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Child Effects on Communication between Parents of Youth with and without ADHD

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Abstract

Numerous studies indicate interparental conflict causes child externalizing behavior. However, far less is known about the inverse relationship. Exploring this gap in the literature has clear implications for parents of children with externalizing disorders (e.g., attention-deficit hyperactivity disorder [ADHD]). Adapting an experimental child behavior manipulation paradigm (Lang et al., 1999; Pelham et al., 1997, 1998), parent couples of 9–12 year-old boys and girls with ADHD ($n=51$) and without ADHD ($n=39$) were randomly assigned to interact with a “disruptive” or “typical” confederate child. According to parent and observer ratings, parents communicated less positively and more negatively with each other during and after interactions with disruptive confederates than parents who interacted with typical confederates. Observational coding also indicated that child effects on negative interparental communication were more noticeable among parents of youth with ADHD, particularly those with comorbid oppositional-defiant disorder or conduct disorder, compared to parents of youth without ADHD. These findings extend results of prospective studies highlighting child effects on marital quality.

Child Effects on Communication between Parents of Youth with and without ADHD

For many years, research has documented relations between interparental conflict and child behavior problems (Emery, 1982). Studies typically find that the association between marital discord and child maladjustment is stronger in families with more frequent, intense, and unresolved conflict, particularly arguments regarding child-related issues, as well as in families with clinic-referred children (Grych & Fincham, 1990). The influence of marital quality on child adjustment has been tested quite rigorously (Cummings & Davies, 1994), including experimental manipulations of interparental conflict (e.g., Jouriles & Farris, 1992). These studies provided convincing evidence indicating that interparental conflict, especially childrearing discord, is not just associated with behavioral distress in children ranging from infants to adolescents, but also causes its occurrence.

Curiously, however, far less is known regarding the impact of child behavior problems on interparental relationship quality. The dearth of evidence supporting child effects on marital relations is surprising given the extensive literature highlighting how parents of children with externalizing disorders (e.g., attention-deficit hyperactivity disorder [ADHD], oppositional-defiant disorder [ODD], conduct disorder [CD]) report experiencing significantly more parenting stress and psychopathology than parents of youth without behavior problems (e.g., Johnston & Mash, 2001). Though this research is not direct proof of child effects, it underscores stressors associated with raising children with disruptive behavior disorders, including risk factors known to contribute to marital distress (e.g., Amato & Rogers, 1997).

Recently, prospective tests with community families have demonstrated that child externalizing problems predict later marital conflict (Schermerhorn, Cummings, DeCarlo, &

Davies, 2007), particularly arguments over childrearing (Jenkins, Simpson, Dunn, Rasbash, & O'Connor, 2005). Another study with families of children with ADHD also found that severity of disruptive child behavior prospectively predicts marital instability (Wymbs, Pelham, Molina, et al., 2008). While these important studies underscore the harmful influence of child effects on marital quality, one cannot rule out the possibility that these findings are influenced by untested variables covarying with child behavior predictors (Jenkins et al., 2005). Given the unique contribution of experiments towards clarifying causal relations shown by prospective studies (Cummings, 1995), research on child effects would benefit from studies including experimental child behavior manipulations to examine whether disruptive children cause interparental discord.

Experimental Manipulations of Child Behavior

Experimental manipulations have been relied on for many years to demonstrate child effects on parent functioning (Bell & Chapman, 1986; Emery, Binkoff, & Houts, 1983). In these studies, child behavior has been manipulated most often through use of confederate children (Brunk & Henggeler, 1984; Bugental, Caporael, & Shennum, 1980). For example, Pelham, Lang, and colleagues trained child confederates to reliably enact "deviant," ADHD/ODD-like child behavior in order to examine its impact on adult parenting behavior, affective distress and alcohol use. Parents who interacted with deviant confederates utilized more restrictive (e.g., commands) and less positive (e.g., laughing, playing) parenting behaviors, reported greater negative affect, and consumed more alcohol in a laboratory setting than individual parents interacting with "normal," non-disruptive confederates (Lang, Pelham, Atkeson, & Murphy, 1999; Pelham, Lang, et al. 1997, 1998). Child effects were found consistently across parents of children with ADHD (Pelham et al., 1998) and without ADHD (Pelham et al., 1997). Acknowledging the success of experimental child behavior manipulations with illustrating child effects on parent behavior, studies employing confederate children are needed to corroborate findings of prospective studies displaying the impact of disruptive child behavior on interparental relationship quality in families of children with and without ADHD.

Interparental Discord and Children with ADHD

Research has consistently demonstrated that couples who are parents of youth with ADHD are more discordant than couples who are parents of children without ADHD (Johnston & Mash, 2001). Parents of children with ADHD, particularly those with comorbid ODD/CD, argue more often without resolution in front of their children and report being more verbally aggressive during arguments than parents of children without ADHD (e.g., Schachar & Wachsuth, 1991; Wymbs, Pelham, Gnagy, & Molina, 2008). Given their discordant behavior, it is not surprising that parents of youth with ADHD, especially those with more severe ODD/CD behavior, report lower marital satisfaction and higher rates of divorce than parents of youth without ADHD (e.g., Barkley, Anastopoulos, Guevremont, & Fletcher, 1992; Wymbs, Pelham, Molina, et al., 2008).

Of note, parents of children with ADHD and comorbid ODD/CD have more trouble resolving childrearing disagreements than parents of youth with ADHD-only or without ADHD (Johnston & Behrenz, 1993; Lindahl, 1998; Wymbs et al., 2007). The fact that couples who are parents of children with ADHD argue more frequently over collaborative parenting (i.e. co-parenting) issues should be expected in light of the significant difficulties parents have managing children with ADHD (Johnston & Mash, 2001). Parents of hyperactive youth, especially young hyperactive children (2–6 year-olds), have a difficult time finding appropriate ways to manage their child's behavior and, consequently, report significantly higher levels of parental distress than parents of children without ADHD (e.g., Mash & Johnston, 1982, 1983). Coupling the notable strain of parenting children with ADHD with evidence indicating parents are at greatest risk of divorce early in marriages (Emery, 1999), it should come as no

surprise to learn that divorces occur more quickly in families of youth with ADHD than those without ADHD. In fact, Wymbs, Pelham, Molina, and colleagues (2008) found that parents of child with ADHD were nearly twice as likely to divorce by the time their child turned 8 years of age than parents of children without ADHD. Thus, parents of youth with ADHD seem to be at greatest risk for parenting and marital hardship early in their child's development.

At the same time, symptoms and impairment characteristic of ADHD are widely recognized to persist from childhood through adolescence (e.g., Bagwell, Molina, Pelham, & Hoza, 2001) and into adulthood (Barkley, Murphy, & Fischer, 2007). The chronicity of ADHD is concerning for parents not only given the potential for additional parenting and marital stress to accumulate over time, but also because children typically intervene more during interparental conflict as they grow older (Cummings & Davies, 1994). As it is, youth with clinically-elevated externalizing problems are more emotionally and behaviorally distressed by recurring conflict (e.g., Cummings, Ianotti, & Zahn-Waxler, 1985) and intervene more frequently during marital conflict than children without behavior problems (Wymbs, Schermerhorn, & Cummings, 2009). Thus, the behavior of children with ADHD at any age is likely a risk factor for marital distress.

Only one study has evaluated the unique contribution of disruptive child behavior towards marital instability in families of youth with ADHD. Relative to well-known parent risk factors of divorce (e.g., maternal depression, substance use disorders), Wymbs, Pelham, Molina and colleagues (2008) found that more severe child ODD/CD behavior uniquely predicted shorter marriages in families of 5–12 year-old children with ADHD. We speculated that the frustration of managing child oppositional-defiance and more severe conduct problems (not to mention chronic inattention and hyperactivity/impulsivity) accumulates and ultimately “spills over” to affect marital communication and problem-solving, thereby increasing risk of divorce. Yet, no study has tested whether disruptive child behavior exacerbates discordant interparental communication in families of youth with ADHD, especially those with comorbid ODD/CD. Research is needed to address this limitation.

Specific Aims and Hypotheses

By adapting an experimental laboratory paradigm (Lang et al., 1999; Pelham et al., 1997, 1998), this project was designed to replicate and extend prospective studies highlighting child effects on marital relations by testing whether disruptive child behavior causes discordant communication between parents of children with and without ADHD. Couples who are parents of children with and without ADHD were randomly assigned to interact with a “disruptive” or “typical” child confederate. After these interactions, couples discussed issues related to co-parenting. Parents were expected to communicate less positively and more negatively with each other during and after interactions with disruptive confederate children than couples who interacted with typical confederate children. Parents of children with ADHD, especially those with comorbid ODD/CD, were also expected to communicate less positively and more negatively than parents of children without ADHD, regardless of confederate child behavior. Finally, because we had no evidence to indicate whether parents of youth with ADHD would be more or less sensitive to interactions with disruptive child confederates than parents of youth without ADHD, confederate child behavior (disruptive vs. typical) X diagnostic status of parents' own children (ADHD vs. non-ADHD) interactions were only explored.

Methods

Participants

Ninety couples who are parents of children with ADHD (n=51) and without ADHD (n=39) were recruited “to participate in a co-parenting study” via newspaper and radio advertisements,

postings in local physicians' offices, and flyers distributed in several local elementary schools. Interested couples completed a phone screen, during which the following inclusion criteria were confirmed: 1) Parents agreed to participate in the study session together; 2) Parents lived together for at least two years; 3) Mothers and fathers were both active parents with their children at home; 4) Target children were 9–12 years of age; and 5) Target children did not meet diagnostic criteria for a development disorder, schizophrenia, or any other psychotic disorder.

Presence of child ADHD was assessed using evidence-based strategies (Pelham, Fabiano, & Massetti, 2005). One parent from each eligible couple completed standardized rating scales assessing whether their child exhibited clinically-significant ADHD, ODD, and CD symptoms (Disruptive Behavior Disorder Rating Scale; Pelham, Gnagy, Greenslade, & Milich, 1992) and functional impairment (Impairment Rating Scale; Fabiano et al., 2006). Their child's teacher also completed the same rating scales. Children were diagnosed with ADHD provided they presently met *DSM-IV* criteria for ADHD (American Psychiatric Association, 1994): 1) exhibiting 6 or more symptoms of inattention, 6 or more symptoms of hyperactivity/impulsivity, or both according to parent and teacher report; 2) demonstrating clinically significant symptoms and impairment across home and school settings; and 3) evidence of symptoms and impairment across home and school settings prior to age 7. Symptoms of ODD and CD were also evaluated by parents and teachers. Twenty-two (43.1%) children with ADHD met *DSM-IV* criteria for ODD and 10 (19.6%) met criteria for CD. Current treatment status and treatment history of children with ADHD and their parents was not assessed.

After most of the parents of youth with ADHD had been recruited, parents of children without ADHD were invited to participate if 1) their child did not meet present or historical diagnostic criteria for ADHD, ODD, or CD; 2) if they had no other children meeting current or historical criteria for ADHD; and 3) their child's gender, race, and age (within 1 year) as well as their own age (within 4 years), race, and highest education level (within 2 years) were equivalent to families of youth with ADHD at the group level.

As shown in Table 1, families of children with and without ADHD were demographically similar. Across twelve demographic variables, only one variable differed significantly between groups: length of the parents' relationship *with* children. In brief, parents of children without ADHD reported having children for more time (i.e. longer parenting experience) than parents of children with ADHD. A statistical trend also indicated parents of youth with ADHD were somewhat less educated than parents of youth without ADHD. To control for these possible confounds, parent education level and length of the parents' relationship with children were covaried in all analyses.

Procedures

Child interaction—After providing informed consent and confirming demographic information, parent couples were given an overview of the child interaction task sequence. Parents were told they would interact with an unfamiliar child selected at random from a local elementary school, who was the same gender, race, and approximately the same age as their own child. Couples were encouraged to act naturally with the child during the interaction. Parent couples were also reminded the goal of this study was to learn more about co-parenting. As such, they were asked to problem-solve with each other as needed to resolve child behavior management issues, if applicable. Unbeknownst to the parents, the child with whom they interacted was a confederate.

Seven 9–12 year-old children (including 5 boys and 2 girls) were trained extensively to enact two scripted behavioral roles: one dictating they behave like developmentally-appropriate “disruptive” children with ADHD/ODD and another requiring they behave like

developmentally-appropriate “typical” children without externalizing behavior problems. Scripts for both roles were adapted from the experimental paradigm devised and validated with 9–12 year-old confederates by Pelham, Lang, and colleagues (Lang et al., 1999; Pelham et al., 1997, 1998) to allow for interactions with parent couples. In the “typical” role, confederate children were friendly and cooperative throughout their interaction with parent couples. In the “disruptive” role, confederate children enacted symptoms of ADHD and ODD drawn from *DSM-IV* throughout their interaction with the parents. Every confederate was trained to enact both “disruptive” and “typical” roles, but they were randomly assigned to enact only one role with each parent couple for the duration of the child interaction. Reliability checks were conducted during every interaction to assure the integrity of the confederate behavior manipulation. Trained observers used checklists to track the behavior of the confederates, recording whether or not specific behaviors were exhibited or omitted correctly according to the scripts for each role. Behavior tracking confirmed the integrity of the “typical” ($M=93\%$, $SD=5$, $\text{Range}=82\text{--}99\%$) and “disruptive” ($M=88\%$, $SD=4$, $\text{Range}=78\text{--}98\%$) confederate roles.

Child interactions began with a *cooperative task* (8 minutes), which required both parents engaging the child to help them build the tallest *Jenga* block tower in the shortest amount of time and to rebuild the tower if it fell so they could play again. Next, in the *parallel task* (7 minutes), while parents individually completed a checkbook-balancing task, they were responsible for ensuring the child completed a simple math worksheet. Then, during the *free play task* (7 minutes), parent couples were instructed to play with the child using toys available in the room and to allow the child to direct the play. Finally, during the *clean up task* (3 minutes), couples were asked to have the child clean up all of the toys without their help. With the exception of the *cooperative task*, which included *Jenga* instead of *Etch-a-Sketch* to allow for triadic (parent-parent-confederate child) interactions, the remaining tasks in this study were exactly the same as the Pelham and Lang studies (Lang et al., 1999; Pelham et al., 1997, 1998). These tasks are also used commonly by researchers to examine factors that impact parent-child relationship quality (e.g., Johnston, Murray, Hinshaw, Pelham, & Hoza, 2002).

Post-interaction measures—Immediately following the conclusion of the child interaction, parents were asked to complete several manipulation check ratings and self-report measures of interparental communication.

Manipulation check measures were drawn from the studies by Pelham, Lang, and colleagues (Lang et al., 1999; Pelham et al., 1997, 1998). One manipulation check measure was the Iowa Conners' Rating Scale (ICRS; Pelham, Milich, Murphy, & Murphy, 1989). The 10-item ICRS is a widely-used and validated behavior rating scale assessing parent perceptions of how often (0=Not at all, 1=Just a little, 2=Pretty much, 3=Very much) children exhibit inattention-overactivity (IO) and oppositional-defiance (OD) behavior. IO and OD total sum scores were examined to assess whether parents perceived “disruptive” confederates to behave differently than “typical” confederates. The effectiveness of the confederate manipulation was also assessed by asking parent couples to indicate how pleasant (0=very unpleasant, 6=very pleasant) it was to interact with the child as well as how successful (0=very unsuccessful, 6=very successful) and effective (0=very ineffective, 6=very effective) they felt as parents with the child.

Notably, parents were asked to rate how positive (1=Not at all positive, 10=Completely positive) and negative (1=Not at all negative, 10=Completely negative) their partner communicated with them during the child interaction. The format and scale of these items was adapted from Fincham and Linfield's (1997). *Positive and Negative Quality in Marriage Scale*. Parents also rated how realistic their partner's interparental communication was during the interaction (0=Very different at home, 6=Very similar to home).

Co-parenting discussion—After completing the post-interaction measures, parents engaged in a 10-minute discussion regarding co-parenting issues. They were instructed to spend the first 5 minutes discussing how they could work together better as parents in the next child interaction (that ultimately did not occur), and the second 5 minutes discussing how they could work together better as parents with their own child at home. Afterwards, both parents again reported how positive and negative they felt their partner communicated with them during the co-parenting discussion and how realistic their partner's communication was during the discussion.

Conclusion—Upon finishing the post-discussion ratings, parents were told the confederate child had to leave early, thus prohibiting a second child interaction. Parents were then debriefed regarding the behavior of the confederate child and the intent of the study.

Observational coding procedures—Two sets of undergraduate research assistants, who were held blind to study hypotheses and conditions, coded interparental communication during the child interactions and co-parenting discussions. One set was trained to code communication during the interaction and a second set was trained to code communication during the discussion.

Interparental communication during the child interaction was coded using the Family Observation Schedule (FOS; Dadds & Sanders, 1992; see also Dadds, Sanders, Behrens, & James, 1987). FOS coders evaluated parents' positive (e.g., listening, questions, positive feedback) and negative (e.g., negative feedback, contradiction, ignoring) interparental communication. Total frequencies of positive and negative communication behaviors were dependent measures. Interactions were coded by pairs of observers in order to calculate interobserver agreement. Intraclass correlations for positive (.98) and negative (.81) interparental communication during the child interaction were acceptable.

Interparental communication during the co-parenting discussion was coded using the Couples Communication Coding System (CCCS; Hollinsworth, King, Lindsay-Woolley, & Webster-Stratton, 1991). CCCS coders evaluated 10 codes for positive (e.g., polite request, appreciation, humor) and 11 codes for negative (e.g., fault finding, ignoring, withdrawal, disagreement) interparental communication. Total frequencies of positive and negative communication behaviors were dependent measures. Again, intraclass correlations for positive (.89) and negative (.98) interparental communication during the discussion were acceptable.

Results

Effectiveness of Confederate Manipulation

To determine whether the confederate manipulation was successful, parent reports of confederate child behavior on the ICRS (IO and OD total sum scores) as well as parent perceptions of pleasantness, effectiveness, and successfulness were analyzed using 2 (Diagnostic Status of Parent's Children: ADHD, non-ADHD) X 2 (Parent Gender: Mother, Father) X 2 (Confederate Status: Disruptive, Typical) multivariate analyses of covariance (MANCOVAs). Parent education level and length of relationship with children were entered as covariates.

The MANCOVA examining confederate IO/OD behavior revealed a significant main effect of confederate status $F(2, 168) = 188.82, p < .01$. Follow-up univariate analyses of covariance (ANCOVAs) showed parents interacting with disruptive confederates reported greater IO ($M=8.70, SD=3.12$), $F(1, 169) = 379.58, p < .01$, and OD ($M=5.29, SD=3.47$), $F(1, 169) = 124.52, p < .01$, than parents interacting with typical confederates (IO: $M=1.15, SD=1.45$; OD: $M=.65, SD=1.19$). Effect sizes calculated using Cohen's d (i.e. $M_1 - M_2 / \sigma_{\text{pooled}}$; Cohen,

1988) revealed very large effects for both comparisons ($d = 3.10$ and 1.79 , respectively). Main effects of diagnostic status, parent gender, and all interactions were nonsignificant.

The MANCOVA assessing parenting self-efficacy with the confederate child also revealed a confederate status main effect $F(3, 167) = 80.98, p < .01$. Follow-up ANCOVAs indicated parents felt less pleasant ($M = 3.56, SD = 1.26$), $F(1, 169) = 165.61, p < .01$, less successful ($M = 2.95, SD = 1.37$), $F(1, 169) = 169.88, p < .01$, and less effective ($M = 3.01, SD = 1.31$), $F(1, 169) = 103.21, p < .01$, interacting with disruptive confederates than parents interacting with typical confederates (Pleasant: $M = 5.68, SD = .79$; Successful: $M = 5.37, SD = 1.00$; Effective: $M = 5.07, SD = .96$). Effect sizes were very large for all comparisons (Pleasant $d = 2.02$; Successful $d = 2.02$; Effective $d = 1.79$). Self-efficacy ratings did not differ significantly based on diagnostic status or parent gender, and there were no significant interactions.

ANCOVAs were conducted to assess whether parents felt their partners' communication behavior with them was realistic during the child interaction and co-parenting discussion. Parents who interacted with disruptive children felt their partners communicated less realistically during the child interaction ($M = 3.99, SD = 1.52$) than parents who interacted with typical children ($M = 4.85, SD = 1.22$), $F(1, 169) = 18.88, p < .01$. The same behavior pattern reportedly occurred during the co-parenting discussions (Disruptive: $M = 4.36, SD = 1.40$; Typical: $M = 4.87, SD = 1.26$), $F(1, 169) = 10.82, p < .01$. Parents of children with ADHD also felt their partners communicated less realistically during the child interaction ($M = 3.98, SD = 1.59$) than parents of children without ADHD ($M = 4.94, SD = 1.02$), $F(1, 169) = 23.89, p < .01$. Again, the same pattern occurred during the co-parenting discussion (ADHD: $M = 4.29, SD = 1.50$; Non-ADHD: $M = 5.01, SD = 1.01$), $F(1, 169) = 24.57, p < .01$. During debriefing interviews, parents routinely stated they communicated more positively and less negatively than they would during similar situations at home.

Parent Ratings of Partner Communication

Descriptive statistics for parent ratings of partner positive and negative interparental communication are in Table 2. Parent ratings of partner communication during the child interaction and subsequent co-parenting discussion were assessed using separate 2 (Diagnostic Status of Parent's Children: ADHD, non-ADHD) X 2 (Parent Gender: Mother, Father) X 2 (Confederate Status: Disruptive, Normal) MANCOVAs. Parent education level and length of relationship with children were entered as covariates.

The MANCOVA examining parent ratings of partner communication during the child interaction revealed significant main effects of confederate status $F(2, 168) = 19.76, p < .01$, and diagnostic status $F(2, 168) = 4.34, p < .05$. The confederate x diagnostic status interaction was not significant, and neither was any other interaction or the main effect of parent gender. Follow-up ANCOVAs showed parents felt their partner communicated less positively, $F(1, 169) = 29.06, p < .01$, and more negatively, $F(1, 169) = 25.89, p < .01$, with them during interactions with disruptive confederates than parents interacting with typical confederates. Effect sizes were large for both comparisons ($d = .89, .82$, respectively). Parents of children with ADHD also believed their partner communicated less positively during the child interaction than parents of children without ADHD, $F(1, 169) = 8.70, p < .01$, but not more negatively, $F(1, 169) = 1.66, p = .20$. The effect size for positive communication was moderate ($d = .55$).

Post hoc analyses were conducted to explore whether parent-rated partner positive communication during the child interaction differed between parents of youth with ADHD and comorbid ODD/CD, parents of youth with ADHD-only, and parents of youth without ADHD or ODD/CD. The omnibus ANCOVA was significant, $F(1, 166) = 35.00, p < .01$, and follow-up Tukey tests ($p < .05$) indicated that parents of children with ADHD + ODD/CD felt their

partner communicated less positively with them during the child interaction ($M=7.83$, $SD=2.47$) than parents of children without ADHD ($M=9.08$, $SD=1.27$). Partner positive communication reported by parents of youth with ADHD-only ($M=8.39$, $SD=2.21$) did not differ significantly from either group.

The MANCOVA assessing parent ratings of partner communication during the co-parenting discussion also found significant main effects of confederate status $F(2, 168) = 5.65$, $p < .01$, and diagnostic status $F(2, 168) = 4.59$, $p < .05$. Again, the confederate $\times$ diagnostic status interaction was not significant, and neither was the main effect of parent gender or any other interaction. Follow-up ANCOVAs revealed parents felt their partner communicated less positively, $F(1, 169) = 11.36$, $p < .01$, but not more negatively, $F(1, 169) = 3.19$, $p = .08$, during discussions after interactions with disruptive confederate than those after interactions with typical confederates. Follow-up ANCOVAs also showed that parents of youth with ADHD felt their partner communicated less positively, $F(1, 169) = 9.20$, $p < .01$, but not more negatively, $F(1, 169) = 2.96$, $p = .09$, during discussions than parents of youth without ADHD. Effect sizes were moderate for confederate and diagnostic status comparisons of positive communication (Cohen's $d = .55$ and $.53$, respectively).

Post hoc analyses were conducted to assess whether parent-rated partner communication during the co-parenting discussion differed based on the age and the comorbidity of the parent couples' child. Regarding the impact of child comorbidity, the omnibus ANCOVA was significant for positive communication, $F(1, 166) = 13.11$, $p < .01$, with follow-up Tukey tests indicating that parents of children with ADHD + ODD/CD felt their partner communicated less positively with them during the discussion ($M=8.14$, $SD=2.25$) than parents of children without ADHD ($M=9.17$, $SD=1.07$). Positive communication reported by parents of children with ADHD-only ($M=8.50$, $SD=1.67$) did not differ significantly from either group.

Observer-rated communication

Table 3 provides descriptive statistics for observer-coded positive and negative interparental communication. Observational coding of positive communication during the child interaction and subsequent co-parenting discussion were assessed using 2 (Diagnostic Status of Parent's Children: ADHD, non-ADHD) $\times$ 2 (Parent Gender: Mother, Father) $\times$ 2 (Confederate Status: Disruptive, Normal) ANCOVAs. Parent education level and length of relationship with children were entered as covariates. Because coders indicated that most parents did not exhibit negative communication during the child interaction (76%) or the discussion (44%), chi-square analyses were conducted in lieu of ANCOVAs to compare rates of couples exhibiting "no (0)" vs. "any (1 or more)" negative communication behaviors across confederate child condition, parents' own child diagnostic status, and parent gender.

The ANCOVA assessing observational coding of positive communication during the child interaction found a significant confederate status main effect, $F(1, 169) = 7.83$, $p < .01$, such that parents interacting with disruptive confederates exhibited fewer positive communication behaviors than parents interacting with typical confederates ($d = .46$). Main effects of diagnostic status and parent gender were nonsignificant, as were all interactions. Chi-square analyses indicated rate of negative communication during the interaction differed depending on the diagnostic status of the parents' own child, $\chi^2(180) = 9.28$, $p < .01$, and confederate status, $\chi^2(180) = 19.27$, $p < .01$, but not parent gender, $\chi^2(180) = 0.03$, $p = .86$. Among couples who interacted with a typical confederate, parents of children with and without ADHD were both unlikely to exhibit any negative communication behavior (10.42% vs. 7.89%), $\chi^2(86) = 0.16$, $p = .69$, Odds ratio=1.36. However, among couples who interacted with a disruptive confederate, both groups were more likely to communicate negatively, especially parents of children with ADHD (51.85% vs. 17.50%), $\chi^2(94) = 11.60$, $p < .01$, Odds ratio=5.08. Post hoc analyses indicated that parents of children with ADHD+ODD/CD (57.89%; Odds ratio=6.48)

and parents of children with ADHD-only (37.50%; Odds ratio=2.83) were both more likely to communicate negatively during interactions with disruptive confederates than parents of children without ADHD.

The ANCOVA examining observational coding of positive communication during the co-parenting discussion did not uncover any significant main effects or interactions among confederate status, diagnostic status, or parent gender. Chi-square analyses indicated significant differences in negative communication behavior during the discussion depending on the diagnostic status of the parents' own child, $\chi^2(180) = 12.72, p < .01$, and confederate status, $\chi^2(180) = 6.16, p = .01$, but not parent gender, $\chi^2(180) = 1.11, p = .29$. Among couples who previously interacted with a typical confederate, parents of children with ADHD were more likely to exhibit any negative communication behavior during the discussion than parents of youth without ADHD (56.25% vs. 34.21%), $\chi^2(86) = 4.14, p < .05$, Odds ratio=2.47. Among couples who interacted with a disruptive confederate, both groups were more likely to communicate negatively, especially parents of children with ADHD (77.78% vs. 47.50%), $\chi^2(94) = 9.25, p < .01$, Odds ratio=3.87. Post hoc analyses indicated that parents of children with ADHD+ODD/CD (81.58%; Odds ratio=4.89) and those with ADHD-only children (68.75%; Odds ratio=2.43) were both more likely to communicate negatively during discussions after interactions with disruptive confederates than parents of children without ADHD.

Discussion

Utilizing an experimental manipulation of child behavior, the present study extends findings from prospective studies demonstrating child effects on marital relations. Specifically, parents who interacted with disruptive, ADHD/ODD-like child confederates communicated less positively and more negatively with each other compared to parents who interacted with typical, non-disruptive confederate children. The deleterious impact of disruptive child behavior on interparental communication was evident across parent and observer ratings, child interactions and subsequent co-parenting discussions, and parents of youth with and without ADHD. Observational coding of negative interparental communication also indicated child effects were more pronounced for parents of children with ADHD, especially those with comorbid ODD/CD, than parents of youth without ADHD.

Child Effects on Interparental Communication

For the first time, an experimental manipulation of child behavior has demonstrated that disruptive child behavior exacerbates discordant interparental communication. This study replicates prior work highlighting prospective relations between externalizing child behavior and marital discord (Jenkins et al., 2005; Schermerhorn et al., 2007; Wymbs, Pelham, Molina, et al., 2008). The present study also extends prospective research by showing that disruptive child behavior is not only a unique, distal risk factor of marital conflict, but is also a proximal cause of discordant interparental communication, particularly as it relates to childrearing.

By manipulating child behavior experimentally, it was possible to isolate and directly test whether disruptive child behavior exacerbated interparental discord. Doing so provided an opportunity to address a limitation of prior prospective research: the potential for untested variables associated with disruptive child behavior (e.g., parental psychopathology), and not disruptive child behavior itself, to spark marital discord. Still, like prospective tests, experimental manipulations are not without their own limitations (Cummings, 1995). For example, as discussed below, the external validity of the experimental manipulation used in this study is questionable due to the highly-controlled nature of the structured interactions. Given the constraints of both approaches, it appears more appropriate to assert that findings of the present study corroborate results of the aforementioned prospective tests, and vice versa.

With prospective and now experimental research highlighting the impact of disruptive child behavior on marital quality, we can be more confident in the strength and reliability of this causal relation.

The case for disruptive child behavior exacerbating discordant marital relations is further supported by this study highlighting child effects across multiple informants (parents and observers) and multiple settings (child interaction and co-parenting discussion). Within-study corroboration across raters and situations is rather unique relative to prior work in this area. For example, of the three prior studies examining longitudinal associations between child externalizing behavior and marital discord (i.e., Jenkins et al., 2005; Schermerhorn et al., 2007; Wymbs, Pelham, Molina et al., 2008), only Schermerhorn and colleagues (2007) found evidence of child effects on marital quality measured by multiple informants (parents and observers). Further, no studies but this one tested for evidence of marital discord across multiple settings, though Jenkins et al (2005) did show evidence of child effects on different forms of marital conflict (e.g., overt discord, conflict over childrearing). It should be noted, however, that the magnitude of child effects on interparental communication in this study was larger during the child interaction than during the co-parenting discussion. Perhaps child effects were large during the interaction because the source of discord (the disruptive confederate child) was in the room. Alternatively, the goal-oriented, problem-solving nature of the co-parenting discussion may explain the small-to-moderate child effects observed during this period. In any event, by showing evidence of disruptive child behavior underlying interparental discord across setting and informant, this study further supports the legitimacy of child effects on marital quality.

Comparing Communication between Parents of Youth with and without ADHD

Regardless of the behavior exhibited by the confederate child, parent and observer data both indicated that couples of youth with ADHD, particularly those with comorbid ODD/CD, are more susceptible to engaging in discordant interparental communication than couples of youth without ADHD. These results were not surprising in light of prior research displaying that parents of children with ADHD and comorbid ODD/CD are more argumentative during analog laboratory interactions than parents of youth without ADHD (Johnston & Behrenz, 1993; Lindahl, 1998). Furthermore, coupling evidence suggesting that families of youth with ADHD, especially those with more severe behavior problems, endure more environmental stressors than families of children without ADHD (Counts, Nigg, Stawicki, Rappley, & Von Eye, 2005) with research indicating these stressors increase risk of marital discord (e.g., Amato & Rogers, 1997), it makes sense that parents of youth with ADHD are more conflictual than parents of children without ADHD.

Yet, study findings advance our knowledge of marital discord in families of youth with ADHD in at least two ways. First, parent-reported data highlighted that couples who are parents of children with ADHD exhibit a harmful pattern of interparental communication in childrearing contexts: a dearth of positives coupled with excessive negatives. This specific pattern is concerning as observations of it in novel laboratory interaction tasks, even those as brief as a few minutes, prospectively predicts marital dissatisfaction and divorce many years later (Carrere & Gottman, 1999; Gottman, Coan, Carrere, & Swanson, 1998). Second, observational coding indicated that parents of youth with ADHD, particularly those with comorbid ODD/CD, were 5 times more likely to communicate negatively with each other when managing disruptive confederates than parents of children without ADHD. We were unsure whether couples of youth with ADHD would be more sensitive to the effects of interacting with disruptive, ADHD-like children or whether their experience as parents of children with chronic externalizing behavior problems would prepare them to handle the child-induced stress in this study. As it turned out, parents of youth with ADHD appeared to be “sensitized” to child

externalizing behavior and/or problem-solving over childrearing issues, reacting with heightened negativity when exposed to both in this study. Relatedly, Cummings and Davies (1994) state that “sensitization” is not uncommon in families with recurrent marital conflict. Taken together, by highlighting how couples who are parents of children with ADHD are likely to communicate less positively and more negatively than couples who are parents of children without ADHD, especially when managing disruptive child behavior, these data may begin to explain why childrearing disagreements and divorce are relatively common in these families (Wymbs et al., 2007; Wymbs, Pelham, Molina et al., 2008).

It is important to note, however, that couples who parents of children with and without ADHD in this study all had 9–12 year-old children. This was done, in part, to appropriately match participating couples to confederates, who were all 9–12 years of age. In light of Wymbs, Pelham, Molina and colleagues’ (2008) finding that risk of divorce is greatest in families of children with ADHD younger than age 8, couples of youth with ADHD in the present study arguably survived through the time of greatest risk of marital instability. Thus, evidence of child effects on interparental communication in families of 9–12 year-old children with ADHD presented herein are likely conservative estimates relative to those that may be found with parents of younger children. Furthermore, given recognition that ADHD symptoms and impairment persist for many across development (e.g., Bagwell et al., 2001) and evidence of child effects from prospective research including samples with older children (e.g., Jenkins et al., 2005; Schermerhorn et al., 2007), we believe our findings underscore the significant risk of marital discord for parents of youth with ADHD of all ages.

Limitations and Future Directions

Caveats of this study are largely a direct result of employing an experimental child behavior manipulation paradigm. The generalizability of data collected from this confederate child manipulation is limited by staging interactions in a university laboratory instead of a more naturalistic location (e.g., homes of participating families), having parent couples interact with an unfamiliar child enacting scripted behavior instead of having parents interact with their own child, and informing parents they would be observed and taped throughout the interactions. These methodological issues not only call into the question the external validity of the findings, but also likely reduced the effect of disruptive child behavior on interparental communication observed in this study. Yet, even though mothers and fathers, particularly those with ADHD children, reported communicating less realistically (sp. more appropriately) during interactions with disruptive confederates than they would around similar child behavior at home, the confederate manipulation still produced large effects on communication across parents of youth with and without ADHD. As such, these data underscore the impressive strength of the manipulation and, presumably, the causal relationship between disruptive child behavior and interparental discord. At the same time, studies are needed to extend these findings by comparing the effect of different levels of disruptive child behavior (e.g., ADHD-only vs. ADHD/ODD), especially child behavior derived by more naturalistic manipulations (e.g., stimulant medication manipulations with ADHD children; Barkley, 1981), on marital quality.

This generalizability of this study is limited in other ways as well. For example, parents only interacted with one confederate child at a time. Child effects on marital communication may have differed if parents were asked to manage multiple children, especially more than one child with disruptive behavior problems. Sample characteristics also reduce the utility of these findings. Specifically, most participants were Caucasian, middle-to-upper class parents with 9–12 year-old male children. Future research in this area should consider examining for child effects on couples in samples comprised of more racial/ethnic minorities, socioeconomically-disadvantaged individuals, parents of girls, and/or parents of toddlers or adolescents. Another limitation of this study is the uneven group sizes. Even though the parent groups were

equivalent across nearly all demographic variables, with statistically-dissimilar variables controlled throughout, our results may have differed if groups were matched in number and demographics. One more limitation of the study was not gathering current treatment status or treatment history of parent couples or their children. As such, it is conceivable that results may have differed if this variable was measured and controlled. Finally, because the order of child interactions and co-parenting discussions was not counter-balanced, differences in effect sizes between these settings could not be attributed to the effect of time.

In addition to the research ideas discussed above, future studies should go in several additional directions. First, similar to Schermerhorn and colleagues' (2007) investigation with a community sample, longitudinal studies are needed to measure the dynamic relations between disruptive child behavior and marital conflict over time in families of youth with externalizing disorders. This line of research could also include evaluations of potential mediators (e.g., parenting behavior and/or stress). Relatedly, researchers should also explore whether discordant interparental communication explains the prospective association between disruptive child behavior and divorce in families of youth with ADHD. The present study highlights the deleterious impact of disruptive child behavior on discordant communication, and earlier research has shown that discordant marital communication is predictive of divorce (e.g., Gottman et al., 1998). Work is needed to test this longitudinal pathway. Finally, clinical researchers should attempt to tailor evidence-based treatments for youth with ADHD to address the reciprocal relations between externalizing child behavior and marital conflict. For example, evidence-based behavioral parent training (BPT) for youth with conduct disorder has been adapted successfully for use with discordant parents (e.g., Dadds, Schwartz, & Sanders, 1987). Despite BPT's efficacy for children with ADHD, it has not been tailored to work with discordant families (Chronis, Chacko, Fabiano, Wymbs, & Pelham, 2004). Researchers should also consider adapting evidence-based marital distress prevention programs (e.g., Markman, Stanley, Blumberg, Jenkins, & Whiteley, 2004) for use with parents of young children with ADHD.

Conclusions

It should come as no surprise to learn managing disruptive child behavior strains interparental communication. Indeed, most parents understand the burden child behavior problems can place on marriages. However, the potential strain faced by couples managing chronic child externalizing problems cannot be emphasized enough. Coupling the primary finding of this study—that is, managing disruptive child behavior causes discordant interparental communication—with results of prior work underscoring the longitudinal association between child externalizing problems and marital instability, parents of children with chronic disruptive behavior problems (e.g., ADHD, autism), are clearly at-risk for significant marital difficulties. Obviously, disruptive child behavior is not the only risk factor for interparental discord. Still, mindful of its influence, it is hoped this study will increase awareness of child effects on marital relations and stimulate interest from researchers to examine ways to prevent needless marital conflict and divorce in families with externalizing children.

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Table 1

Sample demographics

	Non-ADHD n=39 ^a	ADHD n=51 ^a	
<i>Matching Variables</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>p</i>
Mean Child Age (Years)	10.84 (1.05)	10.71 (1.28)	.58
% Child Male	82.05	86.27	.58
% Child Caucasian	97.44	94.12	.45
Mean Mother Age (Years)	40.03 (6.39)	39.41 (6.15)	.65
Mean Father Age (Years)	42.00 (6.87)	41.92 (6.72)	.96
% Mother Caucasian	100	96.08	.46
% Father Caucasian	89.74	94.12	.59
Mother's Highest Education ^b	7.08 (1.38)	6.41 (1.80)	.06
Father's Highest Education ^b	6.82 (1.85)	6.22 (2.02)	.15
<i>Other Parent Variables</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>P</i>
% Married	97.44	92.16	.28
Mean Length of Relationship with Children (Years)	13.10 (4.18)	10.20 (4.37)	< .01
Mean Household Income	\$68,954	\$79,818	.25

Notes: ^a = number of couples

^b Response Scale for level of 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.

Table 2

Descriptive statistics of parent ratings of partner interparental communication during the child interaction and co-parenting discussion

	Non-ADHD				ADHD	
	Typical		Disruptive		Typical	Disruptive
	n=19 ^a	M (SD)	n=20 ^a	M (SD)	n=24 ^a	n=27 ^a
<i>Child Interaction</i>						
Positive	Mothers	9.63 (.76)	8.95 (1.28)	9.29 (1.55)	7.11 (2.76)	
	Fathers	9.47 (.77)	8.30 (1.63)	9.04 (1.52)	6.93 (2.39)	
Negative	Mothers	1.16 (.50)	2.10 (1.94)	1.21 (.51)	2.41 (1.97)	
	Fathers	1.11 (.32)	2.05 (1.67)	1.30 (.70)	2.78 (2.12)	
<i>Co-parenting Discussion</i>						
Positive	Mothers	9.58 (.69)	9.05 (1.23)	8.79 (1.72)	8.07 (2.35)	
	Fathers	9.42 (.69)	8.65 (1.31)	8.96 (1.19)	7.52 (2.34)	
Negative	Mothers	1.58 (1.84)	1.80 (1.82)	2.38 (2.48)	3.30 (2.69)	
	Fathers	1.63 (1.83)	2.45 (2.01)	2.22 (2.39)	3.11 (2.34)	

Note: Parent ratings of their partner's positive and negative communication range from 0 (Not at all positive/negative) to 10 (Very much positive/negative).

^a number of couples per confederate behavior condition;

Table 3

Descriptive statistics of observer-coded interparental communication during child interaction and co-parenting discussion

	Non-ADHD		ADHD	
	Typical n=19 ^a	Disruptive n=20 ^a	Typical n=24 ^a	Disruptive n=27 ^a
<i>Child Interaction</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Positive ^b	Mothers 31.16 (14.36)	27.00 (10.08)	30.00 (13.93)	23.67 (12.40)
	Fathers 32.00 (13.28)	22.70 (9.04)	24.96 (10.45)	22.41 (11.22)
Negative ^c	Mothers .05 (.23)	.20 (.41)	.21 (.59)	.81 (1.04)
	Fathers .11 (.32)	.20 (.52)	.13 (.46)	1.04 (1.45)
<i>Co-parenting Discussion</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>
Positive ^d	Mothers 49.16 (9.74)	48.45 (9.99)	49.25 (9.36)	45.85 (11.79)
	Fathers 48.11 (6.65)	47.00 (10.34)	46.57 (8.93)	44.41 (11.34)
Negative ^e	Mothers .63 (.83)	.95 (1.05)	1.50 (2.57)	4.81 (8.23)
	Fathers .26 (.45)	.90 (1.37)	1.17 (.98)	3.15 (5.55)

Note. ^a Number of couples per confederate behavior condition^b Positive communication frequency during child interaction ranged from 3 –70 (median = 25)^c Negative communication frequency during child interaction ranged from 0 – 7 (median = 0)^d Positive communication frequency during the co-parenting discussion ranged from 20 –79 (median = 47)^e Negative communication frequency during the co-parenting discussion ranged from 0 – 42 (median = 1).