Coparenting and Child Outcomes in Families of Children Previously Identified With Developmental Delay

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Abstract
The current study explored cross-sectional relations between coparenting quality and child problem behaviors, as measured by parent report and direct observation, in families of school-aged children previously identified with a developmental delay in early childhood. Parents’ reports of difficulty with coparenting problems predicted child problem behaviors. For primary caregivers, parenting self-efficacy mediated the relation between coparenting quality and problem behaviors. Observed undermining behavior significantly positively predicted child appropriate behavior across specific tasks and observed partner support behavior significantly negatively predicted child appropriate behavior across specific tasks. Discussion focuses on the clinical significance of these findings and future research directions.

Key Words:  
coparenting; developmental delay; problem behavior

It is well documented that many problem behaviors in early childhood can be traced to ineffective, inconsistent parenting practices (e.g., delivery of ineffective commands, reinforcement of inappropriate behaviors; Patterson, DeBar-yshe, & Ramsey, 1990). Researchers have typically established ties between parenting behavior and child adjustment via observed dyadic interactions between primary caregiver (PC) and child, or by PC self-report (Coplin & Houts, 1991). Research findings suggest that fathers, traditionally considered alternate caregivers (ACs), are now more than ever before expected to share equal coparenting duties (Pleck & Pleck, 1997). To exclusively focus on one caregiver provides an incomplete picture of factors that contribute to and shape a child’s adjustment.

In response, the field has gradually shifted towards an acknowledgement and investigation of the coparenting relationship (Feinberg, 2003). Broadly, the coparenting relationship, sometimes referred to as the parental alliance, can be defined as “an enterprise undertaken by two or more adults working together to raise a child for whom they share responsibility” (McHale & Lindahl, 2011, p. 42). The coparenting relationship is not confined to traditional nuclear families; it could comprise close family members, family friends, and caregivers (e.g., nannies), none of whom need to necessarily live with the child to be considered a coparent (McHale & Lindahl, 2011). For the purposes of this investigation, we will focus on two-parent intact families. Both parents’ perceptions of the coparenting relationship provide valuable information regarding agreement over childrearing practices (Dadds & Powell, 1991), feelings of satisfaction and support in coparenting (Schoppe, Mangelsdorf, & Frosch, 2001), and a sense of “division of labor” within parenting (e.g., helping with homework or disciplining; Cowan & Cowan, 1990). Extensive research on the relations between coparenting and child outcomes provides evidence of the impact of the coparenting relationship on school readiness (Cabrera, Scott, Fagan, Steward-Streng, & Chien, 2012), academic and social outcomes (Stright & Neitzel, 2003), child internalizing behavior (Teubert & Pinquart, 2010), and externalizing behavior (Schoppe et al., 2001).
Coparenting and Child Behavior in Typically Developing Families

Extensive research supports relations between the coparenting relationship and child problem behaviors in families of typically developing children during toddlerhood, preschool years, middle childhood, and adolescence (Feinberg, Kan, & Hetherington, 2007; Johnson, 2010; Schoppe et al., 2001). For the purposes of this article, we will focus on coparenting during middle childhood.

Even as children spend more time at school with peers and teachers during this stage of development, the coparenting relationship continues to act as a model for interactions with and behavior towards others. Drawing from social learning theory perspectives, scholars have suggested that frequent, repeated exposure to parent modeling of effective problem solving and communication may allow children to incorporate these prosocial behaviors into their repertoire at school and in the community (Webster-Stratton, 1994).

Indeed, research during this developmental period has highlighted the impact of coparenting on children’s internalizing and externalizing behaviors. For example, Feinberg, Jones, Roettger, Solmeyer, and Hostetler (2014) found that teachers were less likely to report internalizing behavior for both boys and girls and less likely to report externalizing problem behaviors for boys of parents who had received a prenatal intervention that focused on supportive strategies to jointly parent, resolve conflicts, and so forth. Similarly, in a sample of kindergarten-aged children, Katz and Low (2004) found that marital violence and poor family-level processes (e.g., parent-centered, aggressive behaviors) significantly predicted delinquency. Katz and Low (2004) also found that coparenting processes mediated the relationship between marital violence and child symptoms of anxiety and depression.

Taken together, these findings suggest that coparenting plays an important role in families of typically developing children. An examination of coparenting in families of children with developmental delay (DD) would provide more insight into the significance of this relationship in the presence of more unique or challenging circumstances.

Coparenting and Child Behavior in Families of Children With DD

Comparatively few studies have undertaken a quantitative examination of coparenting and child outcomes in families of children with DD (Floyd, Gilliom, & Costigan, 1998; Thullen & Bonsall, 2017). Parents of children with DD may experience greater difficulty with parenting than parents of typically developing children (McIntyre, 2008). Parents of children with DD are more likely to experience parenting stress, depression, and other mental health concerns, compared to parents of children with no history of delays (Lee; 2013; Singer, 2006). Families of children with DD and disabilities may also be at increased risk for marital conflict and divorce (Hartley, Barker, Seltzer, Floyd, Greenberg, Osmond, & Bolt, 2010), although the effect of disabilities on marital relationships is small (Risdal & Singer, 2004).

Further, children with DD are at risk for developing poor mental health and behavioral outcomes compared to their typically developing peers (Baker, McIntyre, Blacher, Crnic, Edelbrock, & Low, 2003; Emerson & Einfeld, 2010). Behavioral concerns can persist during the transition from preschool to elementary school (McIntyre, Blacher, & Baker, 2006) and across the lifespan (Tremblay, 2006). The risk for psychopathology in children with DD suggests a need to examine whether parenting behaviors may play a role in child outcomes (e.g., if parents model poor conflict resolution around parenting issues).

It is worth noting that despite risk factors in families of children with DD, the family climate (e.g., cohesion, harmony) of this population may more closely resemble that of healthy families than distressed families (Perry, Harris, & Minnes, 2004), contrary to how the field has tended to conceptualize their functioning and well-being. Parents of children with DD may mobilize better than parents of typically developing children, and find that their teamwork and support of one another is necessary to support the needs of their child. Further, access to more professional opinions and recommendations of service providers (e.g., speech therapists, behavioral providers, etc.) may make it easier for parents to get on the same page. Alternately, reaching agreement and providing adequate support to one another may simply present more challenges when parenting a child with greater needs. For instance, behavior problems within this population may negatively impact
parents (Blacher & Baker, 2007). That families of children with DD respond to challenges in a variety of ways underscores the need to examine coparenting in this population.

Currently, literature in the DD field has provided limited support for the role of coparenting in child outcomes and has identified its complex interplay with relevant familial variables (e.g., marital satisfaction, parenting competence). For instance, Floyd et al. (1998) found that the parenting alliance (e.g., the coparenting relationship) mediated the relationship between marital satisfaction and perceived parenting competence in families of school-age children with intellectual disability (ID). Thus, the degree to which a parent felt they belonged to a supportive team indirectly played a role in the relationship between marital satisfaction and the degree to which he or she felt competent in their parenting skills. Further, Floyd et al. (1998) identified that the parenting alliance mediated the relationship between marital satisfaction and parent-child interactions for mothers, such that lower marital satisfaction led to lower quality parenting alliance, and more negative exchanges between parent and child during dyadic interactions.

In a sample of children with autism spectrum disorder, Thullen and Bonsall (2017) also found associations between problem behaviors and one kind of coparenting: exposing their child to conflict. They identified that parents were more likely to argue in the presence of their child when their child engaged in inappropriate mealtime behaviors (e.g., refusing to eat, making negative statements, etc.). Results of both studies point to the impact of interparental conflict on child outcomes in families of DD, whether manifested via negative parent-child interactions or disruptive behavior.

**Theoretical Framework**

Given documented associations between the parenting alliance and child outcomes, we can view coparenting from an integrated lens of social learning theory and the family systems framework. The family systems framework emphasizes the family as a significant social system through which we can understand behavior (Minuchin, 1985). Within this framework, the coparenting relationship is thought to maintain the structure, hierarchy, and boundaries for that family unit. For instance, two parents may implicitly understand that it would be inappropriate to overtly express dissatisfaction with one another’s attempts to discipline in front of their child following a misbehavior. Maintaining this unspoken rule reinforces family boundaries (i.e., discussing “adult” issues in private), and upholds both parents’ authority (i.e., no undermining parenting strategies in front of child). In addition, it may prevent a child from “acting out” in response to discomfort regarding interparental conflict or to inconsistent parenting practices. Within this framework, low-quality (e.g., conflictual, undermining) coparenting may increase the risk of child externalizing behavior concerns due to a breakdown in family structure.

Social cognitive theory involves the interdependent influences of one’s self-efficacy (i.e., the degree to which one feels competent in their abilities), their own actions, and feedback from their environment (Bandura, 1986). From the perspective of social cognitive theory, coparenting behaviors (e.g., supporting a partner’s parenting decision) may drive parenting behaviors (e.g., their individual responses to their child) and beliefs about their parenting abilities (e.g., thoughts on their own parenting competence), which in turn would shape their child’s behavior and responses. This model is founded on the transactional nature of parenting and child behaviors (Baker et al., 2003). We view the coparenting relationship as a direct predictor of child behavioral outcomes, with parenting (i.e., parenting self-efficacy and parenting behaviors) as an indirect variable in the relation.

For the purposes of this study, we’ve included both parenting behaviors and parenting self-efficacy within the broad domain of parenting, given established connections between the two variables (Sanders & Woolley, 2005). Although parenting behaviors may refer to discipline, reinforcement, or interaction styles with their child, parenting self-efficacy refers to parents’ beliefs in their ability to effectively manage the varied tasks and situations of parenthood (Gross & Rocissano, 1988).

Several studies, most of which focus on typically developing populations, provide evidence for the mediating role of parenting in the relation between coparenting and child behaviors. Researchers have identified links between coparenting and parenting behaviors (e.g., Feinberg, Kan, & Hetherington, 2007; Floyd et al.,...
1998; Margolin, Gordis, & John, 2001) and between coparenting and parenting self-efficacy (Merrifield & Gamble, 2013). Further, research has indicated that parenting self-efficacy plays a fundamental role in child externalizing behaviors (Rominov, Giallo, & Whelan, 2016; Sanders & Woolley, 2005; Weaver, Shaw, Dishion & Wilson, 2008), as do parenting behaviors (Patterson et al., 1990). Although only one of these studies included families of children with DD (Floyd et al., 1998), this research nonetheless establishes an important foundation for the mediating mechanisms in the relationship between coparenting and child behavior. These studies suggest that within the broad domain of parenting, parents with high quality coparenting (e.g., high levels of agreement and support regarding parenting practices) may feel more efficacious in their parenting and may use more effective parenting strategies, and consequently, prevent or minimize challenging behaviors.

Gaps in the Field of Coparenting
Research in the field of coparenting often includes parent self-report measures and occasionally includes Likert-type ratings for direct observations of triadic interactions (i.e., both parents and child) to capture the relationship. Investigating triadic observations using event recording (i.e., percentage of occurrences) in families of children with DD may unearth preliminary evidence about the nature and impact of coparenting behaviors in this population. Although several studies in the DD field have included observations of whole family interactions, coding has only involved dyadic, or parent-child exchanges (e.g., Floyd et al., 1998). Thus far, no studies have included data collection for observed triadic interactions in families of children with DD. This study fills a gap in the literature in that it includes both coding of triadic interactions and self-report measures by both parents. Perhaps most important, it is one of a few studies that has examined coparenting within the DD population and thus provides a significant contribution to the literature.

Study Goals
The current study aimed to explore associations between the coparenting relationship and child problem behaviors in a sample of intact (i.e., nondivorced) families with 6- to 9-year-old children with a history of DD in preschool. We conducted two separate studies. In Study 1, we recruited 56 families who had previously participated in a longitudinal randomized controlled trial study that examined the efficacy of a parent training program on child and family outcomes in families with 3-year-old children with DD. Study 2 was a smaller, exploratory study; we recruited a subsample of 30 families who participated in Study 1.

We addressed the following research questions for Study 1:
1. Does coparenting quality predict child problem behaviors?
2. Does parenting self-efficacy mediate the relationship between coparenting quality and child problem behaviors?

We addressed the following research questions for Study 2:
1. Are observed coparenting behaviors associated with observed child behaviors?
2. Do parenting behaviors mediate the relationship between coparenting quality and child problem behaviors?

Broadly, we hypothesized that low-quality coparenting, as measured by parent report and direct observations, would predict higher levels of problem behaviors, as measured by parent report and direct observations. We hypothesized that parenting (i.e., self-reported parenting self-efficacy and observed parenting behaviors) would mediate relations between coparenting and child problem behavior.

Study 1 Methods
Participants
We recruited participants who had taken part in the original intervention study, the Oregon Parent Project, which involved six waves of data collection over two-year period. Participants from this study were recruited using a cohort design; some families had recently finished their last wave of assessment and some families had finished several years earlier depending on time of study entry. To be eligible to participate in Study 1, PCs had to have previously participated in the original longitudinal study and been married to or living
with the same partner (i.e., alternate caregiver) for two or more years. In addition, both caregivers must have lived with the target child with DD for two or more years.

The authors use the terms primary and alternate caregivers rather than mothers and fathers because some fathers identified as primary caregivers, and some mothers identified as alternate caregivers, contrary to societal expectations of gender roles. The authors were interested in examining perspectives based on parents’ self-identified roles, rather than gender, with the assumption that differential roles and responsibilities of more full-time parenting may impact one’s perspectives.

Fifty-six families participated in Study 1. Of these families, 96% of women identified as primary caregivers. Mean age for primary caregivers was 35 years. Eighty-nine percent of primary caregivers identified as White and 50% had at least a college degree. Mean age for alternate caregivers was 37 years; 39% had at least a college degree, and 93% identified as White. Seventy percent of alternate caregivers were employed full-time, whereas 23% of primary caregivers were employed full-time. Families reported an average annual income of $64,769. Mean child age was approximately 6 years old, and a majority of the sample was male (82%). See Table 1 for details on family demographics.

All children had previously been identified with a DD and had received early intervention services. At the time of the current study, over half of the sample (62%) were still receiving special education services. Nineteen percent of the children were receiving services under the Autism eligibility category; 9% were receiving services under the Intellectual Disability eligibility category; 19% were receiving services under the Communication Disorders eligibility category; 2% were receiving services under the Other Health Impairment eligibility category; and 12% of families indicated that their child was receiving services under another special education category not listed. The remainder of the sample reported their child was no longer receiving special education services.

Procedures

In Study 1, parents answered questions about their demographic information, coparenting quality, childcare duties, perceptions of child problem behaviors, relationship satisfaction, and psychological well-being. We sent questionnaires to both parents in separate mail-home packets. Research assistants reviewed the consent forms with both parents over the phone prior to their participation. Parents were instructed to complete their packets separately to ensure privacy and to minimize potential response bias if parents were to fill out surveys together. Parents were reimbursed $50 ($25/parent) once they both mailed back their packets. All procedures for Study 1 followed a standardized protocol as approved by the University Institutional Review Board (IRB).

Measurement

Parenting self-efficacy. The Parenting Tasks Checklist (PTC; Sanders & Woolley, 2001) is a 28-item self-report measure for caregivers to rate the extent of their confidence (i.e., 0 = certain I cannot do it to 100 = certain I can do it) in handling child behaviors and tasks (e.g., getting dressed, throwing a tantrum, going shopping with child) across different settings (e.g., at home with friends, at school, at store). The PTC has two subscales that yield scores for behavior-specific self-efficacy and setting-specific self-efficacy (Sanders & Woolley, 2001) and offers evidence of discriminant validity (Sanders & Woolley, 2001) and high internal consistency for both subscales (i.e., \( \alpha = .97 \) and \( \alpha = .91 \); Sanders & Woolley, 2005). For the purposes of this study, only the behavioral self-efficacy subscale was utilized. Scores can range from 0 to 100 for this scale, with higher numbers indicating greater self-efficacy. For this sample, Cronbach’s alpha coefficients for both PCs and ACs were .97.

Difficulty with coparenting problems. The Parent Problem Checklist (PPC; Dadds & Powell, 1991) is a 16-item self-report measure for caregivers about the extent to which problems related to childrearing (e.g., disagreement over discipline, or disagreement over what is “naughty” behavior) have caused difficulties. For identified problems, parents rate the extent of difficulty from 1 (no difficulty) to 7 (extensive difficulty). Studies have reported little evidence on validity, adequate internal consistency (\( \alpha = .70 \)) and high test-retest reliability (\( \alpha = .90 \); Morawska & Thompson, 2009). For the current study, we used the difficulty subscale, which ranges in score from 16 to 112. For this sample, Cronbach’s alpha coefficients for PCs were .92 and for ACs, .90.
Table 1
Descriptive Statistics of Family Demographics in Studies 1 and 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Study 1 (N = 56)</th>
<th>Study 2 (N = 30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age in years</td>
<td>6.15 (.96)</td>
<td>6.33 (.95)</td>
</tr>
<tr>
<td>Male</td>
<td>46 (82%)</td>
<td>26 (86%)</td>
</tr>
<tr>
<td>White</td>
<td>50 (89%)</td>
<td>28 (93%)</td>
</tr>
<tr>
<td>In general ed 80% or more</td>
<td>17 (30%)</td>
<td>11 (36%)</td>
</tr>
<tr>
<td>Not in special education</td>
<td>21 (38%)</td>
<td>8 (27%)</td>
</tr>
<tr>
<td>Primary caregiver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age in years</td>
<td>34.89 (5.00)</td>
<td>35.67 (5.00)</td>
</tr>
<tr>
<td>Female</td>
<td>54 (96%)</td>
<td>29 (97%)</td>
</tr>
<tr>
<td>White</td>
<td>50 (89%)</td>
<td>28 (93%)</td>
</tr>
<tr>
<td>College or graduate degree</td>
<td>28 (50%)</td>
<td>13 (43%)</td>
</tr>
<tr>
<td>Full time employed</td>
<td>13 (23%)</td>
<td>9 (30%)</td>
</tr>
<tr>
<td>Annual income</td>
<td>$64,769 ($39,910)</td>
<td>$70,268 ($40,523)</td>
</tr>
<tr>
<td>Alternate caregiver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age in years</td>
<td>36.94 (6.31)</td>
<td>38 (6.12)</td>
</tr>
<tr>
<td>Male</td>
<td>27 (90%)</td>
<td>29 (97%)</td>
</tr>
<tr>
<td>White</td>
<td>52 (93%)</td>
<td>29 (97%)</td>
</tr>
<tr>
<td>College or graduate degree</td>
<td>21 (39%)</td>
<td>13 (43%)</td>
</tr>
<tr>
<td>Full time employed</td>
<td>39 (70%)</td>
<td>21 (70%)</td>
</tr>
</tbody>
</table>

**Problem behavior.** The Child Behavior Checklist (CBCL; Achenbach & Rescorla, 2012) was completed by both parents to assess the target child’s internalizing and externalizing behaviors. The 6 to 18-year version was used and includes 112 specific problems, with parents providing a rating on the same 0–2 scale. The CBCL includes two broadband scales, Internalizing Problems and Externalizing Problems, and a Total Problems scale. The Internalizing Problems scale includes three syndrome types (anxious/depressed, withdrawn/depressed, and somatic complaints), and the Externalizing Problems scale includes two syndrome types (rule-breaking behavior and aggressive behavior). The CBCL has a test-retest reliability of 0.95 for the specific problems items. Additionally, the Total Problems scale test-retest reliabilities range from 0.91 to 0.95 (Achenbach & Rescorla, 2012). We reported t scores from the Total Problems scale ($M = 50; SD = 10$). For the current sample, Cronbach's alpha coefficients for PCs were .85 and for ACs, .83 on the Total Problems scale.

**Study 1 Results**

**Analytic Approach**
To date, one study has identified links between financial resources (i.e., a proxy for socioeconomic status [SES]) and coparenting quality (Brody, Stoneman, Flor, McCrary, Hastings, & Conyers, 1994). SES has also been reliably linked to child social-emotional functioning (Dodge, Pettit, & Bates, 1994), such that lower SES is associated with higher rates of childhood mental health concerns. Scholars have hypothesized that poverty—inequitable access to resources—can explain this relationship. To rule out an alternative hypothesis, we conducted bivariate correlations of PC-reported family annual income and reports of coparenting quality and child behavior problems. Contrary to past findings, income was only significantly, positively associated with AC-reported child problem behaviors ($r = .37, p = .01$), such that higher income was correlated with higher rates of problem behavior. Because this finding was not in the expected direction and
likely spurious, we did not include it as a control variable in our AC analyses.

Because the original intervention study included a treatment condition, independent samples $t$ tests were utilized to test for significant differences in parent-reported challenging behavior and parent-reported coparenting quality for the intervention versus. treatment as usual (TAU) group and to test for differences in demographic variables (i.e., education and income) for families participating in Study 1 versus both studies. Descriptive statistics were used to explore the nature of the independent variables, dependent variables, and sample demographic variables. Regression analyses were utilized to address whether parent-reported coparenting quality predicted child behaviors. We conducted mediation analyses using the bootstrapping method with bias-corrected confidence estimates (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004). We obtained the 95% confidence interval of the indirect effects with 5,000 samples using PROCESS Macro version 3 (Hayes, 2017). Results were interpreted as significant (i.e., $p < .05$) when the confidence interval did not contain zero. All analyses were conducted using SPSS 25.

**Preliminary Analyses**

There was no significant difference in problem behaviors, for PCs, $t(54) = -1.27, p = .21$, and ACs, $t(54) = .68, p = .50$, coparenting, PCs, $t(54) = -.99, p = .33$, and ACs, $t(54) = 1.04, p = .30$, or parenting self-efficacy, PCs, $t(53) = .99, p = .33$, and ACs, $t(54) = -.57, p = .57$, for the intervention condition versus the Treatment as Usual condition.

For families who participated in Study 1 versus both studies, the assumption of homogeneity of variances was violated, as assessed by Levene’s test for equality of variances for PC-reported problem behaviors ($t(54) = -2.9, p = .78$), PC-reported coparenting ($p = .013$), and AC-reported problem behaviors ($p = .01$). A Welch $t$ test was utilized to explore differences in these variables. There was no significant difference in SES, as measured by income, $t(54) = .84, p = .78$, parenting self-efficacy, PCs, $t(42.04) = -1.29, p = .21$, and ACs, $t(53.64) = .28, p = .78$, or coparenting, PCs, $t(40.39) = 1.74, p = .08$, and ACs, $t(54) = .13 p = .89$, between families who participated in Study 1 and families who participated in both studies. Although there was no significant difference between families who participated in Study 1 and families who participated in both studies in PC-reported problem behaviors, $t(54) = -2.9, p = .78$, there was a significant difference in AC-reported problem behaviors, $t(42.69) = -2.23, p = .03$, with higher scores in families who participated in both studies.

**Research Questions**

**Question 1.** To examine whether parent-reported coparenting quality predicted parent-reported problem behaviors after controlling for intervention condition, we conducted a sequential regression analysis for PCs and ACs using the PPC Extent of Difficulty subscale.

**Primary caregivers.** For PCs, the overall model was significant, accounting for 11% of variance in child problems. In Step 1, participant study condition accounted for 3% of the variance in child problems but did not contribute significantly to the model. In Step 2, difficulty with coparenting explained an additional 8% of variance in child problems, $F(2, 53) = 3.42, p = .04$.

**Secondary caregivers.** For ACs, the overall model was significant, accounting for 21% of variance in child problems. In Step 1, participant study condition accounted for 1% of the variance in child problems but did not contribute significantly to the model. We entered ACs report of difficulty with coparenting problems in Step 2. Coparenting problems explained an additional 20% of variance in child problems, $F(2, 53) = 6.97, p = .002$, suggesting that from the ACs perspective, greater magnitude of coparenting disagreements leads to an increase in child behaviors. See Tables 2 and 3 for more information regarding findings for PCs and ACs. See Table 4 for details on mediation analyses.

**Question 2.** For both PCs and ACs, bias-corrected boot strap analyses were conducted to test for the mediating role of parenting self-efficacy in the relation between coparenting and child problems, after controlling for condition assignment.

**Primary caregivers.** Multiple regression analyses were conducted to assess each component of the proposed mediation model for PCs. Difficulty with coparenting problems positively predicted child problems ($B = .30, SE = .13, p = .02$). Next, difficulty with coparenting problems negatively predicted parenting self-efficacy ($B = -.44, SE = .13, p < .001$). Parenting self-efficacy negatively predicted child problems ($B = -.51, SE = .13, p < .001$). Results of the mediation analysis confirmed...
the mediating role of parenting self-efficacy in the relationship between coparenting problems and child problems ($B = .22, SE = .10, 95\% CI [.06, .46]$). The direct effect of difficulty with coparenting problems on child problems became non-significant, $B = .08, t(53) = .61, p = .54,$ when controlling for parenting self-efficacy, suggesting mediation.

**Alternate caregivers.** For ACs, difficulty with coparenting problems positively predicted child problems ($B = .43, SE = .12, p < .001$). Coparenting problems negatively predicted parenting self-efficacy ($B = -.44, SE = .16, p = .01$). Parenting self-efficacy did not significantly predict child problems ($B = -.14, SE = .10, p = .15$). We proceeded with testing for the indirect effect even though the mediator did not significantly predict the DV, given indirect effects can still be identified even if preconditions were not met (Rucker, Preacher, Tormala, & Petty, 2011). Results indicated that parenting self-efficacy does not mediate the relationship between coparenting problems and child problems in ACs ($B = .07, SE = .07, 95\% CI [-.03, .27]$). See Table 2 for more details on the mediations.

## Study 2

### Participants

As with Study 1, participants for Study 2 were recruited from the original intervention study. Study 1 eligibility criteria applied to participants in Study 2. Only families who participated in Study 1 were recruited to participate in Study 2. Thirty families participated in Study 2 and as with Study 1, all families were intact, two-parent families. Of the families, 97% of women identified as primary caregivers.

### Table 2

**Regression Analysis for Variables Predicting Problem Behaviors**

<table>
<thead>
<tr>
<th>Variable</th>
<th>PC-Reported Variables</th>
<th>AC-Reported Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
<td>$SE$</td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study assignment</td>
<td>4.83</td>
<td>3.81</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
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<tr>
<td>Study assignment</td>
<td>3.72</td>
<td>3.71</td>
</tr>
<tr>
<td>Coparenting difficulty</td>
<td>.29</td>
<td>.13</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.11</td>
<td></td>
</tr>
<tr>
<td>$F$</td>
<td>3.42</td>
<td></td>
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<tr>
<td>$p$-value</td>
<td>.02</td>
<td></td>
</tr>
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</table>

Table 3

**Correlations Among Observed Coparenting Behaviors and Child Behaviors**

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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<tbody>
<tr>
<td>1. Total PSB</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Total UB</td>
<td>.28</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Total CAB</td>
<td>-.30</td>
<td>.22</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. FP CAB</td>
<td>-.44*</td>
<td>.01</td>
<td>.88**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>5. CU PSB</td>
<td>-.66**</td>
<td>.21</td>
<td>-.47**</td>
<td>-.55**</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. CU UB</td>
<td>.04</td>
<td>.60**</td>
<td>.29</td>
<td>.17</td>
<td>-.05</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Puzzle UB</td>
<td>.18</td>
<td>.52**</td>
<td>.28</td>
<td>.09</td>
<td>.03</td>
<td>.35</td>
<td>—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Puzzle CAB</td>
<td>-.25</td>
<td>.25</td>
<td>.72**</td>
<td>.58**</td>
<td>-.38*</td>
<td>.23</td>
<td>.39*</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>9. Book CAB</td>
<td>-.08</td>
<td>.29</td>
<td>.80**</td>
<td>.52**</td>
<td>-.23</td>
<td>.37*</td>
<td>.25</td>
<td>.41*</td>
<td>—</td>
</tr>
</tbody>
</table>

*Note.* PSB = partner support behavior; UB = undermining behavior; FP = free play task; book = book reading task; PC = primary caregiver-reported.

* $p < .05$. ** $p < .01$. 

Coparenting and Child Outcomes
caregivers was 36 years. Ninety-three percent of primary caregivers identified as White. Forty-three percent of both primary caregivers and alternate caregivers had at least a college degree. Mean age for alternate caregivers was 38 years and 97% identified as White. Seventy percent of alternate caregivers were employed full-time, whereas 30% of primary caregivers were employed full time. Families in this sample reported an average annual income of $70,268. Mean child age was approximately 6 years old, and a majority of the sample was male (86%). See Table 1 for more details on family demographics.

In this sample, 73% of the children were receiving services under an individualized education program (IEP) in their school setting. Twenty-three percent were being served under the category of Autism; 23% were being served under the category of Communication Disorder; 13% were being served under the category of Intellectual Disability; and 13% of families reported their child was being served under a different special education category.

### Procedures

In Study 2, caregivers were re-contacted via phone and invited to participate in another study with their child, which consisted of four videotaped activities (i.e., free play, clean-up, a challenging puzzle task with only parents’ verbal support, and a reading task) at a research institute on campus or at their home. Length of time between participation in Study 1 and Study 2 depended on when families were recruited for and participated in each study and thus ranged between three and five months. For Study 2, families only participated in the videotaped activities; they did not fill out additional questionnaires. Observations were triadic and always comprised both caregivers and the target child. If siblings participated in the task, research assistants did not include them in their coding. For each task, families were provided relevant materials (e.g., box of toys for free play task, bag of books for the book task, etc.). The free-play task was 7 min and followed by a 3-min clean-up task. The puzzle task and the book task were each 5 min long. Families were instructed to interact as they normally would for the free play task and the book task. For both the clean-up task and the puzzle task, research assistants informed families they could provide instructions and help verbally, but not to physically help their child. Twenty-nine out of 30 families opted to complete the video tasks at home. Parents were reimbursed $25 total following the completion of the videotaped tasks. Visits often took between 25 to 30 min. All procedures for Study 2 followed a standardized protocol as approved by the university IRB.

### Measurement

Research assistants collected direct observation data on the following independent variables: (a) positive parenting behavior, (b) partner support behavior, and (c) partner undermining behavior. Direct observation data were collected for the following dependent variables: (a) child inappropriate and (b) appropriate behavior. We utilized a 10-s partial interval data collection to code all parent and child behaviors. The percentage of intervals containing behaviors for each variable was computed, yielding percentage occurrences for behaviors within each task and across all tasks (i.e., total percentage).

Assessors were trained to reach a 95% accuracy criterion on the administration of the assessment protocol to begin assessments. The coding team was trained to 80% interobserver agreement (IOA) mastery on each target behavior coded during the videotaped triadic play interaction. If IOA fell below 80% agreement for any of the behaviors, the data collection team addressed discrepancies and re-addressed behavioral definitions of concern during the weekly coding meeting. Total IOA (occurrence and nonoccurrence) was collected on parent and child behaviors for 20% of the videos; it ranged from 86% to 96%, with an average reliability of 92%.

**Positive parenting behaviors.** We defined positive parenting as any instance in which the parent provides (a) verbal statements (e.g., praise statements), (b) gestures (e.g., thumbs-up), or (c)
physical behaviors (e.g., high fives) in positive evaluation of the child.

**Partner support behaviors.** We defined *partner support behavior* as any instance in which (a) parent provides contingent attention or prompting towards compliance following a partner’s command or prompt, (b) parent provides positive attention to his or her partner, (c) partner joins in with positive reinforcement following partner’s delivery of positive reinforcement, or (d) partner makes a statement of one or more words in agreement in response to partner’s statement within 10 s.

**Partner undermining behaviors.** We defined *partner undermining* as any instance in which a parent (a) provides a command or statement to the parent or to the child that conflicts with or diminishes the partner’s command or statement within 10 s of the partner’s command/statement, (b) utters a statement to the partner, which includes one or more words, that is a negative evaluation of the partner, or (c) utters a statement to the child, which includes one or more words, that is a negative evaluation of the partner.

**Inappropriate child behaviors.** *Inappropriate child behaviors* included any instance in which the child engages in (a) aggression (e.g., hitting or kicking), (b) disruption (e.g., throwing an object across the room), or (c) negative vocalizations (e.g., screaming).

**Appropriate child behaviors.** *Appropriate child behaviors* were defined as any instance in which the child engaged in positive or neutral verbalizations. Verbalizations can range from sounds that include a consonant and syllable (e.g., “ba”) to single word utterances (e.g., “ball”) to fully formed sentences (e.g., “look at that ball”).

**Study 2 Results**

**Analytic Approach**

Study 2 utilized a subsample of Study 1 and was exploratory in nature. Descriptive statistics were used to explore the nature of the independent variables, dependent variables, and sample demographic variables. Bivariate correlations were utilized to explore the magnitude of associations between observed coparenting behaviors and observed child behaviors. To determine if positive parenting mediated the relation between coparenting behaviors (i.e., undermining behavior and supportive behavior) and child problem behaviors, we conducted mediation analyses using the bootstrapping method with bias-corrected confidence estimates (MacKinnon et al., 2004; Preacher & Hayes, 2004). We obtained the 95% confidence interval of the indirect effects with 5,000 samples using PROCESS Macro version 3 (Hayes, 2017). Results were interpreted as significant (i.e., *p* < .05) when the confidence interval did not contain zero. All analyses were conducted using SPSS 25.

**Research Questions**

**Question 1.** For our first question, we used bivariate correlations to explore associations between observed coparenting behaviors and child behaviors. We found several significant correlations between observed coparenting behaviors and observed child behaviors across specific observation tasks (i.e., free play, clean-up, challenging puzzle task, and reading task), rather than between our total scores. Total partner support behavior was significantly, negatively associated child appropriate behavior during free play (*r* = −.55, *p* = .002). Partner support behavior during clean-up was significantly, negatively correlated with total child appropriate behavior (*r* = −.47, *p* = .009), child appropriate behavior during free play (*r* = −.55, *p* = .002), and child appropriate behavior during the challenging puzzle task (*r* = −.38, *p* = .038). Partner undermining behavior during the clean-up task was significantly, positively associated with child appropriate behavior during the book task (*r* = .37, *p* = .048). Partner undermining behavior during the puzzle task was significantly, positively related to child appropriate behavior during the puzzle task (*r* = .39, *p* = .035). See Table 3 for more information related to our bivariate correlations.

**Question 2.** Bias-corrected boot strap analyses were conducted to investigate the hypothesis that positive parenting mediated the effect of coparenting (i.e., undermining coparenting and supportive coparenting, respectively) on child problem behaviors.

Undermining behavior was not a significant predictor of child behaviors, (*B* = .003, *SE* = .32, *p* = .99), and positive parenting did not significantly predict child behaviors, (*B* = −.79, *SE* = .41, *p* = .06). Because additional indirect effects can be detected even when the preconditions are not met (Rucker et al., 2011), we proceeded to test the indirect effect. The indirect coefficient was not significant (*B* = −.002, *SE* = .36, 95% CI [−.68, .85]).
Supportive coparenting behavior was not a significant predictor of child behaviors, \( (B = -0.02, SE = 0.17, p = 0.89) \), and positive parenting did not significantly predict child behaviors, \( (B = -0.79, SE = 0.43, p = 0.07) \). We tested the indirect effect and found that the indirect coefficient was not significant, \( (B = 0.02, SE = 0.11, 95\% \text{ CI } [-0.17, 0.26]) \). See Table 5 for mediation results.

**Discussion**

Broadly, our study identified links between both PCs and ACs reports of difficulty with coparenting problems and child problems. For PCs, parenting self-efficacy played a mediating role in the relationship between coparenting quality and child outcomes. Observed coparenting behaviors predicted observed child behaviors within and across tasks, in an unexpected direction. Following, we discuss our findings for each study in more detail.

**Study 1**

**Research question 1.** Difficulty with coparenting problems may serve as a proxy for the extent to which parents argue over childrearing issues because it identifies both the presence of problems and the extent to which the problem is difficult to resolve. Measures of disagreement (e.g., fighting, arguing, active undermining) are potentially more likely to occasion child behavioral issues. Indeed, these findings are consistent with the family systems framework (Minuchin, 1985); families who argue more over childrearing decisions may be more vulnerable to breakdowns of their unified parenting front. In response, their children may be more likely to act out. In part, we could also attribute this connection between coparenting disagreement and child problems to parents’ modeling of conflict, particularly in families that experience frequent coparenting difficulties.

As children enter and progress through middle childhood, parents may find that they need to configure new roles and responsibilities (e.g., helping with homework, advocating at IEP meetings). Such changes may usher in potential conflict, particularly in families with a history of disagreement. Our findings were consistent with the typically developing coparenting literature (Dadds & Powell, 1991; Katz & Low, 2004; O’Leary & Vidair, 2005; Schoppe et al., 2001) as well as with coparenting research in the DD field (Floyd et al., 1998; Thullen & Bonsall, 2017).

**Research question 2.** For PCs, parenting self-efficacy mediated the relation between difficulty with coparenting problems and child problem behaviors. This study is the first to explore parenting efficacy as variable explaining the relation between coparenting and child outcomes. Past research has identified relations between PSE and child problem behavior in mothers of children at risk for early conduct problems (Sanders and Woolley, 2005; Weaver et al., 2008). These findings lend preliminary support for our integrated framework, particularly from the perspective of social cognitive theory: Primary caregivers who work within a supportive coparenting arrangement may feel more confident in their ability to handle disruptive behavior and thus may use effective strategies to address those behaviors, leading to fewer challenging behaviors. Demonstrating a show of support for each other in front of their children may further reinforce their role as family “managers,” thus strengthening their parenting efforts and helping to maintain any behavioral concerns.

Our findings mirror past research on the impactful role of PSE in child outcomes in the DD population (Hastings & Brown, 2002). Hastings and Brown (2002) only found a mediation for mothers, not fathers. For PCs, parenting self-efficacy may play a more important role in their perceptions of child outcomes given that they may spend more time in the parenting role. Finally, it is worth noting that most of the PCs identified as women; parenting self-efficacy may hold more salience for mothers in part due to societal expectations of women regarding fulfillment of the PC role (Cmic, Pederson y Arbona, Baker, & Blacher, 2009). ACs may put less “stock” in their parenting confidence if their role is to support their partner but not take the lead in several key

**Table 5**

<table>
<thead>
<tr>
<th>Mediated Variable</th>
<th>( B )</th>
<th>( SE )</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undermining behavior</td>
<td>-.002</td>
<td>.36</td>
<td>[-.68, .85]</td>
</tr>
<tr>
<td>Positive parenting</td>
<td>0.02</td>
<td>.12</td>
<td>[-.17, .26]</td>
</tr>
<tr>
<td>Supportive behavior</td>
<td>.02</td>
<td>.12</td>
<td>[-.17, .26]</td>
</tr>
</tbody>
</table>
parenting responsibilities. That said, our findings are not consistent with Rominov et al. (2016), who identified that low parenting self-efficacy was linked with child problem behaviors in fathers. The conflicting results point to a need to further disentangle PSE for fathers of children with DD.

Study 2

Research question 1. We found that total observed coparenting behaviors did not significantly predict total observed child behaviors in the expected direction. Although these findings appear counterintuitive, we offer several plausible explanations.

First, it’s possible that behavior-specific partner support (i.e., “listen to your father when he says it’s time to clean up”) may be more likely to predict behavioral outcomes than global partner support (i.e., agreeing with partners on neutral or positive topics related to the child, or showing affection towards one another in response to the child). These behaviors, although positive and supportive, may be too negligible to register, particularly with children previously identified with DD.

Second, we limited undermining behavior to include content of parents’ verbal interactions, not tone. Thus, if a parent made a derisive remark towards his partner (e.g., “you are so bad at building blocks”), we would have coded it even if he were laughing while he said it. However, if a parent had said something in a negative tone, we would only have coded it if the content were negative, too. For instance, if a parent said, “wow” in a sarcastic tone, this behavior would not have fit under our coding manual’s definition, even if it appeared consistent with undermining behavior. Tone and attitude may be more salient than content of the interactions, especially when negative. Alternately, it’s possible that partner undermining behavior predicted child appropriate behavior because children may have inadvertently redirected potentially negative conversations away by engaging their parents in the activity in some way (i.e., by imploring their parents to look at something they had built). Older children may be more skilled at successfully redirecting conversations away from negative interparental interactions compared to younger children with delays, who may be less attuned to their parents’ behaviors toward each other.

Our coding definition for child appropriate behavior was also limited in that it included only positive or neutral vocalizations. If a child engaged in fewer appropriate behaviors in an observation, it does not necessarily indicate they were behaving inappropriately. Instead, it might indicate that they were simply playing quietly. Observations with more talkative parents and children quietly absorbed in the play materials would support our findings where increased partner support was associated with less appropriate behavior. Had the code included more specific instances of appropriate behavior (e.g., sharing, initiating play with parents, smiling, etc.), the results may have differed significantly.

Last, our study was unique in that we coded for both parent and child behaviors. It’s possible that children may be less likely to immediately “act out” in response to undermining coparenting behaviors. Instead, we may observe child outcomes in other settings, which would be consistent with past research that has examined the links between observed coparenting and child outcomes in school settings (Stright & Niezel, 2003) and observed coparenting and child outcomes as rated by parents and teachers at different time points (Schoppe-Sullivan, Weldon, Cook, & Buckley, 2009).

Research question 2. For our final research question, we asked whether parenting behaviors mediated the relationship between coparenting quality and child problem behaviors. Results did not support a mediation for either supportive coparenting or undermining coparenting. As previously discussed, we could hypothesize that this was due in part to the fact that the definitions differed significantly.

Implications for Clinical Practice

The Individuals With Disabilities Education Act (2004) mandates that every state have at least one parent training and information center (PTI). Typically, PTIs offer training and access to...
resources for (a) understanding parental rights under special education law, (b) advocating at IEP meetings, (c) navigating school transitions, and (d) facilitating effective family-school partnerships. Research establishing ties between coparenting quality and child behavioral outcomes in families of children with developmental delay may drive PTI’s to take preventive approaches with families at risk for receiving special education services in their elementary-age years. Alternately, PTI’s could serve as a resource for families of school-aged children with DD. PTI services targeting coparenting support could include support in use of consistent parenting strategies, mutual support in childrearing endeavors, and effective problem-solving around child-related issues.

Limitations
Several limitations suggest that findings be interpreted with caution. First, we cannot specify the direction of our relations, given that they are cross-sectional. It is possible that a transactional relationship exists between these variables; further research could expound on that possibility. Another limitation to consider is the homogeneity of the sample: Most of our participants are White, educated, and mid-income. Last, limited statistical power due to relatively small sample sizes for both studies may have played a role in limiting the significance in some of our findings.

Regarding observations, we did not distinguish between PC and AC coparenting behaviors for our coparenting variables. Doing so may have yielded data that better represented PC and AC reports of coparenting quality. Last, we defined child appropriate behavior as positive or neutral verbalizations, which potentially precluded a broader representation of appropriate behaviors (e.g., using polite words, sharing, smiling, etc.).

Future Directions
Future studies can continue to contribute to this literature by addressing the previous limitations. Future researchers would benefit from including more family variables as covariates in their analyses. Inclusion of parent mental health or relationship satisfaction would provide important information regarding the degree to which coparenting quality predicts child outcomes above and beyond these salient factors. Future research should consider child outcomes beyond the home setting. School-related dependent variables (e.g., classroom observations, teacher ratings, child grades) might provide insight into how coparenting quality influences school success. Next, inclusion of longitudinal designs would further strengthen future studies examining coparenting and child outcomes. Past research has provided extensive support for longitudinal links between coparenting behavior and child outcomes for typically developing children in middle childhood and adolescence (O’Leary & Vidair, 2005; Riina & McHale, 2014).

Regarding parenting variables, future researchers might benefit from identifying and quantifying parents’ roles and responsibilities, rather than simply identifying whether they are PCs. Although one parent may identify as the PC, their partner may nonetheless share an equal number of responsibilities. Including the extent to which parents attend to parenting duties may help to explain variance in child outcomes.

Conclusion
Limitations notwithstanding, the current study contributed to the field in several ways. This is one of few studies to use a multimethod and multi-informant approach to examine the coparenting relationship within families of children with DD. Our findings supported links between parent-reported coparenting quality and child problem behaviors as well as the mediating role of parenting self-efficacy in the relation between coparenting quality and child problem behaviors for PCs. Our findings offer insight into similarities and differences in caregivers’ perceptions of their (a) own parenting beliefs and behaviors, (b) coparenting relationships, and (c) children’s well-being. Taken together, the current study further elucidates knowledge of family-level variables in a population already at risk for poor outcomes, advancing research in both the coparenting and DD literature.

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