Early Harsh Parenting Predicts Parent Reports of Deceitful-Callous Behavior in Early Childhood

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Running head: EARLY PARENTING PREDICTS DECEITFUL-CALLOUSNESS

Early Harsh Parenting Predicts Parent Reports of Deceitful-Callous Behavior in Early Childhood.

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Abstract

**Background:** The relationship between parenting and the development of antisocial behavior in children is well established. However, the evidence for associations between dimensions of parenting and callous unemotional (CU) traits is mixed. As CU traits appear critical to understanding a subgroup of youth with antisocial behavior, more research addressing the link between early parenting and CU traits is needed. **Methods:** The current study investigated the longitudinal prediction between measures of harsh and positive parenting, and early CU behavior. Data from mother-child dyads ($N=731$) were collected from a multi-ethnic, high-risk sample with young children, and included self-reported and multi-method observed parenting. CU behavior was assessed using a previously validated measure of deceitful-callous behavior (Hyde et al., in press). **Results:** The results support the importance of observed harsh parenting and parent-reported harshness for deceitful-callous behavior development, but not for dimensions of positive parenting. **Conclusions:** The current findings have implications for developmental psychopathology and early interventions for antisocial behavior. The results also raise a number of issues about measuring emerging CU behavior in very young children, including the complex interrelation between parent perceptions and reports of child behavior, parent reactions, and the subsequent development of severe antisocial behavior. **Keywords:** callous-unemotional; conduct problems; deceitful-callous; parenting. **Abbreviations:** CP–Conduct problems; CU–Callous-unemotional; FCU–Family Check-Up; RPC–Relationship Process Code; HOME–Home Observation for Measurement of the Environment Inventory.
Early Harsh Parenting Predicts Parent Reports of Deceitful-Callous Behavior in Early Childhood.

Patterns of poor parenting are a well-recognized risk factor for the development and maintenance of conduct problems (CP) in children. Research has consistently highlighted the importance of particular aspects of parenting, including rejecting parenting practices (Shaw, Gilliom, Ingoldsby, & Nagin, 2003), coercive patterns of parent-child interaction (Patterson, 1982) and positive parent-child engagement (Gardner, Ward, Burton, & Wilson, 2003). Such research has been the empirical basis on which many successful parenting interventions have been predicated. Indeed, numerous randomized trials show that interventions targeting parenting practices are effective (Piquero, Farrington, Welsh, Tremblay, & Jennings, 2009). At the same time however, it has long been recognized that children with CP are a heterogeneous group. As such, there have been numerous attempts to identify meaningful subgroups, each potentially associated with distinct developmental trajectories and outcomes, and thereby having important implications for basic research, prevention, and treatment.

Recent research efforts have focused on the presence of callous-unemotional (CU) traits for a subgroup of youth with CP, which may indicate unique risk processes (Frick & Viding, 2009). High levels of CU traits are associated with specific patterns of personality, cognitive and affective characteristics, including deficits in empathy and insensitivity to punishment (Frick & White, 2008). These findings have been replicated in samples ranging in age from 4-18 years, although research has mainly focused on clinical or adjudicated adolescent samples. CU traits are also associated with earlier onset of CP (Christian, Frick, Hill, Tyler, & Frazer, 1997) and more severe patterns of concurrent and later antisocial behavior (Pardini, Obradovic, & Loeber,
Moreover, there appears to be stronger genetic influence on the CP of children with high versus low levels of CU traits (Viding, Blair, Moffitt, & Plomin, 2005).

A key question is whether poor parenting, known to be a risk factor for the development of CP, is related to the emergence of CU traits. Typically, two study designs have been employed to assess how parenting relates to CU traits in youth. First, studies have tested whether CU traits moderate the association between parenting and CP, often utilizing a cross-sectional design. Findings from cross-sectional moderation studies suggest that parenting practices, such as harsh parenting or inconsistent discipline, are not consistently related to CP when children have high concurrent levels of CU traits (e.g., Hipwell et al., 2007; Oxford, Cavell, & Hughes, 2003). A second type of study has directly assessed the effect of specific parenting practices on the development of CU traits, aided by a prospective and longitudinal design. For example, Fontaine, McCrory, Boivin, Moffitt, & Viding (2011) identified the joint developmental trajectories of child CP and CU traits in a large sample (N=9,578; aged 7-12 years). While only a small proportion of children demonstrated a trajectory of both high CU traits and high CP (4.4% of sample), the results indicated this group to have had more risk predictors at age 4, including negative parental feelings and discipline, compared to a group with low levels of CU traits but high CP at age 12. Pardini, Lochman, and Powell (2007) investigated CU traits over a one year period in aggressive, high-risk children (N=120; aged 9-12 years old). Controlling for earlier CU traits, higher levels of corporal punishment predicted increases in CU traits, and higher parental warmth/involvement predicted decreased levels. Other longitudinal studies have found low levels of child-reported positive parenting in middle-school children (M age=10.65; Frick, Kimonis, Dandreaux, & Farell, 2003) and high parent-child conflict in adolescence (mean age at baseline=13.9; Pardini & Loeber, 2008) predicted CU trait stability. Therefore, there is
increasing evidence that positive and negative dimensions of parenting predict levels of CU traits in both childhood and adolescence.

No study, however, has yet assessed the prospective, longitudinal associations between parenting and the emergence of CU traits in early childhood. First, this is surprising because childhood problem behavior is known to have its developmental roots in the preschool years (Shaw et al., 2003). Second, high rates of disruptive behavior during the preschool period are associated with harsh, inconsistent, and dysfunctional parenting practices (e.g., Bell & Harper, 1977; Johnston & Mash, 2001). Third, while many of the behaviors related to CU traits require relatively advanced cognitive skills, there is developmental evidence to support extending the construct of CU traits to preschool children. For example, the results of studies investigating related concepts, such as empathy (Knafo, Zahn-Waxler, Van Hulle, Robinson, & Rhee, 2008), prosocial behavior (Svetlova, Nichols, & Brownell, 2011), guilt (Kochanska, Gross, Lin, & Nichols, 2002), and lying (Bussey, 1992), suggest that these behaviors mature rapidly from ages 2 to 5, and may be influenced by early parenting (e.g., Kochanska, 1997). Early childhood could therefore be a particularly useful focus for investigating the emergence of CU behavior given the greater potential for malleability of behavior at younger ages, when prevention possibilities may be stronger.

The current study is unique in investigating the question of whether harsh and positive parenting practices, assessed during the preschool period, predict emergence of CU behavior. Specifically, parenting and CU behavior were both assessed at a young age and the association was tested longitudinally. Parenting was assessed using parent reports of parenting and multi-informant observed measures of harsh and positive parenting. Indeed, while there is evidence that both parental harshness and warmth may be important for CU behavior development, no
studies have compared their unique effects, or assessed observed parenting. The data were
drawn from a large, high-risk sample, with roughly equal numbers of boys and girls. A key
strength of assessing the direct effect of parenting on later CU behavior in this sample is the
ability to separate out the evocative effects of earlier child behavior on parenting. Indeed, being
able to control for earlier CU behavior provides strong evidence that parenting predicts later CU
behavior because it precludes the potentially negative influence of a child’s early patterns of CP
on a parent’s responses.

Methods

Participants

Participants were mothers and children recruited as part of the large, ongoing Early Steps
Multisite trial of the Family Check-Up (FCU) parenting intervention (Dishion et al., 2008).
During 2002/2003, families with a child aged between 2 years 0 months and 2 years 11 months
were recruited from the Women, Infants, and Children Nutrition Program from suburban
Eugene, OR, urban Pittsburgh PA, and more rural Charlottesville, VA. Of 1666 families
screened, 879 met eligibility criteria and 731 consented to participate. Eligibility criteria were
defined as scoring one or more SD above the normative average on at least two of three
screening measures. The screening measures were child behavior (including CP and high-
conflict relationships), family problems (including maternal depression and substance abuse),
and socioeconomic risk (including low education achievement or low income). Ethical approval
was granted by the IRB at each site (Dishion et al., 2008), and consent was obtained during
annual assessments from the primary caregiver. At the first assessment, children in the sample
(N=731; 49% female) had a mean age of 29.9 months (SD=3.28 months). Across sites, primary
caregivers self-identified as European-American (50%), African-American (28%), biracial (13%)
and other groups (9%). The majority of primary caregivers were biological mothers (96% at age 2 and 3). Most children were living with both biological parents (37%), a single/separated parent (42%) or a cohabiting single parent (21%). Sixty-six percent of the sample reported annual family income below $20,000. Half the sample was randomly assigned to the intervention (for full details, see Dishion et al., 2008); intervention status was used as a covariate in analyses.

**Measures**

All assessments were conducted in the home annually from age 2 with mothers, and if present, an alternative caregiver, such as a father or grandmother. Assessments began by having the child engage in free play with age-appropriate toys, while the mother completed questionnaires. After the free-play task (15 minutes), mother and child participated in a clean-up task (5 minutes), followed by a delay of gratification task (5 minutes), four teaching tasks (3 minutes each), a second free-play (4 minutes) and clean-up task (4 minutes), the presentation of two inhibition-inducing toys (2 minutes each), and a meal preparation/lunch task (20 minutes). All tasks were videotaped and the clean-up, teaching, and meal preparation/lunch tasks were used for observational coding of parenting.

**Demographics questionnaire**

A demographics questionnaire was administered at ages 2 and 3, which included questions about parental education and income (Dishion et al., 2008; Table 1).

**Deceitful-callous behavior**

The measure of deceitful-callous behavior was drawn from a previous study using this sample (Hyde et al., in press). The measure was constructed from parent-reported items from the CBCL (Achenbach & Rescorla, 2000), Eyberg Child Behavior Inventory (Robinson, Eyberg, & Ross, 1980) and Adult-Child Relationship Scale (Pianta, 2001) at ages 2, 3 and 4. Items were
chosen if they reflected an early lack of guilt, lack of affective behavior and deceitfulness, were related to the construct of CU traits, or were similar to items on the CU traits scale of the Antisocial Process Screening Device (APSD; Frick & Hare, 2002) or Inventory of Callous-Unemotional Traits (ICU; Frick, 2004). Items were examined in an exploratory factor analysis on half the sample, and a confirmatory factor analysis on the other half. Results confirmed that the following five items loaded onto a single factor, termed deceitful-callous behavior: ‘child doesn’t seem guilty after misbehaving,’ ‘punishment doesn’t change behavior,’ ‘child is selfish/won’t share,’ ‘child lies’ and ‘child is sneaky/tries to get around me’ (Hyde et al., in press). The five-item deceitful-callous behavior measure demonstrated modest internal consistency at age 2 (α=.57), which improved at ages 3 (α=.64) and 4 (α=.72). Internal consistencies were comparable with other measures of CU traits in older samples of children and adolescents (e.g., Frick et al., 2003; Hipwell et al., 2007).

**Parent-reported harshness**

Parent-reported harshness was assessed using the over-reactivity subscale of the Parenting Scale at ages 2 and 3 (Arnold, O’Leary, Wolff, & Acker, 1993). The Parenting Scale is a 30-item self-report measure of parenting practices made up of three factors (over-reactivity, laxness, and verbosity). The 10-item over-reactivity subscale assesses harsh discipline, including reports of displaying anger and irritability, each rated on a 1-7 scale. An example item is, ‘when my child misbehaves, I spank, grab, or hit him/her.’ In the current sample, alphas were modest (age 2, α=.56; age 3, α=.58) and harsh parenting was also examined using observational measures.

**Observed harsh parenting**
Observed harsh parenting was defined and validated at ages 2 and 3 as a multi-dimensional factor, incorporating general parenting qualities (e.g., overall harshness) and specific parental behaviors (e.g., negative comments) (Moilanen et al., 2010), using two coding methods. First, a team of undergraduates, blind to families’ intervention status, coded videotaped family interaction tasks using the Relationship Process Code (RPC; Jabson, Dishion, Gardner, & Burton, 2004). The RPC is derived from the Family Process Code (Dishion, Gardner, Patterson, Reid, & Thibodeaux, 1983), which has been used extensively in previous research. RPC inter-rater reliability was calculated using Noldus Observed Pro 5.0 software based on the duration of each micro-social behavior. To achieve acceptable reliability levels, coders had to achieve 70% agreement and kappa=.70 on two consecutive training assignments, which had been coded by a ‘master coder.’ Fifteen percent of videotapes were coded twice, with acceptable agreement (average team percent agreement=.87; kappa=.86). The three RPC codes used in the observed harsh parenting construct were the duration proportions of a summary score of the following codes: parental negative verbal, directive, and physical behavior.

Following the micro-social coding, coders completed a macro-social rating scale on the same videotaped interactions using the Coder Impressions Inventory (Dishion, Hogansen, Winter, & Jabson, 2004). Negative parenting behavior was assessed by six items: parent ‘gives developmentally inappropriate reasons for desired behavior change,’ ‘displays anger/frustration/annoyance,’ ‘criticizes/blames child for family problems,’ ‘uses physical discipline,’ ‘actively ignores/rejects the child’ and ‘makes statements/gestures indicating child is worthless.’ The three RPC and six macro-ratings were standardized and summed to create a composite index of observed harsh parenting (α=.75; Moilanen et al., 2010).

Observed positive parenting
A composite for observed positive parenting at ages 2 and 3, labeled ‘positive behavior support’ was also created for the Early Steps study (Dishion et al., 2008; Lunkenheimer et al., 2008). This construct assesses a parent’s support for their child’s positive behavior, using items from three different measures. First, home visitors completed the HOME (Bradley et al., 2001). At age 2, in order to retain blindness, this was done prior to revealing information to the family about their intervention status. The three-item HOME Involvement subscale was used: the parent ‘keeps the child in visual range’, ‘talks to the child while doing household work’ and ‘structures the child’s play periods’. Second, two subscales comprising RPC micro-social codes from the videotaped interactions were used (see above for coding information). The positive reinforcement subscale included four RPC codes: positive verbal (e.g., praise); positive physical (e.g., hugging); verbal suggestions and prompts for positive activities; and positive structure (e.g., guidance of behaviour). The engaged interaction subscale included two RPC codes: a neutral verbal code, which captured neutral questions, answers, explanation and teaching, and a neutral physical code, which captured physical contact that was helpful and non-intrusive (e.g., holding child back to ensure safety).

Finally, six macro-social items from the Coder Impressions Inventory formed a subscale of proactive parenting: parent ‘gives child choices for behavior change,’ ‘communicates to child in calm/simple/clear terms,’ ‘gives understandable, age-appropriate reasons for behavior change’ ‘adjusts situation to ensure child’s interest/success/comfort,’ ‘redirects to appropriate behavior if child is off task/misbehaves,’ and ‘uses verbal structuring to make task manageable.’ Confirmatory factor analysis indicated that the four subscales from across the three measures formed a latent factor and consequently, scores were standardized and summed to form a
An analysis was conducted to examine the relationship between positive behavior support and later deceitful-callous behavior. The analysis was divided into two steps. In the first step, bivariate correlations between study variables were computed. In the second step, prediction of deceitful-callous behavior by earlier parenting was assessed, using hierarchical regression models. In step one of models, the following covariates were entered: child gender and race, intervention group status, parent education, and earlier deceitful-callous behavior. In step two, observed positive behavior support and then either observed harsh parenting or parent-reported harshness were entered in separate models, which enabled comparison of these two methods, while controlling for the effect of observed positive parenting on deceitful-callous behavior outcome for both. The two-step comparative process was repeated for the following ages: age 2 parenting predicting deceitful-callous behavior at 3 and 4, and age 3 parenting predicting deceitful-callous behavior at age 4. It was necessary to control for intervention status as, after age 2, half the sample had been allocated to the FCU intervention. Earlier deceitful-callous behavior was controlled for to account for potential parent-child reciprocity and to ensure models assessed prediction of child deceitful-callous behavior by parenting, over and above child-driven effects.

Attrition

Of the 731 families entering the study at child age 2, 659 (90%) participated at age 3 and 622 (85%) at age 4. Selective attrition analyses conducted from 2-4 years old revealed no significant differences in project site, race, ethnicity, gender, or externalizing behavior (Dishion et al., 2008). Though the amount of missing data was small for individual measures (n=622-731, for self-report; 585-731, for observed), listwise deletion may have limited the power and biased
estimation. Thus, to address missing data, values were imputed (via the EM algorithm in SPSS 18.0) (covariance coverage=.75-1.00). All analyses were run using both imputed and non-imputed datasets. The results were similar for both, although for brevity, the results reported are only for the imputed data (i.e., effective sample size of 731). Sources of missing data beyond attrition included families refusing to be videotaped, damaged videotapes, or families moving away and being unavailable for observations, although submitting self-report questionnaires via mail.

Results

Correlation analysis

Cross-sectional and longitudinal correlations for all study variables were computed (Table 2). There were moderate to strong correlations between deceitful-callous behavior at different ages (range $r=.41-.61$), indicating stability in the construct. There were moderate correlations between parent-reported harshness and deceitful-callous behavior (range $r=.20-.36$), except the cross-sectional correlation at age 2. There were modest significant correlations between observed harsh parenting and deceitful-callous behavior cross-sectionally and longitudinally (range $r=.15-.18$). The correlations between positive behavior support and deceitful-callous behavior were smaller, although in all cases but one reached significance.

Regression analysis

Parent-reported harshness consistently predicted later deceitful-callous behavior, controlling for earlier deceitful-callous behavior, child and parent covariates, and concurrent positive behavior support (Table 3). The model predicting age 3 deceitful-callous behavior from age 2 measures was significant, ($R^2=.25, p<.001$) and age 2 parent-reported harshness contributed uniquely to the model ($\beta=.20, p<.001$). The model predicting age 4 deceitful-callous
behavior from age 2 measures was also significant ($R^2=.20, p<.001$) and age 2 parent-reported harshness added unique variance ($\beta=.16, p<.001$). Finally, the model predicting age 4 deceitful-callous behavior from age 3 measures was significant ($R^2=.38, p<.001$) and age 3 parent-reported harshness added unique variance ($\beta=.07, p<.05$). Earlier deceitful-callous behavior, but not positive behavior support, consistently added unique variance to each of the models. This remained true when parent-reported harshness was removed from the model.

Observed harsh parenting showed a similar pattern and consistently predicted later deceitful-callous behavior, controlling for earlier deceitful-callous behavior, child and parent covariates and concurrent positive behavior support (Table 4). The model predicting age 3 deceitful-callous behavior from age 2 measures was significant, ($R^2=.22, p <.001$) and age 2 observed harsh parenting uniquely added variance ($\beta=.08, p<.05$). The model predicting age 4 deceitful-callous behavior from age 2 measures was also significant ($R^2=.18, p <.001$) and age 2 observed harsh parenting added unique variance ($\beta=.12, p<.01$). Finally, the model predicting age 4 deceitful-callous behavior from age 3 measures was significant ($R^2=.38, p<.001$) and age 3 observed harsh parenting added unique variance ($\beta=.09, p<.01$). Earlier deceitful-callous behavior, but not positive behavior support, added unique variance to each of the models. This remained true when observed harsh parenting was removed from the model.

Discussion

This study advances understanding of the development of CU traits by prospectively analyzing the prediction of deceitful-callous behavior in high-risk toddlers by early negative and positive parenting. Limitations of previous studies include a reliance on parent reports of parenting behavior and cross-sectional designs, with very few studies prospectively assessing parenting, CU traits, or their potential association, particularly in young children. The current
findings provide support for the role of early harsh parenting in the emergence of CU behavior, and are consistent with previous studies that demonstrate an association between negative parenting practices and CU trait development in older children (e.g., Fontaine et al., 2011; Pardini et al., 2007). Results were similar when either parent-reported or observed harshness was used as a predictor, supporting the reliability of this association across measurement methods. In addition, the prospective design enabled earlier deceitful-callous behavior to be controlled for in models, enabling more robust conclusions to be drawn about the effect of harsh parenting on CU behavior development (i.e., over and above earlier child behavior, observed positive parenting and other covariates). Indeed, Daversa (2010) argued that parents who demonstrate abusive, unemotional or harsh behavior, or who communicate their feelings poorly, may leave their children unable to understand the perspectives or emotional demonstrations of others, and therefore at greater risk for psychopathic-like behaviors. The results from the current study fit well with Daversa’s theoretical perspective.

While the results suggest that harsh parenting relates to the emergence of deceitful-callous behavior, the contribution made by parenting was modest and earlier deceitful-callous behavior was a consistently strong predictor in models. In other words, there was stability in the parent’s perception of deceitful-callous behavior over time. The current study did not directly test this question, but it is theoretically intuitive that if a child is perceived as showing high levels of CU behavior, and is seen as fearless in response to punishment and non-compliant with directives, this may motivate a parent to use harsher punishment. Increasingly harsh parenting feeds into cycles of mutual negative reinforcement, where both parent and child continually resort to coercion in their interactions (Patterson, 1982) and punishment severity and inconsistent
parenting escalates (Dadds & Salmon, 2003). Future studies could assess cascade models of reciprocal influence between CU and parenting behaviors.

The lack of significant prediction of deceitful-callous behavior by observed positive parenting, the positive behavior support composite, also merits discussion. The cognitive and affective characteristics of children with high levels of CU traits include insensitivity to punishment and reward-drive aggression (Frick & White, 2008), which suggests that positive, reward-focused parenting may be a theoretically salient target of investigation. While positive parenting did not predict deceitful-callous behavior in the current study, other studies have found an association between positive dimensions of parenting and child CU traits (e.g., Frick et al., 2003; Pardini et al., 2007). Furthermore, parental warmth and positive affect have been found to predict conscience development in children showing fearlessness and punishment-insensitivity (e.g., Kochanska, 1997). The current measure focused on observed, active parenting behavior, whereas it may be that parental warmth and affect are more relevant to the construct of CU traits and related behaviors. On the other hand, previous studies using this sample (Dishion et al., 2008) have shown that positive parenting predicts changes in conduct problems over time. Thus, it also may be that positive parenting is critical for the development of conduct disorders, but has less of an effect on specific CU behaviors. Finally, it is worth noting the greater preponderance of deceitful items in the deceitful-callous behavior measure compared to CU scales in older ages, which could also partly account for the low correlations with positive versus harsh parenting.

There are a number of unique strengths to the present study, including the large sample size, the use of observed measures of parenting and prospective, longitudinal measurement from toddler age. At the same time, the results should be interpreted in the context of several limitations. First, it is yet to be established how and whether the measure of deceitful-callous
behavior is prognostic of future CU traits in middle childhood and adolescence. Future studies using the current sample will seek to validate the deceitful-callous behavior measure against a fuller measure of CU traits, the ICU (Frick, 2004) at later assessment waves. Second, the results highlight the need for continued investigation into the extension of the construct of CU traits to very young children. Specifically, while a variety of observational paradigms employed within the developmental literature suggest that preschool children demonstrate behaviors relating to the construct of CU traits (e.g., Kochanska et al., 2002), the internal consistency for the deceitful-callous measure was weak at age 2. Thus, aspects of deceitful-callous behavior and CU traits may be insufficiently developed to assess before age 3 (Hyde et al., in press). Third, it is difficult to assess the potential role of distorted parental perceptions of their child, which may be a key factor in defining parent-child interaction processes of harshness. The issue of parental perceptions again highlights the need to assess early manifestations of CU behavior using methods that are independent of parent perceptions, including observational tasks and experimental paradigms (e.g., Kochanska et al., 2002; Svetlova et al., 2011). Fourth, the measure of positive parenting may have been limited by a focus on observed, goal-directed parenting behaviors, and future studies are needed that test associations between affectively-based measures of positive parenting and CU trait emergence during early and later childhood. Finally, the current study focused on low-income children with multiple risk factors, including family risk (e.g., maternal depression, history of substance use), and early child problem behavior. Thus, it is unclear whether the results would be generalizable to children from higher-income families with fewer risk factors.

The present study is the first to have examined the role of very early parenting in the development of deceitful-callous behavior. Specifically, parent-reported and observed harsh
parenting were longitudinally associated with young children displaying deceitful-callous behaviors. The results provide support for early interventions to target harsh parenting, in order to prevent the emergence of behaviors that seem reliably and strongly related to later child CP (Hyde et al., in press). At the same time, the results highlight the need for future studies to examine child-driven effects, including the extent to which deceitful-callous behaviors have a genetic basis, the role of temperamental factors, such as fearlessness, and the interaction of these with specific aspects of parenting.

Key points

- Very early parent-reported and observed harsh parenting predicted the emergence of deceitful-callous behavior

- Parent reports of deceitful-callous behavior also predicted later deceitful-callous behavior

- A multi-method measure of observed positive parenting did not predict deceitful-callous behavior

- The results support interventions that target harsh parenting practices to reduce the emergence of CU behavior

- Future longitudinal and intervention studies are needed to examine child-driven effects of early CU behavior and their interaction with parenting practices
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(rebecca.waller@gtc.ox.ac.uk)
References


Table 1

**Recruitment descriptives and demographic characteristics**

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Table 2

*Cross-sectional and longitudinal bivariate correlations between study variables (N=731)*

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<td>7. Age 3 observed harsh parenting</td>
<td>.04</td>
<td>.15**</td>
<td>.18**</td>
<td>.06</td>
<td>.20**</td>
<td>.23**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Age 2 positive behavior support</td>
<td>-.13**</td>
<td>-.05</td>
<td>-.09*</td>
<td>.01</td>
<td>-.02</td>
<td>-.17**</td>
<td>-.13**</td>
<td></td>
</tr>
<tr>
<td>9. Age 3 positive behavior support</td>
<td>-.14**</td>
<td>-.11**</td>
<td>-.08*</td>
<td>-.02</td>
<td>-.08*</td>
<td>-.19**</td>
<td>-.22**</td>
<td>.53**</td>
</tr>
</tbody>
</table>

* p < .01 level (2-tailed).

* p < .05 level (2-tailed).
Table 3

Longitudinal prediction of deceitful-callous behavior by parent-reported harshness

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Age 3 deceitful-callous behavior</th>
<th>Age 4 deceitful-callous behavior</th>
<th>Age 4 deceitful-callous behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>B</td>
<td>B (SE)</td>
</tr>
<tr>
<td>Age 2 deceitful-callous</td>
<td>.58 (.04)</td>
<td>.44***</td>
<td>.76 (.066)</td>
</tr>
<tr>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 3 deceitful-callous</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>behavior</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 2 positive support</td>
<td>-.002 (.007)</td>
<td>-.007</td>
<td>-.012 (.011)</td>
</tr>
<tr>
<td>Age 2 parent-reported</td>
<td>.04 (.007)</td>
<td>.20***</td>
<td>.048 (.01)</td>
</tr>
<tr>
<td>harshness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Δ(R^2) = .04, (p&lt;.001)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 3 positive support</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Age 3 parent-reported</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>harshness</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\*\(p<.05\), \**\(p<.01\), \***\(p<.001\). Note: Demographic factors (intervention group, parent education, and child race and gender) included as step 1 in models but not shown in table. \(\Delta R^2\) for final step adding parenting measures.
Table 4

**Longitudinal prediction of deceitful-callous behavior by observed harsh parenting**

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Age 3 deceitful-callous behavior</th>
<th>Age 4 deceitful-callous behavior</th>
<th>Age 4 deceitful-callous behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B (SE)</td>
<td>β</td>
<td>B (SE)</td>
</tr>
<tr>
<td>Age 2 deceitful-callous behavior</td>
<td>.60 (.045)</td>
<td>.44***</td>
<td>.76 (.067)</td>
</tr>
<tr>
<td>Age 3 deceitful-callous behavior</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Age 2 positive behavior support</td>
<td>-.005 (.007)</td>
<td>.022</td>
<td>-.006 (.011)</td>
</tr>
<tr>
<td>Age 2 observed harsh parenting</td>
<td>.003 (.001)</td>
<td>.08*</td>
<td>.006 (.002)</td>
</tr>
</tbody>
</table>

\[\Delta R^2=.01, p<.05 \quad \Delta R^2=.01, p<.01\]

| Age 3 positive behavior support | n/a | n/a | n/a | n/a | .001 (.011) | .002 |
| Age 3 observed harsh parenting | n/a | n/a | n/a | n/a | .004 (.003) | .09** |

\[\Delta R^2=.01, p<.05\]

*p<.05, **p<.01, ***p<.001. Note: Demographic factors not shown in table. \(\Delta R^2\) for final step adding parenting measures.