Bidirectional associations Between Parenting Practices and Child Conduct Problems: The Moderating Role of Callous-Unemotional Behavior

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ABSTRACT

BIDIRECTIONAL ASSOCIATIONS BETWEEN PARENTING PRACTICES AND CHILD CONDUCT PROBLEMS: THE MODERATING ROLE OF CALLOUS-UNEMOTIONAL BEHAVIOR

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A growing body of research has evidenced bidirectional associations between parenting practices and the development of conduct problems in children. However, studies examining the effect of child callous-unemotional (CU) behavior in the context of these reciprocal associations have produced mixed findings. This study used data from the Fragile Families and Child Wellbeing Study (N= 4,898) to investigate bidirectional associations between parenting practices (i.e., positive and harsh) and child conduct problems across ages 3, 5, and 9 and determine if these associations are moderated by child CU behavior. Cross-lagged panel analyses revealed that higher positive parenting at age 5 was associated with lower conduct problems at age 9, whereas higher harsh parenting at age 5 was positively associated with year 9 conduct problems. Further, parents of children with higher levels of conduct problems demonstrated more harsh parenting behaviors in the home. In exploring the moderating role of CU behavior, results indicated a significant interaction between conduct problems and CU behavior at age 3 on positive parenting at age 5, such that the nature of this association differed based on the presence of higher or lower CU behavior. Implications of findings in terms of both research and intervention efforts are discussed with an emphasis on utilization of early intervention methods.
to target dysfunctional parent-child cyclical interactions that contribute to maladaptive parent and child outcomes.
BIDIRECTIONAL ASSOCIATIONS BETWEEN PARENTING PRACTICES AND CHILD CONDUCT PROBLEMS: THE MODERATING ROLE OF CALLOUS-UNEMOTIONAL BEHAVIOR

BY

ELIZABETH R. CORNING
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A THESIS SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY

Thesis Director:
Elizabeth C. Shelleby
TABLE OF CONTENTS

LIST OF TABLES .................................................................................................................. v

LIST OF FIGURES ................................................................................................................ vi

LIST OF APPENDICES ......................................................................................................... vii

Chapter

1. INTRODUCTION AND REVIEW OF LITERATURE .............................................. 1

   The Role of CU Behaviors in the Path to Conduct Problems ......................... 6

   The Effects of Parenting on Conduct Problems ............................................. 8

      Positive Parenting ......................................................................................... 8

      Harsh Parenting ............................................................................................. 10

   How Parenting Impacts CU Behavior .......................................................... 12

   CU Behavior as a Moderator of How Parenting Impacts Child Conduct Problems . 17

      Cross-Sectional Designs ............................................................................. 17

      Longitudinal Designs .................................................................................. 20

   The Influence of Conduct Problems on Parenting ...................................... 23

   The Influence of CU Behaviors on Parenting .............................................. 25

   The Interaction Between CU Behaviors and Conduct Problems on Parenting ....... 27

   Summary of Current Empirical Findings ..................................................... 28

   The Present Study ............................................................................................... 29

2. METHOD ......................................................................................................................... 32
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Analysis</td>
<td>33</td>
</tr>
<tr>
<td>Procedure</td>
<td>33</td>
</tr>
<tr>
<td>Assessments and Measures</td>
<td>35</td>
</tr>
<tr>
<td>Demographic Questionnaire</td>
<td>35</td>
</tr>
<tr>
<td>Positive and Harsh Parenting</td>
<td>35</td>
</tr>
<tr>
<td>Child Conduct Problems</td>
<td>36</td>
</tr>
<tr>
<td>Callous-Unemotional Behavior</td>
<td>37</td>
</tr>
<tr>
<td>Covariates</td>
<td>40</td>
</tr>
<tr>
<td>Analytic Approach</td>
<td>41</td>
</tr>
<tr>
<td>Primary Analysis</td>
<td>41</td>
</tr>
<tr>
<td>3. RESULTS</td>
<td>44</td>
</tr>
<tr>
<td>Missing Data</td>
<td>44</td>
</tr>
<tr>
<td>Preliminary Analyses</td>
<td>44</td>
</tr>
<tr>
<td>Primary Analyses</td>
<td>47</td>
</tr>
<tr>
<td>Measurement Model</td>
<td>47</td>
</tr>
<tr>
<td>Model 1</td>
<td>48</td>
</tr>
<tr>
<td>Hypotheses 1 and 2</td>
<td>48</td>
</tr>
<tr>
<td>Hypotheses 3 and 4</td>
<td>51</td>
</tr>
<tr>
<td>Model 2</td>
<td>51</td>
</tr>
<tr>
<td>Hypotheses 5 and 6</td>
<td>52</td>
</tr>
<tr>
<td>Research Questions 1 and 2</td>
<td>54</td>
</tr>
<tr>
<td>Final Model</td>
<td>55</td>
</tr>
</tbody>
</table>
## 4. DISCUSSION

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bidirectional Associations Between Positive Parenting and Conduct Problems</td>
<td>58</td>
</tr>
<tr>
<td>Bidirectional Associations Between Harsh Parenting and Conduct Problems</td>
<td>60</td>
</tr>
<tr>
<td>Moderation by CU Behavior</td>
<td>63</td>
</tr>
<tr>
<td>Limitations and Future Research</td>
<td>65</td>
</tr>
<tr>
<td>Conclusions and Implications</td>
<td>67</td>
</tr>
</tbody>
</table>

REFERENCES: 69

APPENDICES: 85
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Bivariate Correlations of Callous-Unemotional Items</td>
<td>38</td>
</tr>
<tr>
<td>2. Descriptive Statistics of Continuous Variables</td>
<td>45</td>
</tr>
<tr>
<td>3. Bivariate Correlations Among Continuous Variables</td>
<td>46</td>
</tr>
<tr>
<td>4. Frequencies for Dichotomous Variables</td>
<td>47</td>
</tr>
<tr>
<td>5. Standardized Loadings for Latent CU Variable</td>
<td>48</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Path Diagram for Model 1</td>
<td>42</td>
</tr>
<tr>
<td>2. Path Diagram for Model 2</td>
<td>43</td>
</tr>
<tr>
<td>3. Synchronous and Stability Effects</td>
<td>49</td>
</tr>
<tr>
<td>4. Model 1 Cross-Lagged Effects Examining Hypotheses 1, 2, 3, and 4</td>
<td>50</td>
</tr>
<tr>
<td>5. Interaction Between Year 3 Conduct Problems and CU Behavior on Year 5 Positive Parenting</td>
<td>53</td>
</tr>
<tr>
<td>6. Regions of Significance for the Interaction Between Year 3 Conduct Problems and CU Behavior on year 5 Positive Parenting</td>
<td>54</td>
</tr>
<tr>
<td>7. Final Model Synchronous and Stability Effects</td>
<td>56</td>
</tr>
<tr>
<td>8. Final Model Cross-Lagged Effects</td>
<td>57</td>
</tr>
</tbody>
</table>
LIST OF APPENDICES

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. BASELINE MOTHER/FATHER DEMOGRAPHICS QUESTIONNAIRE</td>
<td>85</td>
</tr>
<tr>
<td>B. MOTHER AND FATHER DEMOGRAPHIC QUESTIONNAIRE YEARS 1 AND 3</td>
<td>88</td>
</tr>
<tr>
<td>C. HOME OBSERVATION FOR MEASUREMENT OF THE ENVIRONMENT (HOME) INVENTORY – YEARS 3, 5, AND PARENTAL WARMTH SUBSCALE</td>
<td>90</td>
</tr>
<tr>
<td>D. HOME OBSERVATION FOR MEASUREMENT OF THE ENVIRONMENT (HOME) INVENTORY – YEARS 3, 5, AND 9 HARSH PARENTING SUBSCALE</td>
<td>95</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION AND REVIEW OF LITERATURE

Conduct problems in children have been broadly defined as including features such as aggressiveness, oppositionality, destructiveness, and antisocial behavior that violates the rights of others (McMahon et al., 2006). Conduct problems have been reported as the most frequent reason that children are referred to mental health clinics and residential treatment centers in the United States (Booker et al., 2016; Loeber et al., 2000). Behaviors within the conduct problems domain range from minor misbehaviors, such as temper tantrums, to more serious conduct, such as physical aggression and property destruction (Loeber & Schmaling, 1985). More serious childhood conduct problems have been shown to predict impairment in domains of functioning such as emotional, social, and academic areas (Erskine et al., 2016; Moffitt et al., 2002; Odgers et al., 2007). In addition, serious conduct problems have been shown to increase risk for substance abuse (Baskin-Sommers et al., 2015; Cohen et al., 2007) and the development of antisocial personality disorder and other types of psychopathology (Caspi et al., 1998). As such, it is important to continue to refine ways to identify the subgroup of youth who are at highest risk for exhibiting more severe conduct problems to inform early prevention and intervention efforts.

There has been an increasing consensus in the literature that children with conduct problems represent a heterogeneous group within which the origin, development, and trajectory of problem behaviors differs substantially (Frick & Ellis, 1999). A wealth of research has attempted to uncover factors related to the development of conduct problems and elucidate
which risk factors may be most predictive of more severe trajectories. According to the biopsychosocial model of the development of conduct problems, various factors dynamically interplay across time to give rise to conduct problems, including biological predispositions (e.g., genetic and hormonal abnormalities), child-level risks (e.g., callous-unemotional behaviors, co-occurring problems, age of onset of conduct problems), family functioning (e.g., parenting behaviors, inter-parental conflict, single parent families), stressful life events, deviant peer influences, and sociocultural context (e.g., family socioeconomic conditions, neighborhood violence, cultural values; Clark & Frick, 2018; Dodge & Pettit, 2003; Frick, Cornell, Barry et al., 2003; Hinshaw, 1994; Moffitt, 1993). Among these risks, increasing research has focused on parenting and child callous-unemotional (CU) behaviors as particularly important factors, given evidence of parenting malleability as an effective intervention target as well as research establishing the predictive utility of CU behaviors in identifying youth at high risk for demonstrating a more severe conduct problem trajectory (Frick, Cornell, Bodin et al., 2003; Thomas & Zimmer-Gembeck, 2007; Waller et al., 2018).

Extensive research exists indicating that parenting practices play an important role in the development of conduct problems in childhood (Campbell et al., 2000; McKee et al., 2007; Reuben et al., 2016; Shaw et al., 1994; Sng et al., 2018). Past studies have demonstrated that positive parenting practices (e.g., warmth, responsiveness, and acceptance) are negatively associated with childhood conduct problems, while harsh parenting practices (e.g., threats, shaming, and harsh punishment) are associated with higher levels of child conduct problems (Stormshak et al., 2000; Tavassolie et al., 2016). Reciprocal relationships between child conduct problems and parenting have also been established, with child conduct problems associated with increases in harsh parenting and decreases in positive parenting (Hipwell et al., 2008; Pardini et
al., 2008; Rolon-Arroyo et al., 2018). Child-driven effects of conduct problems on changes in both positive and harsh parenting behaviors have been demonstrated in large longitudinal samples of youth assessed across childhood to adolescence, with some studies reporting that the influence of youth conduct problems on parenting was of a similar magnitude as the impact of parenting on youth conduct problems over time (Pardini et al., 2008; Hipwell et al., 2008).

Strong evidence supporting the influence of parenting on child conduct problems has additionally been produced by intervention studies demonstrating the effectiveness of parent and family interventions in preventing and reducing conduct problems in children (Gardner et al., 2006; Piotrowska et al., 2019).

The unique role of parenting in the development of child conduct problems has also been examined in the context of genetic risk factors. Findings from a longitudinal twin study ($N=565$) indicated that parental warmth and negative parenting were predictive of conduct problems in children even after controlling for genetic influences (Caspi et al., 2004). Similarly, O’Connor et al. (1998) conducted a longitudinal adoption study ($N=88$) that measured genetic risk for conduct problems, in addition to positive and negative parenting practices, and found that genetic risk alone did not explain the relationship between negative parenting and child conduct problems. Instead, findings demonstrated a significant association between coercive parenting and child conduct problems and evidence of an evocative gene-environment correlation. These findings support the notion that parenting behavior is an important contributing factor to the development of child conduct problems above and beyond a genetic predisposition. While it is known that parenting is an important factor in understanding the development of child conduct problems, evidence has suggested differential responding to parenting based on child factors, such as interpersonal and affective characteristics (Hipwell et al., 2007).
One construct that has been identified as potentially contributing to differences in how children respond to parenting behaviors is child callous-unemotional behaviors (Pasalich et al., 2011). Research on CU behaviors stems from the construct of adult psychopathy, which is characterized by a stable personality involving interpersonal, affective, and behavioral components such as manipulation, grandiosity, remorselessness, lack of empathy, and impulsivity (Hare, 2003). The identification of these features in adulthood has been useful in subtyping individuals who are at a greater risk for displaying acts of criminality and antisocial behavior (Grann et al., 1999). The most recent edition of the Diagnostic and Statistical Manual (DSM-5; American Psychiatric Association, 2013) has also attempted to separately identify children with CU behaviors through the addition of the limited prosocial emotion (LPE) specifier to the diagnosis of Conduct Disorder. Although CU traits have been found to be relatively stable over time (Frick et al., 2005), limited research on CU traits in young children, use of behavioral (as opposed to trait-like) measures of CU for samples of younger children (Hyde et al., 2013), and the desire to avoid labeling children in a way that suggests a permanent deficit, has led researchers to favor the term callous-unemotional behaviors.

Callous-unemotional behaviors are characterized by a reduced capacity for guilt and empathy, insensitivity to punishment, fearlessness, and general lack of emotion (Frick et al., 2014). Studies have shown that the presence of CU behaviors is associated with a trajectory of conduct problems that is more severe and persistent compared to that of youth with conduct problems alone. Specifically, children with conduct problems and CU behaviors have been shown to exhibit higher levels of aggression and self-reported delinquency than those with conduct problems only (Frick, Cornell, Barry et al., 2003; Simmons et al., 2018). As such, identifying youth with higher CU behaviors, and understanding CU in the context of other risk
factors, such as less optimal parenting, may be one method through which to distinguish youth who are more likely to persist in more severe conduct problems.

More recently, researchers have begun to explore the moderating effect of CU behaviors on the association between parenting practices and child conduct problems. Some studies suggest that youth presenting with high levels of CU behavior may be less susceptible to the effects of parenting as compared to children who are low on these traits, allowing conduct problems to develop independent from the influence of parenting (Oxford et al., 2003; Wootton et al., 1997). However, this area of research has produced mixed results, as other studies have found that conduct problems are not significantly predicted by the interaction between CU and parenting (Hyde et al., 2013; Pardini et al., 2007) or conversely, that high levels of CU behavior are associated with more behavioral malleability (Kroneman et al., 2011). Although the effect of the interaction between parenting practices and CU behaviors on conduct problems has been commonly investigated, minimal literature exists documenting how the interaction between child conduct problems and CU behaviors influences parenting. While studies have reported that CU behaviors moderate the association between conduct problems and parenting behaviors in older children (mean age= 14.5, SD= 1.8) such that conduct problems predict a steeper reduction of parental monitoring when accompanied by high levels of CU behaviors (Muñoz et al., 2011), conclusions regarding how child behavior contributes to differences in positive and harsh parenting in the context of CU behaviors have yet to be established, particularly in younger children. Taken together, it is currently unknown whether differential bidirectional patterns exist between parenting and child conduct problems based on the presence of child CU behaviors. The current study aims to contribute to the literature by clarifying how the magnitude of reciprocal associations between parenting and conduct problems is impacted by child CU behaviors and if
these relationships differ across time points spanning from early to middle childhood. In what follows, literature examining the association between CU and conduct problems will be reviewed, followed by literature examining associations between parenting and both CP and CU. Finally, literature examining child evocative effects (e.g., how child CP and CU may influence parenting) will be reviewed, leading to the aims of the current study.

The Role of CU Behaviors in the Path to Conduct Problems

Previous studies have offered evidence of several distinct pathways that lead to the development of conduct problems in youth based on factors such as the age at which an individual begins to demonstrate antisocial behavior as well as the presence or absence of CU behaviors (Frick & Dickens, 2006). One widespread approach involves distinguishing between children based on the time of onset of antisocial behavior. Moffitt (1993) suggested classification of behavior into 2 distinct groups based on the stability of symptoms, the first group being life course persistent (LCP) and the second being adolescence-limited (AL). This conceptualization defines LCP individuals as those who demonstrate a continuous course of problem behavior from childhood, whereas AL individuals are only temporarily involved in antisocial behavior during adolescence. This developmental model uses timing and duration of symptom development as the core feature of classification, which is important to consider due to evidence demonstrating that youth presenting with more extreme antisocial behaviors earlier on in development represent a group with the most stable antisocial trajectory (Loeber, 1982; Moffitt, 1993).

Although this model has been useful in predicting differences in adolescent and adult behavioral outcomes (Moffitt et al., 1996), research has shown that heterogeneity still exists
within the child-onset group (Fairchild et al., 2013) Frick et al., 2000; Frick & Dickens, 2006). To further differentiate children with a steeper and more serious trajectory of conduct problems, a growing body of literature has suggested identifying children with CU behaviors (Frick, Cornell, Barry et al., 2003; Frick & Viding, 2009; Hawes & Dadds, 2007). Multiple longitudinal studies have demonstrated that the presence of CU behaviors at various developmental stages is associated with an elevated risk for the development and severity of conduct problems later in life (Enebrink et al., 2005; Fanti & Centifanti, 2014; Frick & White, 2008; Waller et al., 2105). Hyde et al. (2013) reported that age 3 CU behaviors (termed deceitful-callous behaviors in this study and defined as deceitfulness, lack of guilt, and lack of affect) significantly predicted conduct problems at age 4 after controlling for baseline conduct problems. Pardini et al. (2007) reported similar findings in a sample of fifth grade children, with CU behavior being significantly correlated with conduct problems over a one-year period, even after controlling for initial levels of conduct problems. While most studies in the current literature tend to use limited follow-up periods, one longer longitudinal study found that the presence of psychopathic traits in adolescence, including a dimension of CU behavior, was significantly associated with conduct problems 10 years later in life (Gretton et al., 2004). Research has also suggested bidirectionality between these constructs, such that conduct problems may similarly predict higher levels of CU behaviors longitudinally (Servera et al., 2019). Specifically, Servera et al. (2019) found that conduct problems in the first grade were associated with higher levels of CU behavior in the fourth grade after controlling for baseline levels of CU. Although CU behaviors have been shown to be useful predictors of the development and trajectory of conduct problems, additional environmental influences, such as parenting, must also be considered when examining the origins of conduct problem development.
in children. As previously noted, findings investigating interactions between CU and parenting have led to mixed results in the current literature.

The Effects of Parenting on Conduct Problems

A large body of literature exists indicating that parenting practices play a crucial role in the development of behavioral problems in childhood (McKee et al., 2007; Reuben et al., 2016; Shaw et al., 1994). Specifically, dimensions of parenting such as parental harshness and warmth have been shown to drive changes in child conduct problems (McFadyen-Ketchum et al., 1996; Waller et al., 2012).

Different parenting dimensions have been shown to differentially affect child conduct problems (Caron et al., 2006), providing evidence of the importance of examining positive and negative parenting practices independently. It is also important to consider the separate impact of harsh and positive parenting, as low parental warmth is not synonymous with parental harshness. Similarly, low parental harshness does not signify parental warmth. Further exploration of the influence of parenting on conduct problems in children is necessary due to evidence indicating that conduct problems in childhood contribute to impairment in functioning and often precede antisocial behavior disorders in adolescence (Aguilar et al., 2000).

Positive Parenting

A vast literature has explored associations between positive parenting (e.g., warmth, responsiveness, and acceptance) and child behavior. Using a series of meta-analyses based on 48 studies that assessed various developmental stages ranging from preschool to late adolescence, Kawabata et al. (2011) concluded that positive parenting was significantly associated with less
child aggression. Rothbaum and Weisz (1994) conducted a systematic review of 47 studies and found that parental warmth and acceptance were significantly associated with lower levels of child externalizing problems in nonclinical samples of children. The effects of positive parenting on child behavioral outcomes have also been demonstrated through meta-analyses reviewing intervention studies. In a review examining the effectiveness of the Triple P Positive Parenting Program, which focuses on promoting positive parenting to improve parent-child relationships and child behavior outcomes, Thomas and Zimmer-Gembeck (2007) found that all included studies, with the exception of a media-administered version of the intervention, produced moderate to large effect sizes regarding the effectiveness of the program in reducing negative child behaviors as well as negative parenting behaviors.

With regard to specific empirical studies that have demonstrated that positive parenting practices specifically impact child conduct problems by acting as a protective factor, a longitudinal study by Chronis et al. (2007) found that observed positive parenting (i.e., praise, positive affect, and physical positive interactions) that was measured through a structured parent-child interaction task was associated with lower conduct problems in children aged 4-7 over the course of eight years. An additional study by McFayden-Ketchum et al. (1996) using a large sample of preschool aged children reported that children who experienced higher levels of affection and positive maternal interest showed lower levels of teacher-reported aggression and conduct problems the following year. Using a similar longitudinal design, Stormshak et al. (2000) reported that parental warmth and involvement were negatively associated with conduct problems in early elementary school. Analyses revealed that these positive parenting practices contributed unique variance beyond contributions of parental punishment and aggression.
Although most research examining the relationship between parenting practices and child behavioral problems has generally used samples of biologically related parents and children, Reuben et al. (2016) examined the link between parenting and school-age conduct problems in a sample of adopted children; such a design allows researchers to better estimate the degree to which traits vary in response to environmental (i.e., parenting behavior) versus genetic influences, as adoptive parents are not genetically related to their children. Results demonstrated that higher levels of parental warmth were associated with lower levels of conduct problems, providing evidence of the influence of the parenting environment, above and beyond genetic contributions.

**Harsh Parenting**

While past studies have demonstrated that positive parenting is negatively associated with childhood conduct problems, harsh parenting practices (e.g., threats, shaming, and punishment) have been shown to be positively related to elevated levels of child conduct problems (Stormshak et al., 2000; Tavassolie et al., 2016). A review by Campbell et al. (2000) that attempted to explain the development of conduct problems in toddlers and preschoolers concluded that harsh parenting practices were consistently associated with conduct problems during early childhood. The association between harsh parenting and child conduct problems has been repeatedly established across numerous independent studies. For example, Stormshak et al. (2000) found that high levels of punitive discipline (e.g., yelling, nagging, threatening) and spanking were all significantly related to three dimensions of child disruptive behavior (hyperactivity, aggression, and oppositional behavior) in a sample of first graders (N=631). Examining a similar age range, Criss et al. (2002) found that elevated levels of harsh discipline
(e.g., scolding, yelling, grabbing/shaking) were predictive of child externalizing behavior two years later in 585 families of five-year-old children. These findings have also been replicated in older samples. For example, Kim et al. (2003) found that higher levels of harsh-inconsistent and hostile parenting were associated with higher child conduct problems using a multi-informant longitudinal design in a sample of 897 African American children across two time points, when the children averaged 10.5 and 12.3 years of age. Similar results were reported by McKee et al. (2007) in a large community sample of fifth- and sixth-grade children ($N=2,582$). This study examined the effects of two types of child-reported harsh discipline (harsh verbal discipline and harsh physical discipline) on youth externalizing symptomology. Analyses revealed that both types of harsh discipline were associated with conduct problems after uniquely accounting for positive parenting.

Evidence providing support for the causal nature of the relationship between parenting and child conduct problems has been demonstrated by studies documenting the effectiveness of parenting interventions on child behavioral outcomes. Behavioral family interventions (BFIs) are among the most thoroughly evaluated interventions for children with conduct problems and include teaching parents how to increase positive interactions with their children while reducing parenting practices that are inconsistent, harsh, and coercive (Sanders et al., 2000). These programs have been tested in large randomized controlled trials (RCTs) in a variety of formats (e.g., face-to face, group, and telephone assisted) and have been consistently shown to be associated with a reduction in child conduct problems in samples of preschool through elementary aged children (Gardner et al., 2006; Scott et al., 2001; Webster-Stratton et al., 2004). Specifically, changes in parenting competency and skill have been cited as a key mechanism for driving changes in child behavior (Gardner et al., 2006).
When examining the influence of a parenting intervention program in a randomized controlled trial using a sample of clinically referred children aged 2 to 9, Gardner et al. (2006) found that increases in positive parenting skills significantly contributed to a reduction of child conduct problems over the course of 18 months. Harsh parenting has also been found to impact changes in child behavior, as reductions in critical parenting during a parenting intervention program were significantly associated with a decline in child conduct problems in a sample of 882 children aged 4-6 (Reid et al., 2004). Similar findings were reported by Webster-Stratton (1998), who examined the effectiveness of a parenting program in a sample of 394 kindergarteners. Observed decreases in critical and harsh parenting styles as well as increases in positive and competent parenting were reported for mothers who participated in the intervention as compared to mothers in the control condition. As a result, children of mothers who received the intervention exhibited significant decreases in conduct problems as compared to the children in the control condition whose behavior remained stable.

In sum, research has shown that both positive parenting and negative parenting play an important role in the development of child conduct problems. In addition to conduct problems, research has further investigated whether parenting may similarly contribute to the emergence of CU behaviors in children.

**How Parenting Impacts CU Behavior**

Along with the literature presented describing how parenting practices influence the development of general conduct problems, there is also evidence that parenting may impact the development of CU behaviors over time, although results of studies investigating this question have been inconsistent. One prominent theory in the literature suggests that conduct problems
develop independent of parenting in children with callous interpersonal styles (Lykken, 1995). Past studies have theorized that this pattern occurs due to the affective and motivational styles found in individuals with antisocial tendencies. These characteristics are hypothesized to make children with high levels of CU behavior less responsive to the influence of parenting than children with low (or without) CU behavior (Kochanska, 1991). However, a more recent alternative perspective has suggested malleability in children with CU behaviors in response to parenting, such that children may be influenced by parenting despite the presence of CU behaviors (Waller et al., 2013) or that children may even be more responsive to the influence of parenting when demonstrating high levels of CU behaviors (Waller et al., 2015; Pasalich et al., 2011).

It is first important to note the impact of genetic factors on CU behaviors in order to highlight the importance of both genetic and environmental risks. In a review of research examining genetic and neurocognitive influences related to the development of CU traits, Viding and McCrory (2012) highlighted consistently moderate to strong heritability estimates across studies, suggesting that between 40-78% of variation in CU behaviors in children and youth are attributable to genetic influences. However, the authors went on to conclude that, “Longitudinal, genetically informative data suggest that environmental influences account for a substantial proportion of variance in CU traits and are important for change in these traits” (p. 780); the authors further highlight positive parenting and parental involvement as potentially meaningful targets for reducing CU behaviors, based on findings from other studies (e.g., Hawes et al., 2011). Thus, while the importance of genetic factors cannot be ignored, genetically-informed studies have suggested that environmental influences are also meaningful contributors, with parenting highlighted as a potentially important contextual influence.
With regard to specific studies examining this association, a study by Frick, Kimonis et al. (2003) examining the stability of the CU dimension of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), reported that positive parent-child relationships (based on measures of warmth, involvement, and positive reinforcement) were associated with a decrease in CU behaviors measured over a four-year period in a sample of third through seventh grade children. Similar findings involving the influence of specific positive and negative parenting behaviors on CU behaviors were reported by Muratori et al. (2016) in a sample of 126 elementary aged children using the child-report Inventory of Callous-Unemotional Traits (ICU; Frick, 2003) as well as Hawes et al. (2011) in a large community sample of children aged 3 to 10 (N=1,008) who assessed CU behavior using a previously validated measure that combined the CU subscale of the APSD with items from the prosocial scale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). These findings support the notion that CU behaviors in childhood are typically less stable than antisocial personality traits found in adults (McCrae et al., 2002). A study by Waller et al. (2012) failed to replicate these findings on the link between parenting and CU behaviors using a longitudinal design that assessed a sample of children from age 2 to age 4. Researchers concluded that parental warmth did not significantly contribute to the development of CU behavior in preschoolers, highlighting the importance of assessing this association in different age groups. However, a follow-up investigation by Waller et al. (2014) challenged these original findings by reporting that low levels of parental warmth were associated with higher levels of CU behavior in preschoolers using a similar longitudinal design that examined changes in child behavior from age 2 to age 3. The results of this study mirror the association between low parental warmth and CU behavior that has been demonstrated in older samples of children and adolescents (Frick, Cornell, Bodin et al., 2003; Kimonis et al., 2013).
In addition to low parental warmth, exposure to harsh parenting has also been shown to be associated with higher CU behavior in children. This association can be seen through studies reporting that children who are exposed to harsh parenting display less guilt and are less concerned about the feelings of others (Hastings et al., 2000; Kochanska et al., 2002). Some research has attributed this relationship to the idea that callous or harsh displays from parents as well as ineffective communication may leave their children unable to understand other’s emotions, inhibiting empathy development (Daversa, 2010). An additional perspective, informed by the social control theory, has also attempted to explain the link between parenting and CU behaviors. The social control theory states that social learning aids in the development of prosocial values and helps children develop self-control that reduces their inclination to engage in antisocial behavior (Hirschi, 1969). In relation to parenting, this perspective suggests that harsh punishment results in a poor parent-child relationship, which consequently decreases a child’s motivation to internalize the values presented by their parents and by society. This in turn results in low self-control and an inability to inhibit antisocial behavior (Hirschi, 1969; Pardini et al., 2007). It is thought that through socializing children and adolescents towards prosocial behaviors, it is possible to redirect the influence of impulsive and callous behaviors towards activities that are more socially acceptable (Meier et al., 2008). It has also been speculated that harsh parenting is associated with the development of a callous interpersonal style through modeling. This occurs when parents communicate to their child that aggression is an effective way to exert control over others despite suffering endured by the victim (Bandura, 1973; Gershoff, 2002; Pardini et al., 2007). This kind of disregard for the feelings of others is consistent with deficient empathy, which is considered a central component of CU behavior.
The association between harsh parenting and the development of CU behaviors in children has been repeatedly demonstrated in longitudinal research (Fontaine et al., 2011). Waller et al. (2013) systematically reviewed nine studies examining the relationship between parenting and CU behaviors and concluded that harsh parenting in early childhood as well as negative discipline and corporal punishment in middle childhood were significant predictors of CU behaviors. Frick, Kimonis et al. (2003) reported that third through seventh grade children exposed to negative parenting practices, defined by corporal punishment, inconsistent discipline, and poor monitoring, exhibited increases in CU behavior from childhood to adolescence over a four-year period as measured by the CU dimension of the APSD (Frick & Hare, 2001). Pardini et al. (2007) similarly found that fifth-grade children exposed to higher levels of corporal punishment in addition to those who reported their caregivers as being low in warmth and involvement displayed increases in CU behaviors as measured by the CU traits scale of the APSD (Frick & Hare, 2001). These significant changes occurred over a 1-year period even after controlling for prior levels of CU behaviors. Waller et al. (2012) replicated these findings using a younger sample and reported that dimensions of harsh parenting contributed to the development of child deceitful-callous behavior in preschool aged children. The construct of deceitful-callous behavior was operationalized as behavior reflecting a lack of guilt, deficient affect, or deceitfulness. The association between harsh parenting and CU behaviors has also been found to vary by gender, as Barker et al. (2011) reported that harsh parenting at age 4 was significantly associated with higher levels of CU behaviors at age 13, but this was only true for boys and not girls. Although a vast majority of studies have indicated that parenting is important in predicting both child conduct problems as well as CU behaviors, notable studies have reported that parenting does not significantly impact changes in child CU behaviors longitudinally (Viding et
Therefore, more research is needed to examine how the influence of parenting interacts with the presence of CU behaviors to predict the development of conduct problems over time.

**CU Behavior as a Moderator of How Parenting Impacts Child Conduct Problems**

Research examining moderation of the impact of parenting on conduct problems by CU behaviors has produced mixed results. On the whole, several cross-sectional studies have suggested that child conduct problems are differentially impacted by parenting based on the level of child CU behaviors, whereas various longitudinal studies have suggested no differential responding to parenting based on child CU behaviors. The literature has also indicated potentially divergent results depending on whether harsh or positive parenting are considered. More detail is provided below through a review of studies that have examined the interaction between parenting and CU behaviors on child conduct problem outcomes.

**Cross-Sectional Designs**

Various studies using cross-sectional designs have examined the moderating role of CU behaviors in the association between parenting and conduct problems. One original study examining the interaction between parenting and CU behavior on the development of conduct problems has been consistently referenced throughout the literature. Wootton et al. (1997) aimed to test whether positive (parent involvement and monitoring) and negative (harshness and inconsistent discipline) parent socialization practices interacted with CU behaviors to predict the development of conduct problems. Consistent with past literature, researchers hypothesized that conduct problems would develop independent of parenting in children with callous interpersonal
styles. Using a sample of elementary age children recruited from both an outpatient mental health clinic (N=136) as well as a community sample (N=30), Wootton et al. (1997) measured CU behaviors (i.e., lack of guilt, absence of empathy, emotional constrictedness) through both teacher- and parent-report questionnaires, in addition to gathering both parent- and child-report data on parent socialization practices. Conduct problems were assessed by a clinician-administered diagnostic interview. Results indicated that parenting was significantly associated with conduct problems only when child CU behavior was low.

Oxford et al. (2003) attempted to replicate and expand on the work done by Wootton et al. (1997). With the same research question in mind, researchers used similar methodology to the Wootton et al. (1997) study but extended the original study by examining CU behaviors as both a dichotomous and continuous variable using the CU traits scale of the APSD (Frick & Hare, 2001) in a more diverse sample as compared to the predominantly white male sample used by Wootton et al. (1997). Findings demonstrated that CU behaviors significantly moderated the relationship between ineffective parenting (defined as harsh, inconsistent, psychologically intrusive, permissive, and child-centered) and child conduct problems when CU behavior was treated as a continuous variable. Specifically, parenting was only significantly related to child conduct problems for children who exhibited low levels of CU behaviors.

Additional key studies have similarly examined the role of CU behaviors as a moderator in the relationship between parenting practices and conduct problems. Studies using a cross-sectional design have generally replicated Wootton et al. (1997) and Oxford et al. (2003) in reporting that parenting practices are associated with conduct problems when youth demonstrate low but not high levels of CU behavior (Falk & Lee, 2012; Hipwell et al., 2007). Aligning with these findings, Edens et al. (2008) explored the impact of parenting on conduct problems in the
presence of psychopathic features including interpersonal, affective, behavioral, and antisocial characteristics that are conceptually related to CU behaviors in a sample of adolescents (mean age= 15.61, SD= .93). It was reported that, consistent with literature focusing exclusively on CU behaviors, harsh parenting was more strongly associated with conduct problems in juveniles with low levels of psychopathic features.

In a partial replication of past findings, Pasalich et al. (2011) used a modest sample (N=95) of 4-12-year-old clinically referred boys with conduct disorder to determine the moderating effects of CU behaviors on the relationship between observed parenting and conduct problems. CU behaviors were measured by combining items taken from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and APSD (Frick & Hare, 2001). Coercive parenting, defined as a combination or harsh parenting and parental criticism, was coded from direct observations of family interactions using the Family Observation Schedule (FOS–VI; Pasalich & Dadds, 2009). Parental warmth was coded from five-minute speech samples using the Family Affective Attitude Rating Scale (FAARS; Bullock & Dishion, 2004) that asked parents to describe thoughts and feelings related to their relationship with their child. Analyses revealed that consistent with the researchers’ hypotheses, coercive parenting was more strongly positively associated with conduct problems in boys with low levels of CU behavior. Interestingly, parental warmth was more strongly negatively associated with conduct problems in boys with higher levels of CU behavior. These results suggest that parenting dimensions need to be examined individually when assessing their ability to influence children with CU tendencies. However, it is important to consider the potentially limited generalizability of these results, as all participants in the study were formally diagnosed with a disruptive behavior disorder and demonstrated conduct problem severity ranging from ‘moderate’ to ‘very severe’. The range of conduct problems and
CU behaviors within the sample may therefore be restricted, hindering the ability to generalize findings to other populations.

**Longitudinal Designs**

While the studies previously reviewed were cross-sectional designs, multiple studies have examined the moderating effects of CU behaviors on the relationship between parenting and conduct problems using a longitudinal approach. While results from cross-sectional studies on the whole have demonstrated that parenting is generally more strongly associated with child conduct problems in children demonstrating low levels of CU behaviors, literature using longitudinal designs has produced more mixed results. Kroneman et al. (2011) found that low parental warmth was associated with particularly severe conduct problems in girls with high versus low levels of CU behaviors. CU behaviors were measured using four items from both the parent- and teacher-report on the Antisocial Processes Screening Device (APSD; Frick & Hare, 2001), and harsh and warm parenting was assessed using a parent self-report questionnaire. The study followed a large racially diverse sample (N=1,233) of girls who were 7 to 8 years old at baseline and assessed them annually for five years. It is important to note that this interaction was no longer significant in the last wave of the study, when participants were 12-13 years old. This study highlights the importance of observing CU behavior and its moderating effects in youth over different developmental periods.

A study by Pardini et al. (2007) failed to find a significant interaction between parenting and CU behaviors on the development of conduct problems, which is also inconsistent with cross-sectional literature. Pardini et al. (2007) used a sample of fifth graders to assess how the interaction between CU behaviors, as measured using the CU traits scale of the APSD (Frick &
Hare, 2001), and both warm parenting and corporal punishment impacted the development of conduct problems over a one-year period. Consistent with the researcher’s hypotheses, children who were exposed to little or no corporal punishment and perceived their parent as warm displayed decreases in both CU behaviors and conduct problems across the one-year span. However, contrary to previous findings, there was no significant interaction between parenting practices and CU behaviors on the development of conduct problems. These findings suggest that parenting practices are important to the development of child conduct problems, and in this study, children did not differentially respond to parenting based on their level of CU behaviors.

A study by Hyde et al. (2013) similarly reported that the presence of deceitful-callous (DC) behaviors, conceptualized as behaviors that reflected deceitfulness, lack of guilt, and lack of affect, in children did not moderate the association between observed positive parenting and increases in child conduct problems in a sample of 731 preschoolers from ages 2 to 4. DC behaviors represent a subset of the broader CU construct, and items were chosen based on factor loadings in addition to similarity to items found on the CU scale of the APSD (Frick & Hare, 2001). Using a sample of 49 preschoolers and their parents, Kimonis et al. (2006) also found that CU behaviors, assessed using combined teacher and parent ratings from the CU subscale of a preschool modification of the APSD, and harsh parenting both independently predicted future teacher ratings of conduct problems. However, there was no evidence of an interaction.

A recent comprehensive study by Waller et al. (2015) that most closely mirrors the present investigation examined the moderating effects of CU behavior on associations between affective dimensions of parenting and conduct problems in a sample of toddlers using both cross-sectional and longitudinal models. Researchers assessed child conduct problems using the Eyberg Child Behavior Inventory (ECBI; Robinson & Eyberg, 1981) in a sample of 364 children
from ages 2 to 4. Harsh and warm parenting were measured through both an observational and self-report measure of parenting. CU behaviors were assessed using a previously validated measure of deceitful-callous behavior (Hyde et al., 2013) that included a total of 5 items, 4 from the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983) and 1 from the ECBI. Contradicting previous findings (e.g., Falk & Lee, 2012; Oxford et al., 2003; Wootton et al., 1997), analyses revealed that higher levels of harsh parenting were positively related to child conduct problems at both high and low levels of child CU behaviors in both the cross-sectional and longitudinal models. However, parental warmth was associated with fewer child conduct problems for children with high levels of CU behavior in the cross-sectional model.

In summary, a majority of cross-sectional studies have reported that child conduct problems are differentially impacted by positive and harsh parenting based on a child’s level of CU behaviors; a majority of these have found that parenting is only associated with conduct problems when CU is low (Edens et al., 2008; Falk & Lee, 2012; Hipwell et al., 2007; Oxford et al., 2003; Pasalich et al., 2011; Wootton et al., 1997;) although others have found stronger associations between parenting and CP when CU is high (Pasalich et al., 2011; Waller et al., 2015). Most longitudinal investigations have conversely indicated no differential responding to parenting based on child CU behaviors (see Kroneman et al., 2011 for an exception, finding that the link between parenting and CP was stronger when CU was high). Taken together, clarity regarding the role of CU behaviors when examining the impact of parenting on the development of child conduct problems has yet to be established. In looking at the influence of different parenting behaviors on child conduct problems in the context of CU behaviors, most studies reporting a stronger association between parenting and conduct problems when children had high levels of CU behavior specifically examined parental warmth (Kroneman et al., 2011; Pasalich et
al., 2011; Waller et al., 2015). However, more research is needed to determine how these relationships may differ when considering the impact of positive versus harsh parenting behaviors. In addition to assessing the influence of parenting on changes in child conduct problems and CU behaviors, it is also necessary to consider how child conduct problems and CU behaviors collectively impact parenting over time to gain a complete picture of the transactional processes that occur between parents and their children.

The Influence of Conduct Problems on Parenting

The effects of parenting on child conduct problems have been extensively covered in the literature. However, fewer studies focus on the bidirectional nature of this relationship. The reciprocal effects model asserts that parenting both impacts and is also impacted by child behavior (Huh et al., 2006; Lerner & Spanier, 1978). Aligning with this model, Patterson’s coercive cycles theory (Patterson, 1982) purports that a combination of reciprocal parent and child behaviors collectively contribute to increases in child behavior problems. Specifically, negative child behaviors evoke aversive reactions from their parent (e.g., explosive, irritable, and inconsistent discipline), which in turn further escalates children’s oppositional and aggressive behavior until parents ultimately give in to the child (Huh et al., 2006; Lyons-Ruth, 1996). These coercive interactions act as a negative reinforcer for problematic child behavior, such that children learn to associate their escalating misbehavior with a withdrawal of parent demands, which increases the likelihood that the behavior will re-occur (Caron et al., 2006). Bell and Chapman’s (1986) control system model additionally attempts to explain how parents and children regulate each other through reciprocal interactions. The model proposes that parents of deviant children may raise their tolerance level for negative child behaviors, resulting in
decreased attempts to address and control the behavior. This reduction of control consequently leads to further increases in child behavior problems. It is important to consider how these reciprocal relationships may evolve over the course of children’s development; however, it has been suggested that child behavior becomes more influential on parenting as children grow older and gain autonomy (Huh et al., 2006; Jang & Smith, 1997).

While the effects of child conduct problems on parent practices such as control and monitoring have been more thoroughly covered in the literature (e.g., Kerr & Stattin, 2003; Laird et al., 2003), fewer studies have chosen to examine how child conduct problems may be associated with changes in parental harshness and warmth. A longitudinal study by Hipwell et al. (2008) examined the relationship between child conduct problems and changes in parental punishment and warmth in a large sample of racially diverse school age girls (N = 2,451). It was reported that in addition to parenting behaviors uniquely predicting increases in conduct problems, girls’ conduct problems significantly predicted increases in harsh punishment and decreases in parental warmth over a six-year period.

An additional study supporting the existence of this bidirectional relationship in a large sample of boys ages 6-16 similarly demonstrated that parent and teacher reported child conduct problems were predictive of increases in maladaptive parenting, including physical punishment, over time (Pardini et al., 2008). In this study, the influence of conduct problems on parenting was of a similar magnitude as the association between parenting and child conduct problems. Researchers also found that an age effect was present in the reciprocal relationship between parenting and child conduct problems. Specifically, parents exhibited relatively high levels of positive reinforcement prior to age 9 regardless of their child’s conduct problems. However, by early adolescence, child conduct problems were predictive of decreases in parental positive
reinforcement, demonstrating the importance of assessing these relationships from a developmental perspective and tracking changes over time.

These findings regarding the influence of conduct problems on parenting fall in line with research on attention deficit hyperactivity disorder (ADHD), which has been shown to be highly comorbid with conduct problems in children (Waschbusch, 2002). Specifically, it has been estimated that that 30-50% of children with ADHD in community samples and 50% of children with ADHD in clinically referred samples demonstrate additional externalizing disorders such as ODD and CD (Faraone & Kunwar, 2007). Empirical evidence has shown that parents of children with ADHD experience higher levels of stress than parents of children without ADHD, and that co-occurring conduct problems in children with ADHD further increase parenting stress (Theule et al., 2013). This increased stress may in turn contribute to more negative parenting behaviors (Deater-Deckard & Scarr, 1996; Huth-Bocks & Hughes, 2008). Although there are exceptions (Besemer et al., 2016; Vuchinich et al., 1992), the majority of studies investigating bidirectional effects between child conduct problems and parenting behaviors have provided evidence that child behavior influences parenting.

The Influence of CU Behaviors on Parenting

Along with research exploring the influence of child conduct problems on parenting, the unique influence of CU behaviors on parenting practices has also been examined. Hawes et al. (2011) examined bidirectional relationships between CU behaviors, conduct problems, and parenting practices in a community sample of children ages 3 to 10 that was inclusive of both boys and girls (N=1,008). A linear regression revealed that CU behaviors, measured using a combination of the CU subscale of the Antisocial Process Screening Device (APSD; Frick &
Hare, 2001) and items from the prosocial scale of the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), uniquely accounted for changes in parenting practices over time, independent of associations with conduct problems. Specifically, CU behaviors were associated with increased levels of inconsistent discipline, reduced levels of parental involvement, and increased levels of corporal punishment in older children. Waller et al. (2014) found similar effects with positive parenting and reported that CU behaviors assessed using a measure of deceitful-callous behavior (Hyde et al., 2013) were associated with decreases in observed parental warmth when controlling for child conduct problems in a sample of preschoolers. An additional recent investigation by Trentacosta et al. (2019) with a genetically-informed perspective examined the interplay between harsh parenting, CU behaviors, and inherited risk for CU in an adopted preschool sample. Researchers found support for bidirectional associations between child CU behaviors and harsh parenting across three time points when children were 18 to 54 months of age that were moderated by genetic risk. Specifically, these associations were significant among children with high but not low heritable risk for CU.

The findings of these studies align with Dadds and Salmon’s punishment insensitivity model (Dadds & Salmon, 2003), which states that antisocial behavior accounts for unique effects on parenting among children with conduct problems (Hawes et al., 2011). Although few studies have directly examined these relationships, this research suggests that child evocative effects on parenting will be stronger in children with high levels of CU behavior due to punishment-insensitive behavior patterns commonly found among children exhibiting CU behaviors (Hawes & Dadds, 2005). It is thought that parent’s inability to shape their child’s behavior through traditional punishment techniques will result in decreases in positive parenting and increases in harsh parenting over time. This rationale is consistent with literature stating that parenting a child
who is highly insensitive to punishment may lead parents to increase the amplitude of punishments in hope that they may become effective (Hawes et al., 2011; Vitale et al., 2005). Taken together, this evidence describing individual contributions of CU behaviors on parenting in combination with previously discussed literature documenting the effects of child conduct problems on parenting supports the possibility of an interaction between these child behaviors on parenting outcomes.

The Interaction Between CU Behaviors and Conduct Problems on Parenting

While most past research has examined how CU behaviors moderate the association between parenting and child conduct problem outcomes, few studies have explored how CU behaviors and conduct problems interact to influence parenting. One study by Muñoz et al. (2011) found support for a child evocative effect on parental monitoring that was moderated by CU behaviors in a sample of adolescents (M= 14.5, SD= 1.8). Specifically, conduct problems predicted a steeper reduction in parental monitoring over the course of four years when accompanied by high levels of CU behavior, measured by the CU dimension of the APSD (Frick & Hare, 2001). Although this study did not address the parenting dimensions of harshness and warmth, it offers evidence that CU behavior has the potential to moderate associations between conduct problems and parent behavior.

Literature also exists suggesting that CU behaviors moderate the relationship between conduct problems and parent stress, which has been shown to consequently influence parenting practices. Research has shown that parents of children ages 6 to 12 with high levels of interpersonal callousness report higher levels of stress than parents with children low on these behaviors (Fite et al., 2008). Examining this relationship using a longitudinal cross-lagged
model, Fanti and Centifanti (2014) reported that conduct problems were more strongly associated with parental stress in parents with children exhibiting high levels of CU behavior, as measured by the 24-item parent-report Inventory of Callous-Unemotional Traits (ICU; Frick, 2003). While this does not evidence a direct link between CU behavior and parenting practices, parental stress has been shown to predict increases in harsh discipline (Anthony et al., 2005; Connor-Smith & Flachsbart, 2007). In sum, while current research examining how child conduct problems and CU behaviors collectively influence parenting is scarce, past studies have provided initial support for the existence of an interaction between these child characteristics that may impact parenting outcomes. However, further investigation is needed to provide a clear picture of the transactional processes that occur involving conduct problems, CU behaviors, and specific parenting behaviors over time.

Summary of Current Empirical Findings

A vast majority of past research has demonstrated clear links between both positive and harsh parenting and the development of child conduct problems (Campbell et al., 2000; Chronis et al., 2007). Additional studies have similarly evidenced that parenting is an important contributing factor to child CU behaviors (Muratori et al., 2016: Waller et al., 2014). While some research has suggested a significant interaction between parenting and CU behaviors in predicting child conduct problems (Falk & Lee, 2012; Pasalich et al., 2011), findings regarding the moderating effect of CU behaviors have been generally inconsistent. In examining bidirectional effects, research has largely supported that child conduct problems and CU behaviors drive changes in both positive and harsh parenting (Hawes et al., 2011; Pardini et al., 2008). As notably fewer studies have focused on how CU behaviors may moderate the
relationship between child conduct problems and parenting outcomes, the extent to which CU behaviors interact with conduct problems to predict positive and harsh parenting has yet to be established. As such, the present study aims to expand on these findings by exploring whether CU behaviors moderate the reciprocal relationships between conduct problems and both positive and harsh parenting outcomes over time.

The Present Study

The proposed study aims to assess the reciprocal relationship between parenting practices (positive and harsh) and child conduct problems and determine if these associations are moderated by CU behavior. Gaining a better understanding of how the development of conduct problems in children is influenced by the presence of CU behavior early on is important due to evidence that the subgroup of youth with higher CU behavior present a higher risk of exhibiting continued antisocial behavior later in life (Frick et al., 2014). Attaining a more complete understanding of these associations may be helpful in informing interventions to offset the severe and persistent behavioral trajectory that has been previously thought to be stable in individuals displaying CU behaviors (da Silva, Rijo, & Salekin, 2013; Hawes & Dadds, 2007). In addition, information gained about how CU behaviors interact with conduct problems to drive changes in parenting behavior may be useful for informing parent-based behavioral interventions, particularly if findings suggest that certain aspects of parenting are more strongly linked with conduct problems for children with higher levels of CU behavior. This information would allow interventions to be modified to address the most salient parenting behaviors driving increases in conduct problems for parents of children demonstrating CU behaviors.
The present study aims to address current gaps in the literature by examining the associations between child conduct problems, CU behaviors, and parenting behaviors in a cross lag model that covers multiple developmental periods between ages 3 and 9. While past research has commonly examined CU behaviors in clinically referred male populations, the sample used in this study was inclusive of males and females and more representative of the general population. The current study will expand on previous research by exploring bidirectional relationships between child conduct problems and parenting practices and will examine whether each association is moderated by CU behavior. To address concerns expressed in previous studies about the reliability of self-report parenting data, the present study will include observational measures of parenting in addition to parent report measures of child conduct problems and CU behaviors. The following hypotheses and research questions will be examined:

H1: Higher child conduct problems will be significantly associated with higher harsh parenting over time. More specifically, higher CP at age 3 will be associated with higher harsh parenting at age 5 and higher CP at age 5 will be associated with higher harsh parenting at age 9.

H2: Higher child conduct problems will be associated with lower positive parenting over time. More specifically, higher CP at age 3 will be associated with lower positive parenting at age 5 and higher CP at age 5 will be associated with lower positive parenting at age 9.

H3: Higher positive parenting will be significantly associated with lower conduct problems across time points. More specifically, higher positive parenting at age 3 will be associated with lower CP at age 5 and higher positive parenting at age 5 will be associated with lower CP at age 9.
H4: Higher harsh parenting will be significantly associated with higher conduct problems across time points. More specifically, higher harsh parenting at age 3 will be associated with higher CP at age 5 and higher harsh parenting at age 5 will be associated with higher CP at age 9.

H5: The association between conduct problems and harsh parenting will be moderated by CU behavior, such that links will be stronger for parents of children with higher levels of CU behavior. More specifically, the association between CP at age 3 and harsh parenting at age 5 as well as the association between CP at age 5 and harsh parenting at age 9 will be stronger for parents of children with higher CU behaviors.

H6: The association between conduct problems and positive parenting will be moderated by CU behavior, such that the associations will be stronger for parents of children with higher levels of CU behavior. More specifically, the association between CP at age 3 and lower positive parenting at age 5 as well as the relationship between CP at age 5 and lower positive parenting at age 9 will be stronger for parents of children with higher CU behaviors.

RQ1: Will positive parenting be more strongly associated with conduct problems in children with lower or higher levels of CU behavior?

RQ2: Will harsh parenting be more strongly associated with conduct problems in children with lower or higher levels of CU behavior?

Although not a primary research question of this study, it is hypothesized that higher levels of harsh parenting will be associated with lower levels of positive parenting longitudinally and concurrently.
CHAPTER 2

METHOD

Participants

The proposed study used data collected as part of the Fragile Families and Child Wellbeing Study (FFCWS), which is a longitudinal birth cohort study comprised of 4,898 families. Each family had a child born between 1998 and 2000 in 20 different U.S cities with 200,000 or more inhabitants (Reichman et al., 2001). Single parent families were oversampled, and roughly 75% of children in the study were born to unmarried parents. Hospitals used to recruit participants in the sample were chosen to be representative of nonmarital births in each city. Nonmarried families are considered “fragile” due to a greater risk for disintegration and a higher chance of living in poverty as compared to families in which parents are married (Reichman et al., 2001). At baseline, mothers’ reports of their race/ethnicity were as follows: 17% non-Hispanic white, 44% non-Hispanic Black, 35% Hispanic, and 4% other. Data were collected from participating families at the birth of the focal child as well as when children were one, three, five, nine, and fifteen years of age. The present study will focus on data collected through age 9. Attrition resulted in a decrease in sample size throughout the course of the study, with 4,270 participating families at year one, 4,140 at year three, 4,055 at year five, and 3,515 at year nine.
Power Analysis

The recommended sample size for the study was determined using a-priori sample size calculation software for structural equation models (Soper, 2009). The sample size estimate is calculated based on the anticipated effect size, desired statistical power level, number of latent and observed variables, and the desired probability level. The recommended minimum sample size is 403 assuming a small to medium effect size, 80% power, and a probability level of $p=.05$. There are 4,898 participants in the Fragile Families sample, which is adequate for the present analysis.

Procedure

Participant parents were recruited in the hospital shortly after the birth of their child. Parental consent was obtained that allowed access to parent and child medical records, and parents who consented completed an initial interview. Subsequent interviews with mothers, fathers, and/or primary caregivers at ages one, three, five, and nine were conducted via telephone. While most interviews were completed by the mother of each child, interviews were conducted with other primary caregivers when the child lived with a different caregiver more than half of the time. These interviews aimed to collect information on family characteristics (e.g., the number of people living in the household), relationships (e.g., marital status, current partners, cohabitation), parenting behavior (e.g., parent involvement in the child’s life, use of discipline), demographic characteristics (e.g., race/ethnicity, education), parent and child physical health (e.g., height, weight, reported injuries), parent and child mental health (e.g., depression and anxiety symptoms, history of mental illness, parent stress) economic and
employment status (e.g., family income, government assistance, current employment), child behavior (e.g., disobedience, hyperactivity), and neighborhood characteristics (e.g., safety of neighborhood).

In addition to parent reported data, information was also collected from the children and their teachers. Child self-report data were collected at year nine and included information regarding relationships with parents (e.g., perceived closeness, amount of time spent with parent), school (e.g., bullying, feeling happy at school), early delinquency (e.g., destroying property, drug use), and behavior (e.g., difficulty completing tasks, frequency of feeling sad or worried). Teacher surveys were conducted at years five and nine via telephone and gathered information including classroom behavior (e.g., following instructions, cooperating with peers) and parent involvement (e.g., parents attended parent-teacher conferences).

In-home assessments of the children and their home environment were conducted by trained examiners at ages three, five, and nine. At each home visit, parents provided informed consent and children provided assent. Cognitive ability of the child and cognitive ability of the parent were assessed. Health information was also gathered at these visits, including child weight and height. The home environment was assessed both externally and internally. Examiners reported on external characteristics of the home (e.g., broken glass, graffiti, garbage) as well as the state of the interior of the home (e.g., exposed wire, peeling paint, overall cleanliness). Additionally, parental warmth and harshness were measured during the home visit through a coded observation of different parent behaviors (e.g., helping the child, showing the child affection, shouting at the child).
Assessments and Measures

Demographic Questionnaire

Parents completed a demographic questionnaire at each wave of the study that included information such as participants’ race, ethnicity, marital status, income, employment, household characteristics, and education (Appendices A and B). Information on these variables was collected for both the mother and father of the child when possible.

Positive and Harsh Parenting

Positive and harsh parenting were measured using items from the Home Observation for the Measurement of the Environment Inventory (HOME; Caldwell & Bradley, 1984) at ages 3, 5, and 9. Positive parenting was measured using the warmth subscale of the HOME, which includes items that assess aspects of parenting such as responsivity, sensitive caregiving, and investment in the child. The warmth subscale includes 7 items at year 3 (i.e., parent spontaneously vocalized to child twice, parent responded verbally to child’s vocalizations, parent told child the name of an object or person during visit, parent spontaneously praised child at least twice, parents voice conveys positive feelings toward child, parent caressed or kissed child at least once, parent responds positively to praise of child; Appendix C). Year 5 includes 9 items (i.e., parent talks to child twice during visit, parent verbally answers child’s questions or requests, parent encourages child to contribute to conversation during visit, parent helps child demonstrate some achievement or mentions a particular skill, strength, or achievement during visit, parent spontaneously praises child twice, parent uses some term of endearment or some diminutive for child’s name at least twice, parents voice conveys positive feelings when speaking
of or to child, parent caressed or kissed child at least once, parent responds positively to praise of child; Appendix C). Year 9 includes 8 items, including all items asked in year 5 with the exception of “Parent spontaneously praised child at least twice” (Appendix C). Each item was scored during the home observation as either a 1 (yes) or a 2 (no) based on what was observed at the home visit, and item ratings were summed for each time point to form a composite score. Higher scores indicate a higher level of positive parenting. Within the Fragile Families sample, the reliability of the scales is, $\alpha = .77, .81,$ and $.72$ at years 3, 5, and 9 respectively.

Harsh parenting was measured using the HOME Inventory at ages 3, 5 and 9. Four items from the HOME were summed to create a harsh parenting measure at each time point. Examiners scored each of the following items as either a 1 (yes) or 2 (no) based on what was observed during the visit: parent shouts at child, parent expresses annoyance/hostility toward child, parent slaps/spanks child, parent scolds or criticizes child ($\alpha = .73, .72,$ and $.59$ at years 3, 5, and 9 respectively; Appendix D). Higher scores indicate a higher level of harsh parenting. The HOME has demonstrated strong psychometric properties, with high levels of interrater reliability and good internal consistency (Elardo & Bradley, 1981). Validation of the HOME using a low-income diverse sample of infants supported the factor structure of the measure and indicated good construct validity (Mundfrom et al., 1993).

**Child Conduct Problems**

Conduct problems were assessed using items from the Child Behavior Checklist (CBCL; Achenbach & Edelbrock, 1983), which is widely used rating scale that assesses a range of emotional and behavioral problems in children. The CBCL was completed by the child's primary caregiver (96% mothers) at ages 3, 5, and 9. Items were drawn from the age 2-3 (CBCL 2/3;
Achenbach, 1992), age 4-18 (CBCL/4-18; Achenbach & Rescorla, 2000), and age 6-18 (CBCL/6-18; Achenbach & Rescorla, 2001) versions of the CBCL to assess conduct problems at ages 3, 5, and 9, respectively. Specifically, the externalizing subscale of the CBCL was used to measure child conduct problems. Sample items from the externalizing subscale include “He/She is defiant” and “He/She destroys things belonging to other children.” The CBCL has caregivers report on child behavior using a likert scale ranging from 0 (not true) to 2 (very often or often true). The year 3 version of the measure contains 22 items related to externalizing behavior. However, three items (i.e., punishment doesn’t change his/her behavior, child is selfish/won’t share, child is cruel to animals) were used as part of the CU behavior measure and were therefore removed from the conduct problems measure to avoid content overlap between the two constructs (greater detail on this approach is provided in what follows). This resulted in 19 items assessing conduct problems at year 3. The year 5 and year 9 versions of the CBCL contain 28 and 35 items respectively; however, one item (i.e., child doesn’t seem to feel guilty after misbehaving) was also omitted from the conduct problems measure at these time points to avoid content overlap. Items were summed at each age to create a composite conduct problems score. The CBCL has demonstrated consistently high levels of internal consistency and test-retest reliability in addition to good construct, discriminant, and convergent validity (Achenbach & Rescorla, 2001). Within this sample, α = .87, .85, and .91 at years 3, 5, and 9 respectively.

**Callous-Unemotional Behavior**

Callous-Unemotional (CU) behavior was assessed at age 3 through select items from the primary caregiver CBCL that tap into behavioral characteristics representative of the construct of CU behavior including a lack of guilt, insensitivity to punishment, and a general lack of affect, in
line with previous studies assessing CU in younger samples that did not include a measure that specifically assesses CU (e.g., Hyde et al., 2013; Waller et al., 2012, Waller et al., 2014; Waller et al., 2015; Willoughby et al., 2011). The following 6 items tapping CU behaviors were drawn from the CBCL: “child doesn’t seem guilty after misbehaving,” “punishment doesn’t change his/her behavior,” “child is selfish/wont share,” “child is cruel to animals,” “he/she seems unresponsive to affection,” and “he/she shows little affection towards people.” Table 1 presents correlations among these variables.

Table 1
Bivariate Correlations of Callous-Unemotional Items

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Doesn’t feel guilty after misbehaving</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Punishment doesn’t change behavior</td>
<td>.33***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Child is selfish</td>
<td>.19***</td>
<td>.22***</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Unresponsive to affection</td>
<td>.15***</td>
<td>.11***</td>
<td>.16***</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Shows little affection towards others</td>
<td>.14***</td>
<td>.15***</td>
<td>.14***</td>
<td>.23***</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>6. Cruelty towards animals</td>
<td>.13***</td>
<td>.13***</td>
<td>.13***</td>
<td>.13***</td>
<td>.14***</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note. * p < .05, ** p < .01, *** p < .001

Selected items were chosen based on similarity to items from validated measures of CU behavior, including the Inventory of Callous-Unemotional Traits (ICU; Frick, 2003) and the CU subscale of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001) as well as past studies that constructed CU measures using the CBCL (Hyde et al., 2013; Waller et al., 2015).

As a preliminary step to verify that an adequate CU construct could be constructed from this dataset, a confirmatory factor analysis was conducted to determine how well each observed
variable loaded on to the latent CU construct. If an observed variable has a high factor loading and adequate model fit, it will indicate that the variable is representative of the latent construct. Results suggested that the “cruelty to animals” item should be omitted, as the factor loading was small (0.28). All other items loaded above 0.30 (loadings ranged from 0.32 to 0.54) and were significant; model fit was adequate ($\chi^2 (df = 5) = 105.773, p < .01; \text{RMSEA} = 0.079; \text{SRMR} = 0.035; \text{CFI} = 0.90$). To confirm that the constructed measure of CU behavior tapped a distinct construct from the broader measure of conduct problems, additional CFAs were run. All items from the CU measure as well as all items from the conduct problems measure were loaded onto one factor (conduct problems) and then onto two factors (CU behaviors, conduct problems) and their fits were compared. The 2-factor model fit the data significantly better ($\chi^2_{\text{diff}} = 48.27, df = 1, p < .01$), confirming that the items in the model are tapping two distinct constructs (e.g., CU behaviors and conduct problems).

A notable limitation of the present study is the inability to measure CU behavior at a later time point; however, justification for using an early measure of CU behavior at a later time point is built on the idea that these traits are relatively stable over time (Willoughby et al., 2011). A study by Ezpeleta et al. (2015) specifically demonstrated that stability of CU behavior between ages 3 and 5 was moderate, but significant. In addition, preliminary analyses did not support the construction of a latent CU construct from items collected at year 5. It was determined that the available year 5 items associated with CU behavior (i.e., items used in previous studies to assess CU when an explicit measure of CU was not available) were not sufficient to accurately assess CU. Reasoning behind this decision included that there were only three items available at year 5, one item only included a yes/no response, and the items were not all significantly correlated. Further, the three items failed to significantly load on to the latent factor.
Covariates

Covariates in the present study included several demographic variables measured on the demographics questionnaire. The decision to include these variables in the analysis is supported by research suggesting that a variety of demographic factors are significantly related to child behavioral outcomes and parenting (Alavi et al., 2017; Raikes et al., 2006). Covariates included in the analyses are as follows: race/ethnicity (using dummy codes for non-Hispanic White, non-Hispanic Black, Hispanic, and other), maternal marital/cohabitation status (0=not married or cohabitating, 1=married/cohabitating), child sex (0=male, 1=female), mother’s age, and household income. While the Fragile Families dataset does not contain a measure of CU behavior for parents, it is important to control for a similar construct, as a genetic link for CU behavior has been established (Viding & McCrory, 2012). In an attempt to account for heritable CU influences, a measure of parental antisocial behavior was additionally included as a covariate. As similarly conceptualized in a previous study utilizing the Fragile Families sample (DeKlyen et al., 2006), parent antisocial behavior was assessed using a combination of mother and father incarceration history (i.e., has the mother or father spent time in a correctional institution), mother’s report of experiencing domestic violence by the child’s father before or during her pregnancy (e.g., hit or slapped; hit with a fist or object; cut or bruised), and father’s report of experiencing domestic violence by the child’s mother (e.g., hit or slapped; hit with a fist or object; cut or bruised). Parent incarceration was measured by summing responses to the 2 dichotomous items (0= No, 1=Yes) asking about any previous incarceration. Parent perpetration of domestic violence was similarly assessed by summing responses to the 3 domestic violence items reported on by each parent.
Analytic Approach

Primary Analysis

The present study aimed to examine the reciprocal relationships between parenting and conduct problems and the moderating role of CU behavior across early to middle childhood. The model was examined using a structural equation model with the R statistical software program (R Core Team, 2013). A cross lag panel model was run including measures of positive parenting, harsh parenting, and child conduct problems across the ages of 3, 5, and 9. Measures occurring at the same time point were correlated. In addition to examining the reciprocal relationship between parenting and conduct problems across time points, links between parenting across each age and conduct problems across each age were measured. Specifically, synchronous associations (i.e., correlations between different variables measured at the same time), stability effects (i.e., correlations between the same variable measured at different time points) and cross-lagged effects (i.e., the prediction of variables by other temporally preceding variables) were analyzed.

Initially, a cross lag model was examined independent of the moderator (CU). The first model included measures of positive parenting, harsh parenting, and conduct problems at the three time points (Hypotheses 1, 2, 3, and 4; Figure 1). Positive and harsh parenting were examined within the same model to examine the unique variance contributed by each predictor on the outcome variable in the context of the other predictor. Next, a model was run testing the moderating role of CU behaviors, modeled as a latent construct, in the associations between positive parenting (RQ1) as well as harsh parenting (RQ2) and child conduct problem outcomes (Figure 2). Bidirectional relationships were also examined to test whether CU behaviors moderate the effects of child conduct problems on harsh parenting (Hypothesis 5) and positive
parenting (Hypothesis 6) outcomes. In the moderation model, the influence of CU behavior was examined between age 3 and age 5 as well as between age 5 and age 9. To assess the moderating influence of CU behavior, interaction terms were created by multiplying each predictor (i.e., positive parenting at ages 3 and 5, harsh parenting at ages 3 and 5, and conduct problems at ages 3 and 5) by the moderating variable (i.e., CU behavior at age 3), resulting in 6 interaction terms. In cases where an interaction term was significantly associated with the specified outcome variable (i.e., conduct problems, positive and harsh parenting), the moderation was probed through examining the significance of simple slopes and creating a visual representation of the interaction (e.g., a graph) to determine the nature of the moderation.

Figure 1. Path diagram for Model 1.
Figure 2. Path diagram for Model 2.
CHAPTER 3

RESULTS

Missing Data

Missing data analyses revealed a significant amount of missing data across variables, as is expected due to the longitudinal nature of the Fragile Families sample. Little’s MCAR test was conducted to examine the randomness of the missingness. Little’s test was significant ($\chi^2 = 11327.66, p<.001$) suggesting that the data were not missing completely at random. Logistic regressions were then conducted to examine whether or not missingness for each variable was associated with any other included variables. Analyses indicated that missingness among variables was predicted by several other included variables (e.g., mother marital status, mother age, mother race), suggesting that the data can be considered missing at random (MAR). Multiple demographic variables identified as predictors of missingness were included in both analytic models as control variables. Full information maximum likelihood (FIML) was used to account for missing data, as FIML has been shown to be particularly effective in addressing missingness in models including latent variables (Carter, 2006).

Preliminary Analyses

Data screening revealed that several variables (e.g., Year 9 conduct problems, harsh parenting at years 3, 5, and 9) demonstrated significant skew (i.e., outside of the range -2 to 2). On account of this nonnormality, maximum likelihood estimation with robust standard errors
(MLR) was utilized in order to produce standard errors and chi-square that are robust against nonnormality. Several outliers were identified for multiple continuous variables; however, these outliers were considered reasonable and representative due to typical patterns observed when examining pathology within a community sample. Descriptive statistics and bivariate correlations for all included continuous variables appear in Tables 2 and 3. Table 4 consists of frequencies of dichotomous variables.

Table 2
Descriptive Statistics of Continuous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M (SD)</th>
<th>Range</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline Poverty Ratio</td>
<td>3,830</td>
<td>2.76 (2.73)</td>
<td>0-15.80</td>
<td>1.89</td>
<td>3.69</td>
</tr>
<tr>
<td>Mother Age</td>
<td>4,894</td>
<td>25.28 (6.04)</td>
<td>15-43</td>
<td>0.73</td>
<td>-0.22</td>
</tr>
<tr>
<td>Parent Incarceration History</td>
<td>2,937</td>
<td>0.31 (0.52)</td>
<td>0-2</td>
<td>1.41</td>
<td>1.04</td>
</tr>
<tr>
<td>Parent Domestic Violence History</td>
<td>4,616</td>
<td>0.18 (0.50)</td>
<td>0-5</td>
<td>3.42</td>
<td>14.17</td>
</tr>
<tr>
<td>Year 3 Positive Parenting</td>
<td>2,084</td>
<td>5.97 (1.57)</td>
<td>0-7</td>
<td>-1.76</td>
<td>2.57</td>
</tr>
<tr>
<td>Year 3 Harsh Parenting</td>
<td>3,114</td>
<td>0.35 (0.83)</td>
<td>0-4</td>
<td>2.47</td>
<td>5.28</td>
</tr>
<tr>
<td>Year 3 Conduct Problems</td>
<td>2,727</td>
<td>12.06 (6.94)</td>
<td>0-38</td>
<td>0.67</td>
<td>0.14</td>
</tr>
<tr>
<td>Year 5 Positive Parenting</td>
<td>1,885</td>
<td>6.91 (2.29)</td>
<td>0-9</td>
<td>-1.02</td>
<td>0.08</td>
</tr>
<tr>
<td>Year 5 Harsh Parenting</td>
<td>2,089</td>
<td>0.40 (0.87)</td>
<td>0-4</td>
<td>2.23</td>
<td>3.97</td>
</tr>
<tr>
<td>Year 5 Conduct Problems</td>
<td>2,681</td>
<td>11.29 (6.72)</td>
<td>0-41</td>
<td>0.90</td>
<td>0.86</td>
</tr>
<tr>
<td>Year 9 Positive Parenting</td>
<td>2,828</td>
<td>5.69 (1.92)</td>
<td>0-8</td>
<td>-0.72</td>
<td>-0.27</td>
</tr>
<tr>
<td>Year 9 Harsh Parenting</td>
<td>3,374</td>
<td>0.12 (0.46)</td>
<td>0-4</td>
<td>4.43</td>
<td>21.59</td>
</tr>
<tr>
<td>Year 9 Conduct Problems</td>
<td>3,117</td>
<td>5.98 (6.68)</td>
<td>0-68</td>
<td>2.68</td>
<td>13.72</td>
</tr>
</tbody>
</table>
Table 3
Bivariate Correlations Among Continuous Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Baseline Poverty Ratio</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Year 3 Positive Parenting</td>
<td>.15**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Year 3 Harsh Parenting</td>
<td>-</td>
<td>-.34**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Year 3 Conduct Problems</td>
<td>-.12**</td>
<td>-.14**</td>
<td>.22**</td>
<td>--</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Year 5 Positive Parenting</td>
<td>.16**</td>
<td>.20**</td>
<td>-.17**</td>
<td>-.11**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Year 5 Harsh Parenting</td>
<td>-.11**</td>
<td>-.08**</td>
<td>.14**</td>
<td>.11**</td>
<td>-.29**</td>
<td>--</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7. Year 5 Conduct Problems</td>
<td>-.11**</td>
<td>-.10**</td>
<td>.13**</td>
<td>.56**</td>
<td>-.13**</td>
<td>.21**</td>
<td>--</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8. Year 9 Positive Parenting</td>
<td>.09**</td>
<td>.07*</td>
<td>-.08**</td>
<td>-.06**</td>
<td>.14**</td>
<td>-.06*</td>
<td>-.03</td>
<td>--</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>9. Year 9 Harsh Parenting</td>
<td>-.06**</td>
<td>-.05</td>
<td>.11**</td>
<td>.11**</td>
<td>-.06**</td>
<td>.16**</td>
<td>.15**</td>
<td>-.06**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Year 9 Conduct Problems</td>
<td>-.09**</td>
<td>-.07*</td>
<td>.10**</td>
<td>.37**</td>
<td>-.17**</td>
<td>.16**</td>
<td>.45**</td>
<td>-.06**</td>
<td>.16**</td>
<td>--</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Mother Age</td>
<td>.32**</td>
<td>.13**</td>
<td>-.09**</td>
<td>-.12**</td>
<td>.14**</td>
<td>-.08**</td>
<td>-.14**</td>
<td>.09**</td>
<td>-.03</td>
<td>-.09**</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Parent Incarceration</td>
<td>-.22**</td>
<td>-.08**</td>
<td>.10**</td>
<td>.17**</td>
<td>-.08**</td>
<td>.07**</td>
<td>.18**</td>
<td>-.02</td>
<td>.07**</td>
<td>.11**</td>
<td>-.19**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>13. Parent Domestic Violence</td>
<td>-.10**</td>
<td>-.02</td>
<td>.05*</td>
<td>.07**</td>
<td>-.03</td>
<td>.03</td>
<td>.07**</td>
<td>-.03</td>
<td>.07**</td>
<td>.07**</td>
<td>-.07**</td>
<td>.22**</td>
<td>--</td>
</tr>
</tbody>
</table>

Note: * p < .05, ** p < .01
Table 4
Frequencies for Dichotomous Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child Male</td>
<td>2,256</td>
<td>52.2</td>
</tr>
<tr>
<td>Baseline Married/Cohabitating</td>
<td>2,936</td>
<td>61.3</td>
</tr>
<tr>
<td>Mother Baseline Education Less than HS Diploma</td>
<td>1,699</td>
<td>34.7</td>
</tr>
<tr>
<td>Mother African American</td>
<td>2,326</td>
<td>47.6</td>
</tr>
<tr>
<td>Mother European American</td>
<td>1,030</td>
<td>21.1</td>
</tr>
<tr>
<td>Mother Hispanic</td>
<td>1,336</td>
<td>27.3</td>
</tr>
</tbody>
</table>

Primary Analyses

Structural equation modeling was utilized using the statistical package lavaan in R (Rosseel, 2012) to examine two models that test the six hypotheses and two research questions of the present study.

Measurement Model

A confirmatory factor analysis (CFA) was conducted to examine whether the observed CU variables loaded onto the latent CU construct. As previously described, the “cruelty to animals” item was omitted due to preliminary analyses indicating a low factor loading. All included items loaded above 0.30 and were significant (Table 5). The chi-square statistic was significant and model fit was adequate ($\chi^2 (df = 4) = 28.617$, $p < .001$; RMSEA = 0.044; SRMR = 0.018; CFI = 0.974).
Table 5

Standardized Loadings for Latent CU Variable

<table>
<thead>
<tr>
<th>Item</th>
<th>Year 3 Child CU Behavior</th>
<th>( \lambda )</th>
<th>Std. Error</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child doesn't seem to feel guilty after misbehaving</td>
<td></td>
<td>.66</td>
<td>(.07)</td>
<td>***</td>
</tr>
<tr>
<td>Punishment doesn't change his/her behavior</td>
<td></td>
<td>.69</td>
<td>(.09)</td>
<td>***</td>
</tr>
<tr>
<td>Child is selfish or won't share</td>
<td></td>
<td>.51</td>
<td>(.08)</td>
<td>***</td>
</tr>
<tr>
<td>Child seems unresponsive to affection</td>
<td></td>
<td>.31</td>
<td>(.04)</td>
<td>***</td>
</tr>
<tr>
<td>Child shows little affection toward people</td>
<td></td>
<td>.35</td>
<td>(.06)</td>
<td>***</td>
</tr>
</tbody>
</table>

Note. ***\(p<.001\), **\(p<.01\), *\(p<.05\)

Model 1

The first cross-lagged model examined reciprocal associations between child conduct problems, positive parenting, and harsh parenting from ages 3 to 5 as well as ages 5 to 9. Certain correlations among covariates (e.g., mother marital status and mother age, parent perpetration of domestic violence and parent incarceration history) were estimated in the model due to preliminary evidence of significant associations from bivariate correlations. The model demonstrated adequate fit: \( \chi^2 (df = 62) = 451.59, p<.001 \), RMSEA = .036, CFI = .973, TLI = .926, and SRMR = .045. Significant pathways between all primary variables and corresponding standardized path coefficients in Model 1 are depicted in Figures 3 and 4.

Hypotheses 1 and 2

Model 1 explored whether higher levels of child conduct problems were associated with higher harsh parenting (hypothesis 1) as well as lower positive parenting (hypothesis 2) across ages 3 to 9. Analyses revealed a positive association between conduct problems at year 3 and
Figure 3. Synchronous and stability effects.
Figure 4. Model 1 cross-lagged effects examining hypotheses 1, 2, 3, and 4.
harsh parenting at year 5 (b=.066, se=.003, p=.006) as well as between conduct problems at year 5 and harsh parenting at year 9 (b=.103, se=.001, p<.001). No significant associations were observed between conduct problems and positive parenting from ages 3 to 5 (b=-.035, se=.008, p=.162) or ages 5 to 9 (b=.002, se=.007, p=.933).

**Hypotheses 3 and 4**

Model 1 further assessed whether higher positive parenting was associated with lower levels of conduct problems from ages 3 to 5 and ages 5 to 9 (hypothesis 3). While positive parenting at year 3 was not related to conduct problems at year 5 (b=-.010, se=.103, p=.681), higher positive parenting at age 5 was associated with lower levels of conduct problems at age 9 (b=-.096, se=.070, p<.001). A similar pattern was observed when examining the association between harsh parenting and conduct problems from ages 3 to 5 and ages 5 to 9 (hypothesis 4). No association was observed between harsh parenting at year 3 and conduct problems at year 5 (b=.009, se=.181, p=.685); however, harsh parenting at year 5 was positively associated with conduct problems at year 9 (b=.050, se=.164, p=.019).

**Model 2**

In the next model, the latent year 3 CU construct was included as a moderator of associations between ages 3 and 5 as well as between ages 5 and 9. Model 2 examined the moderating influence of CU behaviors on each pathway included in Model 1. In order to estimate the effects of latent interaction terms within the model, the latent moderated structural equations (LMS) method proposed by Klein and Moosbrugger (2000) was used. The LMS method allows for the estimation of latent interaction terms within structural equation models through multiplying the independent variable of an interaction with each indicator of a latent moderating
variable. The resulting products are then used as indicators of the latent moderator in the structural model. The LMS method does not produce traditional fit indices and it is therefore suggested that model fit be assessed prior to the addition of latent moderating variables as latent interaction terms do not impact the fit of the measurement model (Maslowsky et al., 2015; Muthén & Muthén, 2017). Based on the determination that the first model displayed adequate fit ($\chi^2 (df = 62) = 451.59, p < .001$, RMSEA $= .036$, CFI $= .973$, TLI $= .926$, SRMR $= .045$), fit for the second model was also determined to be adequate.

Hypotheses 5 and 6

Model 2 evaluated whether the association between conduct problems and harsh parenting was moderated by CU behavior between ages 3 and 5 and ages 5 and 9, such that these links are stronger for parents of children with higher levels of CU behavior (hypothesis 5). The interaction between CU behavior and conduct problems at year 3 on harsh parenting at year 5 was not significant ($b = -.063, se = .014, p = .526$). Findings further indicated no significant interaction between CU behavior and conduct problems at year 5 on harsh parenting at year 9 ($b = .016, se = .001, p = .555$). Model 2 additionally examined whether the negative association between conduct problems and positive parenting was moderated by CU behavior between ages 3 and 5 and ages 5 and 9, such that the associations are stronger for parents of children with high levels of CU behavior (hypothesis 6). The interaction between CU behavior and conduct problems at year 3 on positive parenting at year 5 was significant ($b = -.574, se = .027, p < .001$). Interpretation of the nature of the moderation through graphing indicated that children with high conduct problems and high CU behavior received significantly less positive parenting than children with high conduct problems and low CU behavior (Figure 5). Interestingly, the visual
representation of the interaction additionally suggested that children with low conduct problems and high CU received more positive parenting than children with low conduct problems and low CU. Simple slope analysis confirmed that the relationship between year 3 conduct problems and year 5 positive parenting was significantly impacted by CU behavior at both low (b=.119, t=6.375, \( p<.001 \)) and high (b=-.073, t=-3.905, \( p<.001 \)) levels of CU. Values of the moderator (i.e., CU behavior) at which the described interaction is significant are depicted in Figure 6. No significant interaction was observed between conduct problems at year 5 and CU behaviors on positive parenting at year 9 (b=-.024, se=.006, \( p=.337 \)).

![Figure 5. Interaction between Year 3 conduct problems and CU behavior on Year 5 positive parenting.](image-url)
Research Questions 1 and 2

Research questions 1 (i.e., will positive parenting be more strongly associated with conduct problems in children with lower or higher levels of CU behavior) and 2 (i.e., will harsh parenting be more strongly associated with conduct problems in children with lower or higher levels of CU behavior) were additionally explored within the second model. CU behavior did not moderate the effect of positive parenting on conduct problems between years 3 and 5 (RQ1; b=-.151, se=.679, p=.264) or 5 and 9 (RQ1; b=.002, se=.050, p=.931). Findings were similar for harsh parenting; no significant interaction was observed between harsh parenting at and CU
behavior on conduct problems at age 5 (RQ2; b=-.158, se=.774, \( p=.101 \)) or age 9 (RQ2; b=.075, se=.680, \( p=.272 \)).

Final Model

A final model was run that included only the significant interaction term. In this model, all significant pathways remained consistent with previously reported findings with the exception of the inverse association between harsh parenting at year 3 and positive parenting at year 5. With the inclusion of the interaction term, harsh parenting at year 3 was no longer significantly associated with positive parenting at year 5 (b=.004, se=.017, \( p=.900 \)). Notably, this pathway was not included in any of the present study’s primary hypotheses. All standardized pathway coefficients for the final model are depicted in Figures 7 and 8. Covariate pathways for the final model are displayed in Table 6.

Table 6

Regression Table Displaying Covariates for Final Model

<table>
<thead>
<tr>
<th>Y5 Conduct Problems</th>
<th>Y5 Positive Parenting</th>
<th>Y5 Harsh Parenting</th>
<th>Y9 Conduct Problems</th>
<th>Y9 Positive Parenting</th>
<th>Y9 Harsh Parenting</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \beta )</td>
<td>( \beta )</td>
<td>( \beta )</td>
<td>( \beta )</td>
<td>( \beta )</td>
<td>( \beta )</td>
</tr>
<tr>
<td>Baseline Poverty Ratio</td>
<td>-0.03</td>
<td>0.09***</td>
<td>-0.07**</td>
<td>-0.04</td>
<td>0.02</td>
</tr>
<tr>
<td>Mother Age</td>
<td>-0.05**</td>
<td>0.06*</td>
<td>-0.03</td>
<td>-0.01</td>
<td>0.05*</td>
</tr>
<tr>
<td>Child Sex</td>
<td>-0.04*</td>
<td>0.03</td>
<td>-0.06**</td>
<td>-0.06**</td>
<td>0.01</td>
</tr>
<tr>
<td>Married/Cohabitating</td>
<td>0.04*</td>
<td>-0.05*</td>
<td>0.003</td>
<td>0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>Mother Baseline Education</td>
<td>-0.02</td>
<td>-0.02</td>
<td>-0.03</td>
<td>0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td>Mother African American</td>
<td>-0.04</td>
<td>0.01</td>
<td>0.04</td>
<td>0.002</td>
<td>-0.05</td>
</tr>
<tr>
<td>Mother European American</td>
<td>-0.001</td>
<td>0.12*</td>
<td>-0.02</td>
<td>0.05</td>
<td>0.03</td>
</tr>
<tr>
<td>Mother Hispanic</td>
<td>-0.04</td>
<td>0.12</td>
<td>-0.04</td>
<td>-0.04</td>
<td>-0.10*</td>
</tr>
<tr>
<td>Parent Incarceration History</td>
<td>0.08**</td>
<td>-0.02</td>
<td>0.04</td>
<td>0.01</td>
<td>0.03</td>
</tr>
<tr>
<td>Parent Domestic Violence History</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.04*</td>
<td>-0.02</td>
</tr>
</tbody>
</table>

Note. ***\( p<.001 \), **\( p<.01 \), *\( p<.05 \)
Figure 7. Final model synchronous and stability effects.
Figure 8. Final model cross-lagged effects.
CHAPTER 4
DISCUSSION

The present study examined reciprocal associations between parenting practices (i.e., positive and harsh) and child conduct problems across ages 3, 5, and 9. This study further explored whether these associations were moderated by child CU behavior. Findings indicated that higher levels of conduct problems were associated with higher levels of harsh parenting between ages 3 and 5 and between ages 5 and 9. Additionally, while higher harsh parenting at year 5 was associated with higher levels of conduct problems at year 9, higher positive parenting at year 5 was associated with lower levels of conduct problems at year 9. Further, the association between conduct problems at year 3 and positive parenting at year 5 differed based on child CU behavior. Children with high conduct problems and high CU behavior received significantly less positive parenting than children with high conduct problems and low CU behavior. However, children with low conduct problems and high CU received more positive parenting than children with low conduct problems and low CU. Results from Model 1, which did not include CU behavior as a moderator, are reviewed first followed by a review of the final model that included the significant interaction term.

Bidirectional Associations Between Positive Parenting and Conduct Problems

Consistent with one of the present study’s hypotheses, findings indicated that children of parents who exhibited more positive parenting behaviors at year 5 demonstrated less conduct problems at year 9. This finding aligns with past literature documenting the mitigating effect of
warm, responsive, and affectionate parenting on the development of child conduct problems in middle childhood (Chronis et al., 2007; Clark & Frick, 2018; Stormshak et al., 2000). The identified impact of positive parenting on child conduct problems has been explained in the context of social learning theory (Bandura, 1973), which emphasizes the role of real-life experiences in directly or indirectly shaping child behavior. In applying social learning theory to parenting practices, past literature has suggested that positive parenting can increase children’s ability to manage emotions, resolve disputes, and engage with others through processes such as modeling and reinforcement (O’Connor et al., 2013). These social and self-regulatory skills are thought to increase adaptive functioning and decrease impulsive tendencies to engage in aggressive, oppositional, or destructive behavior (Hirschi, 1969; Pardini et al., 2007). Findings of the present study support the continued use of intervention programs such as the Tripe P Positive Parenting Program (Sanders et al., 2000) and Positive Parenting and Sensitive Discipline (VIPP-SD; Juffer et al., 2017) that have been developed based on social learning principles and highlight the protective impact of positive parenting on child externalizing problems (O’Connor et al., 2013).

Results did not support the hypothesized inverse association between positive parenting at age 3 and conduct problems at age 5. While this finding is inconsistent with some past literature suggesting a significant relationship between positive parenting and child conduct problem outcomes in early childhood (McFayden-Ketchum et al., 1996; Reuben et al., 2016), other studies have identified positive parenting in middle childhood as a stronger predictor of child externalizing outcomes than positive parenting in early childhood and infancy (Bradley & Corwyn, 2007). Results of the present study similarly suggest that the impact of positive parenting on child conduct problems may become more robust as children age. This conclusion
further highlights the importance of examining the unique impact of positive parenting practices on child behavioral outcomes at various stages of development.

Contrary to one of the present study’s hypotheses, higher levels of conduct problems were not associated with lower positive parenting at either time point. This finding is surprising based on past studies supporting child-driven effects of conduct problems on lower levels of positive parenting (Hipwell et al., 2008; Zhang et al., 2019). However, these results are consistent with some past literature documenting an age effect in the relationship between child conduct problems and positive parenting over time. For example, in a longitudinal study of children aged 6 to 16, Pardini et al. (2008) found that parents exhibited consistent levels of positive parenting prior to age 9 regardless of their child’s conduct problems. However, by early adolescence, child conduct problems were predictive of lower levels of positive parenting. As the present investigation only examined parent and child outcomes up to age 9, the lack of an observed association between conduct problems and positive parenting may therefore be attributable to the window of development captured by the study.

Bidirectional Associations Between Harsh Parenting and Conduct Problems

Children of parents who demonstrated more harsh parenting behaviors at year 5 displayed higher levels of conduct problems at year 9. However, similar to the pattern observed between positive parenting and conduct problems, harsh parenting at year 3 was not related to conduct problems at year 5. As it was hypothesized that this association would be significant across time, the proposed hypothesis was partially supported. Past studies examining these relationships have frequently identified exposure to harsh parenting as a risk factor for the development of conduct problems between early and middle childhood (Flouri & Midouhas, 2017; Shaw et al., 2019;
Tavassolie et al., 2016). Findings of the present study did not indicate a significant effect of harsh parenting in early childhood on conduct problems at age 5, which may suggest that aspects of child behavior such as oppositionality, aggressiveness, and destructiveness are less driven by parenting within a younger age range. This interpretation is supported by literature suggesting that developmental timing may influence the impact of harsh parenting practices on conduct problems. A review by Larzelere (2000), for example, concluded that harsh parenting has been most consistently related to increases in child conduct problem outcomes when children are between the ages of 7.5 and 10 as compared to early childhood samples. Turning to the broad influence of parenting on child behavior outcomes, studies examining the effectiveness of parenting intervention programs may also be useful in supporting the finding that harsh parenting exerts a stronger influence over child conduct problems during middle as compared to early childhood. A meta-analytic review of parenting intervention studies by Barlow et al. (2005) found minimal evidence of effectiveness of parenting programs aimed at reducing negative and inconsistent parenting to promote prosocial child behavior among children 0-3 years of age. These results differ significantly from additional reviews establishing the longitudinal effect of parent intervention on child behavior outcomes among older children (Diamond & Hyde, 1999).

Alternatively, the lack of an observed association between harsh parenting at year 3 and conduct problems at year 5 may be attributed to individual differences regarding the level of psychopathology exhibited by participants in the Fragile Families sample as compared to clinical samples. Previous meta-analytic investigations have reported differential effectiveness of parenting interventions when examining high-risk versus low-risk children (i.e., children at the highest risk benefit most from parenting interventions; Shelleby & Shaw, 2014). Discrepancies in the present findings may therefore be explained through the idea that these associations are
less pronounced within a lower-risk community subgroup of children (i.e., the Fragile Families sample). Specifically, it has been hypothesized that this pattern of enhanced effectiveness of parenting interventions for higher-risk children may stem from higher levels of child behavior problems at baseline.

Consistent with one of the study’s proposed hypotheses, having a child with high levels of conduct problems resulted in the use of more harsh parenting behaviors in the home. This pattern was found to be significant between ages 3 and 5 as well as between ages 5 and 9 and aligns with past research suggesting a child-driven effect of conduct problems on harsh parenting (Hipwell et al., 2008; Pardini et al., 2008). These identified pathways demonstrate the role of negative child behaviors in eliciting aversive parental reactions as outlined in Patterson’s coercive cycles theory (Patterson, 1982). In light of consistent evidence suggesting that child conduct problems contribute to harsh parenting outcomes, interventions focused on decreasing harsh parenting should consider the benefit of concurrently targeting problematic child behaviors that provoke cycles of coercive parent-child interactions. Based on present findings, it can be reasonably inferred that interventions focused on the dyadic nature of coercive cycles may produce a greater effect on parenting than interventions that only target specific parenting behaviors. Notably, this observed association between child conduct problems and harsh parenting highlights the unique impact of child conduct problems on harsh parenting behaviors above and beyond previously identified demographic predictors of maladaptive parenting (e.g., socioeconomic status, mother marital status) that were controlled for during analyses.
Moderation by CU Behavior

Analyses revealed a significant interaction between conduct problems and CU behavior at age 3 on positive parenting at age 5. Interpretation of the moderation suggested that, consistent with one of the study’s hypotheses, children with high conduct problems and high CU behavior received significantly less positive parenting two years later than children with high conduct problems and low CU behavior. However, contrary to the expected effect of CU behavior on the association between conduct problems and positive parenting, children with low conduct problems and high CU received more positive parenting than children with low conduct problems and low CU.

The current body of literature examining the interaction between child conduct problems and CU behavior on positive parenting outcomes is scarce. While not conceptually identical to positive parenting, some past studies have provided support for an interaction between conduct problems and CU behavior on parenting outcomes such as reduced parental monitoring, such that conduct problems were associated with a steeper reduction in parental monitoring when accompanied by high CU behavior (Muñoz et al., 2011). Results of the present study signify that, among young children with high levels of conduct problems, parents engage in significantly less positive parenting when children also demonstrate high levels of CU behavior. This pattern may suggest that parents of children with high conduct problems alone are more successful in demonstrating positive parenting despite difficult child behavior, whereas the addition of high CU is associated with lower positive parenting, perhaps on account of characteristic insensitivity to parenting techniques for children with higher CU. Support for this interpretation of findings can be found within Dadds and Salmon’s punishment insensitivity model (Dadds & Salmon,
of traditional punishment techniques will result in decreases in positive parenting over time (Hawes & Dadds, 2005).

Drawing from the punishment insensitivity model, it has been speculated that an inability to control child behavior problems in children with high CU may cause parents to reduce their use of positive parenting out of frustration (Childs et al., 2014). In an effort to adapt previously established parenting programs to increase efficacy for children demonstrating CU behavior, researchers have emphasized the inclusion of intervention components that improve emotional functioning within the parent-child relationship (Dadds et al., 2012). For example, Kimonis et al. (2019) demonstrated that an adaptation of Parent-Child Interaction Therapy (P-CIT) tailored to address parent responsiveness to emotional deficits in young children with CU produced significant decreases in both CU and conduct problem symptoms longitudinally. Within this study, modifications made to standard PCIT protocols included explicitly coaching parents to engage in warm and responsive parenting, replacing punishment strategies with positive reinforcement, and an additional computer-based module focused on assisting empathy and emotional development in children. Such findings demonstrate the importance of tailoring interventions to address specific needs of children and families and highlight the potential benefits of increasing positive parenting for children with higher CU behavior.

Among children with low levels of conduct problems at age 3, children with higher levels of CU behavior received more positive parenting at age 5 than children with low levels of CU behavior. This surprising finding may indicate that parents of children with high CU behavior and low conduct problems exhibit more warm and responsive parenting behaviors than parents of children with low levels of conduct problems and low CU behavior in an effort to over-
compensate for affective deficits that are commonly considered a core aspect of CU behavior. Support for this interpretation may have been found in the individual items comprising the latent CU construct included in the model. In the current study, the measure of CU largely reflected behaviors associated with affection (i.e., child is unresponsive to affection; child shows little affection towards others). In considering the subsample of children described as Low CP/High CU, higher CU scores may have been driven by these affection items as other indicators of the latent construct involved response to misbehavior. In turn, parents may have attempted to overcompensate for children’s unresponsiveness to affection or failure to display affection by increasing their positive behavior toward children. As CU behavior and conduct problems commonly co-occur (Fanti, 2013), and past literature has primarily focused on the unidirectional effect of parenting on child behavior outcomes, limited research has explored the independent impact of CU characteristics on parenting in the absence of significant conduct problems. Therefore, further exploration of these parent-child processes through replication and extension of the present study is necessary to clarify this proposed interpretation of findings. As described above, it is also important to note that a limitation of the present study was the inability to examine CU behavior at age 5 due to a lack of available items that reflect CU behavior in the year 5 wave of the Fragile Families dataset. As such, findings may have differed with the inclusion of an adequate year 5 measure of CU behavior.

Limitations and Future Research

Strengths of the present study include the use of a multi-informant longitudinal design with a considerable sample size. The cross-lagged analytical approach used in the current study also offers the ability to examine reciprocal relationships between parent and child variables.
across stages of child development. Finally, in extending on past research examining individual pathways within the proposed model, the inclusion of multiple parent and child variables within the same model allows for enhanced interpretation of relationships in the context of other included constructs.

Despite the identified strengths, several limitations of the present investigation should be acknowledged. One notable limitation is the inability to measure CU behavior at age 5 due to incongruence between the items asked to participants at each time point. This study instead utilized a measure of CU behavior at year 3 to represent CU behavior at a later time point, which relies on the notion that CU behaviors remain relatively stable over time. While using secondary data analysis adds strength to the study in that longitudinal effects can be examined in a large sample, being unable to control what measures were included at each time point is a clear weakness. In spite of evidence suggesting stability in CU from early to middle childhood (Ezpeleta et al., 2015), future studies exploring relationships between parenting, conduct problems, and CU behavior should attempt to assess CU at multiple time points throughout childhood to improve sensitivity to changes in these associations over specified periods of time.

An additional limitation of the present study is the requirement of developing a measure of CU behavior that is not identical to previously validated measures. While statistical techniques (e.g., confirmatory factor analyses) were able to establish validity of the indicators used in the creation of the latent CU construct, future research should consider examining links indicated by present findings using a more comprehensive measure of CU behavior with well-established psychometric properties. A final limitation of the study is the inability to directly control for conferred genetic risk of CU behavior. Despite evidence from recent genetically informed studies of CU emphasizing the role of parenting in the development of CU behavior above and
beyond heritable risk (Waller et al., 2018), appropriate measures of parent CU behavior should be included as control variables in future investigations. This will allow for a more accurate disentanglement of genetic versus environmental contributions to CU and offers the possibility of exploring gene-environment interactive processes related to parenting, CU behavior, and child conduct problems.

Conclusions and Implications

The present study expands upon current literature examining bidirectional associations between parenting practices and child conduct problems across development and demonstrates how these associations may vary in the context of child CU behavior. Findings challenge previous assertions that harsh parenting only exerts a meaningful influence on conduct problems when children do not demonstrate high CU behavior (Oxford et al., 2003; Wooton et al., 1997), as it was found that CU behavior did not moderate the association between harsh parenting and conduct problem outcomes. This result highlights the potential for behavioral malleability in children with higher CU and stresses the potential importance of reducing harsh parenting strategies in an effort to protect against the development of conduct problems in children with both high and low levels of CU. Further, the identified interaction between conduct problems and CU behavior on positive parenting in early childhood contributes to research supporting the need for additional studies examining heterogeneity among children classified as having conduct problems, as findings suggest a differential effect of conduct problems on positive parenting outcomes based on the presence of high or low CU behaviors in the early years of life.

Considering the outcomes of the present investigation, the development of future parenting intervention programs should include a focus on replacing harsh parenting behaviors with
positive parenting strategies during middle childhood to protect against conduct problem outcomes. Interventions should further consider targeting child conduct problems throughout early and middle childhood to reduce their perpetuating effect on maladaptive parent-child cyclical interactions, and additionally acknowledge the potential benefits of tailoring interventions to reflect the potentially differential impact of CU behavior on these parent-child processes.
REFERENCES


APPENDIX A

BASELINE MOTHER/FATHER DEMOGRAPHICS QUESTIONNAIRE
A4. Are you currently married to the father of your new baby?
YES, MARRIED TO FATHER ................. 1
NO, NOT MARRIED TO FATHER .......... 2
FATHER UNKNOWN ......................... 3

H3. Which of these categories best describes your race?
White ................................................. 1
Black, African-American .................. 2
Asian or Pacific Islander .................. 3
American Indian, Eskimo, Aleut .......... 4
Other, not specified ...................... 5
Hispanic ............................................. 101
DON’T KNOW ........................................ 2

H3A. Are you of Hispanic or Latino origin or descent?
YES ...................................................... 1
NO ....................................................... 2 (GO TO I
DON’T KNOW ........................................ 2

I1. Now I’d like to ask some questions about your education and work experience. What is the highest grade or year of regular school that you have completed?
No formal schooling ......................... 1
8th grade or less ............................... 2
Some high school (Grades 9,10,11, & 12) .. 3
High school diploma (Completed 12th grade) .. 4
G.E.D. ................................................. 5
Some college or 2-year degree ............. 6
Technical or trade school ................... 7
Bachelor’s degree ............................. 8
Graduate or professional school .......... 9

J3. Thinking about your income and the income of everyone else who lives with you, what was your total household income before taxes in the past 12 months?
Under $5,000 ..................................... 1
$5,000 to $9,999 ................................. 2
$10,000 to $14,999 ............................. 3
$15,000 to $19,999 ............................. 4
$20,000 to $24,999 ............................. 5
$25,000 to $34,999 ............................. 6
$35,000 to $49,999 ............................. 7
$50,000 to $74,999 ............................. 8
Greater than $75,000 ....................... 9
REFUSED ........................................... -1
DON’T KNOW .................................... -2
F1. Not including yourself, how many people are currently living with you? (IF RESPONDENT NOT IN JAIL, SHELTER, OR HOMELESS, READ: Please include people who sleep in (your/this) home most nights.)

<table>
<thead>
<tr>
<th>PEOPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESPONDENT LIVES ALONE</td>
</tr>
<tr>
<td>RESPONDENT LIVES IN JAIL</td>
</tr>
<tr>
<td>RESPONDENT LIVES IN A SHELTER OR ON THE STREET</td>
</tr>
</tbody>
</table>

-10
APPENDIX B

MOTHER AND FATHER DEMOGRAPHIC QUESTIONNAIRE YEARS 1 AND 3
C36. CODE WITHOUT ASKING IF KNOWN:
Has (FATHER) ever spent any time in jail or prison?
   YES ........................................................................ 1
   NO ........................................................................ 2 ➔ GO TO C38
   DON'T KNOW ...................................................... 2 ➔ GO TO C38

D8. Now, think about how (FATHER) behaved towards you during the last month of your relationship. For each statement I read, please tell me how often he behaved this way.
   (First) (READ ITEM). Did (FATHER) behave this way often, sometimes, or never?
   D8H. He slapped or kicked you ..........................................................1....2....3
   D8I. He hit you with his fist or an object that could hurt you ........1....2....3

D9. Couples sometimes get into fights. Were you ever cut, bruised, or seriously hurt in a fight with (FATHER)?
   YES ........................................................................ 1
   NO ........................................................................ 2 ➔ GO TO SECTION E

C42.
Has (MOTHER) ever spent any time in jail or prison?
   YES ........................................................................ 1
   NO ........................................................................ 2 ➔ GO TO C43 MOTHER IS CURRENTLY IN JAIL
   ............................................................. 3
   DON'T KNOW ...................................................... 2 ➔ GO TO C43

D7. Now, think about how (MOTHER) behaves towards you. For each statement I read, please tell me how often she behaves this way.
   (First) (READ ITEM). Does (MOTHER) behave this way often, sometimes, or never?
   H. She slaps or kicks you ..........................................................1....2....3
   I. She hits you with a fist or an object that could hurt you ......................1....2....3

D10. Now I have some questions about events that may have happened since (DATE OF LAST INTERVIEW/FIRST DAY OF MONTH AND YEAR OF CHILD's BIRTH MONTH). Have you been seriously hurt in a fight with (MOTHER) since (DATE OF LAST INTERVIEW/FIRST DAY OF MONTH AND YEAR OF CHILD's BIRTH MONTH)?
   YES ........................................................................ 1
   NO ........................................................................ 2 ➔ GO TO SECTION E

   NO CONTACT WITH MOTHER
   (VOLUNTEERED) .......................................................... 14 ➔ GO TO SECTION E
APPENDIX C

HOME OBSERVATION FOR MEASUREMENT OF THE ENVIRONMENT (HOME) INVENTORY—YEARS 3, 5, AND 9 PARENTAL WARMTH SUBSCALE
T1. PARENT SPONTANEOUSLY VOCALIZED TO CHILD TWICE (COULD HAVE BEEN SOUNDS OR RANDOM WORDS—SPONTANEOUS IS THE IMPORTANT CONCEPT, DOES NOT COUNT IF MOTHER’S VOCALIZATION WAS IN RESPONSE TO CHILD’S VOCALIZATION).
VOCALIZED .............................................................01
DID NOT VOCALIZE................................................00

T2. PARENT RESPONDED VERBALLY TO CHILD’S VOCALIZATIONS (SOUNDS OR WORDS, IMPORTANT POINT IS THAT MOTHER DID NOT IGNORE CHILD. IF CHILD NEVER VOCALIZED TO MOTHER: SCORE AS AUTOMATIC “DID NOT RESPOND”).
RESPONDED...........................................................01
DID NOT RESPOND................................................00

T3. PARENT TOLD CHILD THE NAME OF AN OBJECT OR PERSON DURING VISIT (MOTHER’S SENSITIVITY TO CHILD’S SEARCH FOR NAMES OF OBJECTS AROUND (HIM/HER)—NEED NOT BE AS DIRECT AS “THIS IS AN APPLE”, BUT THE PARENT’S STATEMENT MUST CLEARLY LABEL SOME OBJECT OR PERSON, NOT JUST USE THE WORD IN A SENTENCE. FOR EXAMPLE, “GO GET X” SHOULD NOT COUNT BECAUSE PARENT IS NOT TEACHING CHILD THE NAME OF ANYTHING).
INTERVIEWER: INCLUDE BABY WORDS AS “01”.
TOLD CHILD ............................................................01
DID NOT TELL CHILD..............................................00

T7. PARENT SPONTANEOUSLY PRAISED CHILD AT LEAST TWICE (ANY ACHIEVEMENT NOTED WITH PRIDE, E.G., CAN DRESS HIMSELF, HAS A GOOD DISPOSITION. IMPORTANT THAT YOU READ THE MOTHER’S AFFECT, SOMETIMES NEGATIVE COMMENTS ARE REALLY POSITIVE REMARKS).
PRAISED..................................................................01
DID NOT PRAISE ....................................................00

T8. PARENT’S VOICE CONVEYS POSITIVE FEELINGS TOWARD CHILD (WAS TONE OF VOICE ANIMATED, OR FLAT AND/OR IRRITATED)?
POSITIVE.....................................................................01
NOT POSITIVE ........................................................00

T9. PARENT CARESSED OR KISSED CHILD AT LEAST ONCE (E.G., CAN INCLUDE HUGGED, STROKED HAIR, PATTED ARM OR LEG, AFFECTIONATELY REACHING OUT, BLOWING A KISS).
CARESSED....................................................................01
DID NOT CARESS...................................................00

A/E8. PRAISE CHILD. DID PARENT RESPOND POSITIVELY WHEN YOU PRAISED CHILD? YES.........................................................01
NO...........................................................................00
Home Observation for Measurement of the Environment (HOME) Inventory—Year 5
Parental Warmth Subscale

T1. PARENT TALKS TWICE TO (CHILD) DURING VISIT (BEYOND CORRECTION AND INTRODUCTION).
   TALKS TWICE TO CHILD ..................................................... 01
   DOESN’T TALK TWICE TO CHILD ........................................ 00
   CHILD NOT OBSERVED ....................................................... d

T2. PARENT VERBALLY ANSWERS (CHILD’S) QUESTIONS OR REQUESTS.
   PARENT ANSWERS QUESTIONS ............................................. 01
   PARENT DOESN’T ANSWER QUESTIONS ................................. 00
   CHILD NOT OBSERVED ....................................................... d

T3. PARENT ENCOURAGES (CHILD) TO CONTRIBUTE TO CONVERSATION DURING VISIT.
   PARENT ENCOURAGES CONTRIBUTION ..................................... 01
   PARENT DOESN’T ENCOURAGE CONTRIBUTION ........................... 00
   CHILD NOT OBSERVED ....................................................... d

T4. PARENT HELPS (CHILD) DEMONSTRATE SOME ACHIEVEMENT OR MENTIONS A PARTICULAR SKILL, STRENGTH, OR ACHIEVEMENT DURING VISIT.
   PARENT HELPS OR MENTIONS ............................................... 01
   PARENT DOESN’T HELP OR MENTION ...................................... 00
   CHILD NOT OBSERVED ....................................................... d

T5. PARENT SPONTANEOUSLY PRAISES (CHILD)’S BEHAVIOR OR QUALITIES TWICE DURING VISIT.
   PARENT PRAISES TWICE .................................................... 01
   PARENT DOESN’T PRAISE TWICE .......................................... 00
   CHILD NOT OBSERVED ....................................................... d

T6. PARENT USES SOME TERM OF ENDEARMENT OR SOME DIMINUTIVE FOR (CHILD)’S NAME WHEN TALKING ABOUT OR TO HIM/HER AT LEAST TWICE DURING VISIT.
   PARENT USES ENDEARMENT TWICE OR MORE ......................... 01
   PARENT DOESN’T USE ENDEARMENT TWICE .............................. 00
   CHILD NOT OBSERVED ....................................................... d

T7. PARENT’S VOICE CONVEYS POSITIVE FEELINGS WHEN SPEAKING OF OR TO (CHILD).
   PARENT CONVEYS POSITIVE FEELINGS ................................... 01
   PARENT DOESN’T CONVEY POSITIVE FEELINGS ....................... 00

T8. PARENT CARESES, KISSES, OR CUDDLES (CHILD) ONCE DURING VISIT.
   PARENT CARESES, ETC. ...................................................... 01
   PARENT DOESN’T CARESS, ETC. ............................................ 00
   CHILD NOT OBSERVED .......................................................
ACT_a8: PARENT RESPONDS POSITIVELY TO PRAISE OF CHILD.
PARENT RESPONDS POSITIVELY ..........................01
PARENT DOES NOT RESPOND POSITIVELY ............00
CHILD NOT OBSERVED ...........................................d

Home Observation for Measurement of the Environment (HOME) Inventory—Year 9
Parental Warmth Subscale

E1. (PARENT/PRIMARY CAREGIVER) TALKED TWICE TO THE CHILD DURING VISIT
(BEYOND CORRECTION AND INTRODUCTION).
(PARENT/PRIMARY CAREGIVER) TALKED TWICE TO CHILD ... 01
(PARENT/PRIMARY CAREGIVER) DID NOT TALK TWICE
TO CHILD ................................................................. 00
CHILD NOT OBSERVED .............................................. d

E2. (PARENT/PRIMARY CAREGIVER) VERBALLY ANSWERED THE CHILD’S QUESTIONS OR REQUESTS.
(PARENT/PRIMARY CAREGIVER) ANSWERED QUESTIONS .... 01
(PARENT/PRIMARY CAREGIVER) DID NOT ANSWER QUESTIONS ....00
CHILD NOT OBSERVED/CHILD DID NOT ASK QUESTIONS ...... d

E3. (PARENT/PRIMARY CAREGIVER) ENCOURAGED THE CHILD TO CONTRIBUTE TO CONVERSATION DURING VISIT.
(PARENT/PRIMARY CAREGIVER) ENCOURAGED CONTRIBUTION .......... 01
(PARENT/PRIMARY CAREGIVER) DID NOT ENCOURAGE CONTRIBUTION ..... 00
CHILD NOT OBSERVED .................................................... d

E4. (PARENT/PRIMARY CAREGIVER) HELPED THE CHILD DEMONSTRATE SOME ACHIEVEMENT OR MENTIONED A PARTICULAR SKILL, STRENGTH, OR ACHIEVEMENT DURING VISIT.
(PARENT/PRIMARY CAREGIVER) HELPED OR MENTIONED .. 01
(PARENT/PRIMARY CAREGIVER) DID NOT HELP OR MENTION .............................................................. 00
CHILD NOT OBSERVED .................................................... d

E5. (PARENT/PRIMARY CAREGIVER) USED SOME TERM OF ENDEARMENT OR SOME DIMINUTIVE FOR THE CHILD’S NAME WHEN TALKING ABOUT OR TO HIM/HER AT LEAST TWICE DURING VISIT.
(PARENT/PRIMARY CAREGIVER) USED ENDEARMENT TWICE OR MORE ................................................................. 01
(PARENT/PRIMARY CAREGIVER) DID NOT USE ENDEARMENT TWICE ... 00
CHILD NOT OBSERVED .................................................... d

E6. (PARENT/PRIMARY CAREGIVER)’S VOICE CONVEYED POSITIVE FEELINGS WHEN SPEAKING OF OR TO THE CHILD.
(PARENT/PRIMARY CAREGIVER) CONVEYED POSITIVE FEELINGS ........ 01
(PARENT/PRIMARY CAREGIVER) DID NOT CONVEY POSITIVE
FEELINGS .............................................................................................................. 00
CHILD NOT OBSERVED ..................................................................................d

E7. (PARENT/PRIMARY CAREGIVER) CARESSED, KISSED, OR CUDDLED THE CHILD ONCE DURING VISIT.
(PARENT/PRIMARY CAREGIVER) CARESSED, ETC. .................. 01
(PARENT/PRIMARY CAREGIVER) DID NOT CARESS, ETC. .... 00
CHILD NOT OBSERVED ..................................................................................d

AT A NATURAL POINT IN YOUR CONVERSATION WITH THE PARENT/PCG WHILE TAKING THE WT/HT MEASUREMENTS, PRAISE THE CHILD.
DID PARENT/PCG RESPOND POSITIVELY?
YES ................................................................. 01
NO (INCLUDES NO RESPONSE) .......... 00
APPENDIX D.

HOME OBSERVATION FOR MEASUREMENT OF THE ENVIRONMENT (HOME) INVENTORY—YEARS 3, 5, AND 9 HARSH PARENTING SUBSCALE
E8. (PARENT/PRIMARY CAREGIVER) SHOUTED AT THE CHILD DURING VISIT.
(PARENT/PRIMARY CAREGIVER) SHOUTED ......................... 1
(PARENT/PRIMARY CAREGIVER) DID NOT SHOUT ............ 0
CHILD NOT OBSERVED .................................................................. -2

E9. (PARENT/PRIMARY CAREGIVER) EXPRESSED OVERT ANNOYANCE WITH OR HOSTILITY
TOWARD THE CHILD (EXAMPLE: COMPLAINED, DESCRIBED HIM/HER AS “BAD”, SAID HE WON’T MIND, ETC.)
(PARENT/PRIMARY CAREGIVER) EXPRESSED ANNOYANCE .............. 1
(PARENT/PRIMARY CAREGIVER) DID NOT EXPRESS ANNOYANCE ...... 2
CHILD NOT OBSERVED .................................................................... -2

E10. (PARENT/PRIMARY CAREGIVER) SLAPPED OR SPANKED THE CHILD DURING VISIT.
(PARENT/PRIMARY CAREGIVER) SLAPPED OR SPANKED .... .... 1
(PARENT/PRIMARY CAREGIVER) DID NOT SLAP OR SPANK ......................................................... 2
CHILD NOT OBSERVED ...................................................................... -2

E11. (PARENT/PRIMARY CAREGIVER) SCOLDED, DEROGATED OR CRITICIZED THE CHILD MORE THAN ONCE DURING VISIT.
(PARENT/PRIMARY CAREGIVER) SCOLDED MORE THAN ONCE .......... 1
(PARENT/PRIMARY CAREGIVER) DID NOT SCOLD MORE THAN ONCE ... 2
CHILD NOT OBSERVED .................................................................... -2