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**Callous-Unemotional Behaviors in Early Childhood:
Measurement, Meaning, and the Influence of Parenting**

Rebecca Waller

Luke Hyde

University of Michigan

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Abstract

Antisocial behavior is costly and harmful to families, communities, and society. With roots in early childhood, antisocial behavior puts children at risk for poor physical and mental health outcomes across development. Callous-unemotional (CU) traits identify a subgroup of youth with particularly severe and stable antisocial behavior. While much literature has examined CU traits in late childhood and adolescence, researchers are just beginning to elucidate the developmental origins of CU traits. In this article, we review research examining the measurement and correlates of CU behaviors in early childhood, along with evidence that these early behaviors predict later measures of CU traits. We then describe research highlighting the role that parents play in the development of CU behaviors in early childhood. Finally, we outline translational implications and ethical considerations for studying CU behaviors and consider the use of the term CU traits in young children.

Antisocial behavior in childhood, including aggression and rule-breaking, can lead to a host of negative consequences, including school failure, psychiatric diagnosis, and crime, outcomes that incur financial costs for families, communities, and society. Because most adult offenders' antisocial behavior begins early in life, research has focused on identifying and preventing such behavior in early childhood (1). However, while many children show early behavior problems, including aggression and tantrums, most desist from severe antisocial behavior (1), making it challenging to identify children at the highest risk for persistent, lifelong behavior of this kind.

In the last three decades, researchers have assessed callous-unemotional (CU) traits to identify children at risk for chronic antisocial behavior. CU traits were developed as an extension of affective-interpersonal traits of adult psychopathy and are defined by low empathy and guilt, and an uncaring interpersonal style (2). Despite a growing literature from late childhood and adolescence showing that CU traits identify youth at risk for severe antisocial behavior (2), we know less about the developmental origins of these traits. This gap in knowledge is surprising given that antisocial behavior originates in early childhood and interventions may be particularly effective during this period (3). Therefore, researchers are now identifying behavioral precursors of CU traits in early childhood. In this article, we describe this emerging research, including the measurement of CU behaviors in early childhood and the role of parenting in the etiology of CU behaviors. We conclude by discussing translational and ethical implications of this literature and outline directions for research.

Callous-Unemotional Traits

The term antisocial behavior captures behaviors that contravene laws or societal expectations or directly harm others. Youth who score high on measures of antisocial behavior exhibit a range of heterogeneous behaviors, including violence, aggression, theft, and substance use, which are thought to develop from many etiological sources. Researchers have sought to improve our understanding of these different etiologies by categorizing antisocial youth into more homogenous subgroups, including distinguishing youth engaging in proactive versus reactive aggression (4), aggression versus rule-breaking (5), and antisocial behavior that begins in childhood versus antisocial behavior that begins in adolescence (6, 7). Recently, the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) included the presence or absence of CU traits as a subtype specifier of the youth antisocial behavior diagnosis of conduct disorder (i.e., conduct disorder with limited prosocial emotions), making CU traits a focus of current psychiatric research (6).

Historically, CU traits are “a new idea with a long history” (8, p. 59) because the construct overlaps with undersocialized antisocial behavior described in the DSM-III (8, 9). Both constructs focus on youth with low empathy, guilt, and concern for others. However, the undersocialized subtype also focused on whether antisocial behavior occurred alone or in a group; this led to confusion over how to measure it best and it was omitted from subsequent versions of the DSM. Nevertheless, to successfully identify youth at risk for chronic antisocial behavior, Paul Frick and colleagues developed the CU traits construct, which combines developmentally appropriate symptoms of affective personality deficits, seen in adult psychopathy, with features of the undersocialized subtype (2, 10). The CU traits construct has several strengths relative to alternative subtyping approaches, including the fact that items used to assess CU traits do not overlap with those used to assess antisocial behavior. The CU traits construct also shows strong

conceptual links to the broader literature on psychopathy in adults, and overlaps with basic developmental research on empathy, guilt, and conscience (11, 12). Thus, by investigating CU traits in early childhood, we can understand how the development of conscience and empathy can go awry and lead to chronic antisocial behavior.

Early Childhood CU Behaviors as a Precursor to CU Traits

Early childhood, defined as ages 2 to 5 years, is an ideal period to investigate the origins of CU traits because individual differences in empathy (11) and conscience (12) emerge from 2 to 3 years. Thus, by early childhood, children respond appropriately to others' emotions and internalize rules, making deviations from these milestones both measurable and important for understanding the development of antisocial behavior. Researchers have begun to examine the CU construct during this developmental period using three approaches (Table 1). First, studies of early childhood have used measures of CU traits developed for older children, including the Inventory of Callous-Unemotional Traits (ICU; 13-15). Second, researchers have created developmentally informed measures of behavior problems that include CU-like constructs. For example, the Multidimensional Assessment of Preschool Disruptive Behavior (MAP-DB; 16) includes factors assessing low concern for others and punishment insensitivity. Third, researchers have developed ad-hoc CU scales using items from common behavior rating scales similar to items in traditional measures of CU traits (Table 1). Regardless of measurement approach, we refer to the CU construct when measured in early childhood as CU behaviors, a term consistent with empirical studies during this period (17, 18). Later, we discuss the strengths, weaknesses, and ethical implications of this nomenclature.

Across all three approaches, measures assessing CU behaviors in early childhood contain items tapping low emotional sensitivity, impaired empathy, and reduced caring about others or behavioral consequences. Moreover, these items define a CU factor that is distinct from factors assessing broader behavior problems (Table 1). For example, using items from the Child Behavior Checklist (19), five independent studies established that a five-item CU behaviors scale in early childhood forms a separate factor from a six-item oppositional and six-item attention-deficit behavior scale (e.g., 18, 20, 21). These studies demonstrate that parent-rated items can distinguish callousness and uncaring behavior from other problematic behaviors in early childhood.

Measures of CU behaviors assessed as young as age 3 also robustly predict concurrent and subsequent antisocial behavior. For example, CU behaviors were significantly related to a disruptive behavior disorder diagnosis among 3- to 4-year-olds (14) and correlated with more teacher-reported overt and relational aggression among 3- to 6-year-olds (15). Longitudinally, CU behaviors predicted teacher-reported proactive aggression 9 to 12 months later in 2- to 5-year-olds (22). Similarly, parent-reported CU behaviors at age 3 predicted teacher-reported aggression six years later, accounting for severity of antisocial behavior by controlling for oppositional and attention-deficit behaviors at age 3 (18, 20). A 5-item measure of CU behaviors at age 3 also demonstrated homotypic continuity by uniquely predicting CU traits (measured via the ICU) at age 9½, while considering earlier behavior problems and informant rater effects (23). Thus, across measures and samples, CU behaviors in early childhood are separable from markers of early behavior problems, uniquely predict later antisocial behavior, and show construct validity by predicting later measures of CU traits.

Finally, early childhood CU behaviors show a distinct set of behavioral and socioemotional correlates. For example, compared to oppositional and attention-deficit behaviors, CU behaviors at age 3 were uniquely related to lower empathy and guilt (18). CU behaviors were also related to less accurate recognition of interpersonal emotions among 3- to 6-year-olds (15), and 4-year-olds who scored high on the low concern for others scale of the MAP-DB were less able to recognize fear (24). Similarly, children rated higher on CU behaviors and behavior problems paid less attention to distress cues on a dot-probe task (15). Thus, by early childhood, measures of CU behaviors uniquely tap deficits in conscience and empathy, and identify children with specific deficits in socioemotional processing.

Risky Heritable and Nonheritable Pathways to CU Behaviors

Having established the utility of different measures of CU behaviors during early childhood, we need to understand how these behaviors develop. Recent research shows that parenting predicts the development of CU traits during late childhood and adolescence (for a systematic review, see 25). However, early childhood is when children peak in aggression, lack cognitive understanding of their behavior, and can be hard to manage, features that can challenge parents. Thus, early childhood is a critical period for understanding the influence of parenting on CU behaviors, which can inform early interventions (26).

Overly harsh parenting interferes with children's ability to internalize rules and develop conscience (12), which could, in turn, result in children developing CU behaviors. Consistent with this notion, observations of parental harshness at age 2 predicted increases in CU behaviors from ages 2 to 4 (27). Parenting that is very positive or responsive could protect against CU behaviors by facilitating children's ability to internalize messages of socialization and promoting

the development of empathy (12). In support of this hypothesis, in a randomized controlled trial of the effectiveness of preventative intervention for antisocial behavior, increasing parental warmth was more effective in lowering CU traits in adolescents than reducing parental harshness (28). In early childhood, parental warmth also apparently protects against the development of CU behaviors. For example, greater parental warmth was related to fewer behavior problems among 4- to 12-year-olds, especially for those with high levels of CU behaviors (29). In another study, higher levels of parental warmth predicted decreases in CU behaviors from ages 2 to 3 years, even when accounting for the severity of general behavior problems (30). Finally, in another study (31), both parental harshness and low parental warmth at 6, 15, 24, and 36 months predicted increases in CU behaviors at 6 years. Thus, parenting practices appear vital to understanding the development of CU behaviors.

However, CU traits and antisocial behavior in the presence of CU traits also appear to be highly heritable, at least in late childhood and early adolescence (32). Thus, we should consider whether parenting influences are causal (i.e., lower warmth directly increases children's CU behaviors) or arise from gene-environment correlations (i.e., parents low on warmth pass on genes that increase children's risk for CU behaviors). To address this confound, a recent study used an adoption design to separate genetic and environmental confounds; biological mothers' antisocial behavior predicted adopted children's CU behaviors at 27 months, even though biological mothers had almost no contact with their child, marking a heritable or "genetic" pathway (33). However, observations of adoptive mothers' low positive parenting also predicted children's CU behaviors at 27 months, indicating nonheritable parenting effects. And in a gene-by-environment interaction, biological mothers' antisocial behavior predicted children's CU behaviors only when adoptive mothers had low positive parenting (33). Thus, CU behaviors

likely emerge in the context of heritable risk, but risk is exacerbated (or buffered) by nonheritable parenting influences.

At the same time, parenting does not occur in a vacuum and is affected by children's early characteristics. In particular, person-by-context interactions in the etiology of CU behaviors are likely, with specific factors in children (e.g., low affiliative behavior) interacting with aspects of parents' caregiving (e.g., low warmth) to exacerbate or buffer risk for CU behaviors. This idea is consistent with developmental research on interactions between parenting and children's fearlessness in developing conscience (12). Indeed, in a recent study, a heritable pathway from fearlessness in biological mothers to fearlessness in adopted children predicted increases in children's CU behaviors only when children experienced low levels of positive parenting from their adoptive parents (34). Thus, the combination of low positive parenting, children's fearlessness, and CU behaviors may signal a risky person-by-context interaction in the etiology of severe behavior problems.

CU behaviors are also correlated with other emotion-processing and interpersonal deficits that could directly influence the affective quality of the parent-child relationship. For example, reduced face preference at 5 weeks (35), low affection from child to parent at 18 months (34), and low baseline respiratory sinus arrhythmia (thought to influence social behaviors) measured across 3 to 24 months (17) all predicted increases in CU behaviors in early childhood. Moreover, among 4-year-olds who were referred to a clinic, children with behavior problems and CU behaviors were less affectionate and had less eye contact with parents than healthy 4-year-olds or 4-year-olds who had behavior problems only (36). Supporting the evocative effects of children's CU characteristics on reduced affection between parents and children, high levels of CU behaviors at age 2 predicted decreases in parental warmth over time from ages 2 to 3 (30).

Together, these findings suggest that factors that can emerge as early as infancy, including decreased sensitivity to social cues, poor understanding of emotional interactions, and fewer affiliative behaviors, could increase children's risk for CU behaviors. Thus, while parenting likely represents a direct, nonheritable influence on the development of CU behaviors, it interacts with aspects of children's temperament to exacerbate or buffer their risk for CU behaviors.

Implications for Treatment and Intervention

Understanding how parents' behaviors affect the development of children's CU behaviors can inform interventions directed at parents to ameliorate CU behaviors or buffer risky temperaments in children. Moreover, interventions that improve positive parenting can reduce children's CU traits or their antisocial behavior when they have CU traits (25). However, few randomized controlled trials have tested the effectiveness of parenting interventions for CU behaviors or antisocial behavior in preschoolers with high levels of CU behaviors. In one exception (37), a brief parenting-focused intervention that used motivational interviewing and was adapted to the needs of families increased positive parenting and reduced the behavior problems of high-risk 2- to 4-year-olds regardless of the level of children's CU behaviors (although the study did not target CU behaviors directly). In a second example, a parenting intervention for 2- to 5-year-olds significantly reduced both behavior problems and CU behaviors among children in a treatment group (compared to children in a control group; 38). Consistent with the observational research in this area, emerging treatments for children with early CU behaviors could continue to focus on adapting traditional evidence-based parenting programs by adding treatment modules that target the socioemotional processing deficits correlated with CU behaviors. For example, adapted treatments for children with higher levels of

CU behaviors could focus on increasing parent-child eye contact and affiliation (36), or could train children in recognizing emotions (15, 39).

Limits of Research and Looking Ahead

Several limits of research highlight avenues for inquiry. First, although research is articulating heritable pathways to CU traits (33), we know less about the underlying biological mechanisms of transmission from parent to child. Studies are needed that examine the influence of specific genotypes as they interact with parenting and familial risk to predict CU traits and antisocial behavior via their effect on brain structure and function (40). Second, the overlapping, potentially heritable phenotypes of CU and autistic behaviors, including deficits in eye contact and emotion-recognition, may make it difficult to differentiate these behavioral outcomes in early childhood. However, research in late childhood suggests that CU behaviors are specifically correlated with impaired emotional responsivity but intact cognitive perspective-taking, whereas autistic traits are correlated with intact emotional responsivity but impaired cognitive perspective-taking (41). Studies need to begin early in life to distinguish these divergent deficits, especially given the potential for tailoring treatments that start early and are geared to specific disorders. Finally, several studies that have identified deficits in children's empathy or emotion recognition focused on children with high levels of both CU behaviors and behavior problems (36), leaving the possibility that severity of antisocial behavior may be responsible for the effects. At the same time, dimensional studies that covary for behavior problems have identified a unique set of socioemotional correlates for early CU behaviors (18). Studies incorporating both person-centered and dimensional approaches are needed to uncover specific etiological pathways to CU

behaviors that are not confounded by the severity of antisocial behavior, perhaps by examining CU behaviors in the absence of antisocial behavior (for a recent example, see 42).

Ethical Considerations

Researchers are beginning to effectively measure CU behaviors in early childhood and identify the role parents play in the development of CU behaviors during this period. However, several ethical issues exist. A primary concern is the link among CU behaviors, CU traits, and psychopathy, a link that could inadvertently convey that we are identifying “preschool psychopaths.” In contrast to this message, empirical evidence suggests that CU traits are only weakly to moderately related to psychopathy. For example, although psychopathic traits from ages 13 to 24 years showed moderate dimensional rank-order stability, only 1 in 5 children in the top 10% of those with psychopathic traits at age 13 were diagnosed with psychopathy at age 24 (43). Similarly, in a longitudinal trajectory analysis of CU traits from ages 7 to 12 years, more children were in groups classified by changing CU traits (i.e., 7% increasing, 13% decreasing) than stably high on CU traits (5%; 44). Thus, while CU behaviors are an important risk factor for antisocial behavior and psychopathy, they are not destiny. Measures of CU behaviors may help us understand etiology and targeting interventions, but they should not be used in legal settings or for making prognoses based on early behaviors.

Relatedly, we have used the term CU behaviors when referring to the CU construct in early childhood, but to be consistent with the field, refer to CU traits in late childhood. In making this distinction, we do not imply that CU behaviors become more stable or traitlike in late childhood; indeed, as outlined earlier, evidence exists to the contrary (43, 44). However, using the word traits could have unintended consequences, especially given its origins as an

extension of psychopathy in adulthood, which clinical lore (falsely) purports to be inborn (i.e., purely genetic) and even untreatable (45). Such notions are problematic when applied to young children, particularly when some children with high levels of CU traits benefit from treatment (25, 38). Moreover, using the word traits carries a risk that treatment providers, parents, or children may inadvertently receive iatrogenic messages about stability or untreatability, which become self-fulfilling prophecies. Such concerns were reflected in the decision of the DSM-5 to label the construct “with limited prosocial emotions” rather than “CU traits” (2, p. 42). Thus, our use of the term CU behaviors in early childhood signifies a conviction that the field should consider the ethical implications of the CU construct nomenclature across childhood. Ultimately, more research on the stability, prediction, and heritability of CU traits is important, but research among service users (parents, children) and providers (clinicians, courts, teachers) examining the consequences of using this term will also help guide the field. Until we have strong evidence to address these questions, we should use the more cautious term CU behaviors, particularly among younger children and potentially across all ages.

Conclusion

Several different measures of CU behaviors established in early childhood predict more severe antisocial behavior and tap a construct involving low empathy, guilt, and interpersonal affect. Early CU behaviors appear both heritable and nonheritable in origin, with parents playing an important role in person-context interactions. Through this emerging research, studying CU behaviors in early childhood can inform the development of early, personalized preventative interventions, and guide our understanding of normative and atypical development. But researchers and clinicians must be careful that labeling does not harm young children.

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Correspondence concerning this article should be addressed to Luke W. Hyde, Department of Psychology, 530 Church Street, University of Michigan, Ann Arbor, MI 48109; e-mail: lukehyde@umich.edu.

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Table 1
Outline of the Continuity of Items Measuring Callous-Unemotional-Related Phenotypes Across Development

Construct	Items from CU Behaviors Scale from ASEBA	Items from Low Concern for Others Scale from MAP-DB	CU Items from the ICU or APSD	DSM-5: “Limited Prosocial Emotions” Specifier	Items from the PCL-R
Lack of guilt	<ul style="list-style-type: none"> • No guilt after misbehavior 	<ul style="list-style-type: none"> • Act like did not care when someone was mad or upset • Act like did not care when someone felt bad or sad 	<ul style="list-style-type: none"> • Does not care who she/he hurts • Feels bad or guilty (R) • Shows no remorse 	<ul style="list-style-type: none"> • Lack of remorse or guilt 	<ul style="list-style-type: none"> • Lack of remorse or guilt • Callous and/or lack of empathy
Low concern about performance or behavior consequences	<ul style="list-style-type: none"> • Punishment does not change behavior • Shows too little fear 	<ul style="list-style-type: none"> • Act like did not care when someone was mad or upset 	<ul style="list-style-type: none"> • Is concerned about school work (R) • Does not care if she/he in trouble 	<ul style="list-style-type: none"> • Unconcerned about performance 	<ul style="list-style-type: none"> • Failure to accept responsibility for actions • Need for stimulation and/or prone to boredom • Lack of realistic long-term goals
Low empathic concern for others/ callousness	<ul style="list-style-type: none"> • Shows little affection • Unresponsive to affection 	<ul style="list-style-type: none"> • Acts like did not care when someone felt bad or sad • Keep on doing something that was scaring or upsetting someone • Does not seem to care about parent’s feelings 	<ul style="list-style-type: none"> • Seems cold and uncaring • Feelings of others are unimportant • Concerned about feelings of others (R) • Does things to make others feel good (R) 	<ul style="list-style-type: none"> • Lack of empathy (“<i>unconcerned about the feelings of others</i>”) 	<ul style="list-style-type: none"> • Callous and/or lack of empathy
Low emotional responsivity or affiliative behavior	<ul style="list-style-type: none"> • Shows little affection • Unresponsive to affection 	<ul style="list-style-type: none"> • Acts like did not care when someone felt bad or sad • Does not seem to care about parent’s feelings 	<ul style="list-style-type: none"> • Expresses feelings openly (R) • Does not show emotions • Seems cold and uncaring • Is expressive/emotional (R) 	<ul style="list-style-type: none"> • Shallow or deficient affect 	<ul style="list-style-type: none"> • Conning and/or manipulation
<u>Samples applied to</u>	Early childhood (i.e., 1½ - 6 years)		Early childhood (i.e., 1½ - 6 years) & middle-late childhood & adolescence (i.e., 7-18 years)	Clinical conceptualizations in children (i.e., 6-18 years)	Adult psychopathy conceptualizations

Note: ASEBA = Achenbach System of Empirically Based Assessment (19); ICU = Inventory of Callous-Unemotional Traits (13); DSM-5 =

Diagnostic and Statistical Manual of Mental Disorders (6); MAP-DB = Multidimensional Assessment of Preschool Disruptive Behavior (16);
PCL-R = Psychopathy Checklist-Revised (46).

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