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ORIGINAL PAPER

Child Hostility toward a Parent with a History of Depression and Family Functioning

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Abstract

Family dysfunction has been associated with both child externalizing problems, including hostility, and parent depression or depressive symptoms. Research investigating child hostility directed toward a parent with a history of depression is absent, yet it may be associated with especially high levels of family dysfunction. The current study aimed to assess (1) the relation between observed child hostility, measured by the Iowa Family Interaction Rating Scale, toward such a parent and child-reported family dysfunction, using the Family Assessment Device, and (2) whether current parent depressive symptoms, measured by the Beck Depression Inventory-II, moderated this association. We hypothesized that child hostility would negatively relate to family functioning, even after controlling for parent depressive symptoms, and that parent depressive symptoms would moderate this association in that high levels of such symptoms would strengthen the negative relation between child hostility and family functioning. To address these hypotheses, hierarchical regression and moderation analyses were conducted in SPSS. Results indicated that higher levels of child hostility related to a more dysfunctional family environment. Furthermore, although speculative as the interaction of child hostility toward a parent and parent depressive symptoms only approached conventional levels of significance, low levels of both constructs may protect against family dysfunction. Findings from this study may inform new methods of family intervention and prevention, as well as ways of identifying families most at risk for dysfunction.

Keywords Child hostility · Parent depression · Family functioning · Late childhood · Behavioral observations

Highlights

- The current study used unique observational data of child hostility.
- Child hostility related to family dysfunction above parent depressive symptoms.
- Child hostility *and* parent depressive symptoms related to *more* family dysfunction.
- Child Hostility toward a Parent with a History of Depression and Family Functioning.

Child externalizing behaviors, particularly hostility, play an important role in family functioning. Hostile behavior, defined as verbal or physical aggression that is intended to harm another person, peaks during early- to mid-childhood (Krahé et al. 2015), often manifesting in physical behaviors (e.g., pushing, hitting, threatening to physically harm) and through defiant, destructive behavior (e.g., yelling, profanity; Forehand and McMahon 2003). However, during adolescence, displays of hostility are often more verbal or covert, including being critical, sarcastic, and/or belligerent toward the parent (Forehand and McMahon 2003). These behaviors, when directed by an adolescent toward a parent, have received little attention. In contrast, attention has focused on general conflict between the parent and child.

A youth's transition from childhood to adulthood can be stressful for both the adolescent and parent. Changes (e.g., biological, social) for the adolescent during this

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developmental period may influence parent-adolescent interactions, relating to higher levels of parent-adolescent conflict (i.e., storm and stress theory; Deković 1999; Montemayor 1983). For example, adolescents are more likely than younger children to view parent rules as arbitrary; consequently, they may refuse to follow such guidelines, perhaps as a reflection of an increased need for autonomy (Montemayor 1983; Weymouth et al. 2016). Evidence supports a strong link between adolescent-specific characteristics (e.g., high levels of externalizing behaviors, conduct problems [defiant and aggressive behaviors typically more severe than general externalizing problems], poor emotion regulation skills), and conflict with a parent (Deković 1999; Glatz et al. 2019; Montemayor 1983). Thus, externalizing tendencies, including hostile behaviors, may increase the risk of family dysfunction during adolescence, particularly due to increased child-parent conflict.

In addition to altering parent-adolescent communication, the transition to adolescence may disrupt other interpersonal processes, leading to increased family dysfunction. Recent evidence suggests that various forms of externalizing problems exhibited during this developmental transition can upset family functioning in terms of parent-to-parent communication, problem solving, and affective involvement with others in the family (Fleck et al. 2015; Roberts et al. 2018). For example, in a sample where both mothers and pre-adolescents were diagnosed with ADHD, Fleck et al. (2015) found child oppositional defiant disorder/conduct disorder was correlated with several aspects of family functioning (e.g., social life, siblings). Similarly, Roberts et al. (2018) found that young adolescent boys with conduct problems and high ratings of callous-unemotional traits tended to have parent-rated family environments with less emotional involvement and poorer general functioning than families with typically developing adolescent boys. These findings highlight the critical role adolescent-specific factors may play in overall family dysfunction.

Although studies such as those by Fleck et al. (2015) and Roberts et al. (2018) support the relation between high levels of adolescent hostile behaviors and family dysfunction, they leave the question of how an adolescent's hostile behavior directed specifically *toward a parent* may be associated with the family environment. Specifically, an adolescent's sarcastic, critical, rejecting, and/or belligerent behaviors when interacting with his or her parent may be particularly detrimental for positive family functioning. Importantly, this tendency may be more pronounced in families where the parent has a history of depression.

Parent depression has been extensively documented as a permeating source of many unfavorable outcomes including family dysfunction (Cummings et al. 2002; McKinney and Milone 2012). Multiple studies and reviews support that parent depressive symptoms are related to a caretaker's ability to effectively parent, disrupting overall family functioning (e.g., Goodman 2007; Keitner et al. 1987; Lovejoy et al. 2000). Households with a depressed parent have higher levels of family conflict (Fear et al. 2009; Keitner et al. 1987), which may derive from discord in spousal or parent subsystems (Cox and Paley 1997; Minuchin 1985). For example, Keitner et al. (1987) found that families with a depressed member perceived family functioning as poor both during and after an acute depressive episode, demonstrating the longevity of the role depression may play on the family. Additionally, Pilowsky et al. (2006) found that parent depression was related to two components of family functioning: marital dissatisfaction and disordered parenting. Finally, Keitner et al. (1989) found that parental internalizing problems (e.g., depressive symptoms) related to family dysfunction, particularly poor intrafamilial communication, both during and six months after an acute depressive episode. In sum, research documents the pivotal role the presence of parent depression or depressive symptoms plays in family dysfunction, largely through parent-specific factors. However, as child-specific factors are also complicit in negative family environments, effective and efficient treatment for families high in dysfunction requires examining the role child hostility directed *toward* the parent may play in creating a dysfunctional family context.

In addition to considering how child hostility toward a parent and parent depressive symptoms uniquely relate to family dysfunction, families characterized by *both* factors may be at risk for particularly poor family functioning. Unsurprisingly, parent depressive symptoms and child hostility frequently co-occur. As Jaser et al. (2007) describe, children often are instrumental in dysfunction in families coping with parent depression; this role could be due to depressed parents and co-caregivers reinforcing or modeling negative behaviors. Further, children may use hostile behaviors to cope with disruptive family environments provoked by parent depressive symptoms (e.g., parent withdrawal and intrusiveness; Jaser et al. 2007). For example, aggressive behavior aimed at a parent may successfully draw the attention of a withdrawn parent, even though this attention is likely negative. In turn, a child's hostile behaviors can relate to further parent depression, as he or she thus may feel inadequate in the parent role (Jaser et al. 2007; Montemayor 1983). Accordingly, youth hostility may exacerbate and/or be exacerbated by a parent's depressive symptoms.

Beyond the bidirectional effects of parent depressive symptoms and youth hostility on each other, each of these constructs may be viewed as a stressor, and the accumulation of these two stressors may play an enhanced negative role in family functioning. For parents with depressive symptoms, parenting styles tend to be more unpredictable

and indifferent (Lovejoy et al. 2000), predicting higher levels of hostile child behaviors (Jaser et al. 2007). In turn, these behaviors are further associated with elevated levels of family dysfunction (Fleck et al. 2015; Roberts et al. 2018). Thus, although parent depressive symptoms are often a source of dysfunction and stress in any family, high levels of such symptoms may be particularly detrimental when combined with high levels of child hostility. Research in this area is scarce—although both hostility and depressive symptoms have been examined in the context of the family environment (e.g., Fleck et al. 2015; Goodman 2007), research examining their multiplicative effects is absent.

The current study aimed to examine the relation between child hostility directed toward a parent with a history of depression and family dysfunction, and whether child hostility interacted with a parent's present level of depressive symptoms to exacerbate family dysfunction. Notably, we used behavioral observations to assess child hostility toward the parent; as Chorney et al. (2015) recently noted, "… direct observation of behavior is the method of choice when overt behavior is central to a research question (e.g., interactions between children and parents)" (p. 154). Such operationalization of child hostility provides a uniquely ecologically valid perspective of child externalizing behaviors in the family context.

To address the first aim, we examined the association of child hostility and family dysfunction beyond the influence of parent depressive symptoms. We hypothesized that child hostility would be negatively related to family functioning after accounting for parent depressive symptoms and relevant demographic variables. To address the second question, we examined if parent depressive symptoms moderated the relation between child hostility and family dysfunction in an exploratory analysis. We hypothesized that parent depressive symptoms would moderate this association; specifically, high levels of such symptoms would *strengthen* the negative association between child hostility and family functioning. However, it is important to note that we viewed the second hypothesis as exploratory. Small sample sizes and measure reliability limitations make detecting small interaction effects difficult in family research (Whisman and McClelland 2005). As such, in addition to presenting *p* values, we also presented effect size estimates for the multiple regression model.

We tested these hypotheses in a sample of children spanning late childhood to adolescence (i.e., 9 to 15 years old) living in families with a parent with a history of depression. This sample was ideal for testing our hypotheses for two reasons. First, families with a parent with a history of depression are more likely to provide a continuum of mild to severe depressive symptoms rather than the more minimal levels observed in a community sample. Second, a sample of children spanning late childhood and adolescence is well-suited to examine the relation between child hostility and family dysfunction, as the former variable increases during early adolescence (Montemayor 1983) and remains stable or intensifies into adulthood (Piquero et al. 2012).

Method

Participants

This study is a secondary analysis of baseline data from families enrolled in a randomized trial to test the effects of a family cognitive behavioral preventive intervention (for further details on the primary project aims and outcomes, see Compas et al. 2009, 2015). Data were collected from 180 families, living in the Nashville, Tennessee and Burlington, Vermont areas, in which a parent had a history of major depressive disorder (MDD) in the lifetime of their children. Most parents were mothers ($n = 160$; $M_{age} = 41.16$; $SD_{age} = 7.17$), with a minority being fathers ($n = 20$; $M_{age} = 48.30$; $SD_{age} = 7.50$). At the time of data collection, 27% parents met criteria for current MDD. Parents described themselves as Euro-American (82.2%), African American (11.7%), Asian American (1.1%), Hispanic American (2.2%), Native American (.6%), or of mixed ethnicity (2.2%). Regarding relationship status, parents were either married or partnered (61.7%), divorced (21.7%), never married (10.6%), separated (5.0%), or widowed (1.0%). Given the small *n* of never married, separated, and widowed parents, we dichotomized the marital status variable into two categories, married/living with someone as if married versus single, for study analyses. Regarding education level, parents had obtained less than a high school education (5.6%), completed high school (8.9%), completed some college (30.5%), earned a college degree (31.7%), or completed a graduate education (23.3%).

In families with multiple children, one child was randomly selected for analyses. Youth ranged in age from 9 to 15 years old, and they were split roughly equally by gender (girls: $n = 89$ [49.4%]; $M_{age} = 11.26$; $SD_{age} = 2.00$; boys: $n = 91$ [50.6%]; $M_{age} = 11.66$; $SD_{age} = 2.03$). Parent-reported demographic data indicated youth were Euro-American (74.4%), African American (12.8%), Asian American (3.3%), Hispanic American (1.7%), Native American (0.6%), or mixed ethnicity (7.2%).

Procedure

The Institutional Review Board at the University of Vermont and Vanderbilt University approved all study procedures. Parents were recruited through mental health clinics,

general medical practices, and media (e.g., newspapers, magazines) and screened over the phone. Inclusion criteria for parents consisted of MDD or dysthymia during the child's lifetime and having a child in the target age range (i.e., 9 to 15 years old). Exclusion criteria included current or past bipolar I, schizophrenia, or schizoaffective disorder for parents, and autism spectrum disorder, an intellectual disability, bipolar I, schizophrenia, MDD, conduct disorder (CD), or a substance use disorder for child participants. Children with CD were excluded, as the current secondary analysis was developed using data collected from families in group cognitive behavioral interventions for children with depressed parents. Additionally, the original study was a prevention trial and therefore excluded those who already had CD. Evidence suggests that disruptive behavior disorders, such as CD, can spread to others in group therapy (see Compas et al. 2015 for further discussion). As such, the sample was limited to moderate levels of externalizing behaviors characteristic of ADHD, ODD, and other externalizing problems.

Measures

Demographic information

Parents reported information on their gender, race/ethnicity, relationship status (e.g., married/partnered), education level, and their child's race/ethnicity. Youth reported their age and gender.

Observations of child hostility

Child hostility directed toward their parent was measured using the Iowa Family Interaction Rating Scale (IFIRS; Melby et al. 1998). The "hostility" subscale (one of seven IFIRS subscales) was specifically used for the present study. "Hostile" behaviors were defined as aggressive, critical, and rejecting; they could be displayed nonverbally (e.g., scowling, frowning, or disdainful facial expressions) through emotional expression (e.g., sarcastic, irritable, or enraged tones), or through statements intended to be belligerent or deprecating to the parent (e.g., exclaiming "I hate you!" or calling the parent a name).

Trained research assistants then used the IFIRS to code two, 15-minute video recordings of parent–child interactions (together, these interactions were referred to as a "parent-child discussion task"). In the first video, the target parent and child discussed an activity that brought enjoyment to both the parent and the child within the past few months (e.g., a fun family outing), whereas the second video involved the parent and child talking about a stressful situation that may have caused disruption within the family (e.g., the parent was irritable after a stressful work day). Child hostility was rated along a 9-point scale, with odd numbers defined with labels and even numbers serving as half-way points (*not at all characteristic of the child during the interaction* [1]; *mainly uncharacteristic* [3]; *somewhat characteristic* [5]; *moderately characteristic* [7]; *the behavior is mainly characteristic* [9]). Per Melby et al. (2001), ratings of 'characteristicness' are indicators of the *frequency* and *intensity* of hostility from a child toward a parent considering the context of the interaction. For example, a score of '1' for an interaction between child and parent signifies that the child displayed no signs of hostile behavior toward the parent, whereas a score of '9' would signify frequent bouts of intense hostile behavior directed at a parent. Each participant in an interaction was given a separate score (only ratings of child hostility were used in the present study). Coders reported scores for the entire task (i.e., there was a combined score for both parent-child interactions involved in the overall parent-child discussion task).

All interactions were double-coded by two independent trained observers and coders met to establish consensus on any discrepant codes (i.e., codes that were greater than 2 points apart on the 9-point scale). The IFIRS has demonstrated strong psychometric properties in studies evaluating family-focused interventions (especially among low-income families, similar to the current sample) targeting both child and parenting behaviors (e.g., Spoth et al. 1995). Interrater reliability (α), calculated before consensus coding, was 0.73.

Assessment of family functioning

Considering the importance of child perceptions of family conflict on child outcomes (Cummings and Davies 2002), the 12-item General Functioning subscale of the Family Assessment Device (FAD; Epstein et al. 1983) was administered to youth to assess family functioning. The FAD is based on the McMaster Model of Family Functioning and is widely used as a reliable and valid indicator of family functioning (Epstein et al. 1983); evidence supports the reliability and validity of using the General Functioning subscale as a stand-alone index (Boterhoven de Haan et al. 2015). Additionally, the FAD has demonstrated acceptable reliability (e.g., O'Neil et al. 2010, reported a Cronbach's alpha range between 0.74 and 0.9) and concurrent validity with mother reports of family functioning (Bihum et al. 2002) with pre-adolescent samples and children younger than 12 years old. On this measure, children noted whether they *strongly disagree* (1), *disagree* (2), *agree* (3), or *strongly agree* (4) with each item (example item: "We feel accepted for what we are"), and some items were then reverse-coded. We used mean scores in this analysis, with higher total scores indicating *more* family dysfunction.

Scores at or above a 2.0 indicate clinical levels of dysfunction. The Cronbach's alpha coefficient for the current sample was 0.86.

Assessment of parent current depressive symptoms

Parents completed the Beck Depression Inventory–II (BDI–II; Beck et al. 1996), which is an extensively used and standardized measure assessing depressive symptoms. Each item on the self-report involves parents rating the degree to which they relate to each of 21 items (example item: "I am sad all the time") using a zero to three Likert scale, from *never* (0) to *always* (3). The total raw score of all responses indicates depression severity, with raw total scores ranging from 0–13 suggesting minimal depression, 14–19 mild, 20–28 moderate, and 29–63 severe. Analyses used BDI-II mean scores. The Cronbach's alpha coefficient for the current sample was 0.93.

Data Analytic Plan

First, we re-coded some of the study variables, dummy-coding parent education so that we contrasted each level of this variable (e.g., completing high school) with the remaining levels of the variable. Next, we conducted preliminary analyses to describe levels of the independent and dependent variables and to examine the relation among these variables, as well as their associations with demographic variables. We then used hierarchical multiple regression in SPSS 25 (IBM Corp 2017) to evaluate whether observed child hostility contributed to variance in family dysfunction after accounting for parent depressive symptoms, as well as whether observed child hostility and parent depressive symptoms interacted to explain variability in family functioning. We used simple slopes analyses to deconstruct the interaction (Aiken and West 1991). Finally, we re-ran study analyses in Mplus 8.1 (Muthén and Muthén 1998–2017) using the maximum likelihood estimator with robust standard errors (MLR) to account for missing data.

Results

Preliminary Analyses

We conducted analyses in SPSS version 25 (IBM Corp 2017). First, we examined descriptive statistics in a subset of the sample ($n = 157$) that excluded cases with missing data. As expected, average observed child hostility ratings were generally low ($M = 3.89$; $SD = 1.74$; range = 1–8). This mean level indicated that, on average, children occasionally displayed low-intensity hostile behaviors, such as frowning, criticizing, or reacting to parental behaviors irritably (Melby et al. 1998). On average, parents reported mild to moderate depressive symptoms ($M = 19.23$; $SD = 12.58$; range 0–48), and 36.3% reported minimal levels of depression, 19.1% reported mild levels, 19.1% reported moderate levels, and 25.5% reported severe levels. According to levels Epstein et al. (1983) published, on average, family functioning scores approached clinical levels of dysfunction ($M = 1.97$; $SD = .54$; range = 1–3.33), with 46.1 percent of children reporting clinical levels of dysfunction.

Next, we conducted correlational analyses and *t*-tests to further describe our data. Our outcome measure, family dysfunction, was positively correlated with both observed child hostility ($r[155] = 0.25$, $p < 0.01$) and parent depressive symptoms ($r[155] = 0.28$, $p < 0.001$). The two independent variables, child hostility and parent depressive symptoms, were uncorrelated ($r[155] = 0.02$, $p = 0.84$). The following demographic variables were related to one or more of the independent or dependent variables and included as covariates in subsequent analyses: child age and family dysfunction ($r[155] = 0.28$, $p < 0.001$); child age and child hostility toward the parent ($r[155] = 0.15$, $p = 0.07$); child gender and child hostility ($t[155] = -3.74$, $p < 0.001$); parent marital status and parent depressive symptoms ($t[155] = 1.66$, $p < 0.10$); and parent education and depressive symptoms ($r[155] = -0.21$, $p < 0.01$).

Observed Child Hostility toward a Parent with a History of Depression and Family Functioning

To assess whether observed child hostility toward a parent contributed to variance in family functioning above and beyond the variance for which parent depressive symptoms accounted, we conducted a hierarchical multiple regression (see first two steps of regression in Table 1). We mean-centered all continuous variables. After entry of demographic variables and parent depressive symptoms, the child hostility beta coefficient was statistically significant ($b = 0.08$, $p < 0.01$), explaining five percent of the variance in family dysfunction ($\Delta R^2 = 0.05$, ΔF [1, 147] = 9.80, $p < 0.01$). According to Cohen's (1988) guidelines, explaining this degree of variance constitutes a small effect size ($f^2 = 0.055$ for the current study; $f^2 \geq 0.02$, $f^2 \geq 0.15$, and $f^2 \geq 0.35$ constitute small, medium, and large effect sizes, respectively). These results supported the first study hypothesis, suggesting observed child hostility uniquely accounts for variance in family dysfunction after accounting for parent depressive symptoms.

The Moderating Role of Parent Depressive Symptoms

To assess our exploratory aim, the potential moderating role of parent depressive symptoms, we added a third step to the

Table 1 Regression model for child hostility and parent depression predicting family functioning

Outcome	Predictor	*b*	*t*
Step 1			
FAD	Parent education		
	Less than high school	−0.04	−0.22
	High school	0.19	1.15
	Some college	0.20^{+}	1.77
	College	0.11	0.97
	Parent marital status	−0.01	−0.11
	Child gender	−0.01	0.11
	Child age	0.07**	3.28
	BDI-II	0.01**	2.81
Step 2			
FAD	Parent education		
	Less than high school	−0.01	−0.03
	High school	0.21	1.34
	Some college	0.23*	2.04
	College	0.16	1.46
	Parent marital status	0.01	0.11
	Child gender	−0.09	−1.02
	Child age	0.06**	2.83
	BDI-II	0.01**	2.94
	IFIRS	0.08**	3.13
Step 3			
FAD	Parent education		
	Less than high school	0.004	0.02
	High school	0.25	1.57
	Some college	0.23*	2.03
	College	0.17	1.52
	Parent marital status	−0.001	−0.01
	Child gender	−0.10	−1.20
	Child age	0.06**	2.79
	BDI-II	0.01**	2.91
	IFIRS	0.07**	3.08
	BDI-II × IFIRS	−0.003^{+}	−1.74

b's are unstandardized coefficients at the predictor's entry into the equation. Parent marital status: 0 = unmarried; 1 = living with someone as if married; Child gender: 1 = male; 2 = female

FAD family assessment device (child-reported family functioning), *BDI-II* Beck Depression Inventory-II (self-reported parent depression), *IFIRS* Iowa Family Interaction Rating Scale (observed child hostility)

$^{+}p < 0.10$; *$p < 0.05$; **$p < 0.01$

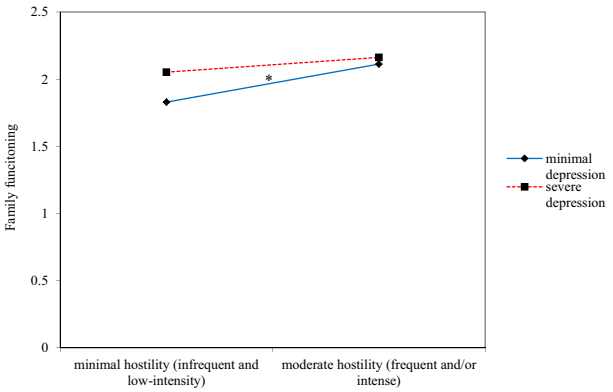

Fig. 1 Observed child hostility, parental depressive symptoms, and family functioning. * = simple slope is significant at $p < 0.05$; depressive symptoms are at BDI-II scores commensurate with minimal (i.e., a BDI-II score of 13) and severe depression (i.e., a BDI score of 30); hostility represents minimal and moderate scores as indicated by the IFIRS handbook

model testing the interaction between parent depressive symptoms and observed child hostility (see Table 1). The model was significant ($R^2 = 0.24$, $F[10, 146] = 4.49$, $p < 0.001$), with a medium to large effect size ($f^2 = 0.307$; Cohen 1988). The interaction term explained an additional two percent of the variance in family functioning, which constitutes a small effect size ($f^2 = 0.015$; Cohen 1988). There were main effects of observed child hostility and parent depressive symptoms on family dysfunction, such that increases in these variables were associated with increases in family dysfunction. An interaction approaching conventional levels of significance ($p < 0.10$) suggested that parent depressive symptoms may moderate these main effects.

Although only approaching conventional levels of significance, we explored the interaction more thoroughly. We deconstructed and plotted parent depressive symptoms at *minimal* and *severe* levels of depressive symptoms based upon BDI-II clinical cut-offs (Beck et al. 1996) using simple slopes techniques (see Fig. 1; Aiken and West 1991). In the context of low levels of parent depressive symptoms, increases in child hostility related to increases in poor family functioning ($b = 0.12$, $p < 0.001$). However, the relation between child hostility and family functioning was nonsignificant in the context of high levels of parent depressive symptoms ($b = 0.03$, $p = 0.23$). Of note, low levels of *both* child hostility and parent depressive symptoms appeared to support more positive family functioning. In contrast, a higher level of either or both constructs suggested poorer family functioning.

Data were missing from key variables (i.e., parent depressive symptoms, observed child hostility, and family functioning) in 23 cases. We thus conducted follow-up analyses in Mplus 8.1 (Muthén and Muthén 1998–2017) to assess whether retaining more of the sample with MLR changed study results. Both observed child hostility ($b = 0.06$, $p = 0.01$) and the interaction term ($b = -0.003$ $p = 0.07$) retained the level of significance found in the primary analyses reported above.

Discussion

The purposes of the current study were to (1) assess whether child hostility toward a parent with a history of depression significantly contributed to child-reported family dysfunction after accounting for levels of parent depressive symptoms, and (2) in exploratory analyses, examine whether parent depressive symptoms moderated the association between child hostility and child-reported family dysfunction. Findings supported the first hypothesis, indicating that child hostility explained variability in child-reported family dysfunction after controlling for parent depressive symptoms. However, findings from the exploratory analyses were inconsistent with the second hypothesis. Although the interaction only approached significance, deconstruction of the interaction indicated that child hostility was related to child-reported family dysfunction at low, but not high, levels of parent depressive symptoms. The findings suggested that the presence of either child hostility or parent depressive symptoms—or both—was associated with elevated child-reported family dysfunction relative to lower levels of both stressors.

Regarding the first aim of this study, after controlling for parent depressive symptoms, child hostility continued to be related to child-reported family dysfunction. These findings are congruent with previous research examining the role of general child externalizing problems, but refine earlier findings (e.g., Fleck et al. 2015; Roberts et al. 2018). Specifically, both the types of externalizing problems displayed (hostility toward a parent with a history of depression) and the method of assessment (behavioral observations) add uniquely to the literature, as not only is observation considered the gold-standard in assessing parent-child interactions (Chorney et al. 2015), but little research exists regarding hostility toward a parent. To our knowledge, this is one of the first studies to examine observed hostility toward a parent with a history of depression.

It is important to note that hostility toward a parent has been conceptualized as constituting two subgroups of adolescents: those who engage in such behaviors with people regardless of relationship and those who are hostile specifically toward family members (Kuay et al. 2017). Research further suggests that the mother is most likely to be the recipient of hostility (Nock and Kazdin 2002). Our findings do not shed light on whether the adolescents were in a particular subgroup, but one congruent with Nock and Kazdin's (2002) findings, as the great majority of people participating in the study were mothers.

Regarding the second hypothesis, an interaction term approaching conventional levels of significance *suggested* that parent depressive symptoms may moderate the association between child hostility toward a parent and child-reported family dysfunction. However, findings were inconsistent with the specific hypothesis that high levels of parent depressive symptoms would exacerbate the relation between child hostility and family functioning. One way to interpret the interaction is that the presence of either child hostility or parent depressive symptoms—or both—is associated with elevated levels of child-reported family dysfunction. Nevertheless, findings *suggest* that the role of *both* parent depressive symptoms and child hostility toward a parent with a history of depression may be important in family functioning. Future research is needed to confirm the interaction approaching conventional levels of significance found in the current study.

The study findings must be interpreted in the context of some limitations. First, we used child reports to measure family dysfunction; as such, the exclusive use of child reported family dysfunction comes with the caveat that child affective state in the lab may influence their report of family dysfunction. However, similar to the interparental conflict literature (e.g., Cummings and Davies 2002), it may be the case that child *perceptions* of family dysfunction are more integral in better understanding associated child well-being than reports from a caregiver or other party. Second, whereas broad constructs like family functioning have strong ecological and external validity, it may be the case that specific *aspects* of family functioning (e.g., high parental stress, poor interparental communication, etc.) relate differentially, with varying levels of strength, with child hostility toward a parent with a history of depression. Lastly, the interaction approached traditional levels of significance and, thus, these findings must be viewed with caution. Future research addressing the current study's aims is critical in intervening with this at-risk group of adolescents.

Several strengths characterize this study. First, hypotheses were addressed using a multi-informant design. By operationalizing constructs using *parent*-reported depressive symptoms, *child*-reported family dysfunction, and *researcher*-observed child hostility, we eliminated same-reporter bias of multiple constructs. Additionally, the specific reporters used for each variable may be most reliable for their respective measures. For example, young adolescents may be more accurate in objectively evaluating variables external to themselves, such as the family environment, in comparison to parents with psychopathology. When parents have a history of depression, their depressogenic attributional style may negatively bias reports of family functioning (e.g., depression → distortion theory; Richters 1992), although this idea is debatable and may depend on other factors such as perceived parenting (see Parent et al. 2014).

Second, the current study is among the first to specifically analyze *observed* child hostility. This assessment approach has been identified as the method of choice in

parent–child interaction studies (Chorney et al. 2015). In comparison, previous studies (e.g., Fleck et al. 2015; Krahé et al. 2015; Roberts et al. 2018; Suzuki et al. 2016) used parent report, teacher report, or structured clinical interviews to assess a broader construct of externalizing problems. As such, the measurement of hostility through observation is a uniquely valuable aspect of this study. Furthermore, the observational data collected in the current project were unique in that they focused on a specific aspect of an adolescent's externalizing problems: hostility *toward* a parent. Assessing the quality of parent-youth interactions will aid in conceptualizing optimal intervention targets. Third, this study analyzed hostility in early adolescence, which is an ideal point in development to assess hostile behaviors, as these behaviors directed toward a parent can increase at this time (Piquero et al. 2012). In comparison, much of the existing literature measures hostile behaviors solely in younger samples (e.g., Stevenson-Hinde et al. 2007).

Upon replication of this model in a longitudinal design, the current study offers clinical implications. As both child hostility directed toward the parent and current parent depressive symptoms related to family functioning, it is important to include both variables when studying the high-risk families. Furthermore, interventions can be directed toward one or both problem areas as needed. Careful assessment of the most severe problem is an important first step during clinical assessment when treating parents with depressive symptoms and youth with hostility toward the parent, as this knowledge may help establish how and where to begin treatment such that it can be the most efficient and effective. For example, therapy could focus on the child and his or her hostility (e.g., the Coping Power program; Lochman et al. 2008), the parent's depressive symptoms (cognitive behavior therapy; Beck 2011), or the parent–child relationship and parenting skills (e.g., Cognitive Behavioral Family Intervention; Sanders and McFarland 2000). Further research establishing temporal precedence and causality is necessary, however, before translating these data to clinical work.

In conclusion, the findings of the current study support that, within the family environment, as child hostility toward a parent with a history of depression increases, child-reported family dysfunction does as well, even after accounting for parent depressive symptoms. Moreover, our exploratory analyses *suggest* that, in the context of mild parent depressive symptoms, child hostility may be a particularly important factor relating to increases in family dysfunction. Future analyses may benefit from increased specificity regarding which aspect(s) of family functioning child hostility toward a parent negatively implicates. Evidence from this study may aid researchers and clinicians in identifying families most at risk for dysfunction, as well as provide information that may help improve family-focused interventions.

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Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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