

The Reciprocal Influence of Callous-Unemotional Traits, Oppositional Defiant Disorder and  
Parenting Practices in Preschoolers

Caitlin Brown, Roser Granero and Lourdes Ezpeleta<sup>1</sup>

Department of Clinical and Health Psychology, Autonomous University of Barcelona

Post-print version

Brown, C., Granero, R., & Ezpeleta, L. (2016). The reciprocal influence of callous-unemotional traits, oppositional defiant disorder and parenting style in preschoolers. *Child Psychiatry and Human Development*. doi: 10.1007/s10578-016-0641-8

<sup>1</sup> Unitat d'Epidemiologia i de Diagnòstic en Psicopatologia del Desenvolupament  
Universitat Autònoma de Barcelona  
Edifici B, Campus de la UAB  
08193 Bellaterra (Cerdanyola del Vallès)  
Barcelona, Spain  
+34 93 586 82 59  
lourdes.ezpeleta@uab.cat

### Abstract

The present study investigates reciprocal associations between positive parenting, parental monitoring, CU traits, and ODD in children assessed at age 3 and again at age 6. Data were collected from a sample of preschoolers ( $N = 419$ ; 51.58% female) through diagnostic interviews and questionnaires answered by parents and teachers. Structural equation modeling revealed a bidirectional relationship between poor monitoring and ODD, with poor monitoring at age 3 predicting ODD at age 6 ( $\beta = .11, p < .05$ ), and ODD at age 3 predicting poor monitoring at age 6 ( $\beta = .10, p < .05$ ). While poor monitoring at age 3 predicted CU traits at age 6 ( $\beta = .11, p < .05$ ), CU traits at age 3 predicted positive parenting ( $\beta = .09, p < .05$ ) and ODD ( $\beta = .13, p < .05$ ) at age 6. Results have important implications for early targeted parenting interventions for CU traits and ODD.

*Keywords:* Callous-unemotional traits, oppositional defiant disorder, parenting style, structural equation modeling, preschoolers

## The Reciprocal Influence of Callous-Unemotional Traits, Oppositional Defiant Disorder and Parenting Style in Preschoolers

The addition of the “limited prosocial emotions” specifier to conduct disorder (CD) in the *DSM-5* reflects a recognition of the heterogeneity of traits and behaviors associated with antisocial behavior in youth and adolescents [1] and the need to examine callous-unemotional (CU) traits as characteristic of a particularly high-risk subgroup [2, 3]. Children who score highly on measures of CU traits tend to exhibit diminished guilt after negative actions, insensitivity to punishment, poor recognition of distress in others, severe antisocial behavior, and a lack of empathy and fear [4].

### **CU traits, CD and ODD**

The current diagnostic framework allows for the identification of CU traits in conjunction with CD, usually diagnosed in older children; however, research indicates that there may also be a significant association between CU traits and ODD, which is more common earlier in development [5]. Furthermore, there is strong general evidence to support the importance of detecting CU traits in children with ODD, as they may represent a particularly high-risk, treatment-resistant subgroup. For instance, in a sample of boys age 4 to 8, those diagnosed with ODD who had high CU traits consistently retained diagnoses of ODD after a parenting intervention, whereas their low-CU counterparts benefitted from the treatment [6]. Relatedly, children age 3 to 9 with high levels of CU traits exhibited more severe ODD symptoms compared to their low-CU peers, indicating an elevated probability of negative clinical outcomes at an early age [7]. In light of evidence that the construct of CU traits does, in fact, seem to apply to younger children, researchers have begun to examine just how early in development CU traits

can be identified, with evidence that CU traits can be reliably identified in the preschool period [7, 8, 9]. However, there is a need for research using representative samples of preschoolers, as previous studies largely examine a wider range of ages in high-risk or delinquent youth.

Furthermore, evidence of a relationship between CU traits and ODD in preschoolers would improve clinicians' ability to diagnose—and ideally, to provide targeted interventions for—CU traits at the age when antisocial personality traits and behaviors are most malleable [10, 11].

Consistent with findings pointing to CU traits as a high-risk indicator in children with disruptive behavior (DB) disorders, there appear to be distinct developmental pathways for CU traits compared to related DB [12, 13]. Children with CU traits can be distinguished from children with DB alone on the basis of genetic risk, cognitive and affective characteristics, environmental influences, biological factors, and personality traits [3]. Heritability estimates support an especially strong genetic component to CU traits and a limited influence of shared environment [14], in contrast with the modest heritability and high environmental influence associated with risk for child antisocial behavior [15]. Moreover, children with CU traits display unique cognitive and affective deficits, such as a blunted fear response that has been linked to amygdala hypoarousal [16]. In terms of categorical diagnoses, elevated CU traits would likely be a consistent predictor of CD or ODD, but an ODD or CD diagnosis alone would not predict CU traits.

### **Parenting practices as a risk factor for CU traits**

Although genetics play an important role, environmental factors such as parenting practices [17] and peer behaviors [18] also seem to have a significant impact on the development of CU traits. In studying risk and protective factors for CU traits in the preschool period,

parenting behaviors are an especially important area of focus given the central role of the parent-child relationship in the first few years of life. Research suggests that a positive and consistent parenting style fosters early conscience development, the absence of which is a risk factor for DB and associated issues [19]. Unsurprisingly, research surrounding the association between parenting practices and child DB suggest that positive parenting and parental warmth may be protective factors for child antisocial behavior, whereas negative parenting practices—such as inconsistent discipline, harsh parenting, and poor monitoring—may pose an increased risk for general antisocial behavior and aggression in kindergarteners [20]. A key question in research on parenting practices, CU traits, and ODD, then, is whether specific parenting styles are differentially associated with risk for ODD and CU traits in the first few years of life, and whether ODD and CU traits lead to different reactions in terms of parenting behaviors.

While a handful of studies have found a significant relationship between parenting practices and CU traits, there remains debate regarding which specific dimensions of parenting are most relevant to the development of CU traits in children, and whether they differ from parental risk factors for ODD. Harsh or punitive parenting has been significantly associated with increased levels of CU traits and ODD over time, in children with ages ranging from 3 to 10 [21] and 4 to 9 [22]. Similar findings were observed in a high-risk sample of preschoolers age 2 to 3 [8]. At the same time, some evidence indicates that for children with high CU traits, exposure to negative parenting is less important than a lack of parental warmth or involvement [7]. Parental warmth seems to be related to decreases in both CU traits and ODD: In a longitudinal study of high-risk preschoolers [23], researchers found that CU traits did not moderate the effects of a positive parenting intervention on CD or ODD, suggesting that positive parenting is important to both CD and ODD in high-risk children ages 2 to 4 [9]. Parental warmth, a construct that

captures an affective component beyond positive parenting, has been associated with a significant decrease in CU traits over time in children ages 3 to 10, though the effects seem to be moderated by age and sex [21]. A similar trend has been observed in high-risk preschoolers [10]. Further research on community samples in the preschool period is necessary to identify whether positive parenting and/or parental warmth can mediate the severity of CU traits in general, and may provide insight into parenting interventions to help reduce CU traits.

Although other dimensions of parenting, such as poor monitoring, have been studied in conjunction with CD and ODD in children, only a handful of studies have examined the relationship between poor monitoring and CU traits. Poor parental monitoring has been identified as a risk factor for general DB in children, and evidence suggests that CU traits may moderate the impact of poor monitoring on CD and ODD in children ages 5 to 12 [24]. Poor monitoring at an early age may lead to increases in CU traits over time due to dysfunctional family processes in the home [21]. It is possible that inadequate parental supervision facilitates the development of the lack of empathy characteristic of CU traits, as uninvolved parents may seem disinterested or fail to set a model of caring for others. However, there remains a need to examine the role of parental monitoring with respect to CU traits in community samples of preschoolers.

### **Bidirectional effects of CU traits on parenting**

Recognizing that CU traits and ODD also impact parenting behavior, researchers have begun to examine the reciprocity of these parent-child relationships. In fact, although the vast majority of relevant research addresses the parent-to-child effects, the effects in the opposite direction—that is, of child CU traits on parenting behavior—may actually be greater in both

older children [21] and adolescents [25]. Consequently, of critical importance is determining how early CU traits impact parenting behaviors and whether the parental response to ODD symptoms is different from the response to CU traits.

Research in high-risk samples of older children supports a bidirectional relationship between poor parental monitoring and ODD, according to which negative parenting fuels increased defiance in children, which in turn provokes further negative parenting practices [26]. This represents an interaction between genetic predisposition and early-environment, wherein negative temperament fuels harsh parenting, which furthers child antisocial behavior [27]. A similar model has been proposed for parental warmth and CU traits: In a longitudinal study of a high-risk sample of preschool children, parental warmth negatively predicted the early onset of CU traits when controlling for behavior problems in general, and early CU traits predicted reductions in observed parental warmth [9]. Similarly, in a slightly older sample of children, negative parent-to-child affect at child age 9-10 predicted psychopathic personality at age 14-15, and vice versa [28].

At the same time, there is evidence to suggest that parents may actually respond to elevated CU traits with increases in positive parenting [24, 29]. Crum et al. (2015) found that positive parenting was associated with elevated conduct problems only in children with high CU traits, whereas the opposite was true for children with low CU traits. Claims regarding the relationship between positive parenting and CU traits must be considered in the context of development, as parental reactions to CU traits could change over time [24]. Research indicates that children with high CU traits display insecure attachment to parents in the first few years of life (Pasalich et al., 2014), and studies associating CU traits with decreased parental monitoring point to a decrease in monitoring over time [21]. Thus, parents may respond to perceived

insecure attachment with positive parenting behaviors in the preschool period, later distancing themselves or reacting with harsh parenting when attempts at positive parenting prove unsuccessful in changing child behavior and child-parent relationships. Considered in conjunction with observations of this relationship in the opposite direction [9], there is an evident need to clarify associations between CU traits and positive parenting early in development, particularly since the parental response to CU traits may change significantly across development.

### **Aims**

The goal of the present study was to test the reciprocal predictive relationships between poor parental monitoring, positive parenting, CU traits and ODD in the preschool period. While several other studies have tested the reciprocity of this relationship in children, only a few have done so in preschoolers [9], a necessary population of study if the goal is early intervention and prevention of disruptive behavior with and without CU traits. Additionally, the majority of previous studies have relied on parent reports of both parenting behavior and CU traits in children, and the inclusion of other informants, such as teachers, will reduce bias. In order to make predictive claims with more confidence, the current study employed a large community sample, data collected from multiple informants (reports from both teachers and parents) and longitudinal measures (over a period of 3 years, starting at child age 3). Cognizant of the extant literature, we hypothesized that CU traits at age 3 would predict ODD at age 6, but that ODD at age 3 would not be predictive of CU traits at age 6. Additionally, we predicted that CU traits and ODD in preschoolers would relate to different dimensions of parenting. Specifically, we hypothesized that poor monitoring at age 3 would predict ODD at age 6, and that ODD at age 3



would predict increases in poor parental monitoring at age 6. Furthermore, we predicted that poor monitoring and low positive parenting at age 3 would predict CU traits at age 6, and conversely, that CU traits at age 3 would predict positive parenting at age 6.

## Method

### Participants

Participants were preschool children, parents and teachers recruited as part of a longitudinal study of psychological risk factors across development [31]. In 2008, a random sample of 2,283 3-year-olds from 54 schools (25.9% public, 74.1% semi-public) in Barcelona, Spain, was obtained from the census ( $N = 13,578$ ), and a double-phase design was then applied to select participants. In the first phase, the families were contacted, and 1,341 (58.7%) agreed to participate. These children underwent an initial screening with the parent-administered Strengths and Difficulties Questionnaire (SDQ) [32], with four supplementary questions regarding ODD. All children who screened positively for behavioral problems (defined by a raw score of 4 or more on the SDQ conduct problems scale, being in the 90<sup>th</sup> percentile in community samples, or a response option of “certainly true” for any of the *DSM-IV* ODD symptoms), were invited to participate. A control group was formed through the random selection of 28% of the children who had tested negative on the screening. Exclusion criteria included the presence of developmental disorders or intellectual disabilities, as well as difficulties in comprehension of Spanish or Catalan. Of those contacted, 622 children (89.4%) and their parents agreed to participate in the study, with no statistically significant differences in sex ( $p = .82$ ) or type of school ( $p = .85$ ) found between the participants and those who did not take part. Table 1 includes demographic information for study participants at intake (age 3).

## Materials

*CU traits (Teacher-Reported).* The Inventory of Callous-Unemotional Traits (ICU) [33] was administered to teachers when children were 3 and 6 years old. The ICU is a 24-item, 4-point Likert scale (0 = *Not at all true*; 1 = *Somewhat true*; 2 = *Very true*; 3 = *Definitely true*) measure used to assess CU traits in preschoolers. Items are grouped into three factors, including the callous, uncaring, and unemotional subscales. The global score, a sum of all of the items in the questionnaire, was used as a measure of CU traits and achieved high internal consistency in our sample (Cronbach's alpha  $\alpha = .88$ ). Previous research suggests that this scale is a valid measure of CU traits in preschoolers [34, 35, 36], relating to deficits in prosocial behavior, conduct problems, and verbal, relational and physical aggression.

*Oppositional Defiant Disorder.* The Spanish version of the Diagnostic Interview for Children and Adolescents (DICA-PPY) [37] was used to assess the presence of an ODD diagnosis according to *DSM* criteria. Trained interviewers administered the DICA to caregivers in order to determine the diagnostic status of ODD, and responses were registered using standardized diagnostic software.

*Parenting Practices.* The Alabama Parenting Questionnaire [38] is a 42-item, 5-point Likert (1 = *Never*; 2 = *Almost never*; 3 = *Sometimes*; 4 = *Often*; 5 = *Always*) questionnaire measuring five dimensions of parenting: positive involvement with children, supervision and monitoring, use of positive discipline techniques, consistency in the use of discipline, and the use of corporal punishment. The APQ does have a preschool version, which contains three factors (positive parenting, inconsistent parenting and punitive parenting) [39]. However, since the areas of interest in this work were the positive parenting and poor monitoring/supervision subscales, it

was necessary to use the subscales from the original version, even though this resulted in a degree of psychometric compromise. The positive parenting subscale contains items such as “You let your child know when he/she is doing a good job with something,” and “You reward or give something extra to your child for obeying you or behaving well.” The poor monitoring/supervision subscale includes items relevant to Spanish preschoolers, all of whom attend school by the age of 3 and carry an “agenda” that serves as a means of communication between the teacher and parents, a record of disciplinary action, and a place to put reminders regarding homework and school activities. With this in mind, the monitoring/supervision subscale includes items such as “You know how your child behaves outside the house (at school, at friends’ houses, on field trips, at birthday parties),” which would apply to when a child went to a friend’s birthday party, for instance, and stayed there to play without the parent. Another example is, “Your child arrives late to school in the mornings.” A final sample item is, “You usually look at your child’s school bag and any notes from the teacher every day,” which refers to the child’s agenda (described above), a means of communication between the school and parents that all preschoolers have in Spain. There was high internal consistency for the positive parenting subscale ( $\alpha = .88$  at age 3 and  $\alpha = .89$  at age 6), while the internal consistency was lower for the monitoring subscale ( $\alpha = .20$  at age 3 and  $\alpha = .24$  at age 6). The reliability of parenting scores over time (3 year interval), calculated through the intraclass correlation coefficient, was moderate for both positive parenting ( $r=.42$ ) and parental monitoring ( $r=.47$ ).

## **Procedures**

The ethics review committee of the authors’ institution approved the study. Schools were contacted to ask for permission before beginning the study, at which point families that were

recruited gave written consent to participate. Families who met screening criteria and agreed to participate were contacted by telephone and then interviewed at the school, first when the children were 3 years old, and again when the children were age 6. Teachers responded to questionnaire items from the ICU, and parents completed a questionnaire with items from the APQ regarding parenting practices. Trained interviewers gathered information about ODD symptoms from primary caregiver reports on the DICA-PPY. All interviews were supervised and recorded, and interviewers were blind to screening group.

### **Statistical Analysis**

Data were analyzed using Stata13 for Windows. Structural Equation Modeling (SEM) was used to generate the pathways between parenting practices, CU traits and ODD at child ages 3 and 6. Because of the double-phase sampling design, analyses were performed using a weighted variable that assigned each child a value inverse to the probability of random selection at the second phase of sampling, such that resulting relationships could be generalized to a normal population. Goodness-of-fit was evaluated using the standard indices of fit [40], including chi-square ( $\chi^2$ ), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Squared Residual (SRMR), and the Tucker-Lewis Index (TLI). Criteria for adequate fit included having an  $\chi^2$  with a  $p > 0.05$ , a CFI and TLI  $> 0.9$ , a RMSEA  $< 0.08$  and a SMSR  $< 0.10$ .

Of the 622 families that entered the study when the children were 3 years old, 419 (67.4%) participated at child age 6, and these 419 were included in the final model. Selective attrition analysis revealed no significant differences in gender ( $p = .28$ ), type of school ( $p = .46$ ), percentage of single-parent households ( $p = .67$ ) or socioeconomic status ( $p = .07$ ) between the

participants who completed the study and those lost to attrition. No significant differences were found when comparing those who completed the study and dropouts on baselines levels of ODD ( $p = .61$ ), parental monitoring ( $p = .13$ ), or positive parenting ( $p = .40$ ). However, the mean level of CU traits was higher for the group lost to attrition ( $p = .001$ ).

### Results

Table 2 contains the correlation matrix for the variables analyzed in the study, and Figure 1 displays the pathway diagram reflecting inter-time and intra-time correlations between factors. After testing a series of models and considering different variables, a final model was generated according to methodological soundness (adequate indices of fit) and consistency with clinical evidence (i.e., the pattern of correlations reflects empirically-demonstrated relationships from the literature). Adequate goodness-of-fit was achieved for this SEM:  $\chi^2 = 10.43$  ( $p = 0.4$ ); CFI = 0.998; TLI = 0.996; RMSEA = 0.01; SMSR = 0.02.

The construct of parenting was represented by two latent variables in the path analysis (one at age 3 and one at age 6), each defined by poor monitoring and positive parenting scores. The latent class of parenting was significantly defined by both poor monitoring and positive parenting at age 6 ( $\Gamma = .36$  and  $\Gamma = .32$ , respectively). At age 3, positive parenting was more important to the construct of parenting ( $\Gamma = .28$ ), and though the correlation coefficient was of a similar magnitude ( $\Gamma = .22$ ), parental monitoring was not significantly correlated with the latent variable at this time.

Notably, callous-unemotional traits, ODD, poor parental supervision/monitoring, and positive parenting at age 3 were all highly auto-correlated at age 6 ( $\beta = .29$ ,  $\beta = .24$ ,  $\beta = .47$ , and  $\beta = .42$ , respectively), indicating construct stability over time. CU traits at age 3 predicted ODD at age 6, indicating that the probability of presenting ODD increases as CU traits increase ( $p =$

0.005). The presence of ODD at age 3 did not predict CU traits at age 6. There was no significant inter-time correlation between CU traits and ODD at age 3, but there was a trend toward significance at age 6 ( $p < .10$ ). Poor monitoring at age 3 was a significant predictor of both CU and ODD traits at age 6 ( $p = 0.018$  and  $p = 0.017$ , respectively), and the presence of ODD at age 3 predicted high poor monitoring scores at age 6 ( $p = 0.02$ ). Although positive parenting at age 3 was not predictive of CU traits or ODD at age 6, high levels of CU traits at age 3 were associated with high positive parenting scores at age 6 ( $p = 0.047$ ).

### **Discussion**

The current study examined the reciprocal relationship between CU traits, ODD, positive parenting and poor parental monitoring/supervision in a representative sample of preschoolers. In support of our hypotheses, high CU traits at age 3 were predictive of ODD and positive parenting at age 6, and there was a bidirectional relationship between ODD and poor parental monitoring at ages 3 and 6. While positive parenting at age 3 was not predictive of reductions in CU traits at age 6, CU traits at age 6 were influenced by poor parental monitoring at age 3.

Children with CU traits may be at an elevated risk of developing ODD, which coincides with previous research on the association of CU traits with more severe forms of ODD [6, 5]. The connection between children with high CU traits at age 3 and children with high CU traits and ODD at age 6 supports the notion that CU traits are identifiable early in development, that they have certain stability over time, and that they may be significantly related to ODD and not just CD. Certain aspects of ODD seem to be more connected to CU traits than others: The ODD dimension of hurtfulness, for instance, has been tagged as an indicator of callousness and aggression toward others [41]. The finding that CU traits at age 3 were predictive of ODD at age

6 reinforces the notion of CU traits and ODD as distinct yet related constructs, suggesting that it may be helpful to consider including CU traits as a specifier for ODD, and not just for CD. This would help to identify children with signs of CU traits in the first few years of life, and given the need for differential treatment interventions in the case of CU traits, as well as the neuronal plasticity early in development, it could improve our odds of arresting the development of child callous-unemotional traits. Moreover, the ability to identify CU traits at an earlier age, in conjunction with ODD, is of particular importance, as children with high CU traits appear to exhibit more severe ODD symptoms that may be resistant in the face of traditional parenting interventions [5, 6]. On the other hand, as expected, children with ODD symptoms at age 3 were not at a significantly increased risk of developing CU traits, which suggests that children with high CU traits may represent a high-risk subgroup of children with other disruptive behavior disorders.

A major objective of this study was to examine not just the parent-driven effects on child temperament and behavior, but also the child-driven effects on parenting, and in line with our hypothesis, child CU traits at age 3 were a significant predictor of positive parenting at age 6. The results of the current study address previous discrepancies in the relationship between positive parenting and CU traits. Specifically, the model dovetails with studies by Crum et al. (2015) and Falk and Lee (2012) suggesting that caregivers may react to early CU traits with positive parenting behaviors. Observed positive parenting could be a reaction to the increased distress that parents experience when faced with preschoolers who are both reactively aggressive and cold or manipulative [42]. In other words, parents may exhibit positive parenting behaviors to counteract early signs of a lack of empathy, guilt and prosocial behavior. The parental response to high CU traits in the preschool period may be positive, but over time, if positive

parenting is met with rebuffs from high-CU children, the parenting style may become less involved [24]. Finally, the relatively high socioeconomic status of participating families may have impacted this relationship, in that parents with more resources may be more likely to invest resources into responding to early CU traits with increased positivity.

For children displaying ODD symptoms at an early age, the results indicate a reciprocal effect of parent-child behavior: The parental reaction to ODD involves an increase in poor monitoring, which in turn provokes an increase in ODD. In line with previous research on the relationship between negative parenting and ODD [43], the results of the present study suggest that poor monitoring at a very early age predicts increases in temper tantrums, defiant behavior, refusals to comply with authority, and an inability to auto-regulate emotion. As described in Kochanska et al. (2010), the parent-child relationship in the preschool period is crucial to consciousness development in children, since this is when parents establish behavioral models and rules that children internalize with time. Children of poor-monitoring parents may fail to associate reward and punishment with their actions, and the absence of constructive parental feedback allows for aggressive and defiant behaviors to proliferate unchecked. Relatedly, parents may find children with ODD behavior difficult to monitor, and with increased displays of child defiance, parents would distance themselves even more in the form of reduced monitoring or supervision [42], perpetuating the cycle.

Importantly, our finding that poor monitoring poses a risk factor for CU traits suggests that despite the strong contribution of genetics, CU traits are influenced by environmental factors. As demonstrated in the literature, and as mentioned before, poor monitoring at an early age may result in deficient social learning and dysfunctional family processes, which increase the risk for difficulties in conscientiousness maturation and the development of CU traits [21]. It is



possible that parents who display insufficient or poor monitoring fail to provide a model of prosocial behavior, which could allow for the development of the lack of empathy characteristic of CU traits. Interventions focused on improving parental monitoring have proven effective in decreasing ODD symptoms [44, 45]. Future studies should examine the effectiveness of similar interventions on CU traits.

The results of the path analysis should be considered in light of several limitations and strengths that may indicate avenues for further exploration of the relationships between CU, parenting style and ODD. Most of the previous research on parenting has relied on self-reports, despite the fact that some of the constructs encompassed by parenting are vulnerable to distortions inherent in this technique (e.g., retrospective frequency estimates across long periods of time, individual interpretation of terms, sensitive items that may induce social desirability responses, and feelings of intrusiveness or disclosure) [46]. In the present study, parenting behavior was similarly measured using self-reports on the APQ. While the positive parenting scale yielded good reliability, the reliability was low for the monitoring scale. The contents of the monitoring scale may be more susceptible to being interpreted as intrusive, given that this scale questions parental ability to supervise the child. Social desirability bias may thus influence parents to censor their responses, compromising the psychometric properties of the scale. In fact, this issue with low reliability on the monitoring scale surfaced in the original work on the APQ [47], which looked at a clinical sample of children ages 9 to 13, as well as in a community sample of children ages 4 to 9 [48]. Globally, the internal consistency of parenting measures is an issue that needs improvement. According to a review by Morsbach and Prinz (2006) [46], two-thirds of the internal consistency estimates for monitoring subscales of parenting measures are below the desirable levels. As an alternative, we estimated the reliability of monitoring scores

over time and found a moderate intraclass coefficient for both positive parenting and parental monitoring. Considering that the time between the assessments was an interval of 3 years, these values suggest significant temporal stability, which may be indicative of reliability. Future studies should attempt to replicate the results of the present study using observational measures such as speech samples along with parent reports, and ideally, multiple informants will provide information for all variables included in the study. A final limitation arose as a result of selection bias: High scores on the ICU at baseline were associated with dropout. The lack of statistical comparability between completers and dropouts could limit the external validity of the research, and the results should be considered with caution.

To our knowledge, this is the first study to examine reciprocal relationships between parenting practices, CU traits and ODD in a large and representative sample of preschoolers, suggesting a greater ability to generalize results to the preschool population than would be possible with previous high-risk samples [19, 9]. A longitudinal design was employed, taking repeated measures of CU traits, ODD and parenting over a period of 3 years from ages 3 to 6. In doing so, the data reflects the transition from toddlerhood to early childhood, which is an important sensitive period for emotion regulation [49]. The participation of multiple informants, especially teachers, in supplementing parental reports of child behavior allows for increased confidence in the resultant relationships, as the majority of previous studies have relied exclusively on parent informants. Additionally, the use of both diagnostic interviews and questionnaires provide a more comprehensive picture of child psychopathology and parenting practices at the times of data collection. Results support the notion that while poor monitoring and supervision present an increased risk for both ODD and CU traits, early defiant behavior and callous-unemotional traits lead to drastically different reactions in parenting style. Although

there is a reciprocal parent-child relationship between ODD and poor monitoring, high CU traits at an early age predict increases in positive parenting. Interventions focused on improving parental monitoring at a very early age may help to reduce both ODD and CU traits in preschoolers.

### Summary

With the inclusion of the “limited prosocial emotions” specifier of conduct disorder (CD) in the *DSM-5*, there is a need for further investigation into the relationship between callous-unemotional (CU) traits and related psychological features. While relationships between CU traits, parental warmth, and punitive parenting have been examined, other relevant dimensions of parenting, such as poor monitoring, should be assessed. The present study investigates reciprocal associations between positive parenting and parental monitoring, CU traits, and oppositional defiant disorder (ODD) in children assessed at age 3 and again at age 6. Data were collected from a large community sample of Spanish preschoolers ( $N = 419$ ; 51.58% female) through diagnostic interviews and questionnaires answered by parents and teachers. Structural equation modeling revealed a bidirectional relationship between poor parental monitoring and ODD, with poor monitoring at age 3 predicting ODD at age 6 ( $\beta = .11, p < .05$ ), and ODD at age 3 predicting poor monitoring at age 6 ( $\beta = .10, p < .05$ ). While poor monitoring at age 3 predicted CU traits at age 6 ( $\beta = .11, p < .05$ ), the relationship was not bidirectional, and CU traits at age 3 were instead associated with increases in positive parenting at age 6 ( $\beta = .09, p < .05$ ). Additionally, CU traits at age 3 were predictive of ODD at age 6 ( $\beta = .13, p < .05$ ). The empirical results have important implications for targeted parenting interventions for CU traits and ODD at an early age.

## References

- 1 Frick P.J., & Moffitt, T.E. (2010). A proposal to the DSM-V Childhood Disorders and the ADHD and Disruptive Behavior Disorders Work Groups to include a specifier to the Diagnosis of Conduct Disorder based on the presence of Callous–unemotional Traits. American Psychiatric Association, USA, 1–36.
- 2 Barry, C. T., Frick, P. J., DeShazo, T. M., McCoy, M., Ellis, M., & Loney, B. R. (2000). The importance of callous–unemotional traits for extending the concept of psychopathy to children. *Journal of Abnormal Psychology, 109*(2), 335.
- 3 Frick, P.J., Ray, J.V., Thornton, L.C., & Kahn, R.E. (2014). Can callous-unemotional traits enhance the understanding, diagnosis, and treatment of serious conduct problems in children and adolescents? A comprehensive review. *Psychological Bulletin, 1-57*. doi: 10.1037/a0033076
- 4 Frick, P.J., & White, S.F. (2008). Research review: The importance of callous-unemotional traits for developmental models of aggressive and antisocial behavior. *Journal of Clinical Psychology and Psychiatry, 49*(4), 359-375. doi: 10.1111/j.1469-7610.2007.01862.x
- 5 Hawes, D. J., Price, M. J., & Dadds, M. R. (2013). Callous-unemotional traits and the treatment of conduct problems in childhood and adolescence: A comprehensive review. *Clinical child and family psychology review, 17*(3), 248-267. doi: 10.1007/s10567-014-0167-1
- 6 Hawes, D.J., & Dadds, M.R. (2005). The treatment of conduct problems in children with callous-unemotional traits. *Journal of Consulting and Clinical Psychology, 73*, 737-741. doi: 10.1037/0022-006X.73.4.737

- 7 Hawes, D.J., Dadds, M.R., Brennan, J., Rhodes, T., & Cauchi, A. (2013). Revisiting the treatment of conduct problems in children with callous-unemotional traits. *Australian & New Zealand Journal of Psychiatry*, *47*(7), 646-653. doi: 0.1177/0004867413484092
- 8 Waller, R., Gardner, F., Hyde, L.W., Shaw, D.S., Dishion, T.J., & Wilson, M.N (2012). Do harsh and positive parenting predict parent reports of deceitful-callous behavior in early childhood? *Journal of Child Psychology and Psychiatry*, *53*(9), 946-953. doi: 10.1111/j.1469-7610.2012.02550.x
- 9 Waller, R., Gardner, F., Viding, E., Shaw, D.S., Dishion, T.J., Wilson, M.N., & Hyde, L.W. (2014). Bidirectional associations between parental warmth, callous unemotional behavior, and behavior problems in high-risk preschoolers. *Journal of Abnormal Child Psychology*, *42*, 1275-1285. doi: 10.1007/s10802-014-9871-z
- 10 Waller, R., Gardner, F., Shaw, D. S., Dishion, T. J., Wilson, M. N., & Hyde, L. W. (2015). Callous-unemotional behavior and early-childhood onset of behavior problems: the role of parental harshness and warmth. *Journal of Clinical Child & Adolescent Psychology*, *44*(4), 655-667. doi: 10.1080/15374416.2014.886252
- 11 Waller, R., Gardner, F., & Hyde, L.W. (2013). What are the associations between parenting, callous-unemotional traits, and antisocial behavior in youth? A systematic review of evidence. *Clinical Psychology Review*, *33*, 593-608. doi: 10.1016/j.cpr.2013.03.001
- 12 Frick P.J. (2006). Developmental pathways to conduct disorder. *Child and Adolescent Psychiatry Clinics of North America*, *15*, 311–331. doi: 10.1016/j.chc.2005.11.003
- 13 Frick, P. J., & Viding, E. (2009). Antisocial behavior from a developmental psychopathology perspective. *Development and Psychopathology*, *21*, 1111-1131. doi: 10.1017/S0954579409990071

- 14 Viding, E., Blair, R., Moffitt, T., & Plomin, R. (2005). Evidence for substantial genetic risk for psychopathy in 7-year-olds. *Journal of Child Psychology and Psychiatry*, *46*, 592-597. doi: 10.1111/j.1469-7610.2004.00393.x
- 15 Viding, E., Jones, A. P., Paul, J. F., Moffitt, T. E., & Plomin, R. (2008). Heritability of antisocial behaviour at 9: Do callous-unemotional traits matter?. *Developmental Science*, *11*(1), 17-22. doi: 10.1111/j.1467-7687.2007.00648.x
- 16 Jones, A.P., Laurens, K.R., Herba, C.M., Barker, G.J., & Viding, E. (2009). Amygdala hypoactivity to fearful faces in boys with conduct problems and callous-unemotional traits. *American Journal of Psychiatry*, *166*(1), 95-102.  
doi:10.1176/appi.ajp.2008.07071050
- 17 Frick, P.J., Kimonis, E., Dandreaux, D., & Farell, J. (2003). The 4-year stability of psychopathic traits in non-referred youth. *Behavioral Sciences & the Law, Special Issue: Juvenile Psychopathology*, *21*(6), 713-736. doi: 10.1002/bsl.568
- 18 Barker, E.D., & Salekin, R.T. (2012). Irritable oppositional defiance and callous unemotional traits: Is the association partially explained by peer victimization? *Journal of Child Psychology and Psychiatry*, *53*, 1167-1175. doi: 10.1111/j.1469-7610.2012.02579.x
- 19 Kochanska, G., Koenig, J.L., Barry, R.A., Kim, S., & Yoon, J.E. (2010). Children's conscience during toddler and preschool years, moral self, and a competent, adaptive developmental trajectory. *Developmental Psychology*, *46*(5), 1320-1332.  
doi: 10.1037/a0020381
- 20 Stormshak, E. A., Bierman, K. L., McMahon, R. J., Lengua, L. J., & Conduct Problems Prevention Research Group. (2000). Parenting practices and child disruptive behavior

- problems in early elementary school. *Journal of Clinical Child Psychology*, 29(1), 17-29. doi: 10.1207/S15374424jccp2901\_3
- 21 Hawes, D.J., Dadds, M.R., Frost, A.D., & Hasking, P.A. (2011). Do childhood callous-unemotional traits drive change in parenting practices? *Journal of Clinical Child & Adolescent Psychology*, 40(4), 507-518. doi: 10.1080/15374416.2011.581624
- 22 McDonald, R., Dodson, M.C., Rosenfield, D., & Jouriles, E.N. (2011). Effects of a parenting intervention on features of psychopathy in children. *Journal of Abnormal Child Psychology*, 39, 1013-1023. doi: 10.1007/s10802-011-9512-8
- 23 Hyde, L.W., Shaw, D.S., Gardner, F., Cheong, J., Dishion, T.J., & Wilson, M (2013). Dimensions of callousness in early childhood: Links to problem behavior and family intervention effectiveness. *Development and Psychopathology*, 25, 347-363. doi: 10.1017/S0954579412001101
- 24 Crum, K.I., Waschbusch, D.A., Bagner, D.M., & Coxe, S. (2015). Effects of callous-unemotional traits on the association between parenting and child conduct problems. *Child Psychiatry and Human Development*, 46(6), 967-980. doi: 10.1007/s10578-015-0535-1
- 25 Salihovic, S., Kerr, M., Özdemir, M., & Pakalniskiene, V. (2012). Directions of effects between adolescent psychopathic traits and parental behavior. *Journal of abnormal child psychology*, 40(6), 957-969. doi: 10.1007/s10802-012-9623-x
- 26 Pardini, D.A., Lochman, J.E., & Powell, N. (2007). The development of callous-unemotional traits and antisocial behavior in children: Are there shared and/or unique predictors? *Journal of Clinical Child and Adolescent Psychology*, 36(3), 319-333. doi: 10.1080/15374410701444215



- 27 DeLisi, M., & Vaughn, M. G. (2014). Foundation for a temperament-based theory of antisocial behavior and criminal justice system involvement. *Journal of Criminal Justice*, *42*(1), 10-25. doi:10.1016/j.jcrimjus.2013.11.001
- 28 Tuvblad, C., Bezdjian, S., Raine, A., & Baker, L. A. (2013). Psychopathic personality and negative parent-to-child affect: A longitudinal cross-lag twin study. *Journal of criminal justice*, *41*(5), 331-341. doi:10.1016/j.jcrimjus.2013.07.001
- 29 Falk, A.E., & Lee, S.S. (2012). Parenting behavior and conduct problems in children with and without attention-deficit/hyperactivity disorder (ADHD): Moderation by callous-unemotional traits. *Journal of Psychopathology and Behavioral Assessment*, *34*, 172-181. doi: 10.1007/s10862-011-9268-z
- 30 Pasalich, D.S., Waschbusch, D.A., Dadds, M.R., & Hawes, D.J. (2014). Emotion socialization style in parents of children with callous-unemotional traits. *Child Psychiatry & Human Development*, *45*, 229-242. doi: 10.1007/s10578-013-0395-5
- 31 Ezpeleta, L., Granero, R., de la Osa, N., Penelo, E., & Domenech, J. (2012). Dimensions of oppositional defiant disorder in 3-year-old preschoolers. *Journal of Child Psychology and Psychiatry*, *53*(11), 1128-1138. doi: 10.1111/j.1469-7610.2012.02545.x
- 32 Goodman, R. (1997). The Strengths and Difficulties Questionnaire: a research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581-586.
- 33 Frick, P. J. (2004). The inventory of callous-unemotional traits. *Unpublished rating scale*.
- 34 Ezpeleta, L., de la Osa, N., Granero, R., Penelo, E., & Domènech, J. M. (2013). Inventory of callous-unemotional traits in a community sample of preschoolers. *Journal of Clinical Child & Adolescent Psychology*, *42*, 91–105.

- 35 Kimonis, E. R., Fanti, K. A., Anastassiou-Hadjicharalambous, X., Mertan, B., Goulter, N., & Katsimicha, E. (2015). Can callous-unemotional traits be reliably measured in preschoolers?. *Journal of abnormal child psychology*, 1-14.
- 36 Willoughby, M. T., Mills-Koonce, W. R., Waschbusch, D. A., & Gottfredson, N. C. (2015). An examination of the parent report version of the inventory of callous-unemotional traits in a community sample of first-grade children. *Assessment*, 22, 76–85.
- 37 Ezpeleta, L., de la Osa, N., Granero, R., Domènech, J.M., & Reich, W. (2011). The diagnostic interview for children and adolescents for parents of preschool children. *Psychiatry Research*, 190, 137-144. doi: 10.1016/j.psychres.2011.04.034 75
- 38 Frick, P. J. (1991). The Alabama Parenting Questionnaire (APQ). *Unpublished rating scales*. The University of Alabama.
- 39 de la Osa, N., Granero, R., Penelo, E., Domènech, J. M., & Ezpeleta, L. (2014). Psychometric Properties of the Alabama Parenting Questionnaire-Preschool Revision (APQ-Pr) in 3 Year-Old Spanish Preschoolers. *Journal of Child and Family Studies*, 23(5), 776-784. doi: 10.1007/s10826-013-9730-5
- 40 Bollen, K.A., & Long, S. (1993). *Testing structural equation models*. Newbury Park, CA: Sage Publications.
- 41 Stringaris, A., & Goodman, R. (2009). Three dimensions of oppositionality in youth. *Journal of Child Psychology and Psychiatry*, 50, 216-223. doi: 10.1111/j.1469-7610.2008.01989.x
- 42 Fanti, K.A., & Munoz, L.C. (2014). Childhood callous-unemotional traits moderate the relation between parenting distress and conduct problems over time. *Child Psychiatry and Human Development*, 45(2), 173-184. doi:10.1007/s10578-013-0389-3

- 43 Burke, J. D., Pardini, D. A., & Loeber, R. (2008). Reciprocal relationships between parenting behavior and disruptive psychopathology from childhood through adolescence. *Journal of Abnormal Child Psychology*, *36*(5), 679-692. doi: 10.1007/s10802-008-9219-7
- 44 Barkley, R. A., & Robin, A. L. (2008). *Your defiant teen. 10 steps to resolve conflict and rebuild your relationship*. London: Constable & Robinson.
- 45 Fossum, S., Mørch, W., Handegard, B.H., Drugli, M.B., & Larsson, B. (2009). Parent training for young Norwegian children with ODD and CD problems: Predictors and mediators of treatment outcomes. *Scandinavian Journal of Psychology*, *50*, 173-181. doi: 10.1111/j.1467-9450.2008.00700.x
- 46 Morsbach, S.K., & Prinz, R.J. (2006). Understanding and improving the validity of self-report of parenting. *Clinical Child and Family Psychology Review*, *9*, 1-21. doi: 10.1007/s10567-006-001-5
- 47 Shelton, K. K., Frick, P. J., & Wootton, J. (1996). Assessment of parenting practices in families of elementary school-age children. *Journal of clinical child psychology*, *25*(3), 317-329.
- 48 Dadds, M. R., Maujean, A., & Fraser, J. A. (2003). Parenting and conduct problems in children: Australian data and psychometric properties of the Alabama Parenting Questionnaire. *Australian Psychologist*, *38*(3), 238-241.
- 49 Blair, C. (2002). School readiness: Integrating cognition and emotion in a neurobiological conceptualization of child functioning at school entry. *American Psychologist*, *57*, 111–127. doi: 10.1037//0003-066X.57.2.111

Table 1

*Demographic Information for the Sample at Baseline (Age 3)*

		Total sample (n=622)	Analyzed sample (n=419)
Sex; <i>n (%)</i>	Female	312 (50.16)	216 (51.58)
	Male	310 (49.84)	203 (48.42)
School type; <i>n (%)</i>	Public	398 (63.99)	252 (60.11)
	Private	224 (36.01)	167 (39.89)
Socioeconomic status; <i>n (%)</i>	Upper class	205 (32.96)	163 (38.86)
	Upper middle class	195 (31.35)	137 (32.63)
	Middle class	88 (14.15)	52 (12.37)
	Lower middle class	99 (15.92)	54 (12.96)
	Lower class	35 (5.63)	13 (3.18)
Ethnic group; <i>n (%)</i>	Caucasian (white, including Spanish)	554 (89.07)	394 (93.94)
	Hispanic (Latin American)	40 (6.43)	12 (2.75)
	Other	28 (4.50)	15 (3.31)
Single parent household; <i>n (%)</i>		30 (4.8)	16 (3.9)
Prevalence of ODD <i>n (%)</i>		61 (6.9)	39 (6.5)
Child's age in years; <i>Mean (SD)</i>		3.77 (0.33)	3.78 (0.34)
Mother's age in years; <i>Mean (SD)</i>		36.4 (4.7)	36.7 (4.2)
Father's age in years; <i>Mean (SD)</i>		38.6 (5.8)	38.8 (5.4)

Table 2

*Cross-sectional and Longitudinal Bivariate Correlations between ICU, Positive Parenting, Poor Parental Monitoring/Supervision, and ODD at Ages 3 and 6*

		ICU- total age 3	APQ- positive age 3	APQ- monitoring age 3	ODD- diagnosis age 3	ICU- total age 6	APQ- positive age 6	APQ- monitoring age 6	ODD- diagnosis age 6
ICU-total	age 3	---							
APQ-positive	age 3	---	---						
APQ-monitoring	age 3	---	---	---					
ODD-diagnosis	age 3	.020	---	---	---				
ICU-total	age 6	<b>.305</b>	.004	.150	-.062	---			
APQ-positive	age 6	.095	<b>.406</b>	---	.062	---	---		
APQ-monitoring	age 6	.052	---	<b>.451</b>	.063	---	---	---	
ODD-diagnosis	age 6	.138	.041	.107	.235	.119	---	---	---

Bold: medium to high effect size ( $|r| > 0.30$ ).

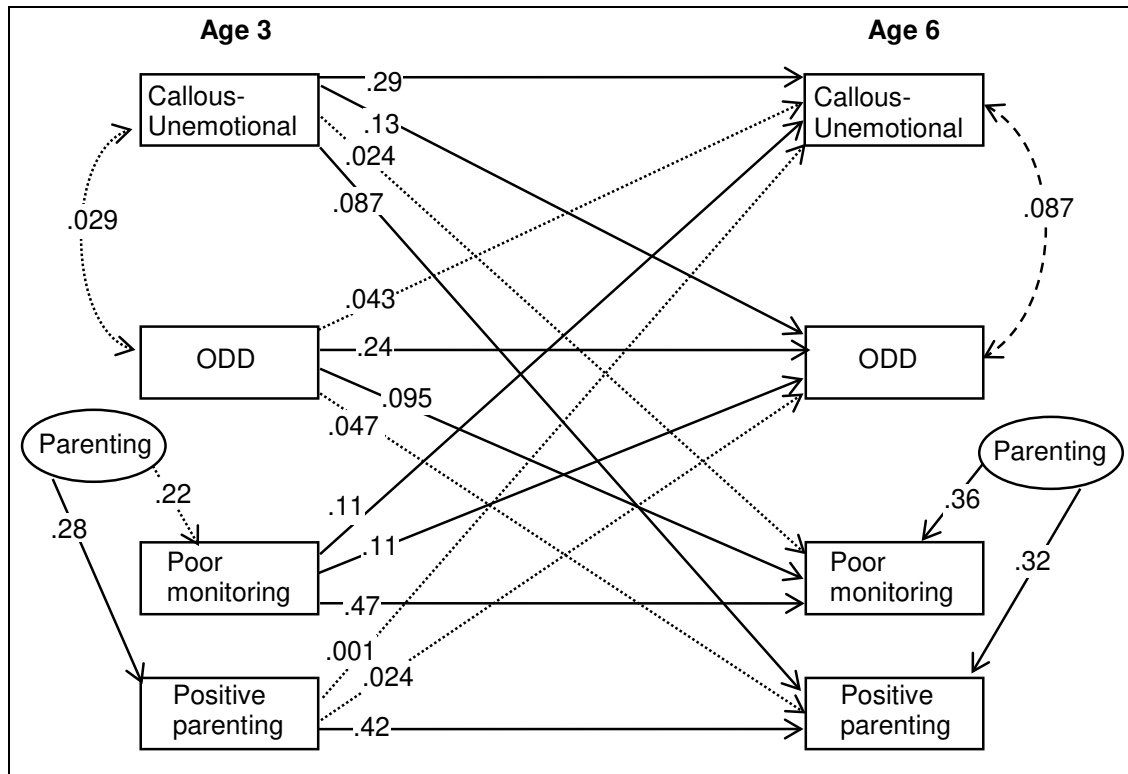


Figure 1. Reciprocal relationships between CU traits, ODD, poor parental monitoring and positive parenting at ages 3 and 6. Significance is indicated by line weight: solid line, significant coefficient ( $p < .05$ ); dashed line, quasi-significant coefficient ( $.05 < p < .10$ ); dotted line, non-significant coefficient ( $p > .10$ ).