

**Exploring the Impact of Depression on Caregiver-Report of Child Behavior within a Court
Ordered Sample**

by

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Abstract

The current study analyzed evidence for a possible depression-abuse distortion in maternal perception of child problematic behavior within a sample of court ordered families. Pre-treatment parent-child behavioral observation data on the Dyadic Parent-Child Interaction Coding System (DPICS) and pre-treatment parent ratings on the Behavior Assessment System for Children (BASC) were used to address a potential maternal distortion with respect to perceived child behavior problems. We hypothesized that depression would moderate the relationship between the parental report of child problematic behaviors on the BASC and the number of negative child behaviors observed through the DPICS observation for biological mothers. Results indicated that depression did not moderate this relationship between parental report and clinician observed problematic child behaviors for mothers; however, it did moderate the relationship when analyses were expanded to include other caregivers (e.g., biological fathers as well as stepparents and grandparents). Specifically, at higher levels of depression, there was greater inconsistency across caregiver report and clinician observed problematic child behavior. Future research should include paternal caregivers, as well as nonbiological caregivers, when exploring the impact of depression on caregiver's perception of child behavior.

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List of Abbreviations

BASC	Behavior Assessment System for Children
BDI	Beck Depression Inventory
CDI	Child directed interaction
DPICS-II	Dyadic Parent-Child Interaction Coding System, Second edition
PCIT	Parent-Child Interaction Therapy
PDI	Parent directed interaction

Exploring the Impact of Depression on Caregiver-Report of Child Behavior within a Court Ordered Sample

Child victims of physical abuse are at an increased risk for medical, emotional, and behavioral problems in both short-term and long-term outcomes in comparison to non-abused children (Herschell & McNeil, 2005). Studies have suggested that child victims of physical abuse are at risk for poor health outcomes and greater risk for chronic medical problems, permanent disability, and lower perceived general health (Christian, 2015; Springer et al., 2007; Thompson et al., 2002). Additionally, evidence has shown that child victims of physical abuse are more likely to experience internalizing problems later in life, including depression, anxiety, post-traumatic stress disorder, and suicidal and self-injurious behavior (Fergusson et al., 2008; Springer et al., 2007, Swogger et al., 2012), as well as externalizing behavior problems including conduct disorders, disruptive behaviors, physically aggressive behaviors, antisocial behaviors, delinquency, and violence perpetration (Cicchetti & Lynch, 1995; Moylan et al., 2010; Smith & Thornberry, 1995; Teisl & Cicchetti, 2007; Trickett & McBride-Chang, 1995; Kolko, 1992).

The deleterious effects of physical child abuse place strain on the parent-child dyad. In a physically abusive relationship, parents contribute to this dyad with a greater number of negative interactions and a lower number of positive interactions with their children compared to non-abusing parents (Allesandri, 1992; Bousha & Twentyman, 1984; Timmer et al., 2005). Abusive parents also have been found to display a high degree of negative affect, a lack of empathetic responding, lower levels of emotional understanding, and overall fewer appropriate caregiving behaviors (Herschell & McNeil, 2005).

Research suggests that children also contribute to abusive parent-child dyadic interactions. To elaborate, abuse contributes to an increased risk for child externalizing behavior

problems as well as increased risk for child physical aggression, noncompliance, and antisocial behaviors (Cicchetti & Toth, 2000; Timmer et al., 2005). In addition, child victims of abuse face difficulties with poor emotion regulation, distractibility, negative affect and resistance to following directions, which can impact social functioning (Cicchetti et al., 1995; Rogosch, 1995; Shields & Cicchetti, 1998; Timmer et al., 2005). The increased risk for problematic child behaviors can place further distress on the parent within this abusive relationship, contributing to a coercive cycle of abuse in which parents escalate harsh and abusive discipline strategies in response to children's escalating behaviors (i.e., defiance, swearing, hitting; Timmer et al., 2005).

This clear tension within the parent-child dyad emphasizes the need for accurate reports of problematic child behaviors in order for clinicians to target behaviors and treat families with accuracy. However, parental account of child problematic behaviors becomes complex with abusive parenting, when child behavior problems reported may be inaccurate or biased. Concerns of parental bias are supported by empirical research suggesting that abusive parents hold highly negative views of their child's behavior (e.g., Culp et al., 2001; Haskett et al., 2003; Kinard, 1995; Lau et al., 2006; Whipple & Webster-Stratton, 1991). Additionally, physically abusive parents tend to view their children as more behavior disordered, defiant, and unresponsive to non-violent disciplinary techniques (Timmer et al., 2005). Abusive parents' relationship with their child has also been found to be characterized by negative attributions of the child, unrealistic expectations, intolerance, and lack of recognition or response to children's appropriate behavior (Hakman et al., 2009).

Maternal Depression

The strain on the parent-child dyad within families involved in physical abuse is further exacerbated by maternal depression. Empirical research has found parental depression to increase the risk of perpetrating physical abuse two to three-fold (Conron et al., 2009). Additionally, depression is 23% more prevalent among caregivers investigated for child maltreatment than other caregivers (Conron et al., 2009). Consequentially, maternal depression and paternal depression have negative implications for the parent-child dyad.

Empirically, mothers who are depressed demonstrate a wide range of difficulties in parenting behavior (Lovejoy et al., 2000). This is further evidenced by the increased associations between maternal depression and increased irritability and hostility, negative affect, coercive behaviors, insensitivity to child cues, and disengagement from the child when compared to non-depressed mothers (Timmer et al., 2011). Additionally, mothers experiencing depression have been found to have more negative interactions and fewer positive interactions with their child (Turney, 2011). Depressed mothers have also been evidenced to be less empathetic, more aggressive, and less emotionally responsive to their child when compared to non-depressed mothers (Turney, 2011). Further, maternal depression has been found to prospectively contribute to externalizing behaviors in children through compromised parenting practices including aggressive interactions and harsh discipline strategies (Villodas et al., 2018).

Similar to children of abusive parents, children of depressed mothers are at greater risk for impaired social, behavioral, and cognitive outcomes throughout the life course (Turney, 2011). Maternal depression has been found to be consistently and significantly associated with internalizing and externalizing problems as well as general psychopathology in children (Goodman et al., 2011). In addition to increased risk for behavior problems, children of mothers

experiencing depression have been found to have increased hyperactivity, aggression, and emotional problems (Letourneau et al., 2013).

Our knowledge about the relationship between maternal depression and child outcomes is largely based on maternal reports of child behavior problems (Madsen et al., 2019). However, the validity of maternal reports of child behavior is further complicated by the perspective of depression. Previous literature shows that a depression-distortion may exist, with findings suggesting that mothers with depressive symptoms hold more negative schemas for their child's behavior (Acri, et al., 2018; Gartstein, et al., 2009; Madsen et al., 2019; Richters, 1992). Studies supporting the depression-distortion theory further suggest that mothers who are depressed are more likely to have distorted views of their child's behaviors due to maladaptive thoughts (Reck et al., 2016). In support of this hypothesis, maternal depression has been associated with greater perceived externalizing problems among male children and greater perceived internalizing problems among female children (Garstein et al., 2009). Additionally, abusive mothers experiencing depression have been found to report the greatest number of behavior problems when compared to non-depressed and non-abusive samples (Kinard, 1995). Of note, regardless of whether the child experienced abuse, maternal depression predicted greater number of behavior problems reported (Kinard, 1995).

There is, however, controversy over whether mothers experiencing depression report increased child problematic behaviors due to this distortion or due to actual child behavior problems (Lau et al., 2006). This rival theory is termed the "accuracy hypothesis" and posits that there may be an interactional effect of the child's difficult behavior contributing to the mother's depression. Querido et al. (2001) found that for mothers of young children with conduct behavior problems, with higher levels of depression, mothers' reports of child behavior were more

consistent with laboratory observations of their child's behavior. Richters & Pellegrini (1989) similarly found that reports of child behavior problems across mothers with depression and teachers yielded no significant differences, even for mothers currently experiencing a depressive episode. Additionally, in terms of abusive and depressive mother-child dyads, Kinard (1995) found that the rating of the abusive and depressive mother to not be significantly different from the teacher report. Importantly, research across accuracy and depression-distortion hypotheses in abusive and depressive parent-child dyads has been limited to Kinard (1995).

Caregiver Depression

Previous literature on the impact of parental depression on child development has also primarily focused on mothers. There is less research focusing on the link between paternal depression and child outcomes; however, the few studies available suggest that paternal depression also impacts child outcomes and dysfunctional parenting behaviors (Wilson & Durbin, 2010). Findings also suggest that children of fathers with depression are at significant risk for externalizing behavior problems, especially in the context of physical child abuse (Cheung & Theule, 2019; Connell & Goodman, 2002; Kane & Garber, 2009).

Previous research has also found that paternal depression is related to discrepancy in parental report of externalizing child behavior when compared to other informants, including foster parents and teachers, in support of the depression-distortion hypothesis (Randazzo et al., 2003). Paternal and maternal symptomology, including symptoms of depression, have also been linked to father-mother discrepancies in report of child externalizing behaviors (Treutler & Epkins, 2003).

While there is research in support of a depression-distortion for mothers (Acri et al., 2018; Gartstein et al., 2009; Madsen et al., 2019; Richters, 1992) as well as fathers (Randazzo et

al., 2003), research supporting the accuracy hypothesis has been limited to mothers (Querido et al., 2001; Richters & Pellegrini, 1989). Further, while research has evidenced relationships between paternal psychopathology and child psychopathology, there is a paucity of research focusing on how custodial caregiver (i.e., biological mother, father, stepparent, grandparent) psychopathology influences perception of child behavior.

Overall, the vast majority of literature across depression-distortion and accuracy hypotheses has relied solely on reports by parents, teachers, and children, and low inter-rater reliability has caused researchers to call for better methodology in assessing parental bias of child behavior reports (Ordway, 2011). While much of the previous work on parental bias focused on surveying multiple raters in the child's environment, some researchers have utilized third-party direct observations of parent and child behaviors to draw conclusions about child behavior problems. Meta-analyses indicate that several studies employed observational parent-child tasks in lab settings to examine problematic child behaviors, specifically within abusive dyads (Wilson et al., 2008). However, there is large variation among task procedures in lab settings. Results from these studies are difficult to interpret as task structure has been found to be a moderator of parental involvement (Wilson et al., 2008).

Additionally, across observational studies of parent-child behavior, there is no singular coding system utilized to analyze parental behaviors. Further, coding systems implemented in parent-child play tasks lack extensive validity or reliability in their development (i.e., Bennett et al., 2006; Kavanagh et al., 1998; ; Lau et al., 2006). There is large variability in methods used across observational studies, which can obscure the findings and affect their generalizability. One possible coding system that could provide researchers with valid and reliable observational data for parent-child dyads would be the Dyadic Parent-Child Interaction Coding System

(DPICS; Eyberg & Robinson, 1981; Robinson & Eyberg, 1981), a coding system commonly used within the context of Parent-Child Interaction Therapy (PCIT; Eyberg & Funderburk, 2011; McNeil & Hembree-Kigin, 2010).

Parent Child Interaction Therapy

Parent Child Interaction Therapy (PCIT) is an empirically supported and clinically validated treatment program for young children experiencing behavioral and emotional problems and their families (Herschell et al., 2002). PCIT has been demonstrated to be effective across a multitude of populations including both abusive parents and parents experiencing depression (Chaffin et al., 2004; Timmer et al., 2011). This parent training program is aimed at teaching caregivers specific skills that foster a secure relationship with their child along with skills that produce consistent and predictable limits and discipline (Herschell et al., 2002). There are two modules within the PCIT treatment protocol: Child Directed Interaction (CDI) and Parent Directed Interaction (PDI). Both modules consist of initial didactic training followed by therapist coaching throughout play settings (Urquiza & McNeil, 1996). Coaching is typically conducted from an observation room and the therapist communicates with the caregiver via a bug-in-the-ear piece (Urquiza & McNeil, 1996).

The major goal of the CDI module is to foster or improve a reciprocally positive relationship between a parent and child (Eyberg & Funderburk, 2011; McNeil & Hembree-Kigin, 2010). This goal is achieved through guiding the parents to “follow” the child’s lead during play. Parents are taught to enhance their interactions through adopting skills including describing, imitating, and praising the child’s appropriate behavior and reflecting appropriate talk (Urquiza & McNeil, 1996). CDI typically lasts 7-10 sessions and by the end, parents generally have transitioned from little to no acknowledgment of their child’s positive behavior to frequently and

consistently praising positive child behavior (Timmer et al., 2005). Additionally, parents shift from using more controlling means of engaging in play with their child, including questions and commands, to describing the child's actions in a way that conveys their interest in the child's activity (Timmer et al., 2005). This allows parents to use their attention as a means of communicating to the child which behaviors are appropriate and which behaviors are inappropriate.

The major goal of PDI is to equip parents with specific and effective skills to direct their child's activity (Eyberg & Funderburk, 2011; McNeil & Hembree-Kigin, 2010). This goal is met through instructing parents to employ transparent, positively stated, direct commands and consistency in consequences for the child's actions. Parents are taught to use praise for compliance, and time-out in a chair for noncompliance (Urquiza & McNeil, 1996). Further, parents are encouraged to implement these skills at home through establishing and enforcing "house rules" (McNeil & Hembree-Kigin, 2010). PDI typically lasts 7-10 sessions and by the end, the process of giving commands and receiving compliance are predictable and safe for the parent-child dyad. By the end of treatment, caregivers are typically able to obtain compliance without having to employ time-out (McNeil & Hembree-Kigin, 2010; Timmer et al., 2005). To examine the quality of parent-child interaction both at pre-treatment assessment observations and within PCIT sessions, therapists employ the Dyadic Parent-Child Interaction Coding System (DPICS; Eyberg & Robinson, 1981; Robinson & Eyberg, 1981). The DPICS utilizes an outside observer to code parent and child verbalizations and behaviors through structured play settings including child-directed activity, parent-directed activity, and clean up from the activity (Eyberg & Robinson, 1981; Robinson & Eyberg, 1981). The DPICS can provide coding information about the parent's verbalizations with the child including the number of indirect and direct

commands issued, negative talk, labeled and unlabeled praise, and behavior descriptions. Additionally, the DPICS can provide coding information about the child's response to the parent including compliance and noncompliance to commands, as well as the child's behavior (e.g., kicking, hitting), the child's vocalizations (e.g., whining, yelling), and the child's verbalizations (e.g., prosocial talk, critical talk). In short, DPICS coding allows for a detailed summary of the parent-child interaction in treatment and during assessment sessions.

Goals of the Current Study

Due to contrasting claims of bias in parental reporting of child behavior problems among depressed caregivers and lack of valid and reliable third-party observations and measures of child behavior, there is a clear need for additional research to evaluate these hypotheses. For these reasons, the proposed study attempted to address the existence of bias in both directions (i.e., parental view as more negative relative to child observed behavior and/or parental view as accurate based on observed child behavior) through the lens of the DPICS, a standardized observation from a third-party observer. Additionally, given the lack of research on caregiver depression and child perceptions within an abusive sample, the present study explored whether depression would moderate the relationship between caregiver report of problematic child behaviors (including mothers, fathers, stepparents and grandparents) and observations by a third-party clinician.

The primary hypotheses to be tested were:

1. Maternal depression would be predictive of maternal ratings of externalizing child behavior.
2. There would be a discrepancy between problematic child behaviors reported by mothers with depression and negative child behaviors observed through the DPICS.

- a. There would be a significant difference between standardized scores of problematic child behaviors rated by mothers with depression and observed negative child behaviors via the DPICS.
 - b. Additionally, depression would moderate the relationship between maternal report of problematic child behaviors and negative child behaviors observed through DPICS.
3. Maternal depression would predict a maladaptive interaction style during observed parent-child interactions.
- a. Maternal depression would be predictive of poorly worded instructions provided to children, in the form of commands without opportunity for child compliance.
 - b. Maternal depression would be predictive of less total praise provided to children.
 - c. Maternal depression would be predictive of fewer total verbalizations during an observed parent-child interaction.

Further, an exploratory hypothesis to be tested was:

4. Depression would moderate the relationship between custodial caregiver (i.e., mothers, fathers, stepparents and grandparents) reported problematic child behaviors and negative child behaviors observed through the DPICS.

Method

Participants

The sample for the proposed study was taken from an archival study (Chaffin et. al., 2004). In the original Chaffin et al. study, parent-child dyads (N=110) were referred to the project by child welfare services, with all cases having a confirmed report for child physical abuse. Parents included in the study were court ordered for treatment and none were identified as perpetrators of sexual abuse. All dyads were able to participate with their child in treatment services (Chaffin et al., 2004). Children included in the present study ranged from four to twelve years of age ($M=8.01$, $SD=2.76$) and included 60.1% males and 39.9% females. The larger study looked at pre- and post- treatment outcomes for this sample. However, only pre-treatment data were utilized for this study.

Measures

Demographics

Basic demographic information was collected from the referral child welfare worker. Additionally, a demographic questionnaire was utilized to gather basic demographic information including health related behaviors, lifestyle characteristics, and social relationships. The questionnaire was available in English and Spanish and was completed by the target parent (i.e., the parent with substantiated child abuse). The Demographic Questionnaire showed a mean two-week test-retest correlation of 0.74 for ordinal level data items and 0.79 for nominal level data items (Chaffin et al., 2004).

Beck Depression Inventory (BDI)

The BDI (Beck et al., 1961), is a reliable, valid, and widely used measure of depressive symptoms. The BDI is structured as a 21-item self-report instrument, with higher scores

indicating more severe symptoms of depression, but not a differential diagnosis of depressive disorders. The scoring system ranges from mild to moderate to severe depressive symptoms. The BDI has evidenced to have internal consistency reliability of .85 (Reynolds & Gould, 1981). For the proposed study, the BDI was used as the measure of maternal depression for analyses. The severity of depression was assessed in four levels: non-depressed (0–9), mild (10–15), moderate (16–23), and severe (24–63; Beck et al., 1988). The internal consistency for the full sample of caregivers was .90 (Chaffin et al., 2004).

Behavior Assessment System for Children (BASC)

The BASC (Reynolds & Kamphaus, 1992) consists of items for rating behavior, thoughts, and emotions of children ranging from 4 to 18 years old. It provides measures of adaptive and maladaptive or problematic behaviors, with developmentally specific items, and comparable reports from various informants of the child's behavior (self, parent, and teacher). The BASC includes multiple scales of behavior including internalizing and externalizing behavior scales. There are three parent-rated forms for children of this age range: preschool (ages 4-5), child (ages 6-11), and adolescent (ages 12-18; Reynolds & Kamphaus, 1992). For this project, we utilized the following subscales to account for externalizing behavior problems: Aggression and Conduct Behavior Problems. Of note, the preschool form does not include ratings on the Conduct scale. The identified abusive parent completed the parent-report version of the BASC. Internal consistency ranged from 0.80 to 0.89 (Merenda, 1996). Alpha ranged from .70-.90 for the BASC scales used in the full sample of caregivers (Chaffin et al., 2004).

Dyadic Parent-Child Interaction Coding System (DPICS-II)

The DPICS-II (Eyberg, et al., 1994) is a structured system of coding parent-child interactions throughout three different observational settings including child-led play (CLP),

parent-led play, and clean-up from the play (CU). The DPICS-II includes codes for inappropriate behavior (i.e., criticism, yelling, physically violent behavior) and prosocial behavior (i.e., labeled praise, behavior description) for both the child and the parent, as well as indirect and direct commands given by the parent, as seen in Table 1. Additionally, the DPICS-II includes codes for child response to parental commands (i.e., compliance, noncompliance), as seen in Table 2.

Previous literature has identified moderate to high inter-observer agreement in the coding of both parent and child behaviors (Bessmer, 1998; Robinson & Eyberg, 1981). The DPICS has evidenced strong reliability, validity, and treatment sensitivity (Eyberg, et al., 2013).

Additionally, the DPICS has shown strong discriminative validity between referred and non-referred children and satisfactory test-retest reliability (Robinson & Eyberg, 1981). Interactions were recorded via video recordings and coded by a trained research assistant blinded to the study condition. Inter-rater reliability for the DPICS codes were .94 for negative parent behaviors and .84 for positive parent behaviors (Chaffin et al., 2004).

Procedure

Archival data for 110 parent-child dyads were collected through an Institutional Review Board (IRB) approved research project conducted at the Center for Child Abuse & Neglect at the University of Oklahoma Health & Sciences Center (National Data Archive on Child Abuse and Neglect [NDACAN], 2004). All parent-child dyads were found to have a history of substantiated abuse, following investigation with child welfare services (Chaffin et al., 2004). Caregivers in the sample included 62 biological mothers (56.4%), 20 biological fathers (18.2%), 21 stepparents (19.0%), 4 grandparents (3.6%) and 3 other caregiver type (2.7%). Within the full sample of caregivers (i.e., mothers, fathers, stepparents, and grandparents), 53 (48.2%) were found to have mild to severe depressive symptoms according to cut-off scores used for the BDI version utilized

in data collection (Beck et al., 1988). Of the 62 biological mothers identified in this study, mild to severe levels of maternal depression were found in 37 (59.7%), according to the BDI cut-off scores (Beck et al., 1988). Demographic information is summarized in Table 1 for biological mothers and Table 2 for all caregivers. Pre-treatment assessment data were used in the analyses for this study (e.g., for the BDI, BASC, and the DPICS).

Analysis

Primary Hypotheses

Hypothesis 1:

To assess whether maternal depression would be predictive of maternal ratings of externalizing child behavior, we conducted a multiple linear regression of maternal BDI score onto mother-reported scores on the BASC Aggression and Conduct Scales, while controlling for demographic variables (i.e., child age, child gender). All significant results were determined at the .05 level.

Hypothesis 2, 2a, & 2b:

Hypothesis 2a: To assess whether there would be a discrepancy between problematic child behaviors reported by mothers with depression and negative child behaviors observed through the DPICS, we combined the number of child inappropriate verbal behaviors and total instances of observed child noncompliance to parental commands (utilizing the DPICS codes in Tables 3 and 4) to create a total observed negative child behavior variable. Following this, we converted BASC T-scores for the Aggression Scale reported by mothers with depression and scores on the observed DPICS negative child behavior scale to standardized z-scores. Mothers were classified as depressed if they had a score greater than or equal to 10, according to BDI cut-off scores (Beck et al., 1988). We then conducted a paired sample t-test to determine if a significant difference exists. This was repeated for BASC Conduct Scale scores.

Hypothesis 2b: Additionally, to further explore if depression would moderate the relationship between maternal reported problematic child behaviors and negative child

behaviors observed through the DPICS observation, we conducted a multiple linear regression of BASC Aggression Scale score, BDI score, and their interaction term onto the total observed negative child behavior variable, while controlling for demographic variables (i.e., child age and child gender). This moderation analysis was repeated using BASC Conduct Scale scores.

Hypotheses 3a, 3b, & 3c:

Hypothesis 3a: To assess whether maternal depression would predict a maladaptive interaction style during observed parent-child interactions, we ran a multiple regression of maternal BDI scores onto the amount of commands without opportunity for compliance, while controlling for demographic variables (i.e., child age, child gender).

Hypothesis 3b: Further, to assess whether maternal depression would predict less total praise, we ran a multiple regression of maternal BDI scores onto the total number of observed labeled and unlabeled praise, while controlling for demographic variables (i.e., child age, child gender).

Hypothesis 3c: Lastly, to assess whether maternal depression was predictive of fewer total verbalizations during an observed parent-child interaction, we used multiple regression of BDI scores onto total observed verbalizations, while controlling for demographic variables (i.e., child age, child gender).

Exploratory Hypothesis

Hypotheses 4:

To assess whether depression would moderate the relationship between caregiver report

of problematic child behaviors and negative child behaviors observed through the DPICS, we conducted a multiple linear regression of BASC Aggression scores, BDI scores, and their interaction term onto the total observed negative child behavior variable, while controlling for demographic variables (i.e., child age, child gender). This moderation analysis was repeated for BASC Conduct scores.

Results

Data Analysis

All analyses were conducted using Mplus unless stated otherwise. Before completing any analyses, the data were examined for skewness, kurtosis, or outliers so as to not violate any assumptions.

Primary Hypotheses

In order to account for missing data, full information maximum likelihood (FIML) was utilized via Mplus software. Zero-order correlations for BASC Aggression scores, BASC Conduct scores, BDI scores, observed negative child behaviors, child age, and child gender are displayed in Table 5 for the sample of biological mothers and Table 6 for the full sample of caregivers. Additionally, zero-order correlations for DPICS variables including total verbalizations, total labeled and unlabeled praise, total commands without opportunity to comply, child age and child gender are displayed in Table 7 for the sample of biological mothers. Of note, all analyses including BASC Conduct Scale scores include reduced sample sizes as preschoolers (age 4-5) were not rated on the Conduct Scale.

Hypothesis 1:

In order to assess whether maternal depression would be predictive of maternal ratings of externalizing child behavior, a multiple linear regression was conducted to assess whether BDI score, child age, and child gender would predict BASC Aggression Scale scores for the sample of biological mothers ($n=62$). The overall regression was not significant ($F(2,59)= 1.39, p >.05$), with the selected predictors explaining only 1.9% of the variance. Notably, BDI approached significance as a predictor ($\beta_{BDI}= .230, SE=.120, p=.055$). Child age and child gender failed to

reach significance ($\beta_{\text{age}}=.126$, $SE=.122$, $p >.05$, $\beta_{\text{gender}}=-.037$, $SE=.123$, $p >.05$). Post hoc power analyses revealed a small to medium effect size ($f^2=.11$, $\alpha=.05$) and 37% power. Additionally, a multiple linear regression was conducted to determine whether BDI score, child age, and child gender would predict BASC Conduct Scale scores for the maternal sample ($n=43$). The overall regression was not significant ($F(2,40)=1.56$, $p >.05$), with the selected predictors explaining 3.8% of the variance. BDI, child age, and child gender failed to reach significance ($\beta_{\text{BDI}}=.234$, $SE=.150$, $p >.05$, $\beta_{\text{age}}=.247$, $SE=.146$, $p >.05$, $\beta_{\text{gender}}=-.109$, $SE=.147$, $p >.05$). Post hoc power analyses revealed a small to medium effect size ($f^2=.06$, $\alpha=.05$) and 25% power. Results of these analyses are shown in Table 8.

Hypothesis 2, 2a & 2b:

To assess whether there would be a discrepancy between problematic child behaviors reported by mothers with depression and negative child behaviors observed through DPICS, we combined the number of child inappropriate behaviors and total observed child noncompliance to parental commands (utilizing the DPICS codes in Tables 1 and 2) to create a total observed negative child behavior variable. Following this, we converted BASC T-scores for the Aggression Scale and scores on the DPICS observed negative child behavior scale to standardized z-scores. The author then conducted a paired t-test analysis to determine if there was a significant difference between the two scales for mothers with depression in a positive or negative direction, as displayed in Table 9. This was repeated with BASC T-scores for the Conduct Scale provided by mothers with depression. Analyses revealed there was no significant difference between BASC Aggression scale scores and observed negative child behaviors ($t(31) = .099$, $p >.05$). Additionally, analyses revealed there was no significant difference between BASC Conduct scale and observed negative child behaviors ($t(23) = -.1143$, $p >.05$), seen in

Table 9. Post hoc power analyses revealed a small effect size ($f^2=.02$, $\alpha=.05$) and 5% power for the paired t-test of the BASC Aggression scale and a medium effect size ($f^2=.24$, $\alpha=.05$) and 19% power for the paired t-test of the BASC Conduct scale with observed negative child behaviors.

Additionally, a moderation analysis was conducted to determine whether maternal depression moderated the relationship between caregiver reported BASC Aggression Scale scores and clinician observed negative child behavior, while controlling for child age and child gender ($n=53$). There was no significant main effect of BASC Aggression scores ($\beta_{\text{Agg}}=.174$, $SE=.144$, $p >.05$) or of BDI scores ($\beta_{\text{BDI}}=-.022$, $SE=.151$, $p >.05$) on observed negative child behaviors. Regarding control variables, child age significantly predicted observed negative child behavior ($\beta_{\text{age}}=-.423$, $SE=.121$, $p <.05$) while child gender did not ($\beta_{\text{gender}}=.100$, $SE=.131$, $p >.05$), as shown in Table 10. Additionally, BASC Aggression scores did not significantly interact with BDI scores to predict observed negative child behaviors ($\beta_{\text{Agg*BDI}}=-.127$, $SE=.154$, $p >.05$), indicating that BDI scores did not significantly moderate the relationship between BASC Aggression and observed negative child behaviors. Post hoc power analyses revealed a medium effect size ($f^2=.16$, $\alpha=.05$) and 53% power.

Further, a moderation analysis was conducted to determine whether maternal depression moderated the relationship between maternal reported BASC Conduct Scale scores and clinician observed negative child behavior, while controlling for child age and child gender ($n=43$). There was no significant main effect of BASC Conduct scores ($\beta_{\text{Con}}=.063$, $SE=.181$, $p >.05$) or of BDI scores ($\beta_{\text{BDI}}=-.059$, $SE=.172$, $p >.05$) on observed negative child behaviors. Regarding control variables, child age significantly predicted observed negative child behavior ($\beta_{\text{age}}=-.347$, $SE=.160$, $p <.05$) while child gender did not ($\beta_{\text{gender}}=.196$, $SE=.157$, $p >.05$). To add, there was no significant effect of the interaction term of BASC Conduct scores and BDI scores on observed

negative child behavior ($\beta_{\text{Con*BDI}} = -.094$, $SE = .171$, $p > .05$). Post hoc power analyses revealed a medium effect size ($f^2 = .16$, $\alpha = .05$) and 42% power. Results of these moderation analyses for the maternal sample are displayed in Table 10.

Hypotheses 3a, 3b, & 3c:

In order to assess whether maternal depression predicted maladaptive verbal behavior during observed mother-child interactions, several analyses were conducted. Authors conducted a multiple regression to assess whether BDI scores predicted the amount of commands without opportunity for compliance, the amount of labeled and unlabeled praise, and the total number of verbalizations provided by mothers during the observation period, while controlling for demographic variables (i.e., child age, child gender). BDI scores, child age, and child gender were regressed onto the number of observed commands without opportunity to comply (both direct and indirect). The overall model was significant ($F(3,49) = 3.56$, $p < .05$, $n = 53$). The selected predictors explained 12.9% of the variance. BDI failed to reach significance ($\beta_{\text{BDI}} = -.004$, $SE = .176$, $p > .05$). Child age and child gender, however, significantly predicted the amount of commands with no opportunity to comply during the observation period ($\beta_{\text{age}} = -1.957$, $SE = -.370$, $p < .05$, $\beta_{\text{gender}} = 7.159$, $SE = 3.450$, $p < .05$), as displayed in Table 11. The relationship was such that mothers provided fewer commands without opportunity to comply as the child aged and more without opportunity to comply commands for male children. Post hoc power analyses revealed a medium to large effect size ($f^2 = .18$, $\alpha = .05$) and 70% power.

A multiple regression was conducted to determine whether BDI scores, would predict the amount of labeled and unlabeled praise provided by mothers during the observation period ($n = 53$), while controlling for demographics (i.e., child age and child gender). The overall model was not significant ($F(2,50) = .824$, $p > .05$), with the selected predictors explaining 1.0% of the

variance. BDI, child age, and child gender failed to reach significance as predictor of observed maternal praise ($\beta_{\text{BDI}} = -.134, SE = .134, p > .05, \beta_{\text{age}} = -.117, SE = .135, p > .05, \beta_{\text{gender}} = .134, SE = .136, p > .05$), as seen in Table 10. Post hoc power analyses revealed a small to medium effect size ($f^2 = .05, \alpha = .05$) and 22% power.

BDI scores was regressed onto the amount of verbalizations provided by mothers during the observation period ($n = 53$), while controlling for child age and child gender. The overall model was significant $F(2, 50) = 7.34, p < .05$, with the selected predictors explaining 26.8% of the variance. BDI failed to reach significance as a predictor of total observed verbalizations ($\beta_{\text{BDI}} = -.088, SE = .115, p > .05$). However, child age and child gender both emerged as significant predictors ($\beta_{\text{age}} = -.523, SE = .101, p < .05, \beta_{\text{gender}} = .272, SE = .114, p < .05$) such that mothers provided fewer verbalizations as the child aged. Post hoc power analyses revealed a large effect size ($f^2 = .38, \alpha = .05$) and 96% power. Results of these regressions are displayed in Table 11.

Exploratory Hypothesis

Hypotheses 4:

A moderation analysis was conducted to determine whether caregiver depression moderated the relationship between caregiver reported BASC Aggression Scale scores and clinician observed negative child behavior ($n = 90$), while controlling for demographic variables (i.e., child age, child gender). There was no significant main effect of BASC Aggression scores ($\beta_{\text{Agg}} = .180, SE = .098, p > .05$) or BDI scores ($\beta_{\text{BDI}} = .014, SE = .095, p > .05$) on observed negative child behaviors. Regarding control variables, child age significantly predicted observed negative child behavior ($\beta_{\text{age}} = -.488, SE = .088, p < .05$) while child gender did not ($\beta_{\text{gender}} = .080, SE = .094, p > .05$). BASC Aggression scores significantly interacted with BDI scores to predict observed negative child behavior ($\beta_{\text{Agg}*\text{BDI}} = -.217, SE = .093, p < .05$). The moderating effect was mitigating

such that the positive relationship between BASC Aggression and observed negative child behaviors was weaker among people who had high BDI scores, as shown in Figure 1. Post hoc power analyses revealed a medium to large effect size ($f^2=.30$, $\alpha=.05$) and 98% power.

An additional moderation analysis was conducted to determine whether caregiver depression moderated the relationship between caregiver reported BASC Conduct Scale scores and clinician observed negative child behavior ($n=66$), while controlling for demographic variables (i.e., child age, child gender). There was no significant main effect of BASC Conduct scores ($\beta_{\text{Con}} = .042$, $SE=.126$, $p >.05$) or of BDI scores ($\beta_{\text{BDI}}=-.074$, $SE=.126$, $p >.05$) on observed negative child behaviors. Regarding control variables, child age significantly predicted observed negative child behavior ($\beta_{\text{age}}=-.345$, $SE=.118$, $p <.05$) while child gender did not ($\beta_{\text{gender}}=.109$, $SE=.121$, $p >.05$). Regarding the interaction term, BASC Conduct scores did not significantly interact with BDI scores to predict observed negative child behavior ($\beta_{\text{Con*BDI}} = -.097$, $SE=.120$, $p >.05$). Post hoc power analyses revealed a medium effect size ($f^2=.15$, $\alpha=.05$) and 64% power. Results of this moderation analysis are displayed in Table 12.

Discussion

There has been debate in the literature regarding how maternal depression influences maternal perception of problematic child behavior. One school of thought is the depression-distortion hypothesis (Acri, et al., 2018; Gartstein, et al., 2009; Madsen et al., 2019; Richters, 1992), which poses that depression impacts the maternal view of child behavior such that mothers with depression report greater problematic child behaviors than mothers without depression. Conversely, the accuracy hypothesis (Querido et al., 2001; Richters & Pellegrini, 1989) presents the notion that mothers with depression are not exaggerative in reporting problematic child behaviors, but rather, are more realistic in their perceptions compared to mothers without depression. Previous literature has evidenced support for both theories, although there is more research to support the depression-distortion hypothesis.

The current study sought to explore the claims of the depression-distortion and accuracy hypotheses with a court-ordered sample via DPICS standardized observation. While prior literature in the field has included samples of mothers with depression (i.e., Acri et al., 2018; Querido et al., 2001; Gartstein et al., 2009; Madsen et al., 2019; Richters, 1992) and samples of abusive mothers (i.e., Lau et al., 2006), our study was able to explore variables of interest with abusive mothers reporting mild to severe depression. Of note, research on the perceptions of abusive mothers with depression has been limited (Kinard, 1995). Kinard (1995) examined potential bias through comparison of teacher report with report of abusive and depressive mothers, along with control groups of non-depressive and non-abusive mothers. We were able to expand on the methodology of this past study through utilization of observational data by trained observers. Specifically, this project included a closer look at maladaptive parent-child

interactions for abusive mothers with depression through DPICS data including parent verbalizations such as commands and praise. Additionally, this study is the first to investigate possible bias in perception of problematic child behavior for a diverse group of caregivers (e.g., abusive fathers, stepparents, grandparents, as well as mothers with depression).

Overall, the findings for this study suggest there is not enough evidence to support potential bias in either direction (i.e., parental view as more negative relative to observed child behavior or parental view as accurate based on observed child behavior). Our first hypothesis was that maternal depression would be predictive of maternal reported number of problematic child behaviors on the BASC Aggression and Conduct scales. It was expected that level of maternal depression would have a significant positive association with BASC Aggression and Conduct scales based on previous literature indicating a relationship between maternal depression and their report of child externalizing problems (Goodman et al., 2011; Letourneau et al., 2013; Turney, 2011). However, the results of the present study did not support these previous findings. Our results, rather, suggest that depression does not impact the extent to which mothers rate their children as behavior disordered. Of note, the sample size for the Conduct scale was limited due to age range confinements (i.e., the BASC excludes ages 4-5) for that scale which likely affected the power to capture a significant relationship. Further, conduct-related behaviors (e.g., stealing, fire setting, callousness) may be more difficult to capture in the observational setting of DPICS, which can best be described as an analog, clinic-based setting. Additionally, given that this sample is an abusive parenting sample, abuse may impact externalizing behavior problems (Cicchetti & Toth, 2000; Timmer et al., 2005) such that maternal depression does not have an effect above and beyond that of abusive parenting.

Our second hypothesis that there would be a discrepancy between maternal report of problematic child behavior and negative child behaviors observed through DPICS was evaluated through two methods including a paired sample t-test of standardized scores and a moderation analysis. There was no significant difference between the standardized maternal rated scores and clinician observed scores. Maternal depression also did not significantly moderate the relationship between maternal report of child functioning and negative child behavior problems observed through the DPICS, when utilizing BASC Aggression scores or BASC Conduct scores. Moderation analyses also indicate that younger child age predicted greater observed negative behaviors, which supports previous findings that externalizing behavior problems are more prevalent in younger children (Abrahamese et al., 2016).

Results from the aforementioned analyses did not support our hypotheses and do not provide sufficient evidence for potential bias in maternal reporting of child behavior problems. It is possible that children of mothers with depression truly exhibit greater behavior problems, accurately detected by both the mother and the clinician, as literature indicates that children of depressed mothers are at a greater risk for negative behaviors (Goodman et al., 2011; Letourneau et al., 2013; Najman et al., 2000; Turney et al., 2011;), especially in the context of abuse (Cicchetti et al., 1995; Rogosch, 1995; Shields & Cicchetti, 1998; Timmer et al., 2005). However, results could also be attributed to nondepressed mothers underreporting their child's negative functioning in comparison to mothers with depression (Najman et al., 2000). Past literature has illustrated that among caregivers in at-risk populations, lower levels of depression are linked to higher socially desirable reporting of child behavior (Costello et al., 2018). At higher levels of depression, mothers may be less likely to engage in socially desirable responding, and therefore more likely to provide realistic reports of child behavior problems.

Another consideration is that children manifested negative behaviors prior to the parent developing depression or adopting harsh discipline strategies. In this circumstance, parental report may not be influenced by abuse or depression, but rather may be an accurate representation of pre-existing behaviors. Additionally, it is possible that parental abuse and depression are developed in response to these problematic child behaviors. One limitation of this investigation is that we cannot state definitively the sequence of events that lead to more consistent maternal reports of negative child behavior compared to observations of a clinician.

Our third hypothesis, that maternal depression would predict maladaptive verbal behavior during observed mother-child interactions, was additionally unsupported. Maternal depression did not predict the number of verbalizations; however, child age and child gender did. Child age and gender, the control variables, predicted the total number of verbalizations such that younger children and male children received greater verbalizations from the mother. This is consistent across previously published research, in that parents speak less with children as they age, as older children require fewer verbalizations to be engaged (Cotter, 2016; Cotter & Brestan-Knight, 2020; McNeil & Hembree-Kigin, 2010). This difference in maternal verbalization rate could be attributed to the play situation, which would look different for younger children (closer to age 4) relative to the older children in the sample (those closer to age 12). Anecdotally, younger children engage in more interactive play with the parent, are more focused on the parent's role in imaginative play, and talk more about present play than older children, who show more independence. Parents are also less likely to describe the play and reflect older child verbalizations as it is less developmentally appropriate than with younger children. Additionally, older children can retain commands mentally for a longer period than can younger children and

may require fewer individual commands and fewer repetitions to complete a large task (e.g., they can obey the command “Clean up the room” with no reminders).

Similarly, maternal depression did not predict total number of commands without opportunity to comply, however the control variables, child age and child gender, did. Older child age predicted fewer of these ineffective commands, which is consistent with the findings above that parents use fewer verbalizations with older children (Cotter, 2016; Cotter & Brestan-Knight, 2020; McNeil & Hembree-Kigin, 2010). Interestingly, male gender also predicted greater ineffective commands. Clinically, when a parent gives a command with no opportunity to comply, it is most often an attempt to gain control over the situation. Ineffective commands such as these can range from a parent saying “Look” in a play setting or saying “Behave” after a previous command has been repeated several times. Additionally, giving several commands in a row is also considered a command without opportunity to comply. It is possible that the mothers in this sample were observed to give more ineffective commands to boys because males with a history of abuse are more likely to develop aggressive and acting out behaviors than females (Maschi et al., 2008). Consequently, the males in the sample may have exhibited more problematic behaviors necessitating commands relative to the female children observed during the play interactions. Further, previous literature has evinced differences in parental discipline strategies based on child gender. Specifically, parents tend to utilize more control and less autonomy-supported strategies with males compared to females (Endendijk et al., 2016).

Maternal depression, along with control variables child age and child gender, did not predict total labeled and unlabeled praise from the mother, which could be related to the physically abusive nature of the sample. Physically abusive caregivers exhibit fewer positive interactions and greater negative interactions with their children (Allesandri, 1992; Bousha &

Twentyman, 1984; Timmer et al., 2005). Similarly, mothers with depression engage in fewer positive interactions and display higher negative affect with their children (Turney, 2011). Hence, in the given sample of physically abusive mothers, depression may not have an additive effect on the fewer positive interactions that one might expect to observe between a physically abusive mother and child.

Finally, our exploratory hypothesis that depression would moderate the relationship between caregiver reported child behavior problems and negative child behavior problems observed through the DPICS in a sample of custodial caregivers (e.g., mothers, fathers, stepparents, and grandparents), was partially supported. There was an interaction between BASC Aggression scores and BDI scores and this interaction significantly predicted clinician observed negative child behaviors, suggesting that the relationship between caregiver reported and clinician observed negative child behaviors is dependent upon their BDI scores. Additionally, as consistent with other findings, child age predicted observed negative child behaviors reported by the clinician, with younger children having greater numbers of observed problematic behaviors. Contrastingly, there was not an interaction between BASC Conduct scores and BDI scores and their interaction did not predict the number of observed negative child behaviors. Again, it should be noted that the sample size decreased due to age range limitations for the BASC Conduct scale.

Based on our findings, it appears that the disparity between clinician observed child behaviors and caregiver reported child behaviors is dependent on the caregiver's reported depression symptomology. Specifically, the results of this study suggest that there is greater discrepancy between caregiver report of aggressive child behavior and clinician's observed problematic child behavior when caregivers report more severe levels of depression. These

findings support the existence of a distortion effect based on the caregiver-reported level of depression. One possible explanation is that caregivers with higher levels of depression view their child's behavior as excessively negative compared to other children (Acri, et al., 2018; Gartstein, et al., 2009; Madsen et al., 2019; Richters, 1992). The discrepancy we found may also be related to the child of the depressed caregiver, such that the child of an emotionally impaired caregiver may behave more differently or more reactively in different settings (i.e., home, lab settings) than the child of a non-depressed caregiver (Najman et al., 2000). Another consideration is that children of depressed caregivers are displaying higher rates of behavior problems, but caregivers are biased in their report (i.e., over- or under-reporting behavior problems).

Given the differences between BASC and DPICS as measures, i.e., parent-report versus observational, this study did not explore whether weakening of agreement was related to caregivers over- or under-reporting problematic child behaviors. However, the finding of a distortion effect is supported by previous work examining paternal depression and discrepancy in report of child behavior with third-party report (i.e., teachers and foster parents; Treutler & Epkins, 2003). Notably, the results of the present study extend work in parental perception of child behavior problems to a more diverse group of custodial caregivers with depression (i.e., biological mothers, fathers, stepparents, grandparents) rather than singularly mothers with depression. Interestingly, in terms of maternal depression, the study did not provide evidence for significant distortions in maternal report of child behavior.

The variation in results across samples, in terms of mothers with depression versus all custodial caregivers with depression (i.e., mothers, fathers, stepparents, grandparents), could be explained by several possibilities. Firstly, it should be noted that the maternal depression

findings for this study may not be significant given that the power was not large enough to truly capture a medium effect size. Thus, both the increase in sample size and power could allow for the capture of a significant relationship when looking at the full sample of caregivers. Further, it may be that including fathers in the analysis contributed to a weaker relationship between the parent reported aggression and clinician observed child behaviors due to the tendency of fathers to underreport child behavior problems when compared to mothers (Calzada et al., 2004; Christensen et al., 1992). It has also been evidenced that mothers tend to report more disruptive behaviors than do fathers, which could lead to more consistency between mothers' report for negative child behavior and with clinician-observed negative child behaviors (Calzada et al., 2004).

Limitations and Conclusions

This study holds several strengths such as highlighting a hard-to-reach sample, utilizing multi-informant and multi-method assessment, including standardized measures and task structure, and the inclusion of biological mothers and fathers, stepparents, and grandparents to explore the depression-distortion and accuracy hypotheses. However, there are some study limitations to be considered.

Firstly, given that the structured DPICS observation takes place in a laboratory setting, child reactivity and parent reactivity should be taken into account, as both have been found to differ across home and lab settings when measured by the DPICS (Thornberry, 2013). Moreover, child reactivity has been a concern noted in previous laboratory studies examining the depression-distortion hypothesis (Lau et al., 2006; Najman et al., 2000). In addition, the BASC inquires about child behavior across settings, so some discrepancy may be inherently expected when comparing home behavior to how a child behaves in a laboratory environment. Therefore,

one future direction for this line of research would be to conduct DPICS structured observations in the home setting to maximize the concordance between parent report of child behavior and clinician-observed behavior.

Secondly, this study uses a very specific sample, physically abusive caregivers who were court-ordered for treatment. As such, results do not speak to caregivers who are not court-ordered for treatment or are not physically-abusive. The sample also lacked a control group for comparison, with caregiver reports only including those provided by abusive caregivers. Including a control group of non-abusive families, as in the previous work of Kinard (1995), may have allowed for abuse status to be examined as a moderator for the discrepancy between parental and clinician reports of child behavior problems.

Thirdly, the study relied on self-report of caregiver depressive symptoms. A clinician-rated level of depression or formal diagnosis of depression would have allowed for more clinically meaningful results. It is notable that the mean BDI score was below the clinical cut-off for moderate depression ($M=11.90$) for mothers and all caregivers ($M=12.30$) in our sample, suggesting that caregivers reported having a low level of depression on average. Additionally, it is possible that subthreshold levels were reported in this sample due to impression management and given the pressure of court ordered treatment and involvement with Child Protective Services (CPS). Notably, prior research has found that parents working with CPS tend to underreport problems at pre-treatment, before trust with their therapist is established (Timmer et al., 2005).

Finally, as previously noted, another limitation of the study was that the sample size did not allow for sufficient power for several analyses included in this study. Further, the nature of the sample (i.e., an archival database from a large-scale, multi-year, grant-funded study) included

in this present study was not reproducible, prohibiting researchers from collecting additional data.

Future Directions

Despite these limitations, our study provides one of the first investigations of the relationship between depressive caregiver perceptions of problematic child behaviors across mothers, fathers, stepparents, and grandparents with a history of substantiated child physical abuse. Although we investigated the agreement between reports of caregivers and clinicians at varying levels of depression, we did not explore whether caregivers overreported or underreported compared to clinicians at varying levels of depression. This is an important consideration for future research, which could look at the distortion related to depression even further by utilizing observational data as well as maternal and paternal caregivers' reports.

Based on our results, future research should place greater emphasis on including fathers and custodial caregivers (i.e., stepparents, grandparents) in their samples, as research on their perceptions of child behavior, thoughts, and emotions is limited and likely impacts the process and outcome of child-focused treatment. Future work should also examine parental perception of child behavior independently, as fathers, mothers, and other custodial caregivers may vary in the extent to which depression impacts their reports of child behavior problems.

Additionally, as this study demonstrated the feasibility of using observational data to explore the depression distortion and accuracy hypotheses, research moving forward could utilize the DPICS observational coding system to examine possible bias in parental reporting. Moreover, given the difficulty in measuring conduct or aggressive behaviors in a laboratory setting that accurately reflect the child's functioning, future research should utilize observational data across multiple settings, including the home, to compare to parental report of child behavior.

As noted in previous literature (Lau et. al., 2006; Reid 1987; Thornberry, 2016), broadening the observation may provide a more accurate depiction of the child's behavior.

Further, the current study focused on evaluating potential bias across caregiver report of externalizing child behavior. However, maternal depression has previously been found to predict over-report of internalizing problems in females, along with over-reporting externalizing problems in males (Garstein et al., 2009). As such, expanding investigation of parental bias to reports of internalizing behavior could be an important future direction given the long term sequelae of parental physical abuse on child mental health outcomes.

Overall, the current study evidenced a discrepancy between custodial caregiver report and DPICS observation of problematic child behavior, dependent upon level of depression. Importantly, this project suggests that depression has an impact on caregiver report of child behavior when evaluating reports of multiple caregiver types (i.e., biological mothers, biological fathers, grandparents, stepparents); however, not when evaluating only biological mothers.

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Table 1

Descriptive Statistics for Biological Mother Data

Variable	<i>M</i>	<i>SD</i>
BDI	14.15	10.05
BASC Aggression	56.92	15.08
BASC Conduct	71.98	17.29
Observed Negative Child Behaviors	7.30	6.93
Total Verbalizations	163.60	74.84
Total Praise	3.13	3.79
Total No Opportunity to Comply	16.91	13.10
Commands		
Parent Age	29.87	6.79

Note. Overall $N=62$, BDI=Beck Depression Inventory, BASC=Behavior Assessment System for Children

Table 2

Descriptive Statistics for Caregiver Data

Variable	<i>M</i>	<i>SD</i>
BDI	11.90	9.16
BASC Aggression	58.06	15.76
BASC Conduct	70.79	18.80
Observed Negative Child Behaviors	7.30	6.93
Parent Age	29.87	6.79
	Males	Females
Parent Gender	34.3%	65.7%

Note. Overall $N=110$, BDI=Beck Depression Inventory, BASC=Behavior Assessment System for Children

Table 3

DPICS-II Composite Categories

Inappropriate Behavior	Prosocial Behavior	Total Commands (Parent Only)
Destructive	Answer	Direct Command
Physical Negative	Acknowledgement	Indirect Command
Yell	Laugh	
Whine	Information Description	
Smart Talk	Behavioral Description	
Criticism	Physical Positive	
	Labeled Praise	
	Unlabeled Praise	
	Reflection	

Table 4

DPICS-II Child Response Categories

Response	Example
Compliance	Parent: "Give me the toy truck." Child: (Gives the toy truck)
Noncompliance	Parent: "Put all the toys away." Child: (Continues to play with toy truck for at least five seconds)
No Opportunity to Comply	Parent: "Come on. Be good." Child: (No opportunity to follow command)

Note. Noncompliance will be considered an observed negative child behavior in the proposed study.

Table 5

Zero-Order Correlations for Biological Mothers

Variable	1	2	3	4	5	6
1. BDI	-					
2. BASC Aggression	.23	-				
3. BASC Conduct	.19	.7**	-			
4. Observed Negative Child Behaviors	-.02	.03	-.09	-		
5. Child Age	-.07	.11	.19	-.37**	-	
6. Child Gender	-.09	-.05	-.16	.03	.06	-

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

Note. Overall $N=62$, BDI=Beck Depression Inventory, BASC=Behavior Assessment System for Children

Table 6

Zero-Order Correlations for Caregivers

Variable	1	2	3	4	5	6
1. BDI	-					
2. BASC Aggression	.05	-				
3. BASC Conduct	.18	.76**	-			
4. Observed Negative Child Behaviors	.05	-.03	-.08	-		
5. Child Age	-.12	.26	.26	-.39**	-	
6. Child Gender	-.16	-.07	-.22	.05	.01	-

**p<.05, **p<.01*

Note. Overall $N=62$, BDI=Beck Depression Inventory, BASC=Behavior Assessment System for Children

Table 7

Zero-Order Correlations for Biological Mothers DPICS-II Codes

Variable	1	2	3	4	5	6
1. BDI	-					
2. Total Verbalizations	-.10	-				
3. Total Praise	-.15	.48**	-			
4. Total No Opportunity to Comply Commands	-.02	.69**	-.11	-		
5. Child Age	-.07	-.47**	-.09	-.37**	-	
6. Child Gender	-.09	.20	.13	.21	.06	-

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

Note. Overall $N=62$, BDI=Beck Depression Inventory

Table 8

BDI as a Predictor of BASC Scale Scores Reported by Biological Mothers

Dependent Variable	Independent			
	Variables	Unstandardized B	Standard Error	<i>p</i>
BASC Aggression				
	BDI	0.23	0.12	0.055
	Child Age	0.126	0.122	0.301
	Child Gender	-0.037	0.123	0.767
BASC Conduct				
	BDI	0.234	0.15	0.118
	Child Age	0.247	0.146	0.091
	Child Gender	-0.109	0.147	0.459

p* < .05. *p* < .01. ****p* < .001

Note. BDI=Beck Depression Inventory, BASC=Behavior Assessment System for Children

Table 9

Results of Paired Sample T-Test of BASC Scale Scores Reported by Biological Mothers and Observed Negative Child Behaviors

Scales Compared	<i>M</i>	<i>t</i>	<i>p</i>
BASC Aggression & Observed Negative Child Behaviors	0.02	0.01	0.92
BASC Conduct & Observed Negative Child Behaviors	-0.30	-1.14	0.27

p* < .05. *p* < .01. ****p* < .001

Note. BASC Aggression *N*=31, BASC Conduct *N*=23, BASC=Behavior Assessment System for Children

Table 10

*Unstandardized Estimates for the Interactions Between BASC Scale Scores and BDI Scores**Predicting Observed Negative Child Behaviors in Sample of Biological Mothers*

Predictors	Step 1	Step 2
<i>Observed Negative Child Behaviors</i>		
Intercept	2.196*** (.379)	2.331*** (.396)
Control variables		
Child Age	-.411*** (.118)	-.423*** (.121)
Child Gender	.113 (.129)	.100 (.131)
Main effects		
BASC Aggression Score	.156 (.150)	.174 (.144)
BDI Score	-.076 (.139)	-.022 (.151)
Interactions		
BASC Aggression Score x BDI Score		-.127 (.154)
R^2	0.183	0.168
ΔR^2	0.183	0.150
Predictors	Step 1	Step 2
<i>Observed Negative Child Behaviors</i>		
Intercept	2.224*** (.721)	2.343*** (.738)
Control variables		
Child Age	-.315* (.151)	-.347* (.160)
Child Gender	.206 (.159)	.196 (.157)
Main effects		
BASC Conduct Score	.030 (.176)	.063 (.181)
BDI Score	-.067 (.169)	-.059 (.172)
Interactions		
BASC Conduct Score x BDI Score		-.094 (.171)
R^2	0.138	0.140
ΔR^2	0.138	0.02

* $p < .05$. ** $p < .01$. *** $p < .001$

Note. BDI=Beck Depression Inventory, BASC=Behavior Assessment System for Children, Intercept= Constant

Table 11

Results from Linear Regression Analyses for BDI onto DPICS Variables

Dependent Variable	Independent Variables	Unstandardized		
		B	Standard Error	<i>p</i>
Total Verbalizations	BDI	-0.088	0.115	0.442
	Child Age	-0.523	0.101	.000***
	Child Gender	0.272	0.114	.017*
Total Labeled & Unlabeled				
Praise	BDI	-0.134	0.134	0.317
	Child Age	-0.117	0.135	0.385
	Child Gender	0.134	0.136	0.323
Total Commands with No				
Opportunity to Comply	BDI	-0.005	0.176	0.976
	Child Age	-1.957	0.694	.002**
	Child Gender	7.159	3.45	.026*

p* < .05. *p* < .01. ****p* < .001

Note. BDI=Beck Depression Inventory, DPICS= Dyadic Parent-Child Interaction Coding System

Table 12

*Unstandardized Estimates for the Interactions Between BASC Scale Scores and BDI Scores**Predicting Observed Negative Child Behaviors in Full Sample*

Predictors	Step 1	Step 2
<i>Observed Negative Child Behaviors</i>		
Intercept	2.264*** (.293)	2.340*** (.286)
Control variables		
Child Age	-.480*** (.088)	-.488*** (.088)
Child Gender	.106 (.098)	.080 (.094)
Main effects		
BASC Aggression Score	.147 (.102)	.180 (.098)
BDI Score	-.012 (.096)	-.014 (.095)
Interactions		
BASC Aggression Score x BDI Score		-.217 (.093)*
R^2	0.220**	0.253***
ΔR^2	0.220**	0.033***
Predictors	Step 1	Step 2
<i>Observed Negative Child Behaviors</i>		
Intercept	2.051*** (.547)	2.169*** (.555)
Control variables		
Child Age	-.316** (.114)	-.345** (.118)
Child Gender	.124 (.127)	.109 (.121)
Main effects		
BASC Conduct Score	.041 (.125)	.042 (.126)
BDI Score	-.088 (.124)	-.074 (.126)
Interactions		
BASC Conduct Score x BDI Score		-.097 (.120)
R^2	0.121	0.129
ΔR^2	0.121	0.008

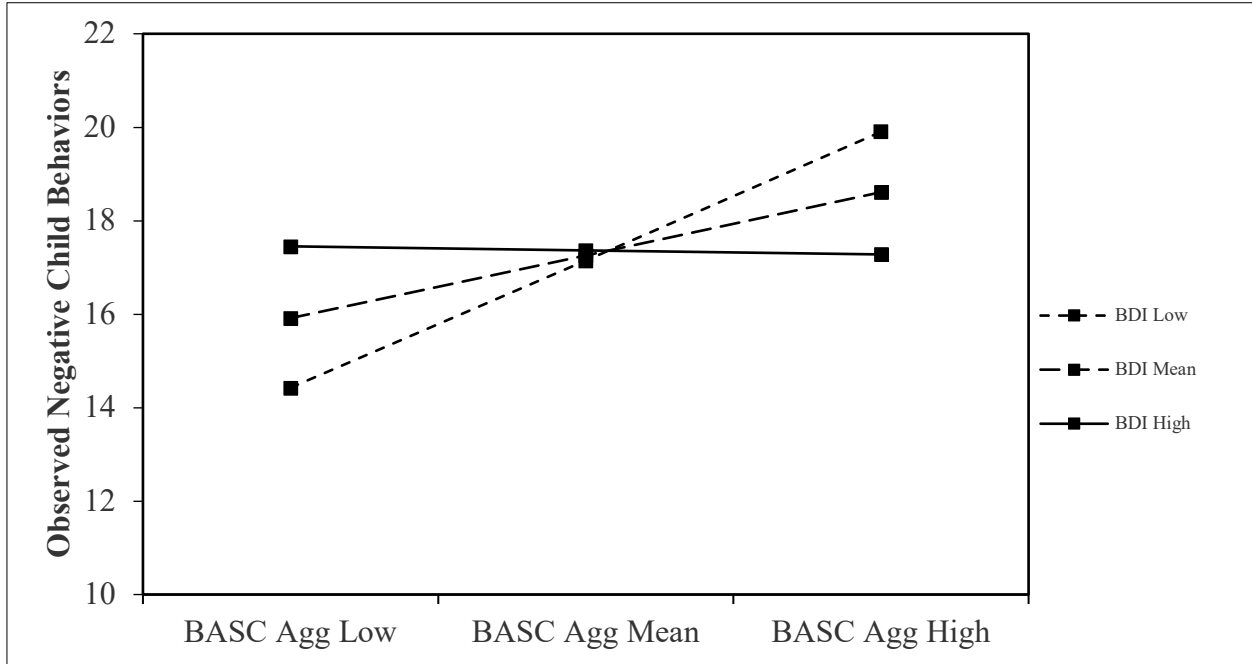
* $p < .05$. ** $p < .01$. *** $p < .001$

Note. BDI=Beck Depression Inventory, BASC=Behavior Assessment System for Children,

Intercept= Constant

Figure 1

BDI as a Moderator of the Relationship Between Caregiver BASC Aggression Scores and Clinician Observed Negative Child Behaviors



Note. Overall $N=110$, BDI=Beck Depression Inventory, BASC Agg=Behavior Assessment System for Children, Aggression Subscale