Investigating the Differential Effects of Specific Child Behaviors on Parent Behaviors and the Potential Moderating Influence of Parent ADHD and Depressive Symptoms

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This thesis titled

Investigating the Differential Effects of Specific Child Behaviors on Parent Behaviors and the Potential Moderating Influence of Parent ADHD and Depressive Symptoms

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Abstract

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Children with disruptive behaviors routinely have strained relationships with their parents. Longitudinal research has consistently demonstrated that increased levels of disruptive child behaviors predict increased levels of negative parenting behaviors and decreased levels of positive parenting behaviors. However, there is presently a dearth of research examining whether specific child behaviors are differentially associated with specific parenting behaviors, and whether associations vary in strength due to parent ADHD or depressive symptoms. As part of a previous study, 90 parent couples were randomly assigned to interact with a 9- to 12-year-old confederate child exhibiting either typical or disruptive behaviors. Observers coded specific child and parent behaviors in each interaction, and parents reported their own ADHD and depressive symptoms. Following adaptive child behaviors, the frequency of positive parenting behaviors was significantly greater than the frequency of negative parenting behaviors. Following disruptive child behaviors, the frequency of negative parenting behaviors was significantly greater than the frequency of positive parenting behaviors. Parent unlabeled praise, reflections, and labeled praise were each uniquely predicted by adaptive child behaviors more strongly than disruptive child behaviors. Parent indirect commands, direct commands, and negative talk were each uniquely predicted by disruptive child behaviors more strongly than adaptive child behaviors. Exploratory analyses yielded

mixed results, with several relationships being moderated by parent ADHD or depressive symptoms. Results extend findings among parent-child dyads to the triad setting, clarify the degree of specificity with which parent behaviors are linked to child behaviors in the coercive cycle, and indicate areas for future research. Dedication

To Casey, whose love Helped foster the fortitude To go the distance.

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Introduction

Children with disruptive behaviors routinely have strained relationships with their parents. Disruptive child behaviors include inattention, interrupting others, refusal to comply with parent directives, temper tantrums and vindictiveness, all of which are related to increased stress and conflict in the parent-child relationship (for a review, see Morgan, Robinson, & Aldridge, 2002). A preponderance of research, in both community and clinical samples across the child developmental spectrum, has shown that parents of children with disruptive behaviors tend to engage in lower levels of positive parenting behaviors and higher levels of negative parenting behaviors compared to parents of typical children who display more adaptive behavior (terms defined below – for a review, see Loeber et al., 2000; Rothbaum & Weisz, 1994). Indeed, some of the most robust findings in the literature demonstrate these effects among parents of children with attention-deficit hyperactivity disorder (ADHD), one of the most common mental health disorders in children that involves a pervasive pattern of inattention and/or hyperactivityimpulsivity causing significant functional impairment (APA, 2013). Parents of children with ADHD report more parenting problems and stress, less parenting self-efficacy, and more parent-child conflicts compared to parents of typical children (Johnston & Chronis-Tuscano, 2015). Moreover, parents of children with comorbid ADHD and oppositional defiant disorder (ODD; i.e., children with frequent irritable mood, defiant behavior and vindictiveness; APA, 2013) have reported negative effects that consistently exceed those reported by parents of children with ADHD only (Edwards, Barkley, Laneri, Fletcher, & Metevia, 2001). This issue highlights that the difficulty of parenting rises as the severity of child externalizing behavior increases, though further investigation into the

independent effects of individual disruptive child behaviors on parenting responses (e.g., comparing the effects of child inattention vs. defiance) is warranted.

For the purposes of the current study, adaptive behavior is defined as child behavior that is typically associated with compliance, cooperativeness, and social desirability according to parent report, teacher report, or as observed by others in the context of a parent-child interaction. Examples of such behaviors include compliance in response to a command, assistance in response to a request, respectful conversation, and complimenting others. Conversely, disruptive behavior is defined as child behavior that is typically associated with inattentiveness, hyperactivity/impulsivity, and/or defiance that leads to impairment according to parent report, teacher report, or as observed by others in the context of a parent-child interaction. Examples of such behaviors include noncompliance in response to a command, whining, yelling, disapproval of the parent's attributes, physical aggression, and sarcastic or rude remarks that would typically be considered aversive.

Given that the quality of parental responses over time appears to influence the progression of disruptive behaviors in children (Patterson, 1982), identifying child behaviors that may uniquely predict specific parenting behaviors shown to facilitate optimal child development (e.g., labeled praise), or suboptimal child development (e.g., negative talk), may yield information that could improve parent-focused interventions for children exhibiting disruptive behaviors (e.g., parent training). For example, if it is known that a specific form of disruptive child behavior (e.g., defiance) is most likely to precede negative parenting responses (e.g., negative talk), this information could help parents prepare for managing defiance, which in turn may increase parents' response options beyond the urge to engage in negative parenting responses. Over time, this may yield improved child behavioral outcomes, parent-child relationships, and overall quality of life for both parents and children.

For the purposes of the current study, positive parenting is defined as parenting behavior that is typically associated with high warmth, high responsiveness, and/or moderate-to-high levels of parental supervision/involvement as reported by oneself or observed by others in the context of a parent-child interaction. Examples of such behaviors include labeled and unlabeled praise, physical affection or touch, verbal reflections, and behavioral descriptions. In contrast, negative parenting is defined as parenting behavior that is typically associated with low warmth and low responsiveness according to oneself or as observed by others in the context of a parent-child interaction. Such behaviors include disapproval of the child's attributes, physical restraint, and sarcastic or rude remarks that would typically be considered aversive. Direct and indirect commands will also be considered negative parenting due to their tendency to begin critical exchanges and their potential to elicit the coercive process.

Additionally, it may be that parents with certain traits are especially susceptible to responding aversively to disruptive child behavior. One such group might be parents with elevated ADHD or depressive symptoms. Research indicates that elevated ADHD symptoms and depressive symptoms are more common among parents of children with disruptive behaviors, and parents' symptoms are associated with higher levels of negative parenting and lower levels of positive parenting (Chronis et al., 2003; Park, Hudec, & Johnston, 2017). Unfortunately, little is known about the degree to which parent ADHD and/or depressive symptoms strengthen or weaken associations between specific child

behaviors and specific parenting behaviors. By better understanding this potential relationship, the field may be better equipped to provide interventions for at-risk parents of children with disruptive behaviors in order to help them escape the coercive process.

The current study aims to address these gaps in the literature by examining the degree to which various kinds of adaptive child behaviors (i.e., compliance, prosocial behaviors) and disruptive child behaviors (i.e., inattention, hyperactivity/impulsivity, defiance) elicit positive parenting behaviors (e.g., unlabeled praise, reflection) and negative parenting behaviors (e.g., negative talk, direct command). The study also aims to determine whether any of these potential relationships may be moderated by parent ADHD or depressive symptoms.

Links between Child Behaviors and Positive Parenting

Across studies with cross-sectional, longitudinal and experimental designs, a preponderance of the evidence indicates that child behavior is associated with positive parenting. Beginning with cross-sectional studies, one meta-analysis found that greater levels of disruptive child behaviors were modestly correlated with lower levels of positive parenting behaviors such as expressions of warmth (r = -.18), monitoring (r = -.19), autonomy granting (r = -.11), and authoritativeness (r = -.16; Pinquart, 2017). Although studies examining the association between adaptive child behaviors and positive parenting behaviors, a recent meta-analysis found that greater levels of adaptive child behaviors, a recent meta-analysis found that greater levels of adaptive child behaviors are associated with greater levels of positive parenting behaviors (i.e., authoritativeness, r = .17; Wong, Konishi, & Kong, 2020). Broadly, these cross-sectional studies have been confirmed and extended by longitudinal research findings.

Indeed, review of the existing longitudinal evidence indicate that disruptive child behaviors during early childhood are associated with a subsequent reduction over time in positive parenting behaviors, while early adaptive child behaviors have been linked with later increases in positive parenting behavior. Much of the literature has focused on infancy and toddlerhood (Beernink, Swinkels, Van der Gaag, & Buitelaar, 2012; Breaux & Harvey, 2019; Gadeyne, Ghesquière, & Onghena, 2004; Liu et al., 2020; Pagani & Fitzpatrick, 2018), although one recent study examined a community sample of parents and their children across four time points (i.e., 1, 3, 5, and 9 years of age) and found that elevated parent-reported symptoms of inattention and hyperactivity/impulsivity at 5 years of age predicted decreased levels of parent- and observer-rated positive parenting (i.e., warmth and parental involvement) at 9 years of age (Shelleby & Ogg, 2019). As such, these longitudinal studies extend cross-sectional findings for dyads during early childhood by establishing the presence of child effects on positive parenting behavior over time, although few studies have examined middle childhood.

Researchers have also used experimental designs to investigate the effects of child behavior on positive parenting. Studies have demonstrated that parents of typical children interacting with disruptive confederates (10–12 years of age) exhibited fewer observerreported positive parenting behaviors (i.e., laughed and played less) compared to those who interacted with typical confederates (Pelham, Lang, Atkeson, et al., 1997; Lang, Pelham, Atkeson, & Murphy, 1999). Similarly, parents of children with ADHD and ODD who interacted with disruptive confederates also displayed fewer observer-reported positive parenting behaviors compared to those who interacted with typical confederates (Lang et al., 1999; Pelham et al., 1998). These studies present causal implications of disruptive child behaviors for positive parenting, whereby interacting with a disruptive child directly elicits fewer positive parenting behaviors compared to other types of parenting responses. Moreover, they underscore the contribution of child-driven factors to the coercive cycle in an experimentally controlled design, which confirms and extends cross-sectional and longitudinal findings described above.

Links between Child Behaviors and Negative Parenting

As with positive parenting studies, investigations across different study designs indicate that child behavior is associated with negative parenting. One meta-analysis found that disruptive child behaviors were positively correlated with negative parenting behaviors such as harsh control (r = .21) and psychological control (r = .22; Pinquart, 2017). Similar to research on positive parenting outcomes, most research regarding negative parenting outcomes has tended to focus on their associations with disruptive child behaviors. Still, of the available literature examining adaptive child behaviors and negative parenting, findings tend to indicate that increased adaptive child behaviors are linked with fewer negative parenting behaviors (Kaufmann et al., 2000). Overall, the cross-sectional literature is clear that greater levels of disruptive child behaviors and lower levels of adaptive child behaviors are associated with greater levels of negative parenting behaviors.

Similar to the cross-sectional literature, studies using a longitudinal approach have focused primarily on the effects of disruptive child behaviors on negative parenting behaviors. Studies have demonstrated that higher levels of child disruptive behaviors predicted subsequently higher levels of negative parenting behaviors, even after controlling for the effects of initial negative parenting behaviors (Alemany et al., 2013; Lifford, Harold, & Thapar, 2008; Lifford, Harold, & Thapar, 2009). However, there appears to be a dearth of longitudinal research examining the effects of adaptive child behavior on subsequent negative parenting behavior. Although the preponderance of findings indicates a shift toward increased levels of negative parenting behaviors over time in response to earlier child disruptive behaviors, little is known regarding the directional effects of adaptive child behaviors and negative parenting behaviors.

Studies using experimental designs have shown that parents interacting with children exhibiting disruptive behaviors were observed to utilize significantly higher levels of negative parenting behaviors (e.g., criticism, commands) compared to parents who interacted with children exhibiting internalizing symptoms (e.g., avoidant, disengaged; Brunk & Henggeler, 1984). Similarly, parents of children with ADHD and ODD who interacted with child confederates exhibiting disruptive behavior rated their experience as significantly more unpleasant, unsuccessful, and ineffective compared to those who interacted with "typical", non-disruptive confederates, and they were also observed to display more negative parenting behaviors than those who interacted with typical confederates (Lang et al., 1999; Pelham et al., 1998). It is clear from the results of these studies that child behavior can have a direct causal influence on parent behavior, and these effects have been demonstrated in nonclinical samples as well as in ADHD/ODD samples. Similar to the longitudinal literature on negative parenting, little is known about the direct causal effects of adaptive child behaviors on parenting behaviors based on experimental designs.

Limitations of the Literature

Though evidence tends to demonstrate that lower levels of adaptive child behaviors and higher levels of disruptive child behaviors are associated with decreased levels of positive parenting behaviors and increased levels of negative parenting behaviors, much of this research is cross-sectional in design. Longitudinal and experimental research has confirmed and extended these findings regarding the effects of disruptive child behaviors on positive and negative parenting behaviors. Although research on the effects of adaptive child behaviors on positive parenting over time has found similar results, it has focused primarily on infancy and early childhood, with few studies examining middle childhood. Moreover, very little is known about the directional effects of adaptive child behaviors on negative parenting behaviors, which limits our understanding of whether leveraging these adaptive child behaviors might work to interrupt the coercive cycle. Additionally, study designs involving parents and their own biological children have precluded researchers from disentangling the potential shared genetic variance in parents and children associated with coercive behavior. These issues underscore the need for more studies involving parents interacting with unrelated children displaying either adaptive or disruptive behaviors in order to more closely examine the degree to which they directly elicit positive or negative parenting behaviors.

Beyond these fundamental design limitations, much of the existing research has measured child and parent behaviors using global parent- and observer-ratings (e.g., parent negativity). The use of these broader units of analysis has precluded researchers from examining the effects of child behaviors on specific parenting behaviors. As such, little is known about the degree to which adaptive or disruptive child behaviors may differentially predict specific parenting behaviors (e.g., labeled praise). Knowledge of this could inform whether it might be more prudent to target child adaptive or disruptive behaviors as part of intervention designed to interrupt the coercive cycle.

Additionally, there is a dearth of research examining the differential effects of specific adaptive and disruptive child behaviors on the quality of specific parenting behaviors. If such information were known, it would further our understanding of child-driven aspects of the coercive cycle by indicating which child behaviors are most evocative, which could potentially lead to more effective parent training regarding how to be aware of and respond adaptively to specific child behaviors.

The vast majority of research has also examined these relationships within the context of parent-child dyads, despite the fact that 69% of U.S. children live in two-parent homes (U.S. Census Bureau, 2016). As such, little is known about whether and to what extent these relationships are maintained or change within the context of mother-father-child triads. Lastly, little is known about how parent factors (e.g., parent psychopathology) may influence causal associations between child behaviors and parent behaviors. The current study aims to address these gaps in the literature.

Links between Parent Psychopathology and Parenting Behaviors

A parent's own mental health concerns may make it even more challenging to respond effectively to child behavior in the moment. Symptoms of ADHD (e.g., impulsivity, disorganization, forgetfulness) and depression (e.g., irritability, fatigue, feelings of worthlessness) appear to be particularly relevant challenges for parenting, especially when faced with disruptive child behaviors. Indeed, elevated parental ADHD is associated with less positive parenting, as well as more harsh and lax parenting behaviors (Park, Hudec, & Johnston, 2017). Meanwhile, elevated parental depressive symptoms are associated with less energy or fewer coping skills to manage disruptive child behaviors, as well as the tendency to withdrawal commands, acquiesce to child misbehavior, or become increasingly coercive (Chronis-Tuscano & Clarke, 2008).

Considering the potential moderating effect of parent ADHD and depression on the link between child behaviors and parenting behaviors appears to be clinically relevant in light of evidence indicating that parents of children with disruptive behaviors are likely to experience subclinical and clinical levels of ADHD and depression (Baker, Brooks-Gunn, & Gouskova, 2019; Johnston, Mash, Miller, & Ninowski, 2012). For example, approximately 40% of families with at least one child with ADHD also have at least one parent who is affected by ADHD (Starck, Grunwald, & Schlarb, 2016). Furthermore, approximately 40% of mothers of children with ADHD have a history of major depression, which corresponds to a likelihood of depression that is 2 to 3 times greater than women in the general population (Chronis et al., 2003). Such elevated levels of ADHD and depressive symptoms among parents warrant further investigation into the impact that they might have on parenting behaviors, especially in response to challenging disruptive behaviors.

However, little is known regarding whether parents with elevated symptoms of ADHD or depression respond differentially to adaptive or disruptive child behaviors. That is, it is presently unclear whether mothers with more ADHD or depressive symptoms respond differently in terms of their parenting behavior to specific adaptive or disruptive child behaviors relative to mothers with low ADHD or depressive symptoms. Understanding these unique differences could inform the tailoring of future parentfocused interventions for children with ADHD in order to focus on unique, maladaptive response patterns that mothers and fathers with elevated ADHD or depressive symptoms may have relative to those without these mental health concerns.

Current Study

The goal of this study is to investigate whether adaptive and disruptive child behaviors differentially predict positive and negative parenting behaviors. Aim 1a sought to address gaps in the literature regarding how parents respond to disruptive and adaptive child behaviors. Specifically, this aim sought to identify the relative proportion of positive parenting behaviors (i.e., a composite of unlabeled praise, labeled praise, reflection, behavioral description, and positive touch) and negative parenting behaviors (i.e., a composite of direct commands, indirect commands, negative talk, and negative touch) elicited by child adaptive behaviors (i.e., a composite of compliance and prosocial behaviors) or disruptive behaviors (i.e., a composite of inattention, hyperactivity/impulsivity, and ODD behaviors). The following hypotheses were proposed for Aim 1a:

- Child adaptive behaviors will elicit a higher frequency of positive parenting behaviors than negative parenting behaviors, on average.
- Child disruptive behaviors will elicit a higher frequency of negative parenting behaviors than positive parenting behaviors, on average.

Aim 1b will determine whether the adaptive child behavior composite or disruptive child behavior composite is most predictive of the six most common individual parenting behaviors. The following hypotheses were proposed for Aim 1b:

- The child adaptive behavior composite will predict parent unlabeled praise, labeled praise, and reflection more strongly than the child disruptive behavior composite.
- The child disruptive behavior composite will predict parent direct commands, indirect commands, and negative talk more strongly than the child adaptive behavior composite.

On an exploratory basis, the present study will determine (EA.1) if any specific child adaptive (i.e., compliance or prosocial behavior) or disruptive (i.e., inattention, hyperactivity/impulsivity or ODD) behaviors are more predictive of individual parenting behaviors than other specific child behaviors (e.g., whether parent unlabeled praise is more strongly predicted by child compliance or prosocial behavior), and (EA.2) if potential relationships between specific child behaviors and parenting behaviors are stronger or weaker among parents with elevated parent ADHD or depressive symptoms.

Method

Participants

Ninety parent couples (n = 180; See Table 1 for participant demographics), who participated in a prior study investigating whether disruptive child behavior caused interparental conflict during structured triadic mother-father-child interactions, provided data for the present investigation (for a full description of the methods for the prior study, see Wymbs & Pelham, 2010). Interested couples completed a phone screening, during which the following inclusion criteria were confirmed: (a) Parents agreed to participate in the study session together; (b) parents had lived together for at least two years; (c) mothers and fathers were both active parents with their children at home; (d) target children were 9–12 years of age; and (e) target children did not meet diagnostic criteria for a developmental disorder, schizophrenia, or any other psychotic disorder.

Table 1

	ADHD		Non-A	р	
	(n = 1)	$(n = 39)^{a}$		51) ^a	
Variable	M	SD	M	SD	
Matching variables					
Child age (years)	10.84	1.05	10.71	1.28	.58
% child male	82.05		86.27		.58
% child European American	97.44		94.12		.45
Mother age (years)	40.03	6.39	39.41	6.15	.65
Father age (years)	42.00	6.87	41.92	6.72	.96
% mother European American	100.00		96.08		.46
% father European American	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
Other parent variables					
% married	97.44		92.16		.28
Length of relationship with children (years)	13.10	4.18	10.20	4.37	< .01
Household income	\$68,954		\$79,818		.25

Demographics of the Participating Parents of ADHD and non-ADHD Children

Note. ADHD = attention-deficit/hyperactivity disorder.

^aNumber of couples.

^bResponse scale for level of education ranged from 1 to 9, with the following rating choices: 1 = less than a 7th-grade education; 2 = junior high school (9th grade); 3 = partial high school; 4 = high school graduate or GED; 5 = specialized training; 6 = partial college; 7 = associate's or two-year degree; 8 = standard college or university education; 9 = graduate professional training.

Procedure

Child Interaction

After providing informed consent and confirming demographic information,

parents were oriented to the child interaction task sequence. Parents were told that they

would interact with an unfamiliar child, chosen at random, who had the same gender as their own child. Parents were encouraged to act as they naturally would with their own child during the interaction.

Unbeknownst to the parents, the child in the study was a confederate. Seven 9- to 12-year-old children (i.e., five boys and two girls) were trained extensively to enact two scripted behavioral roles: One dictated that they behave like developmentally appropriate children with disruptive behaviors, and another required that they behave like developmentally appropriate typical children without disruptive behavior problems. Scripts for both roles were adapted from the experimental paradigm devised and validated with 9- to 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 ADHD/ODD behaviors (e.g., forgetting their turn, getting out of their seat and running away, refusing to comply with directions) drawn from the 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 specific behaviors were exhibited or omitted correctly according to the scripts for each role. As reported by Wymbs and Pelham (2010), observational tracking confirmed the integrity of the typical (M = 93%, SD = 5%, range = 82–99%) and disruptive (M = 88%,

SD = 4%, range = 78–98%) confederate roles. Moreover, parents who interacted with disruptive confederates reported greater severity of externalizing behaviors in the child than did parents who interacted with typical confederates (Wymbs & Pelham, 2010).

All the interactions began with the *cooperative task* (8 minutes), which prompted both parents to engage the child in helping him/her to build the tallest *Jenga* block tower in the least amount of time possible. The next segment involved a *parallel play task* (7 minutes) in which each parent attempted to balance a checkbook individually while responsible for ensuring the child completed a simple math worksheet. During the *free play task* (7 minutes), parents were instructed to play with the child using toys in the room and allowing the child to direct play. Finally, during the *clean-up task* (3 minutes), parents were asked to prompt the child to 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 (i.e., parent–parent–confederate child) interactions, the remaining tasks in the current study were exactly the same as those in the Pelham and Lang studies (Lang et al., 1999; Pelham et al., 1997, 1998). Researchers commonly use these tasks to investigate factors that affect the quality of parent-child relationships (Johnston, Murray, Hinshaw, Pelham, & Hoza, 2002).

Measures

Child Behaviors

Child behaviors examined in this study were identified and coded in two stages: 1) Preliminary coding of a small subset of videos to identify a valid and representative index of disruptive behaviors; and 2) Primary coding of all adaptive and disruptive behaviors through a psychometrically-sound parent-child interaction coding system.

Preliminary Coding. Although the behaviors in the disruptive script were drawn directly from the DSM-IV criteria for ADHD and ODD, I sought to ensure that the predictors were reliable and valid representations of common disruptive behaviors that parents of children with these disorders regularly encounter. To do so, the first three "disruptive" and "typical" videos with high script integrity (i.e., 90% or higher) were reviewed by the primary investigator and two graduate student volunteers. Each observer confirmed whether or not the confederate child performed each behavior as scripted, and then subsequently coded each observed scripted behavior as an example of a DSM-IV symptom of ADHD Inattention (IA) or Hyperactivity/Impulsivity (HI), or of ODD, or not. First, behaviors coded with at least 66.67% agreement were identified across raters and videos. Specifically, at least 2/3 raters needed to have the exact same code for the same behavior exhibited across at least 2/3 videos. Then, using a 5-point Likert scale, each observer rated the extent to which each observed scripted behavior represented IA, HI, or ODD (1 = Very Poor, 2 = Poor, 3 = Fair, 4 = Good, 5 = Very Good; based on DSM-IV criteria as a benchmark). Scripted disruptive behaviors with at least 66.67% agreement and an average representativeness rating across raters and videos of 3.00 or above were then identified (i.e., 8 IA behaviors, 4 HI behaviors, 10 ODD behaviors). The behaviors that satisfied agreement and representativeness requirements were chosen as the sample of disruptive child behaviors to be coded during primary coding of all 90 videos for this study (See Appendix B for disruptive behaviors, percent agreement, and representativeness ratings compiled as a result of preliminary coding).

Primary Coding. After completion of the preliminary coding, undergraduate research assistants, who were unaware of research hypotheses, were trained to positively

identify with at least 80% accuracy all disruptive behaviors selected during the preliminary coding process outlined above. The chosen sample of scripted disruptive behaviors were pre-placed on all coding sheets in the order in which they were intended to occur. Research assistants were trained to identify whether or not each scripted disruptive behavior actually occurred in the video, and to record it as it occurred in the context of all other parent and child behaviors. In addition to the selected disruptive behaviors, research assistants coded all discrete child behaviors that were exhibited by each confederate child during the 25-minute interactions, including adaptive child behaviors. Adaptive child behaviors (i.e., prosocial behaviors, compliance) were captured using the Dyadic Parent-Child Interaction Coding System–4th Edition (DPICS-IV; Eyberg et al., 2013; see "Parenting Behaviors" section for more information about this coding system, including psychometric properties). Coders sequentially recorded unique codes for each of the adaptive behaviors (i.e., prosocial behavior, compliance) and disruptive behaviors (i.e., inattention, hyperactivity/impulsivity, oppositional/defiance).

Table 2 contains interrater reliability statistics from the current study for all child codes. Values of Cohen's Kappa ranged from .88 to .94, indicating excellent interrater agreement. Child prosocial behavior ($\kappa = .89$) and compliance ($\kappa = .88$) were summed together to create a child adaptive behavior composite variable. Child inattention ($\kappa =$.92), hyperactivity/impulsivity ($\kappa = .91$), and ODD behavior ($\kappa = .94$) were summed together to create a child disruptive behavior composite variable.

Table 2

Interrater Reliability: Child Codes

	Cohen's Kappa	
Prosocial Behavior (PRO)	.89	
Compliance (CO)	.88	
Inattention (IA)	.92	
Hyperactivity/Impulsivity (HI)	.91	
ODD Behaviors (ODD)	.94	

Parenting Behaviors

Undergraduate research assistants also coded all discrete parenting behaviors that were exhibited by each parent couple during the 25-minute interactions using the DPICS-IV (Eyberg et al., 2013). The DPICS-IV is designed to capture discrete parenting and child behaviors in sequence, which allows the relationship between specific child and parenting behaviors to be examined (See Appendix C for operational definitions of all DPICS-IV parent codes used in the current study). In order to calculate interrater reliability for the current study, 20% of interactions were double-coded by pairs of observers.

There is a substantial amount of evidence supporting the reliability and validity of the DPICS (for a review of earlier editions, see Eyberg et al., 2010). In terms of reliability, results from earlier studies demonstrated Cohen's kappa values ranging from moderate to substantial interrater agreement for all parent codes (Bessmer, Brestan, & Eyberg, 2005). There is also evidence supporting the DPICS as a valid tool to discriminate between community families and those of children demonstrating disruptive behaviors, with one study finding that 61% of the variance in parent-reported child behavior in the home predicted by DPICS codes of clinic behavior, R(35) = 0.94, p < 0.001 (Robinson & Eyberg, 1981). All DPICS-IV codes used in the current study are equivalent to codes used in earlier editions and have substantial psychometric support (Eyberg, Nelson, Ginn, et. al., 2013).

Table 3 contains interrater reliability statistics from the current study for all parent codes. Values of Cohen's Kappa ranged from .62 to .79, indicating moderate to substantial interrater agreement. Parent unlabeled praise ($\kappa = .62$), reflection ($\kappa = .72$), and labeled praise ($\kappa = .75$) were summed together to create a positive parenting composite variable. Parent indirect commands ($\kappa = .69$), direct commands ($\kappa = .79$), and negative talk ($\kappa = .75$) were summed together to create a negative parenting composite variable. For the current study, the most common positive parenting behaviors (i.e., unlabeled praise, reflection, labeled praise) and negative parenting behaviors (i.e., indirect command, direct command, negative talk) were tallied only if they immediately followed an adaptive child behavior (i.e., prosocial behavior, compliance) or a disruptive child behavior (i.e., inattention, hyperactivity/impulsivity, ODD behavior) in order to more closely capture the sequential effects of child behavior on parent behavior. Neutral parent behaviors (i.e., neutral talk, questions) were not tallied due to a lack of evidence in support of their clinical relevance. Parent indirect commands and direct commands were considered negative parenting behaviors due to their propensity to initiate the coercive cycle (Patterson, 1982).

Table 3

Interrater l	Rel	lial	bil	ity:	Pa	irent	Cod	es
--------------	-----	------	-----	------	----	-------	-----	----

	Cohen's Kappa
Unlabeled Praise (UP)	.62
Reflection (RF)	.72
Labeled Praise (LP)	.75
Indirect Command (IC)	.69
Direct Command (DC)	.79
Negative Talk (NTA)	.65

Parent ADHD and Depressive Symptoms

The Current Symptoms Scale (CSS; Barkley & Murphy, 1998) was used to ask respondents to endorse how frequently they had exhibited 18 *DSM-IV* ADHD symptoms in the past 6 months (0 = Never or rarely, 1 = Sometimes, 2 = Often, 3 = Very Often). A study by Aycicegi and colleagues (2003) examined the psychometric properties of the CSS in two normative samples of American (n = 114) and Turkish (n = 183) populations, and found adequate levels of internal consistency (Cronbach's $\alpha = 0.63-0.78$) and testretest reliability (r = 0.82; 4 week interval). The CSS has been shown to able to discriminate between different levels of inattention, hyperactivity, and impulsivity, which provides support for the validity of the measure as a tool for screening ADHD in adults (Gomez, 2011). For the present study, a total CSS score was attained by adding together the scores of all items (Mother $\alpha = 0.89$, Father $\alpha = 0.88$). The average ADHD score (M =8.95, SD = 7.09) was somewhat lower than normative scores reported by Barkley and Murphy (1998). Out of 90 parent couples, nine parents (5%) exceeded the clinical cutoff (i.e., greater than or equal to 1.5 SD above the mean) for ADHD (Wymbs, Dawson, Egan, Sacchetti, Tams, & Wymbs, 2017).

Parents also completed the 21-item Beck Depression Inventory-Second Edition (BDI-II; Beck et al., 1996), where respondents endorsed the severity of their depressive cognitions and behaviors on a scale from 0 to 3. Higher scores indicate greater depressive symptoms. The BDI-II is the most widely-used and psychometrically-sound measure of adult depression (Dozois, Dobson, & Ahnberg, 1998). In a comprehensive review of its psychometric data across 113 studies, Wang and Gorenstein (2013) found that the BDI-II has demonstrated good internal consistency (Cronbach's $\alpha = 0.83 - 0.96$) and good testretest reliability (r = 0.73 - 0.96; mean interval of two weeks). The researchers also found evidence of convergent validity for the BDI-II with the Center for Epidemiological Studies of Depression (CES-D), the Hamilton Depression Rating Scale (HAM-D), the Zung Self-Rating Depression Scale (SDS), the Montgomeray-Asberg Depression Rating Scale (MADRS), and the Geriatric Depression Scale (GDS), with correlations ranging from 0.66 to 0.86 (Wang & Gorenstein, 2013). For the present study, a total BDI-II score was attained by adding together the scores of all items (Mother $\alpha = 0.89$, Father $\alpha =$ 0.87). Out of 90 parent couples, 27 parents (15%) exceeded the clinical cutoff for mild depression (i.e., greater than or equal to 14), while nine parents (5%) exceeded the clinical cutoff for moderate depression (i.e., greater than or equal to 20; Wymbs et al., 2017).

Analytic Plan

First, descriptive statistics (i.e., minimum, maximum, mean, standard deviation) were calculated for each individual child and parenting behavior code.

For Aim 1a, the mean frequencies of positive parenting behavior (i.e., unlabeled praise, reflection, labeled praise) and negative parenting behavior (i.e., indirect command, direct command, negative talk) composites in response to a child adaptive behavior composite (i.e., prosocial behaviors and compliance) were calculated. Following each occurrence of an adaptive child behavior, any positive parenting behavior or negative parenting behavior was tallied. Then, the total number of positive parenting behaviors was divided by the total number of adaptive child behaviors. Analogous calculations were conducted for negative parenting behaviors following adaptive child behaviors, as well as positive and negative parenting behaviors following disruptive child behaviors. Because all codes were recorded sequentially, whichever parent responded first was tallied and the frequencies reflect a combination of mother and father responses. The mean number of positive parenting tallies following any adaptive child behavior was then compared to the mean number of negative parenting tallies following any adaptive child behavior, using a paired samples t-test (1a.1). The same comparison was conducted for positive and negative parenting behavior tallies in response to the child disruptive behavior composite (i.e., inattention, hyperactivity/impulsivity, and ODD behaviors) as well (1a.2).

For Aim 1b, prior to conducting multiple regression analyses, bivariate correlations were computed for associations among child behaviors and parenting behaviors. Next, hypotheses 1b.1 and 1b.2 were tested through a series of regressions, wherein each of the most common individual positive and negative parenting behaviors (i.e., unlabeled praise, reflection, labeled praise, indirect command, direct command, and negative talk) were regressed upon a composite of adaptive child behaviors (i.e., the sum of all prosocial behaviors and compliance) and a composite of disruptive child behaviors (i.e., the sum of all inattention, hyperactivity/impulsivity, and ODD behaviors) in order to isolate the unique variance attributable to adaptive or disruptive child behaviors. As a post-hoc analysis, Wald Chi-Square tests of parameter constraints were used to determine whether there were significant differences in unstandardized Beta values between the child adaptive behavior composite and the child disruptive behavior composite. Post hoc analyses of Wald Chi-Square tests of parameter constraints were performed using the Mplus statistical software package by entering adaptive and disruptive behavior composites into the model simultaneously, and then testing whether model fit differed significantly if the two predictors were constrained to equal each other compared to when they were allowed to vary freely. A significant Wald Chi-Square test of parameter constraints indicates that the unstandardized Beta weights of the two predictors differ significantly from each other.

For the exploratory aims, EA.1 was investigated using the same analysis conducted in Aim 1b, except regressing individual parenting behaviors (e.g., unlabeled praise) onto specific child behaviors entered individually, not as a child behavior composite (e.g., prosocial behavior and compliance), and testing differences in unstandardized Beta weights between specific adaptive child behaviors (i.e., prosocial behavior vs. compliance) and between specific disruptive child behaviors (i.e., inattention vs. hyperactivity/impulsivity vs. ODD behavior). If so, post hoc analyses identical to those performed for Aim 1b were conducted to determine if any child behavior differentially predicted the parenting behavior. For EA.2, main effect variables of interest (e.g., Parent ADHD, child compliance) were entered simultaneously into a regression model (Block 1). In a second step, the interaction term of interest (e.g., Parent ADHD x child compliance) was entered into the model (Block 2), whereby potential moderation effects of parent ADHD symptoms or parent depressive symptoms were examined. All main effect and interaction terms were centered. Any significant interactions were further investigated using the Johnson-Neyman Technique via the PROCESS macro procedure in SPSS (Hayes, 2017) in order to probe for regions of significance.

Results

Descriptive Statistics

Table 4 and Table 5 contain descriptive statistics for all child behavioral codes and all parent behavioral codes, respectively, that occurred within each 25-minute triadic interaction. The six most common positive and negative parenting behaviors (ordered from highest to lowest frequency within positive and negative domains) were unlabeled praise, reflection, labeled praise, indirect command, direct command, negative talk.

Table 4

Descriptive Statistics: Child Codes

	Ν	Minimum	Maximum	Mean	SD	
Prosocial Behavior (PRO)	90	0	20	5.13	4.46	
Compliance (CO)	90	0	12	1.06	1.94	
Inattention (IA)	90	0	7	1.12	1.58	
Hyperactivity/Impulsivity (HI)	90	0	4	0.69	1.04	
ODD Behaviors (ODD)	90	0	8	1.27	1.74	

Note. Minimum/maximum refer to the fewest/greatest number of child behaviors coded for any individual mother or father participant in which the child code was followed by a positive or negative parenting behavior code.

Table 5

	Ν	Minimum	Maximum	Mean	SD
Unlabeled Praise (UP)	180	0	5	2.29	5.16
Reflection (RF)	180	0	15	1.24	2.06
Labeled Praise (LP)	180	0	11	0.49	0.95
Indirect Command (IC)	180	0	13	2.18	3.04
Direct Command (DC)	180	0	10	1.89	2.24
Negative Talk (NTA)	180	0	16	1.17	2.00

Descriptive Statistics: Six Most Common Positive/Negative Parent Codes

Aim 1a Analyses

Table 6 displays the tallies and percentages of positive and negative parenting behaviors in response to adaptive and disruptive child behaviors averaged across all participants. Following adaptive child behaviors, t-test analyses indicated that the mean number of positive parenting behaviors was significantly greater than the mean number of negative parenting behaviors, t(179) = 5.510, p < .001, d = .411. Following disruptive child behaviors, the mean number of negative parenting behaviors of negative parenting behaviors, t(179) = 5.510, p < .001, d = .411. Following disruptive child behaviors, the mean number of negative parenting behaviors, t(179) = 10.488, p < .001, d = .782.
	(+) Parenting Response	(–) Parenting Response	Total	T-Value
Adaptive Child Behavior	7.88 (63.6%)	4.50 (36.4%)	12.38	5.51*
Disruptive Child Behavior	.17 (2.7%)	6.00 (97.3%)	6.17	10.49*

Mean Number of Positive or Negative Parenting Behaviors Following Adaptive or Disruptive Child Behaviors

Note. Percentage values represent an average parenting response across all participants for each child behavior composite (i.e., percentages sum to 100% across rows, not within columns).

**p* < .001.

Aim 1b Analyses

Table 7 contains bivariate correlations between all child behavioral codes and parent behavioral codes that occurred in sequence. Parent unlabeled praise was positively correlated with child prosocial behavior and compliance, but was not significantly correlated with inattention, hyperactivity/impulsivity, or ODD behavior. Parent reflections were positively correlated with child prosocial behavior and inattention, but were not significantly correlated with compliance, hyperactivity/impulsivity, or ODD behavior. Parent labeled praise was positively correlated with child prosocial behavior and compliance, but was not significantly correlated with inattention, hyperactivity/impulsivity, or ODD behavior. Parent indirect commands, direct commands, and negative talk were all positively correlated with all child behaviors.

|--|

Correlat	ions: Pare	ent & Child (Codes								
	UP	RF	LP	IC	DC	NTA	PRO	СО	IA	HI	ODD
UP	-	.217**	.260**	.249**	.052	.137	.609**	.473**	.118	.048	.073
RF		-	032	.010	.165*	.133	.602**	011	.189*	.022	.102
LP			-	.188*	002	.147*	.333**	.378**	018	009	.071
IC				-	.492**	.584**	.431**	.644**	.695**	.599**	.664**
DC					-	.460**	.390**	.317**	.716**	.485**	.644**
NTA						-	.391**	.439**	.597**	.685**	.727**
PRO							-	.227**	.285**	.090	.226**
СО								-	.435**	.478**	.437**
IA									-	.604**	.700**
HI										-	.627**
ODD											_

Note. UP = Unlabeled Praise, RF = Reflection, LP = Labeled Praise, IC = Indirect Command, DC = Direct Command, NTA = Negative Talk, PRO = Prosocial Behavior, CO = Compliance, IA = Inattention, HI = Hyperactivity/Impulsivity, ODD = Oppositional Defiant Behavior. *p < .05. **p < .01. Table 8 contains all Aim 1b regression analysis results. Regarding positive parenting behaviors, regression analyses indicated that both child adaptive behaviors and child disruptive behaviors were uniquely associated with parent unlabeled and labeled praise. The post hoc analyses indicated that parent unlabeled and labeled praise were differentially predicted, such that greater child adaptive behaviors uniquely predicted greater parent unlabeled and labeled praise more strongly than decreased child disruptive behaviors. Parent reflections were only uniquely predicted by child adaptive behaviors, and were not uniquely predicted by child disruptive behaviors. The post hoc analysis indicated that parent reflections were differentially predicted, such that greater child adaptive behaviors uniquely predicted greater parent reflections more strongly than decreased child disruptive behaviors.

Regarding negative parenting behaviors, as shown in Table 8, regression analyses indicated that child adaptive behaviors and child adaptive behaviors uniquely predicted parent indirect commands, direct commands and negative talk. The post hoc analyses indicated that parent indirect commands, direct commands and negative talk were differentially predicted, such that greater child disruptive behaviors predicted greater parent indirect commands, direct commands and negative talk more strongly than elevated child adaptive behaviors.

Summarv o	f Aim	lb	Regressio	n Analvses
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Effect	R^2	В	SE	χ^2
Unlabeled Praise (UP)	.517*			
Adaptive Behavior		.319*	.023	
Disruptive Behavior		119*	.032	
				41.302*
Reflection (RF)	.263*			
Adaptive Behavior		.211*	.028	
Disruptive Behavior		045	.038	
				20.837*
Labeled Praise (LP)	.203*			
Adaptive Behavior		.088*	.013	
Disruptive Behavior		042*	.018	
				6.940*
Indirect Command (IC)	.675*			
Adaptive Behavior		.211*	.027	
Disruptive Behavior		.480*	.037	
				25.594*
Direct Commands (DC)	.548*			
Adaptive Behavior		.083*	.024	
Disruptive Behavior		.376*	.032	
				39.804*
Negative Talk (NTA)	.624*			
Adaptive Behavior		.087*	.019	
Disruptive Behavior		.350*	.026	
				48.625*

Note. B = Unstandardized Beta, SE = Standard Error, χ^2 = Wald Test of Parameter Constraints. When evaluating the difference between two beta weights, the magnitude (i.e., absolute value) of each beta weight was compared.

*Result significant according to the Holm-Bonferroni (1979) method for family-wise error correction.

Exploratory Analyses

Unique Child Behaviors Predicting Unique Parent Behaviors

Table 9 contains all exploratory beta weight comparisons for positive parenting outcomes. Regression analyses indicated that parent unlabeled praise and labeled praise were predicted by child compliance and prosocial behaviors when entered simultaneously. Post hoc analysis indicated a trend for parent unlabeled praise to be more strongly associated with compliance than prosocial behavior. Furthermore, greater child compliance uniquely predicted greater parent labeled praise more strongly than elevated child prosocial behaviors. Otherwise, parent unlabeled praise and labeled praise were not predicted by child inattention, hyperactivity/impulsivity, and ODD behaviors when entered simultaneously.

Summary of Exploratory Beta Weight Comparisons of Unique Adaptive and Disruptive Child Behaviors Predicting Positive Parenting Outcomes

Effect	R^2	В	SE	Comparison	χ^2
Unlabeled Praise (UP)	.489*				
Prosocial Behavior (PRO)		.256*	.027		
Compliance (CO)		.391*	.061	$CO \approx PRO$	3.572
Unlabeled Praise (UP)	.015				
Inattention (IA)					
Hyperactivity/Impulsivity (HI)					
Oppositional/Defiance (ODD)					
Reflection (RF)	.386*				
Prosocial Behavior (PRO)		.294*	.028		
Compliance (CO)		165*	.064	CO < PRO	4.204*
Reflection (RF)					
Inattention (IA)					
Hyperactivity/Impulsivity (HI)					
Oppositional/Defiance (ODD)					
Labeled Praise (LP)	.207*				
Prosocial Behavior (PRO)		.055*	.015		
Compliance (CO)		.155*	.034	CO > PRO	6.498*
Labeled Praise (LP)	.016				
Inattention (IA)					
Hyperactivity/Impulsivity (HI)					
Oppositional/Defiance (ODD)					

Note. B = Unstandardized Beta, SE = Standard Error, χ^2 = Wald Test of Parameter Constraints. When evaluating the difference between two beta weights, the magnitude (i.e., absolute value) of each beta weight was compared.

*Result statistically significant according to the Holm-Bonferroni (1979) method for family-wise error correction.

Parent reflections were uniquely positively associated with child prosocial behaviors and uniquely negatively associated with child compliance. Post hoc analysis indicated that parent reflections were differentially predicted, such that greater child prosocial behaviors uniquely predicted greater parent reflections more strongly than decreased child compliance. Because parent reflections were not uniquely predicted by composite child disruptive behaviors in Aim 1b, no exploratory analyses were conducted to examine individual behaviors.

Table 10 contains all exploratory beta weight comparisons for negative parenting outcomes. Parent indirect commands were uniquely positively predicted by child prosocial behaviors and compliance. Post hoc analysis indicated that parent indirect commands were differentially predicted, such that greater levels of child compliance predicted greater levels of indirect commands more strongly than elevated levels of child prosocial behaviors. In a separate analysis, parent indirect commands were also uniquely positively predicted by child inattention, hyperactivity/impulsivity, and ODD behaviors. Post hoc analyses indicated that indirect commands were not differentially predicted by any child behavior.

Summary of Exploratory Beta Weight Comparisons of Unique Adaptive and Disruptive Child Behaviors Predicting Negative Parenting Outcomes

Effect	R^2	В	SE	Comparison	χ^2
Indirect Command (IC)	.500*				
Prosocial Behavior (PRO)		.204*	.037		
Compliance (CO)		.900*	.085	CO > PRO	48.846*
Indirect Command (IC)	.566*				
Inattention (IA)		.748*	.140	$IA \approx HI$.473
Hyperactivity/Impulsivity (HI)		.565*	.195	$\mathrm{HI} \approx \mathrm{ODD}$.020
Oppositional/Defiance (ODD)		.474*	.130	$ODD \approx IA$	1.179
Direct Commands (DC)	.207*				
Prosocial Behavior (PRO)		.169*	.035		
Compliance (CO)		.277*	.079	$CO \approx PRO$	1.373
Direct Commands (DC)	.553*				
Inattention (IA)		.742*	.105	IA > HI	101.281*
Hyperactivity/Impulsivity (HI)		190	.146	HI < ODD	69.174*
Oppositional/Defiance (ODD)		.367*	.098	$ODD \approx IA$	4.617
Negative Talk (NTA)	.282*				
Prosocial Behavior (PRO)		.138*	.029		
Compliance (CO)		.379*	.067	CO > PRO	9.403*
Negative Talk (NTA)	.616*				
Inattention (IA)		.072	.087	IA < HI	10.932*
Hyperactivity/Impulsivity (HI)		.695*	.120	$\mathrm{HI} \approx \mathrm{ODD}$.949
Oppositional/Defiance (ODD)		.529*	.081	ODD > IA	9.144*

Note. B = Unstandardized Beta, SE = Standard Error, χ^2 = Wald Test of Parameter Constraints. When evaluating the difference between two beta weights, the magnitude (i.e., absolute value) of each beta weight was compared.

*Result statistically significant according to the Holm-Bonferroni (1979) method for family-wise error correction.

Regression analyses indicated that parent direct commands were uniquely positively predicted by child prosocial behaviors and compliance. However, post hoc analysis indicated that parent direct commands were not significantly differentially predicted by either child behavior. Parent direct commands were also uniquely positively predicted by child inattention and child ODD behaviors, but were not uniquely predicted by child hyperactivity/impulsivity. Post hoc analyses indicated that parent direct commands were not differentially predicted by child inattention or child ODD behaviors, but they were differentially predicted by child inattention when compared to child hyperactivity/impulsivity, such that child inattention uniquely predicted increased parent direct commands were also differentially predicted by child ODD behaviors when compared to child hyperactivity/impulsivity, such that child ODD behaviors were associated with parent direct commands more strongly than child hyperactivity/impulsivity.

Parent negative talk was uniquely positively predicted by child prosocial behaviors and compliance. Post hoc analysis indicated that negative talk was differentially predicted, such that increased levels of child compliance predicted greater levels of parent negative talk more strongly than elevated levels of child prosocial behaviors. Parent negative talk was also uniquely positively predicted by child hyperactivity/impulsivity and child ODD symptoms, but was not uniquely predicted by child inattention. Post hoc analyses indicated that negative talk was not differentially predicted by child hyperactivity/impulsivity or child ODD behaviors, but it was differentially predicted by child ODD behaviors when compared to child inattention, such that child ODD behaviors uniquely predicted increased parent negative talk more strongly than elevated child inattention. Negative talk was also differentially predicted by child hyperactivity/impulsivity when compared to child inattention, such that child hyperactivity/impulsivity was associated with negative talk more strongly than child inattention.

Parent Psychopathology as a Moderator

Table 11 contains all exploratory analyses involving positive parenting outcomes and parent ADHD as a moderator. Parent ADHD moderated the relationship between child prosocial behaviors and labeled praise, such that as ADHD symptoms increased, the positive association between child prosocial behaviors and labeled praise weakened (See Figure 1). For positive parenting outcomes, all other interactions between uniquely predictive child behaviors (i.e., prosocial behaviors, compliance) and parent ADHD were nonsignificant, indicating that associations between adaptive child behaviors and positive parenting did not vary based on parent level of ADHD symptoms.

Effect	В	SE	ΔR^2	F
Unlabeled Praise (UP)				
Prosocial Behavior (PRO)	.293***	.029		
Parent ADHD (ADHD)	024	.018		
PRO x ADHD	.003	.004	.001	.335
Unlabeled Praise (UP)				
Compliance (CO)	.454***	.085		
Parent ADHD (ADHD)	026	.022		
CO x ADHD	023	.015	.010	2.316
Reflection (RF)				
Prosocial Behavior (PRO)	.278***	.028		
Parent ADHD (ADHD)	.003	.018		
PRO x ADHD	.000	.004	.000	.005
Reflection (RF)				
Compliance (CO)	088	.092		
Parent ADHD (ADHD)	024	.024		
CO x ADHD	026	.016	.014	2.530
Labeled Praise (LP)				
Prosocial Behavior (PRO)	.068***	.015		
Parent ADHD (ADHD)	008	.009		
PRO x ADHD	005*	.002	.022	4.559*
Labeled Praise (LP)	.000	.002	.022	1.009
Compliance (CO)	178***	039		
Parant ADHD (ADHD)	.170	.059		
	003	.010	000	096
CO X ADHD	002	.007	.000	.080

Summary of Exploratory Interaction Analyses: ADHD & Positive Parenting Outcomes

Note: Each analysis represents Block 2 (i.e., the final model). *p < .05. **p < .01. ***p < .001.

Relationship between Child PRO and Parent LP Moderated by Parent ADHD Symptoms



Table 12 contains all exploratory interaction analyses involving negative parenting outcomes and parent ADHD. Parent ADHD moderated several relationships between child predictors and negative parenting outcomes. Regarding parent indirect commands, there was a significant interaction between child compliance and parentreported ADHD, such that as parent ADHD scores increased, the positive association between child compliance and parent indirect commands continually strengthened (See Figure 2). This indicates that parents with greater levels of ADHD symptoms were even more likely to respond to child behaviors with indirect commands as levels of child compliance increased compared to parents with lower levels of ADHD symptoms.

Parent ADHD (ADHD)

Prosocial Behavior (PRO)

Parent ADHD (ADHD)

Parent ADHD (ADHD)

ODD x ADHD

PRO x ADHD

CO x ADHD

Direct Commands (DC)

Compliance (CO)

Direct Commands (DC)

Indirect Command (IC)				1
× /				
Prosocial Behavior (PRO)	.291***	.047		
Parent ADHD (ADHD)	017	.029		
PRO x ADHD	003	.007	.001	.147
Indirect Command (IC)				
Compliance (CO)	1.155***	.102		
Parent ADHD (ADHD)	.044	.026		
CO x ADHD	.050**	.018	.025	7.759**
Indirect Command (IC)				
Inattention (IA)	1.342***	.109		
Parent ADHD (ADHD)	002	.023		
IA x ADHD	.003	.019	.000	.025
Indirect Command (IC)				
Hyperactivity/Impulsivity (HI)	1.690***	.188		
Parent ADHD (ADHD)	006	.027		
HI x ADHD	024	.030	.002	.651
Indirect Command (IC)				
Oppositional/Defiance (ODD)	1.137***	.106		

.001

-.015

.191***

-.026

-.007

.409***

-.007

.020

.026

.019

.035

.022

.005

.095

.024

.017

.002

.008

.007

.666

1.728

1.358

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Effect	В	SE	ΔR^2	F
Direct Commands (DC)				
Inattention (IA)	.990***	.078		
Parent ADHD (ADHD)	013	.017		
IA x ADHD	015	.013	.003	1.223
Direct Commands (DC)				
Oppositional/Defiance (ODD)	.826***	.080		
Parent ADHD (ADHD)	007	.020		
ODD x ADHD	001	.014	.000	.008
Negative Talk (NTA)				
Prosocial Behavior (PRO)	.166***	.030		
Parent ADHD (ADHD)	034	.019		
PRO x ADHD	016***	.005	.056	12.555***
Negative Talk (NTA)				
Compliance (CO)	.368***	.080		
Parent ADHD (ADHD)	031	.021		
CO x ADHD	026	.014	.016	3.530
Negative Talk (NTA)				
Hyperactivity/Impulsivity	1.205***	.111		
(HI)				
Parent ADHD (ADHD)	025	.016		
HI x ADHD	044*	.018	.018	6.327*
Negative Talk (NTA)				
Oppositional/Defiance (ODD)	.738***	.061		
Parent ADHD (ADHD)	033*	.015		
ODD x ADHD	048***	.011	.048	20.097***

Note: Each analysis represents Block 2 (i.e., the final model). *p < .05. **p < .01. ***p < .001.

Relationship between Child CO and Parent IC Moderated by Parent ADHD Symptoms



Regarding parent negative talk, there was a significant interaction between child hyperactivity/impulsivity and parent ADHD, such that as parent ADHD scores increased, the positive association between child hyperactivity/impulsivity and parent negative talk significantly weakened (See Figure 3). There was also a significant interaction between child ODD behaviors and parent negative talk, such that as parent ADHD scores increased, the positive association between child ODD behaviors and parent negative talk weakened (See Figure 4). Lastly, there was a significant interaction between child prosocial behaviors and parent negative talk, such that as parent ADHD scores increased, the positive association between child prosocial behaviors and parent negative talk weakened and parent negative talk, such that as parent ADHD scores increased,

Relationship between Child HI and Parent NTA Moderated by Parent ADHD Symptoms



Figure 4

Relationship between Child ODD and Parent NTA Moderated by Parent ADHD Symptoms







Table 13 contains all exploratory interaction analyses involving positive parenting outcomes and parent depressive symptoms. Parent depressive symptoms did not significantly moderate any relationships between child predictors and positive parenting outcomes. Thus, associations between adaptive and disruptive child behavior with positive parenting did not vary across levels of parent depressive symptoms. However, parent depressive symptoms did moderate several relationships between child predictors and negative parenting outcomes (see Table 14).

Summary of Exploratory Interaction Analyses: Depression & Positive Parenting Outcomes

Effect	В	SE	ΔR^2	F
Unlabeled Praise (UP)				
Prosocial Behavior (PRO)	.294***	.029		
Parent Depression	022	.020		
PRO x Depression	001	.004	.000	.000
Unlabeled Praise (UP)				
Compliance (CO)	.492***	.084		
Parent Depression	011	.023		
CO x Depression	012	.015	.003	.601
Reflection (RF)				
Prosocial Behavior (PRO)	.274***	.028		
Parent Depression	.023	.019		
PRO x Depression	.007	.004	.011	3.198
Reflection (RF)				
Compliance (CO)	.019	.091		
Parent Depression	.022	.025		
CO x Depression	.009	.016	.002	.276
Labeled Praise (LP)				
Prosocial Behavior (PRO)	.073***	.015		
Parent Depression	003	.010		
PRO x Depression	004	.002	.016	3.161
Labeled Praise (LP)				
Compliance (CO)	.197***	.039		
Parent Depression	.006	.011		
CO x Depression	.004	.007	.002	.344

Note. Each analysis represents Block 2 (i.e., the final model). *p < .05. **p < .01. ***p < .001.

Summary of Exploratory Interaction Analyses: Depression & Negative Parenting Outcomes

Effect	В	SE	ΔR^2	F
Indirect Command (IC)				
Prosocial Behavior (PRO)	.295***	.047		
Parent Depression	027	.032		
PRO x Depression	003	.007	.001	.190
Indirect Command (IC)				
Compliance (CO)	1.001***	.103		
Parent Depression	.006	.028		
CO x Depression	003	.019	.000	.034
Indirect Command (IC)				
Inattention (IA)	1.334***	.107		
Parent Depression	004	.025		
IA x Depression	002	.017	.000	.020
Indirect Command (IC)				
Hyperactivity/Impulsivity (HI)	1.669***	.182		
Parent Depression	009	.029		
HI x Depression	048	.031	.008	2.343
Indirect Command (IC)				
Oppositional/Defiance (ODD)	1.141***	.100		
Parent Depression	016	.027		
ODD x Depression	021	.018	.004	1.292
Direct Commands (DC)				
Prosocial Behavior (PRO)	.205***	.034		
Parent Depression	029	.023		
PRO x Depression	014**	.005	.033	7.180**
Direct Commands (DC)				
Compliance (CO)	.471***	.092		
Parent Depression	.004	.025		
CO x Depression	.043*	.017	.033	6.764*

Effect	В	SE	ΔR^2	F
Direct Commands (DC)				
Inattention (IA)	1.008***	.077		
Parent Depression	008	.018		
IA x Depression	006	.012	.001	.242
Direct Commands (DC)				
Oppositional/Defiance (ODD)	.818***	.075		
Parent Depression	017	.020		
ODD x Depression	012	.013	.003	.811
Negative Talk (NTA)				
Prosocial Behavior (PRO)	.187***	.030		
Parent Depression	035	.020		
PRO x Depression	018***	.004	.073	16.883***
Negative Talk (NTA)				
Compliance (CO)	.404***	.079		
Parent Depression	024	.022		
CO x Depression	015	.014	.005	1.169
Negative Talk (NTA)				
Hyperactivity/Impulsivity (HI)	1.259***	.109		
Parent Depression	017	.017		
HI x Depression	031	.019	.008	2.722
Negative Talk (NTA)				
Oppositional/Defiance (ODD)	.795***	.058		
Parent Depression	032*	.016		
ODD x Depression	042***	.011	.039	16.057***

Note. Each analysis represents Block 2 (i.e., the final model). *p < .05. **p < .01. ***p < .001.

Regarding parent direct commands, there was a significant interaction between child compliance and parent-reported depressive symptoms, such that as depression scores increased, the positive association between child compliance and parent direct commands strengthened (See Figure 6). There was also a significant interaction between child prosocial behaviors and parent-reported depressive symptoms, such that as depression scores increased, the positive association between child prosocial behaviors and parent direct commands weakened (See Figure 7).

Figure 6



Relationship between Child CO and Parent DC Moderated by Parent Depressive Symptoms



Relationship between Child PRO and Parent DC Moderated by Parent Depressive Symptoms

For parent negative talk, there was a significant interaction between child ODD behaviors and parent-reported depressive symptoms, such that as depression scores increased, the positive association between child ODD behaviors and parent negative talk weakened (See Figure 8). Lastly, there was a significant interaction between child prosocial behaviors and parent-reported depressive symptoms, such that as depression scores increased, the positive association between child prosocial behaviors and parent negative talk weakened and parent-reported depressive symptoms, such that as depression scores increased, the positive association between child prosocial behaviors and parent negative talk weakened and became significantly negatively associated at higher levels of depression (See Figure 9).

Relationship between Child ODD and Parent NTA Moderated by Parent Depressive Symptoms



Figure 9

Relationship between Child PRO and Parent NTA Moderated by Parent Depressive Symptoms



Discussion

The current study evaluated whether child adaptive or disruptive behaviors uniquely predicted positive or negative parenting behaviors. First, as hypothesized for Aim 1a, adaptive child behaviors tended to elicit positive parenting behaviors more than negative parenting behaviors, while disruptive child behaviors tended to elicit negative parenting behaviors more than positive parenting behaviors. This is consistent with previous findings regarding parent-child dyads, wherein increased levels of child adaptive behavior have been linked with increased levels of positive parenting behaviors (Wong, Konishi, & Kong, 2020), and increased levels of child disruptive behavior have been linked to increased levels of negative parenting behaviors (Kaufmann et al., 2000). Current findings suggest that these previous findings among parent-child dyads might also be valid within mother-father-child triads. Should these findings be replicated, they will underscore the direct influence that both adaptive and disruptive child behaviors have on mothers and fathers in triadic settings. Further, the sequential nature of the data and the standardization of the confederate child's scripted behaviors provide strong evidence for the causal effects of child behavior on parent responses during triadic interactions while disentangling any potential shared genetic variance. Finally, this is the first study to compare the relative effects of both adaptive and disruptive child behaviors on positive and negative parenting behaviors. This was particularly needed for adaptive child behaviors, which have garnered less attention across the literature, especially concerning directional effects on parenting behaviors. The results of the current study indicate that adaptive and disruptive behaviors do indeed have differential effects on specific positive and negative parenting behaviors, which contributes to a more nuanced

understanding of the parent-child relationship, particularly within a triadic setting. It also warrants further investigation into whether targeting adaptive child behaviors through intervention might benefit families with particularly low levels of positive parenting behaviors.

Regarding the relative prediction of specific positive parenting behaviors, child adaptive behaviors uniquely positively predicted parent unlabeled praise, labeled praise, and reflections, while child disruptive behaviors uniquely negatively predicted parent unlabeled praise and labeled praise. Post hoc analyses indicated that child adaptive behaviors uniquely predicted all three positive parenting behaviors more strongly than child disruptive behaviors. Unfortunately, no previous studies have directly compared adaptive child behaviors and disruptive child behaviors regarding their unique effects on specific positive parenting behaviors. However, recent meta-analyses have examined correlations between positive parenting outcomes (i.e., authoritativeness) and adaptive child behaviors (r = .17; Wong, Konishi, & Kong, 2020) and disruptive child behaviors (r= - .16; Pinquart, 2017), with very similar effect sizes. The current results are inconsistent with these broader findings, although the inconsistency may be attributable to differences in the granularity of parenting outcomes (e.g., parent labeled praise vs. authoritativeness). Indeed, it may be that adaptive child behaviors predict specific parenting behaviors more strongly than disruptive child behaviors, but they predict a broader construct like authoritativeness more equally due to the many aspects of parenting subsumed within parental warmth and demandingness. If replicated, the current finding would also suggest that interventions targeting improvement of basic prosocial behaviors and compliance for simple tasks may increase parent unlabeled and labeled

praise more effectively than child interventions aimed at decreasing disruptive behaviors. Such a training intervention could be applied in parallel with standard parent-focused interventions aimed at increasing levels of parent praise, which may lead to a faster or more durable improvement in the parent-child relationship.

In examining the relative prediction of specific negative parenting behaviors, both child adaptive and disruptive behaviors uniquely positively predicted parent indirect commands, direct commands, and negative talk. In contrast to the findings with specific positive parenting behaviors, post hoc analyses indicated that child disruptive behaviors uniquely predicted all three negative parenting behaviors more strongly than child adaptive behaviors. In fact, child disruptive behaviors were more than twice as likely to predict parent indirect commands and more than four times as likely to predict parent direct commands and negative talk compared to child adaptive behaviors. This is consistent with previous meta-analyses, which found effect sizes for relationships between child disruptive behaviors and negative parenting (e.g., harsh control, r = .22; Pinquart, 2017) to be somewhat larger than effect sizes for relationships between child adaptive behaviors and negative parenting (e.g., authoritarian parenting, r = -.11; Wong, Konishi, & Kong, 2020). Notably, the current finding demonstrates that this broader pattern is also present among individual sequences of child and parent behaviors, even within triads and when parents are unfamiliar with the child. Overall, the current findings underscore the strong relationship between higher levels of child disruptive behaviors and the increased use of parent commands and negative talk in response to any adaptive or disruptive child behaviors.

Results of exploratory analyses seeking to identify specific child adaptive behaviors predicting specific positive parenting behaviors were mixed. Parent unlabeled praise was not differentially predicted by child compliance or prosocial behaviors, which indicates that parents, on the average, tend to respond to either adaptive child behavior with relatively equivalent levels of unlabeled praise. Conversely, elevated levels of child compliance uniquely positively predicted parent labeled praise 2-3 times more strongly than elevated levels of child prosocial behaviors. If replicated, these findings provide increased understanding and nuance regarding patterns of parent-child interactions. Further, it may have implications for parent training interventions, which may benefit from coaching parents to attend more carefully to their child's broader prosocial behaviors and apply contingent labeled praise rather than focusing only on times in which their child complies with a command.

Parent reflections were also differentially predicted, such that increased levels of child prosocial behaviors were more strongly predictive of parent reflections than decreased levels of child compliance. This finding makes intuitive sense, given that parent reflections are a response to child verbalizations, which were captured entirely via the child prosocial behavior code. Interestingly, parent reflections were negatively associated with child compliance, regardless of the child's level of prosocial behaviors. The direction of the relationship was notably opposite of the positive association between parent reflections and child prosocial behaviors, such that decreases in compliance were uniquely linked with increases in parent reflections. One possible explanation for this relationship could be that parents engaged in more reflections as a way to try to build rapport with the child when compliance was lower. Another possibility may be that

parents tended to use reflections in response to child prosocial behaviors, and tended to respond with labeled praise following child compliance. Further research is needed to examine either of these hypotheses as a possible explanation.

Regarding results of exploratory analyses seeking to identify specific child disruptive behaviors predicting specific negative parenting behaviors, parent indirect commands were uniquely predicted by child inattention, hyperactivity/impulsivity, and ODD behaviors, although they were not differentially predicted by any individual disruptive behavior. This indicates that parents, on the average, tend to respond to any disruptive child behavior with relatively equivalent levels of indirect commands. Regarding specific child adaptive behaviors predictive of indirect commands, increased levels of child compliance more strongly predicted increased levels of parent indirect commands compared to increased levels of child prosocial behaviors. If this finding is replicated, one possible explanation is that child compliance functioned as positive reinforcement for parents who had previously issued an indirect command, which increased the likelihood that they would continue to issue indirect commands. This reinforcement may have led to a stronger association between child compliance and parent indirect commands compared to child prosocial behaviors, although more research is needed to examine this directly.

Parent direct commands were uniquely predicted by child inattention and ODD behaviors, but not hyperactivity/impulsivity. Neither child inattention nor child ODD behaviors were differentially predictive of parent direct commands when compared to each other. If replicated, this finding may indicate that parents are more likely to respond to child inattention and ODD behaviors with direct commands compared to child hyperactivity/impulsivity. Although direct commands risk initiating the coercive cycle and were categorized as negative parenting behavior in the current study, they are sometimes considered an optimal response when faced with child disruptive behavior (Patterson, 1982). As levels of child inattention and ODD behaviors increased, levels of parent direct commands in response to any child adaptive or disruptive behavior also increased. Therefore, it may be that parents simply became more directive overall when faced with disruptive child behavior. More research is needed to confirm these findings and further explore any proximal causal relationships that may exist.

Regarding adaptive child behaviors predicting direct commands, child compliance and prosocial behaviors uniquely predicted direct commands, although they were not differentially predicted by either behavior. The positive unique associations may be due to greater levels of conversation (i.e., parent neutral talk, child verbalizations coded as prosocial behavior) in the disruptive condition, as well as parent-directed behavior (e.g., direct commands) that elicited child compliance. If so, the sequential nature of the data demonstrates that parents were more likely to respond to either adaptive or disruptive child behaviors with direct commands as the level of child compliance or prosocial behaviors increased, which may indicate a spillover effect of being in the disruptive condition. In other words, the presence of disruptive child behaviors may have influenced parents to issue higher levels of direct commands in response to *any* child behaviors, regardless of quality. Further research is needed to examine this potential relationship.

For exploratory analyses regarding parent negative talk, child hyperactivity/impulsivity and ODD behaviors were uniquely positively predictive, while child inattention was not. Further, post hoc analyses indicated that neither child hyperactivity/impulsivity nor child ODD behaviors were differentially predictive of parent negative talk when compared to each other. Again, these results are consistent with coercion theory regarding the effects of aversive child disruptive behavior (Patterson, 1982), and yet they also further our understanding of the link between child hyperactivity/impulsivity, ODD behaviors, and parents' use of negative talk in triadic situations. The findings indicate that parents are more likely to respond to adaptive or disruptive child behavior with negative talk when they experience increased levels of child hyperactivity/impulsivity or ODD behaviors, even in coparenting situations. Indeed, current findings suggest that for every 10 instances of child hyperactivity/impulsivity, mothers and fathers displayed an average of approximately 7 instances of negative talk (*B* = .695, *SE* = .120), even when interacting with a child they recently met and in the context of a laboratory setting.

Parent negative talk appears to be more strongly linked to child hyperactivity/impulsivity and ODD behaviors compared to inattention, which suggests that there may be a unique underlying mechanism that exists between parent negative talk and these two child behaviors. If these exploratory findings of the current study are confirmed, one potential mechanism of interest to investigate further may be transactional emotion dysregulation between the parents and child. Previous research has demonstrated strong associations between ODD and emotion dysregulation in children (Mitchison, Liber, Hannesdottir, & Njardvik, 2020), as well as a link between child disruptive behaviors and parent emotion dysregulation (Carrere & Bowie, 2012). Moreover, increased levels of parent emotion dysregulation have been linked to increased levels of invalidating parenting behaviors (e.g., paternal hostility; Li, Li, Wu, & Wang, 2019). If transactional emotion regulation is indeed a significant underlying factor, then it may be especially important to help parents prepare for the urge to engage in negative talk when they experience emotional arousal in response to child hyperactivity/impulsivity or ODD behaviors. However, further research is needed to explore these potential relationships.

The final exploratory analyses investigated whether parent ADHD symptoms or depressive symptoms moderated any significant relationships between specific child behaviors and parent responses. Regarding positive parenting behaviors with ADHD as a potential moderator, only one significant result emerged, with parent labeled praise as the outcome variable. There was an interaction between child prosocial behavior and parent ADHD symptoms (See Figure 1 above), such that as parent ADHD symptoms increased, the positive relationship between child prosocial behaviors and parent labeled praise weakened. This finding is consistent with the meta-analytic results of Park, Hudec, and Johnston (2017), which found that elevated levels of parent ADHD symptoms were associated with fewer positive parenting behaviors. One possible explanation for the current finding is that parents with higher levels of ADHD are less aware of child prosocial behaviors compared to parents with lower levels of ADHD symptoms, and therefore less likely to respond with labeled praise in particular. Given that no interaction was detected regarding the relationship between child compliance and parent labeled praise (or between any other child behaviors and positive parenting behaviors), the current finding indicates that this lower level of labeled praise following child prosocial behaviors may partially explain the disparity in positive parenting behaviors between parents with greater ADHD symptoms and parents with fewer ADHD symptoms found by Park and colleagues (2017). However, the amount of additional variance explained by

the interaction term was relatively small ($\Delta R^2 = .022$), which limits clinical relevance on an individual basis. Notably, the overall lack of significant findings also indicates that adult ADHD may play a minimal role regarding the relationship between child adaptive behavior and positive parenting behaviors.

Regarding negative parenting behaviors with ADHD as a potential moderator, several significant results emerged. As parent ADHD symptoms increased, the positive relationship between parent indirect commands and child compliance strengthened (See Figure 2 above). Given equivalent levels of child compliance, parents with an average ADHD score within the sample (i.e., CSS score of 9) exhibited 1.63 times the number of indirect commands in response to adaptive or disruptive child behaviors compared to parents without any ADHD symptoms. The finding is consistent with broader metaanalytic results (Park et al., 2017), which found that elevated levels of parent ADHD symptoms were associated with higher levels of negative parenting behaviors (i.e., demands with low warmth). One possible explanation may be that parents with higher levels of ADHD are more sensitive to reinforcement via child compliance compared to parents with lower levels of ADHD, which may make them more likely to issue additional indirect commands following adaptive or disruptive child behaviors. However, this explanation is inconsistent with recent findings that adults with ADHD exhibit decreased reward-based learning compared to adults without ADHD (Portengen, Sprooten, Zwiers, et al., 2021). As such, further research is needed to replicate the current finding and, if successful, explore possible mechanisms by which it might occur.

The remaining significant exploratory results regarding interactions with parent ADHD all involved parent negative talk. As parent ADHD scores increased, the positive relationship between parent negative talk and child hyperactivity/impulsivity weakened (See Figure 3 above). The same interaction effect was found regarding parent ADHD symptoms and child ODD behaviors (See Figure 4 above) and a similar interaction effect was found regarding parent ADHD symptoms and child prosocial behaviors (See Figure 5 above). All three findings are inconsistent with meta-analytic results, which found that elevated levels of parent ADHD were associated with higher levels of negative parenting behaviors (Park et al., 2017). One possible explanation might be that parents with higher levels of ADHD symptoms personally identify with children who exhibit hyperactive/impulsive or oppositional behaviors, and are therefore less likely to respond with negative talk compared to parents with lower levels of ADHD symptoms. This would align with previous findings that higher levels of maternal ADHD mitigated the negative impact of disruptive child behaviors (Psychogiou et al., 2007). However, the same study found the opposite effect for fathers, suggesting that further research is needed to confirm and explore the current findings, particularly as they relate to parent gender in a triadic context.

Regarding positive parenting behaviors with depressive symptoms as a potential moderator, no significant results emerged. Similar to adult ADHD, this pattern indicates that adult depression may play a minimal role regarding the relationship between child behavior and positive parenting behaviors. This is inconsistent with a previous study, wherein mothers with greater depressive symptoms were less likely to respond to adaptive child behaviors (i.e., compliance) with positive parenting behaviors (e.g., labeled praise) compared to mothers with lower levels of depressive symptoms (Thomas et al., 2015). The difference in findings may be due to the fact that the previous sample

included only mothers and their biological children with ADHD, while the current sample included mothers and fathers interacting with a confederate child exhibiting inattentive, hyperactive/impulsive, and oppositional behaviors. Moreover, approximately 20% of the current sample met or exceeded the clinical cutoff for mild depression, while all participants in the previous sample met or exceeded this same cutoff. As such, further research is needed to clarify any impact that parental depressive symptoms might have on the relationship between child behaviors and positive parenting behaviors.

Conversely, four significant results were detected related to negative parenting behaviors. As parent depressive symptoms increased, the relationship between parent direct commands and child compliance strengthened (See Figure 6 above). Compared to parents with lower levels of depression, parents with greater depression were even more likely to respond to child adaptive or disruptive behavior with direct commands as levels of child compliance increased. This is consistent with findings by Thomas and colleagues (2015), wherein mothers with greater levels of depression were more likely to respond to child compliance with commands rather than praise compared to mothers with lower levels of depression. One explanation of the current finding might be that parents with greater levels of depressive symptoms rely more heavily on direct commands in general, even when interacting with children displaying higher levels of compliance.

However, as parent depressive symptoms increased, the current study also found that the relationship between parent direct commands and child prosocial behaviors weakened (See Figure 7 above). Compared to parents with lower levels of depression, parents with greater depression were less likely to respond to any adaptive or disruptive child behavior with direct commands as levels of child prosocial behavior increased. When viewed in the context of the previous interaction, the current finding may indicate that parents with greater depressive symptoms respond with different levels of direct commands depending on the child's behavior, with prosocial behaviors and compliance having opposite effects. Future research should use sequential analysis to clarify these potential relationships.

The final two significant interactions with parental depressive symptoms both involved parent negative talk. As parent depressive symptoms increased, the positive association between parent negative talk and child ODD behaviors weakened (See Figure 8 above). Compared to parents with lower levels of depression, parents with greater depression were less likely to respond to any adaptive or disruptive behaviors with negative talk as levels of child ODD behaviors increased. One possible explanation may be that parents with greater depression are hypersensitive to the punishing aspects of child ODD behaviors, which may make them less likely to challenge child behaviors (e.g., "Don't do that.") or respond critically (e.g., "You're not being very nice right now.") due to fear of provoking additional oppositional behavior. This is consistent with broader findings of the adult depression literature, which indicate that individuals with higher levels of depression demonstrate greater sensitivity to punishing stimuli during situations that involve risk-taking (Hevey et al., 2017).

Interestingly, as parent depressive symptoms increased, the positive association between parent negative talk and child prosocial behaviors also weakened (See Figure 9 above). Compared to parents with lower levels of depression, parents with greater depression were less likely to respond to any adaptive or disruptive behaviors with negative talk as levels of child prosocial behaviors increased. One possible explanation may be that parents with greater depression in the disruptive condition were more sensitive to the levels of reinforcing child behaviors compared to parents with lower levels of depression. However, the broader depression literature indicates that greater levels of depressive symptoms are linked with lower levels of reward sensitivity (Katz et al., 2020). As such, further research is needed to confirm the present finding, and if so, explore possible mechanisms by which it might occur.

Limitations and Future Directions

While the current study has demonstrated a considerable number of novel findings, they must be understood within the context of several limitations. First, the participants in this study interacted with an unfamiliar child in a relatively controlled experimental setting. Although many of the findings were consistent with those of studies involving parents and their own children (and thereby disentangling any potential shared genetic variance), the possibility that the parents in this study may have responded to child behaviors differently than they normally would have with their own child or in the context of their own home cannot be ruled out. Second, the presence of two parents interacting with the child means that their individual parenting behaviors may be influenced by their partner's parenting, which violates the underlying assumption of case independence for linear regression analyses. As a result, the magnitude of any significant relationships may be over-estimated. Third, the frequency and range of child hyperactivity/impulsivity behaviors was comparatively fewer/smaller than other child codes, which may have mitigated the power to detect significant effects related to this child behavior. Finally, the participants in the current study were predominantly
European American, which may preclude these findings from being generalized to parents of other racial and ethnic groups.

Considering both the findings and the limitations herein, the field would benefit from future research that both extends and complements aspects of the current study regarding mother-father-child triads. One potential direction may be to examine to what extent these findings are replicated with parents and their own child within the home setting, which would help to bolster the ecological validity of the current findings. Using more sophisticated analytic procedures like sequential analysis and multilevel modeling would not only confirm or disconfirm existing results, but could also investigate the nature of existing relationships with greater power and precision, including differential patterns between mothers and fathers within the triad. Future research should also strive to include a greater diversity of participants, including parents from various cultural groups and those with more significant ADHD and/or depressive symptoms. Lastly, future studies might also examine how disruptive child behaviors impact parent emotion regulation or affect, particularly for those with ADHD or depressive symptoms.

Conclusion

The current study provides causal evidence indicating that, within mother-fatherchild triads, adaptive child behaviors elicit positive parenting behaviors and disruptive child behaviors induce negative parenting behaviors. These findings are consistent with literature regarding parent-child dyads, while also disentangling potential shared genetic variance. Further, exploratory analyses provide preliminary evidence indicating that specific child behaviors differentially predict specific parenting behaviors, and the presence of parent ADHD or depressive symptoms may strengthen or weaken the relationship between specific child and parent behaviors. If confirmed, the results support an increasingly tailored approach to behavioral parent training, with a focus on particularly salient child and parent behaviors while considering the effects of parent ADHD or depressive symptoms. Although there is a long history of examining parentchild relationships that spans decades, less is known about how specific child behaviors might influence parent behaviors in triadic settings. Because most children live in twoparent households, understanding these interactions will prove useful for parent psychoeducation, the prevention of disruptive behaviors, and improvement of families' quality of life as a whole.

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Appendix A: Current Study Operational Definitions

¹**Disruptive Behavior.** For the purposes of the current study, disruptive behavior is defined as *child behavior that is typically associated with inattentiveness, hyperactivity/impulsivity, and/or defiance that leads to impairment according to parent report, teacher report, or as observed by others in the context of a parent-child interaction.* Such behaviors include noncompliance in response to a command, whining, yelling, disapproval of the parent's attributes, physical aggression, and sarcastic or rude remarks that would typically be considered aversive.

²**Positive Parenting.** For the purposes of the current study, positive parenting is defined as *parenting behavior that is typically associated with high warmth, high responsiveness, and/or moderate-to-high levels of parental supervision/involvement as reported by oneself or observed by others in the context of a parent-child interaction. Such behaviors include labeled and unlabeled praise in response to desired child behavior, physical affection or touch, verbal reflections, and behavioral descriptions.*

³Negative Parenting. For the purposes of the current study, negative parenting is defined as *parenting behavior that is typically associated with low warmth and low responsiveness according to oneself or as observed by others in the context of a parentchild interaction*. Such behaviors include disapproval of the child's attributes, physical restraint, and sarcastic or rude remarks that would typically be considered aversive. In addition, direct and indirect commands will also be considered negative parenting due to their tendency to begin critical exchanges and potential to incite the coercive process. ⁴Adaptive Behavior. For the purposes of the current study, adaptive behavior is defined as *child behavior that is typically associated with compliance, cooperativeness, and social desirability according to parent report, teacher report, or as observed by others in the context of a parent-child interaction.* Such behaviors include compliance in response to a command, assistance in response to a request, and complimenting others.

Appendix B: Scripted Child Disruptive Behaviors

Percent Agreement &	Representativeness	Ratings Based on	Preliminarv	Coding 1	Results

Scripted Child Disruptive Behavior	Code	% Agree ^a	Rep. ^b
Begins to stare at the toys on the floor.	IA	100%	3.78
Stares off into space, needs prompt to take a turn.	IA	100%	3.50
Does not respond to 1 st prompt to get back on task.	IA	89%	4.00
Does not respond to 1 st prompt to come to the table.	IA	89%	4.00
Does not respond to 1 st prompt to not play with LEGO.	IA	78%	3.71
Says, "This is too hard" when doing very basic math.	IA	78%	3.57
Asks, "How many more do I have to do?" during math.	IA	67%	3.50
Does not attend to surroundings, spills LEGO on floor.	IA	67%	3.00
Rushes away from the table after Jenga tower falls.	HI	100%	3.83
Quickly stands up to take a Jenga turn out of order.	HI	100%	3.33
Rushes over to grab Legos and returns to the table.	HI	67%	4.50
Rushes away from the table during math worksheet.	HI	67%	3.17
Closes game with tweezers stuck so it makes noise.	ODD	100%	4.67
Does not respond to a 2^{nd} prompt to return to the table.	ODD	100%	4.17
Blows eraser shavings onto the parents' papers.	ODD	100%	4.11
Does not respond to a 2^{nd} prompt to put the toys away.	ODD	100%	4.00
Refuses to clean up.	ODD	100%	3.83
Says "Haha!" when parents miss basketball shot.	ODD	100%	3.33
Says "Haha!" if parents fail to knock all pins down.	ODD	100%	3.20
Makes loud continuous noises with Operation game.	ODD	89%	3.88
Laughs when knocks pins down before they're set up.	ODD	83%	3.40
Begins repeatedly tapping pencil loudly on the table.	ODD	67%	3.33

^aPercent agreement was calculated by summing the total number of rater agreements across three sample videos with at least 90% script adherence, and dividing that total by the sum of agreements and disagreements across those videos.

^bRep = Representativeness. Representativeness ratings were obtained by asking each rater to score the observed scripted child behavior on a Likert-type scale (1 = Very Poor, 2 = Poor, 3 = Fair, 4 = Good, 5 = Very Good; based on DSM-IV criteria as a benchmark) across three sample videos based on the question, "How accurate of a representation of ______(e.g., inattention) is this behavior?". Scores across raters and videos were then averaged.

Appendix C: DPICS-IV Operational Definitions

(For reference, see Eyberg, Nelson, Ginn, Bhuiyan, & Boggs, 2013) Parent Behaviors

Negative Talk (NTA). Negative talk is a verbal expression of disapproval of the child or the child's attributes, activities, products, or choices. Negative talk also includes sassy, sarcastic, rude, or impudent speech. Examples include "You're being very rude," "(sarcastically) Well that was smart," and "Clean up the mess you made."

Commands. Commands are statements in which the speaker (parent or child) directs the vocal or motor behavior of the other. Commands may be direct or indirect in form.

Direct Commands (DC). Direct commands are declarative statements that contain an order or direction for a vocal or motor behavior to be performed and indicate that the child is to perform this behavior. Examples include "Take the dishes out of the box," "Be careful," and "Shhh (i.e. Be quiet)."

Indirect Commands (IC). An Indirect Command is a suggestion for a vocal or motor behavior to be performed that is implied or stated in question form. Examples include "It's time for you to put the cars away," "If you sit down, I'll give you some candy," and "Remember what I said, okay?"

Praise. Praise is a verbalization expressing a favorable judgment of an attribute, product, or behavior of the child. There are two types of praise: Labeled and Unlabeled Praise. Labeled praise is intended to teach the child specifically what he or she can do to receive further parent approval. Unlabeled Praise does not necessarily reinforce behavior, but it may enhance a child's self-esteem. *Labeled Praise (LP)*. Labeled praise provides a positive evaluation of a specific behavior, activity, or product of the child. Examples include "Your picture is pretty," "Thank you for handing me the box," and "If you put your super tower up here, it will look taller."

Unlabeled Praise (UP). An Unlabeled Praise provides a positive evaluation of the child, an attribute of the child, or a nonspecific activity, behavior, or product of the child. Examples include "Good," "Your eyes are pretty," and "Nice job."

Questions. Questions are verbal inquiries from one person to another that are distinguishable from declarative statements by having a rising inflection at the end and/or by having the sentence structure of a question. Questions request an answer but do not suggest that a behavior is to be performed by the other person. There are two types of questions: Descriptive/Reflective and Information Questions. Information Questions request a verbal response beyond a Neutral Talk while Descriptive/Reflective Questions request no more than a Neutral Talk in response.

Information Questions (IQ). Questions that request specific information from the child other than a brief response (e.g., yes, no, maybe) are Information Questions, even if the child gives a brief response (e.g., "dunno") or no response at all. Examples include "Do you want the red or the black pieces," "What is this called," "What do I always tell you," and "Huh?"

Descriptive/Reflective Questions (DQ). A Descriptive/Reflective Question is a descriptive or reflective comment or statement expressed in question form which requires no more than a brief affirmative or negative response (e.g., "yes" or "no"), even if the

child gives additional information in response or does not respond. Examples include "Is this the one you want," "That was fun, wasn't it," and "Really?"

Reflective Statement (RF). A Reflective Statement by the parent is a declarative phrase or statement that has the same meaning as a child's verbalization. The reflection may paraphrase or elaborate upon the child's verbalization but may not change the meaning of the child's statement or interpret unstated ideas. Examples include "Child: I'm landing the helicopter. Parent: Okay, you're landing it," "Child: I drew a spaceship. Parent: Super. You drew a spaceship," and "Child: That's a funny clown. Parent: You think he's funny."

Behavioral Descriptions (BD). Behavioral Descriptions are non-evaluative, declarative sentences or phrases in which the subject is the other person and the verb describes that person's ongoing or immediately completed (< 5 seconds) observable verbal or nonverbal behavior. Examples include "I see you're coloring those apples pink," "You can draw flowers," and "We're building a house for the princess."

Neutral Talk (TA). Neutral talk is comprised of statements that introduce information about people, objects, events, or activities, or indicate attention to the child, but do not clearly describe or evaluate the child's current or immediately completed behavior. Examples include "Sorry," "Children are supposed to take turns," and "That's a tall tower you're making."

Touch. Physical touch categories provide information regarding some of the nonverbal communication that takes place within the parent-child dyad. Any physical touch between the members of the dyad is coded, with the exception of accidental touch. Touches are categorized as Positive Touch or Negative Touch. *Positive Touch (PT)*. A Positive Touch is any intentional positive physical contact between child and parent. Examples include playfully poking the parent and laughing, giving the parent a "high five," and putting an arm around the parent. Examples include grabbing the child to keep the child from falling, having a teddy bear kiss the child's cheek, and patting the child on the shoulder or back.

Negative Touch (NT). A Negative Touch is any physical touch that is intended to be directive, antagonistic, aversive, hurtful, or restrictive of the child's activity. Examples include restraining a child while saying "Stop that" or restraining a child from throwing a toy.

Child Behaviors

Compliance (CO). Child compliance occurs when the child performs, begins to perform, or attempts to perform a behavior requested by the parent within the 5-second interval following the command. Examples include "Parent: Pick up all the toys. Child: (Picks up one toy as five seconds elapse)," "Parent: Will you please close the door? Child: No! (slams door deliberately)," and "Parent: Can you fix the roof on the fort? Child: I don't know how (begins working on the roof)."

Prosocial Talk (PRO). Prosocial Talk incorporates several categories of verbalizations which contribute positively to the parent-child interaction. Prosocial Talk includes all statements that positively evaluate an attribute, product, or behavior of the parent (specifically or generally), describe the parent's behavior, provide neutral information, reflect the parent's verbalizations, or acknowledge the parent. Examples include "You're a good artist," "You seem sort of mad," and "Hi!"



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