. Adolescents with attention deficit hyperactivity disorder: Mother-adolescent interactions, family beliefs and conflicts, maternal psychopathology. *Journal of Abnormal Child Psychology* 1992;20:263–287. [PubMed: 1619134]
- Barkley RA, Fischer M, Edelbrock C, Smallish L. The adolescent outcome of hyperactive children diagnosed by research criteria: I. An 8-year prospective follow-up study. *Journal of the American Academy of Child and Adolescent Psychiatry* 1990;29:546–557. [PubMed: 2387789]
- Barkley RA, Fischer M, Edelbrock C, Smallish L. The adolescent outcome of hyperactive children diagnosed by research criteria III. Mother-child interactions, family conflicts and maternal psychopathology. *Journal of Child Psychology and Psychiatry* 1991;32:233–255. [PubMed: 2033106]
- Befera MS, Barkley RA. Hyperactive and normal girls and boys: Mother-child interaction, parent psychiatric status and child psychopathology. *Journal of Child Psychology and Psychiatry* 1985;26:439–452. [PubMed: 4008547]
- Bickham NL, Fiese BH. Extension of the children's perceptions of interparental conflict scale for use with late adolescents. *Journal of Family Psychology* 1997;11:246–250.
- Biederman J, Monuteaux MC, Greene RW, Braaten E, Doyle AE, Faraone SV. Long-term stability of the child behavior checklist in a clinical sample of youth with attention-deficit hyperactivity disorder. *Journal of Clinical Child Psychology* 2001;30:492–502. [PubMed: 11708237]
- Brestan EV, Eyberg SM. Effective psychosocial treatments of conduct-disordered children and adolescents: 29 years, 82 studies, 5,272 kids. *Journal of Clinical Child Psychology* 1998;27:180–189. [PubMed: 9648035]
- Chronis AM, Chacko A, Fabiano GA, Wymbs BT, Pelham WE. Enhancements to the behavioral parent training paradigm for families of children with ADHD: Review and future directions. *Clinical Child and Family Psychology Review* 2004;7:1–27. [PubMed: 15119686]
- Cohen, J. Statistical Power Analyses for the Behavioral Sciences. Vol. 2. Hillsdale, NJ: Lawrence Erlbaum Associates; 1988.
- Cohen, J.; Cohen, P. Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences. Vol. 2. Hillsdale, NJ: Lawrence Erlbaum Associates; 1983.
- Counts CA, Nigg JT, Stawicki JA, Rappley MD, Von Eye A. Family adversity in DSM-IV ADHD combined and inattentive subtypes and associated disruptive behavior problems. *Journal of the American Academy of Child and Adolescent Psychiatry* 2005;44:690–698. [PubMed: 15968238]
- Cummings EM, Ballard M, El-Sheikh M. Responses of children and adolescents to interadult anger as a function of gender, age, and mode of expression. *Merrill-Palmer Quarterly* 1991;37:543–560.
- Cummings, EM.; Davies, PT. Children and Marital Conflict: The Impact of Family Dispute and Resolution. New York: The Guilford Press; 1994.
- Cummings EM, Davies PT, Simpson KS. Marital conflict, gender, and children's appraisals and coping efficacy as mediators of child adjustment. *Journal of Family Psychology* 1994;8:141–149.
- Cummings EM, Ianotti RJ, Zahn-Waxler C. Influence of conflict between adults on the emotions and aggression of young children. *Developmental Psychology* 1985;21:495–507.
- Dadds MR, Schwartz S, Sanders MR. Marital discord and treatment outcome in behavioral treatment of child behavior problems. *Journal of Consulting and Clinical Psychology* 1987;55:396–403. [PubMed: 3597955]

- Davies PT, Windle M. Interparental discord and adolescent adjustment trajectories: The potentiating and protective role of intrapersonal attributes. *Child Development* 2001;72:1163–1178. [PubMed: 11480940]
- Dishion, TJ.; Kavanagh, K. *Intervening in Adolescent Problem Behavior: A Family Centered Approach*. New York: The Guilford Press; 2003.
- DuPaul GJ, Power TJ, McGoeys KE, Ikeda MJ, Anastopoulos AD. Reliability and validity of parent and teacher ratings of attention-deficit/hyperactivity disorder symptoms. *Journal of Psychological Assessment* 1998;16:55–68.
- DuPaul, GJ.; Stoner, G. *ADHD in the Schools: Assessment and Intervention Strategies*. Vol. 2. New York: The Guilford Press; 2003.
- Emery, RE. *Marriage, Divorce, and Children's Adjustment*. Thousand Oaks: Sage Publications, Inc; 1999.
- Emery, RE.; Joyce, SA.; Fincham, FD. Assessment of child and marital problems. In: O'Leary, KD., editor. *Assessment of Marital Discord: An Integration for Research and Clinical Practice*. Hillsdale, NJ: Lawrence Erlbaum Associates; 1987. p. 223-261.
- Emery RE, O'Leary KD. Children's perceptions of marital discord and behavior problems of boys and girls. *Journal of Abnormal Child Psychology* 1982;10:11–24. [PubMed: 7108050]
- Epstein MK, Renk K, Duhig AM, Bosco GL, Phares V. Interparental conflict, adolescent behavioral problems, and adolescent competence: Convergent and discriminant validity. *Educational and Psychological Measurement* 2004;64:475–495.
- Faden VB, Day NL, Windle M, Windle R, Grube JW, Molina BSG, Pelham WE Jr, Gnagy EM, Wilson TK, Jackson KM, Sher KJ. Collecting longitudinal data through childhood, adolescence, and young adulthood: Methodological challenges. *Alcoholism: Clinical and Experimental Research* 2004;28:330–340.
- Fauber R, Forehand R, Thomas AM, Wiersma M. A mediational model of the impact of marital conflict on adolescent adjustment in intact and divorced families: The role of disrupted parenting. *Child Development* 1990;61:1112–1123. [PubMed: 2209181]
- Fischer M. Parenting stress and the child with attention deficit hyperactivity disorder. *Journal of Clinical Child Psychology* 1990;19:337–346.
- Foltz C, Morse JQ, Barber JP. Self and observer reports of interpersonal problems in couples. *Journal of Clinical Psychology* 1999;55:27–37. [PubMed: 10100829]
- Frick, PJ. Family dysfunction and the disruptive behavior disorders: A review of recent empirical findings. In: Ollendick, TH.; Prinz, RJ., editors. *Advances in Clinical Child Psychology*. Vol. 16. New York: Plenum Press; 1994.
- Gerdes AC, Hoza B, Pelham WE. Attention deficit/hyperactivity disorder boys' relationships with their mothers and fathers: Child, mother, and father perceptions. *Development and Psychopathology* 2003;15:363–382. [PubMed: 12931833]
- Gonzales NA, Pitts SC, Hill NE, Roosa MW. A mediational model of the impact of interparental conflict on child adjustment in a multi-ethnic, low-income sample. *Journal of Family Psychology* 2000;14:365–379. [PubMed: 11025930]
- Grych JH, Fincham FD. Marital conflict and children's adjustment: A cognitive-contextual framework. *Psychological Bulletin* 1990;108:267–290. [PubMed: 2236384]
- Grych JH, Seid M, Fincham FD. Assessing marital conflict from the child's perspective: The children's perception of interparental conflict scale. *Child Development* 1992;63:558–572. [PubMed: 1600822]
- Harold GT, Fincham FD, Osborne LN, Conger RD. Mom and dad are at it again: Adolescent perceptions of marital conflict and adolescent psychological distress. *Developmental Psychology* 1997;33:333–350. [PubMed: 9147841]
- Hill RW, Zrull MC, McIntire K. Differences between self- and peer ratings of interpersonal problems. *Assessment* 1998;5:67–83. [PubMed: 9458343]
- Hope TL, Adams C, Reynolds L, Powers D, Perez RAN, Kelly ML. Parent vs. self-report: Contributions toward diagnosis of adolescent psychopathology. *Journal of Psychopathology and Behavioral Assessment* 1999;21:349–363.
- Hoza B, Gerdes AC, Hinshaw SP, Arnold LE, Pelham WE, Molina BSG, Abikoff HB, Epstein JN, Greenhill LL, Hechtman L, Odbert C, Swanson JM, Wigal T. Self-perceptions of competence in

- children with ADHD and comparison children. *Journal of Consulting and Clinical Psychology* 2004;72:382–391. [PubMed: 15279522]
- Hoza B, Pelham WE, Dobbs J, Owens JS, Pillow DR. Do boys with attention-deficit/hyperactivity disorder have positive illusory self-concepts? *Journal of Abnormal Psychology* 2002;111:268–278. [PubMed: 12004833]
- Hunsley J, Pinsent C, Lefebvre M, James-Tanner S, Vito D. Construct validity of the short forms of the dyadic adjustment scale. *Family Relations* 1995;44:231–237.
- Jacobson, NS.; Margolin, G. *Marital Therapy: Strategies Based on Social Learning and Behavior Exchange Principles*. New York: Brunner/Mazel; 1979.
- Jenkins J, Simpson A, Dunn J, Rasbash J, O'Connor TG. Mutual influence of marital conflict and children's behavior problems: Shared and nonshared family risks. *Child Development* 2005;76:24–39. [PubMed: 15693755]
- Johnston C, Behrenz K. Childrearing discussions in families of nonproblem children and ADHD children with higher and lower levels of aggressive-defiant behavior. *Canadian Journal of School Psychology* 1993;9:53–65.
- Johnston C, Mash EJ. Families of children with Attention-Deficit/Hyperactivity Disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review* 2001;4:183–207. [PubMed: 11783738]
- Karney BR, Bradbury TN. The longitudinal course of marital quality and stability: A review of theory, method, and research. *Psychological Bulletin* 1995;118:3–34. [PubMed: 7644604]
- Klaczynski PA, Cummings EM. Responding to anger in aggressive and nonaggressive boys: A research note. *Journal of Child Psychology and Psychiatry* 1989;30:309–314. [PubMed: 2708468]
- Lahey BB, Hartdagen SE, Frick PJ, McBurnett K, Connor R, Hynd GW. Conduct disorder: Parsing the confounded relation to parental divorce and antisocial personality. *Journal of Abnormal Psychology* 1988;97:334–337. [PubMed: 3192827]
- Lindahl KM. Family process variables and children's disruptive behavior problems. *Journal of Family Psychology* 1998;12:420–436.
- Mann BJ, MacKenzie EP. Pathways among marital functioning, parental behaviors, and child behavior problems in school-age boys. *Journal of Clinical Child Psychology* 1996;25:183–191.
- Molina BSG, Marshal MP, Pelham WE, Wirth RJ. Coping skills and parent support mediate the association between childhood attention-deficit/hyperactivity disorder and adolescent cigarette use. *Journal of Pediatric Psychology* 2005;30:345–357. [PubMed: 15863431]
- Molina BSG, Pelham WE Jr, Gnagy EM, Thompson AL, Marshal MP. ADHD risk for heavy drinking and alcohol use disorder is age-specific in adolescence and young adulthood. *Alcoholism: Experimental and Clinical Research* 2007;31:1–12.
- Molina BSG, Smith BH, Pelham WE. Factor structure and criterion validity of secondary school teacher ratings of ADHD and ODD. *Journal of Abnormal Child Psychology* 2001;29:71–82. [PubMed: 11316336]
- Mrug S, Hoza B, Gerdes AC. Children with attention-deficit/hyperactivity disorder: Peer relationships and peer-oriented interventions. *New Directions for Child and Adolescent Development* 2001;91:51–77. [PubMed: 11280014]
- MTA Cooperative Group. A 14-month randomized clinical trial of treatment strategies for attention-deficit/hyperactivity disorder. *Archives of General Psychiatry* 1999;56:1073–1086. [PubMed: 10591283]
- Owens JS, Hoza B. The role of inattention and hyperactivity/impulsivity in the positive illusory bias. *Journal of Consulting and Clinical Psychology* 2003;71:680–691. [PubMed: 12924673]
- Pedro-Carroll, J. The Children of Divorce Intervention Program: Fostering resilient outcomes for school-aged children. In: Albee, GW.; Gullotta, TP., editors. *Primary Prevention Works*. Thousand Oaks, CA, US: Sage Publications, Inc; 1997. p. 213–238.
- Pelham, WE.; Fabiano, GA.; Gnagy, EM.; Greiner, AR.; Hoza, B. The role of summer treatment programs in the context of comprehensive psychosocial treatment for attention-deficit/hyperactivity disorder. In: Hibbs, E.; Jensen, P., editors. *Psychosocial Treatments for Child and Adolescent Disorders: Empirically Based Strategies for Clinical Practice*. Vol. 2. Washington, DC: APA; 2005.

- Pelham WE, Fabiano GA, Massetti GM. Evidence-based assessment of attention deficit hyperactivity disorder in children and adolescents. *Journal of Clinical Child and Adolescent Psychology* 2005;34:449–476. [PubMed: 16026214]
- Pelham WE, Gnagy EM, Greenslade KE, Milich R. Teacher ratings of DSM-III-R symptoms for the disruptive behavior disorders. *Journal of the American Academy of Child and Adolescent Psychiatry* 1992;31:210–218. [PubMed: 1564021]
- Pelham WE, Milich R, Cummings EM, Murphy DA, Schaughency EA, Greiner AR. Effects of background anger, provocation, and methylphenidate on emotional arousal and aggressive responding in attention-deficit hyperactivity disorder boys with and without concurrent aggressiveness. *Journal of Abnormal Child Psychology* 1991;19:407–426. [PubMed: 1757710]
- Pelham WE, Wheeler T, Chronis A. Empirically supported psychosocial treatments for ADHD. *Journal of Clinical Child Psychology* 1998;27:190–205. [PubMed: 9648036]
- Power TJ, Andrews TJ, Eiraldi RB, Doherty BJ, Ikeda MJ, DuPaul GJ, Landau S. Evaluating attention deficit hyperactivity disorder using multiple informants: The incremental utility of combining teacher with parent reports. *Psychological Assessment* 1998;10:250–260.
- Reid MJ, Webster-Stratton C, Hammond M. Follow-up of children who received the incredible years intervention for oppositional-defiant disorder: Maintenance and prediction of 2-year outcome. *Behavior Therapy* 2003;34:471–491.
- Robin, AL. ADHD in Adolescents: Diagnosis and Treatment. New York: The Guilford Press; 1998.
- Robin, AL.; Foster, SL. Negotiating Parent-Adolescent Conflict: A Behavioral-Family Systems Approach. New York: The Guilford Press; 1989.
- Rogge RD, Bradbury TN. Till violence does us part: The differing roles of communication and aggression in predicting adverse marital outcomes. *Journal of Consulting and Clinical Psychology* 1999;67:340–351. [PubMed: 10369054]
- Schachar R, Wachsmuth R. Family dysfunction and psychosocial adversity: Comparison of attention deficit disorder, conduct disorder, normal and clinical controls. *Canadian Journal of Behavioural Science* 1991;23:332–348.
- Smith BH, Pelham WE, Gnagy EM, Molina BSG, Evans S. The reliability, validity, and unique contributions of self-report by adolescents receiving treatment for ADHD. *Journal of Consulting and Clinical Psychology* 2000;68:489–499. [PubMed: 10883565]
- Spanier GB. Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family* 1976;38:15–28.
- Straus MA. Measuring intrafamily conflict and violence: The Conflict Tactics (CT) Scales. *Journal of Marriage and the Family* 1979:75–88.
- Waschbusch DA. A meta-analytic examination of comorbid hyperactive-impulsive-attention problems and conduct problems. *Psychological Bulletin* 2002;128:118–150. [PubMed: 11843545]
- Whalen, CK.; Henker, B. The child with Attention-Deficit/Hyperactivity Disorder in family contexts. In: Quay, HC.; Hogan, AE., editors. *Handbook of Disruptive Behavior Disorders*. New York: Kluwer Academic/Plenum Publishers; 1999. p. 139-155.
- Wierson M, Forehand R, McCombs A. The relationship of early adolescent functioning to parent-reported and adolescent-perceived interparental conflict. *Journal of Abnormal Child Psychology* 1988;16:707–718. [PubMed: 3216078]
- Wymbs, BT.; Pelham, WE.; Gnagy, EM.; Buchheit, JM.; Maiorana, N.; Emerson, JM.; Kinsey, YC. Does Disruptive Child Behavior Cause Interparental Discord? An Experimental Manipulation. Poster presented at the 40th annual conference of the Association for Behavioral and Cognitive Therapies; Chicago, IL. 2006 Nov.
- Wymbs BT, Pelham WE, Molina BSG, Gnagy EM, Wilson T. Trajectory and predictors of divorce among parents of adolescents and young adults with attention-deficit hyperactivity disorder. 2007 Manuscript under review.

Biography

BRIAN T. WYMBS, MA, is a Doctoral Candidate in Clinical Psychology at the University at Buffalo, SUNY. His current interests include examining the interplay between disruptive child

behavior and marital relations in families of youth with ADHD. He is currently completing his clinical internship at Western Psychiatric Institute and Clinic. WILLIAM E. PELHAM, JR., PhD, is a Distinguished Professor of Psychology, Psychiatry and Pediatrics at the University at Buffalo and Director of the Center for Children and Families. His current interests include studying the comparative and combined effects of behavior modification and stimulant medication for children with ADHD. ELIZABETH M. GNAGY, BS, is a Senior Research Support Specialist coordinating data collection for treatment outcome research conducted by the Center for Children and Families at the University at Buffalo. BROOKE S. G. MOLINA, PhD, is an Associate Professor of Psychiatry and Psychology at the University of Pittsburgh. She directs the Youth and Family Research Program where studies focus on the longitudinal course and treatment of disruptive behaviors (especially ADHD) and substance abuse between childhood and early adulthood. Address: Brian T. Wymbs, Western Psychiatric Institute and Clinic, 3811 O'Hara St., Pittsburgh, PA 15232; e-mail: wymbsbt@upmc.edu

Table 1

Sample Characteristics

	Control N=88	ADHD-Only N=26	ADHD+ODD N=46	ADHD+CD N=23	Significance
Demographic Matching Variables	M (SD) or %	M (SD) or %	M (SD) or %	M (SD) or %	
Adolescent Age	14.42 (1.76)	15.27 (1.25)	14.20 (1.86)	14.13 (1.69)	$F(3, 179) = 2.59, p = .05; 2 > 4$
% Male Adolescents	89.77	96.15	82.61	100	$\chi^2(182) = 6.54, p = .09$
% Caucasian Adolescents	80.68	96	78.26	91.3	$\chi^2(182) = 15.68, p = .40$
Highest Maternal Education Completed ^a	7.10 (1.83)	6.31 (1.78)	6.98 (1.50)	7.05 (1.62)	$F(3, 179) = 1.46, p = .23$
% High School Graduate or GED	12.5	26.9	4.3	4.5	--
% Partial College or Specialized Training	25	23	30.4	31.8	--
% Associates or 2-Year Degree	6.8	7.7	19.6	9.1	--
% College or University Graduate	23.9	38.5	28.3	36.4	--
% Graduate Professional Training	31.8	3.8	15.2	18.2	--
Other Demographic Variables	M (SD) or %	M (SD) or %	M (SD) or %	M (SD) or %	
Maternal Age	44.14 (5.20)	41.38 (4.96)	44.15 (6.41)	42.04 (5.43)	$F(3, 179) = 2.40, p = .07$
% Caucasian Mothers	86.36	96.15	93.48	91.3	$\chi^2(182) = 7.14, p = .62$
% Married	93.18	92.31	82.61	82.61	$\chi^2(182) = 4.77, p = .19$
Mean Total Family Income ^b	\$86,198	\$77,892	\$56,592	\$51,679	$F(3, 170) = 5.40, p < .001; 1 > 3, 4$
% < 21K	6.2	4	8.7	9.1	--
% 21K–40K	8.6	24	17.4	18.2	--
% 41K–60K	19.8	24	39.1	45.4	--
% 61K–80K	19.7	16	15.2	22.8	--
% 81K–100K	16.1	4	13.1	0	--
% > 100K	29.6	28	6.5	4.5	--
Adolescent Behavior	M (SD)	M (SD)	M (SD)	M (SD)	
Teacher DBD Inattention ^c	0.43 (.58)	0.98 (.71)	1.60 (.79)	2.02 (.92)	$F(3, 179) = 43.00, p < .001; 1 < 2, 3, 4; 2 < 3, 4$
Teacher DBD Hyperactivity/Impulsivity ^c	0.21 (.37)	0.52 (.53)	0.97 (.81)	1.48 (.96)	$F(3, 179) = 29.54, p < .001; 1 < 3, 4; 2 < 4; 3 < 4$
Teacher DBD Oppositional/Defiant ^c	0.10 (.23)	0.40 (.38)	1.12 (.77)	1.34 (.88)	$F(3, 179) = 48.95, p < .001; 1 < 3, 4; 2 < 3, 4$
Teacher DBD Conduct Disorder ^c	0.01 (.02)	0.00 (.00)	0.09 (.13)	0.27 (.29)	$F(3, 179) = 27.26, p < .001; 1 < 3, 4; 2 < 3, 4; 3 < 4$

	Control N=88	ADHD-Only N=26	ADHD+ODD N=46	ADHD+CD N=23	Significance
TRF Externalizing T-Score ^d	45.41 (7.19)	51.75 (9.00)	58.66 (10.33)	63.16 (10.19)	$F(3, 179) = 33.93, p < .001; 1 < 2, 3, 4; 2 < 3, 4$
TRF Internalizing T-Score ^d	46.71 (8.15)	50.38 (10.94)	58.18 (9.61)	56.84 (8.51)	$F(3, 179) = 17.44, p < .001; 1 < 3, 4; 2 < 3$
Mother DBD Inattention ^c	0.37 (.43)	1.21 (.82)	1.82 (.73)	2.00 (.81)	$F(3, 179) = 74.38, p < .001; 1 < 2, 3, 4; 2 < 3, 4$
Mother DBD Hyperactivity/Impulsivity ^c	0.17 (.18)	0.65 (.56)	1.25 (.72)	1.61 (.76)	$F(3, 179) = 73.82, p < .001; 1 < 2, 3, 4; 2 < 3, 4; 3 < 4$
Mother DBD Oppositional/Defiant ^c	0.36 (.33)	0.67 (.40)	1.44 (.57)	1.76 (.81)	$F(3, 179) = 80.93, p < .001; 1 < 2, 3, 4; 2 < 3, 4$
Mother DBD Conduct Disorder ^c	0.02 (.05)	0.07 (.09)	0.14 (.13)	0.51 (.36)	$F(3, 179) = 67.63, p < .001; 1 < 3, 4; 2 < 4; 3 < 4$
CBCL Externalizing T-Score ^d	42.55 (8.12)	52.71 (8.56)	60.56 (9.86)	67.19 (7.78)	$F(3, 179) = 66.57, p < .001; 1 < 2, 3, 4; 2 < 3, 4; 3 < 4$
CBCL Internalizing T-Score ^d	44.06 (8.61)	50.50 (9.86)	53.68 (11.18)	58.52 (10.16)	$F(3, 179) = 16.82, p < .001; 1 < 2, 3, 4; 2 < 4$

Note. All data collected during "Wave 1" of the Pittsburgh ADHD Longitudinal Study when participants were 11–18 years of age. 1 = Control; 2 = ADHD-Only; 3 = ADHD+ODD; 4 = ADHD+CD; DBD = Disruptive Behavior Disorder Rating Scale; TRF = Teacher Report Form; CBCL = Child Behavior Checklist.

^a Response Scale for maternal education ranged from 1 (< 7th grade education) to 9 (Graduate professional training). 4 = High school graduate or GED; 5 = Specialized training; 6 = Partial college; 7 = Associates or 2-year degree; 8 = Standard college or university education.

^b Household income data was partially or completely missing from 13 families of adolescents without ADHD, 4 families of adolescents with ADHD-only, 9 families of adolescents with ADHD + ODD, and 4 families of adolescents with ADHD+CD.

^c Average score assigned to each DSM-IV symptom endorsed on the DBD (0 = Not at all, 1 = Just a little, 2 = Pretty much, 3 = Very much; Pelham et al., 1992).

^d Average CBCL/TRF score is 50, with a standard deviation of 10.

Table 2

ANCOVAs Examining Adolescent and Mother Reports of Interparental Discord

	Control M (SD)	ADHD-Only M (SD)	ADHD+ODD M (SD)	ADHD+CD M (SD)	Significance
Adolescent Report					
CPIC-F ^a	9.61 (2.80)	9.62 (2.74)	9.67 (2.88)	12.26 (3.95)	$F(3, 179) = 5.74, p = .001; 4 > 1, 2, 3$
CPIC-F ^b	9.68 (2.88)	9.76 (2.70)	9.67 (2.88)	12.14 (3.99)	$F(3, 170) = 4.12, p = .008; 4 > 1, 2, 3$
CPIC-I ^a	10.98 (3.48)	11.12 (3.83)	12.24 (3.82)	13.13 (3.66)	$F(3, 179) = 3.03, p = .031$
CPIC-I ^b	11.01 (3.59)	11.16 (3.90)	12.24 (3.82)	13.09 (3.74)	$F(3, 170) = 1.44, p = .233$
CPIC-R ^a	8.78 (2.91)	9.00 (3.45)	9.50 (2.75)	11.43 (3.46)	$F(3, 179) = 5.43, p = .001; 4 > 1, 2$
CPIC-R ^b	8.88 (2.99)	9.08 (3.50)	9.50 (2.75)	11.41 (3.54)	$F(3, 170) = 3.21, p = .024$
Mother Report					
CTS-PA ^a	0.63 (2.85)	0.15 (0.61)	0.85 (2.23)	0.83 (2.39)	$F(3, 179) = 0.31, p = .817$
CTS-PA ^b	0.67 (2.97)	0.16 (0.62)	0.85 (2.23)	0.86 (2.44)	$F(3, 170) = 0.23, p = .873$
CTS-VA ^a	6.51 (5.02)	5.27 (4.21)	7.22 (5.83)	8.26 (6.23)	$F(3, 179) = 1.38, p = .249$
CTS-VA ^b	6.68 (5.18)	5.44 (4.20)	7.22 (5.83)	7.95 (6.19)	$F(3, 170) = 0.68, p = .566$
DAS-S ^a	33.06 (7.23)	34.65 (6.25)	34.11 (7.31)	32.39 (8.37)	$F(3, 179) = 0.52, p = .667$
DAS-S ^b	32.93 (7.34)	34.96 (6.17)	34.11 (7.31)	32.91 (8.18)	$F(3, 170) = 0.62, p = .600$

Note. With the exception of the DAS-S, higher scores indicate worse interparental functioning. 1 = Control; 2 = ADHD-Only; 3 = ADHD+ODD; 4 = ADHD+CD. CPIC-F = Children's Perception of Interparental Conflict Scale-Frequency subscale; CPIC-I = Children's Perception of Interparental Conflict Scale-Intensity subscale; CPIC-R = Children's Perception of Interparental Conflict Scale-Resolution subscale; CTS-PA = Conflict Tactics Scale-Physical Aggression subscale; CTS-VA = Conflict Tactics Scale-Verbal Aggression subscale; DAS-S = Dyadic Adjustment Scale-Satisfaction subscale.

^aCovariates: Maternal age, adolescent age and ethnicity; 88 control, 26 ADHD-Only, 46 ADHD+ODD, 23 ADHD+CD

^bCovariates: Household income, maternal age, adolescent age and ethnicity; 81 control, 25 ADHD-Only, 46 ADHD+ODD, 22 ADHD+CD

Bivariate correlations between Adolescent and Mother Reports of Interparental Relationship Quality in Families of Adolescents with and without ADHD

Table 3

	1	2	3	4	5	6
1. CPIC-F	-	.76**	.71**	.34**	.36**	-.34**
2. CPIC-I	.66**	-	.72**	.36**	.43**	-.25
3. CPIC-R	.61**	.69**	-	.42**	.39**	-.39**
4. CTS-PA	.16	.43**	.24	-	.54**	-.16
5. CTS-VA	.42**	.42**	.35**	.46**	-	-.49**
6. DAS-S	-.25	-.27**	-.12	-.27**	-.48**	-

Note. Data for adolescents without ADHD and their mothers (n=88) are *above* the diagonal and data for adolescents with ADHD and their mothers (n=95) are *below* the diagonal. CPIC-F = Children's Perception of Interparental Conflict-Frequency subscale; CPIC-I = Children's Perception of Interparental Conflict-Intensity subscale; CPIC-R = Children's Perception of Interparental Conflict-Resolution subscale; CTS-PA = Conflict Tactics Scale-Physical Aggression subscale; CTS-VA = Conflict Tactics Scale-Verbal Aggression subscale; DAS-S = Dyadic Adjustment Scale-Satisfaction subscale.

**
p < .01