

The Clinical Assessment of Prosocial Emotions (CAPE 1.1): A Multi-Informant Validation Study

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Support for the clinical importance of callous and unemotional (CU) traits has grown considerably in recent years, yet tools for the assessment of CU traits in clinical settings have largely been limited to questionnaires. This study examined the validity of the Clinical Assessment of Prosocial Emotions (CAPE 1.1), a newly developed clinician-rating measure of CU traits in children and adolescents. Participants were children aged 3 to 15 years ($N = 82$; 75% male) who were referred for treatment of conduct problems. Diagnoses of conduct disorder and oppositional defiant disorder were formulated based on semistructured diagnostic interviews prior to treatment. The CAPE 1.1 was scored based on structured interviews administered jointly to mothers and fathers and was validated with questionnaire measures of CU traits and other correlates of CU traits from multiple informants. Evidence of criterion validity was found in significant associations between CAPE 1.1 scores and questionnaire measures of CU traits completed by mothers, fathers, and teachers. Evidence of construct validity was found in significant associations between CAPE 1.1 scores and established correlates of CU traits, including severity of oppositional defiant disorder/conduct disorder symptoms indexed via diagnostic interview with parents, teacher ratings of proactive aggression, and reports of affective empathy by mothers and fathers. These findings provide support for the clinical utility of the CAPE 1.1 and its inclusion as part of a comprehensive assessment of children and adolescents with conduct problems.

Public Significance Statement

This study provides empirical support for a new interview-based method for assessing limited prosocial emotions (e.g., a lack of guilt and empathy) in children with conduct problems (e.g., aggressive and disruptive behavior). This is important because existing clinical tools for assessing limited prosocial emotions have been limited to questionnaires alone despite the important role of clinical interview data in the formulation of psychiatric diagnoses.

Keywords: limited prosocial emotions, callous-unemotional traits, psychopathy, conduct disorder, disruptive behavior disorders

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Children with conduct problems are understood to be a highly heterogeneous population, comprising subgroups who differ mark-

edly in terms of etiology, symptom expression, and prognosis. Among the various models used to characterize such subgroups, one of the most influential has been that based on the distinction between children with elevated versus normative levels of callous-unemotional (CU) traits (e.g., a lack of guilt and empathy; Frick, Ray, Thornton, & Kahn, 2014a). Evidence regarding the developmental and clinical correlates of childhood CU traits has grown rapidly in recent years, thanks in part to extensive research into the measurement of the construct (Kotler & McMahon, 2010). Research has nonetheless relied largely on questionnaire-based measures of CU traits to date because of slow progress in the development of other assessment methods.

From a theoretical perspective, CU traits correspond to the affective component of adult psychopathy. Accordingly, existing measures of childhood CU traits have their origins in adult measures of psychopathy, in particular, the Psychopathy Checklist—

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Revised (PCL-R; Hare, 2003). The most direct adaptation of the PCL-R to younger ages is the Psychopathy Checklist: Youth Version (PCL:YV; Forth, Kosson, & Hare, 2003), a clinician-rated tool that uses the same interview-based format as the PCL-R and file review data to assess CU traits and other features of psychopathy in adolescents aged 12 to 18 years. Another early measure based on the PCL-R is the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), which instead takes the form of a questionnaire that can be completed by multiple informants (e.g., parents, teachers) and comprises a six-item CU Traits subscale designed to be developmentally appropriate for children as young as 6 years of age. Subsequent measurement research has produced adapted versions of the APSD with psychometric properties that are superior to those of the original measure (e.g., Dadds, Fraser, Frost, & Hawes, 2005) as well as new questionnaires (e.g., Inventory of Callous Unemotional Traits [ICU]; Kimonis et al., 2008) that index CU traits more comprehensively, as early as preschool age (Frick & Ray, 2015).

Research using these child and adolescent measures has shown that beginning early in childhood, children with high levels of CU traits exhibit trajectories of antisocial behavior that are particularly chronic and severe (Longman, Hawes, & Kohlhoff, 2016). Moreover, these children not only engage in more aggressive behavior than children low in CU traits—their aggressive behavior is much more likely to be proactive or instrumental in nature (e.g., Thornton, Frick, Crapanzano, & Terranova, 2013). Evidence regarding the unique social-cognitive correlates of CU traits has also grown considerably, the most fundamental of which include deficits in affective empathy (Moul, Hawes, & Dadds, 2018). *Affective empathy* refers to the reflexive or involuntary sharing of someone else's emotional state, with common definitions typically describing an affective response more congruent with another's situation than to one's own. Although youth with CU traits have also been found to exhibit some deficits in cognitive empathy, or the decoding and labeling of the emotions and situational cues regarding the mental states of others, it is a lack of affective empathy that is particularly characteristic of youth with CU traits (Dadds et al., 2009).

Interest in the clinical utility of CU traits has increased since a “with limited prosocial emotions” (LPE) specifier was added to the diagnosis of conduct disorder (CD) in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013)*. This specifier, defined by CU traits, is applied to youth who meet criteria for CD and who exhibit at least two of the following CU traits: (a) lack of remorse or guilt, (b) callous/lack of empathy, (c) unconcerned about performance, and (d) shallow or deficient affect. More recently, the International Classification of Disease 11th edition (ICD-11; World Health Organization, 2018) has also applied the specifier to persons meeting criteria for either CD or ODD. These criteria were based on factor analyses of participant samples from various countries showing that these symptoms were the best indicators of the overall construct of CU traits, and evidence that the presence of two or more of these symptoms most consistently designated a more severely impaired group of antisocial youth across such samples (Frick, Wall, Barry, & Bodin, 2016). Compared with the criteria for CD alone, meeting criteria for CD and the LPE specifier in childhood has been found to predict increased antisocial outcomes in adulthood (McMahon, Witkiewitz, Kotler, & Conduct Problems

Prevention Research Group, 2010). Pardini, Stepp, Hipwell, Stouthamer-Loeber, and Loeber (2012) found that in girls, the criteria for the specifier were associated with increased bullying, relational aggression, and global impairment over time, while noting that these outcomes were accounted for primarily by baseline differences. Kahn, Frick, Youngstrom, Findling, and Youngstrom (2012) found that, depending on informant, 21% to 50% of a clinic-referred sample of youth met criteria for this specifier, and that those who did exhibited higher rates of aggression and cruelty. In detained youth with CD, the LPE specifier has been associated with aspects of antisocial behavior such as seriousness of offenses and age of crime onset (e.g., Pechorro, Jiménez, Hidalgo, & Nunes, 2015). Similarly, Vanwoerden, Reuter, and Sharp (2016) found that inpatient adolescents with CD and LPE showed greater aggression, along with lower rates of comorbid anxiety and CD symptom reduction, compared with those with CD alone. Findings from clinic-referred and detained youth have also, however, been mixed, and the adequacy of support for the specifier has been subject to debate (see Frick, Ray, Thornton, & Kahn, 2014b; Lahey, 2014). Sakai et al. (2016), for example, found that youth with CD undergoing treatment for substance use disorder had higher counts of CD symptoms when they met criteria for LPE but did not differ on comorbidity or other characteristics compared with those with CD alone. Similarly, Colins and Andershed (2015) found that detained girls with CD and the LPE specifier were more aggressive and delinquent than CD-only girls but did not differ on psychiatric comorbidity. Furthermore, some research with clinic-referred youth has found that those with CD that meet criteria for the LPE specifier do not significantly differ from CD-only youth on clinical variables (Colins, 2016) or that the additional variance accounted for by the specifier may be small (Jambroes et al., 2016). Findings also suggest that some correlates of LPE, such as proactive aggression, may be limited to youth whose conduct problems show an early age of onset (Jambroes et al., 2016).

It is apparent that findings regarding LPE may differ somewhat based on the measure used to operationalize the specifier (Vanwoerden et al., 2016) as well as the informant (Van Damme, Colins, & Vanderplasschen, 2016). Studies to date have most often indexed the LPE specifier using items from the APSD and ICU, and novel rating scales for LPE have also begun to emerge (e.g., Seijas, Servera, García-Banda, Barry, & Burns, 2018). The introduction of CU traits into both the *DSM-5* (American Psychiatric Association, 2013) and *ICD-11* (World Health Organization, 2018) has also raised important questions regarding the assessment of CU traits in clinical settings. Although questionnaires provide an efficient means of indexing CU traits from multiple informants, a sole reliance on questionnaire data is at odds with the principle of multimethod measurement emphasized in guidelines for the clinical assessment of children (McLeod, Jensen-Doss, & Ollendick, 2013). Clinical judgments, particularly those related to diagnostic criteria, are generally assumed to necessitate more in-depth information beyond that provided by questionnaire scores alone. As noted above, the PCL:YV is a well-validated clinician rating system that has been used to assess CU traits as part of the broader construct of psychopathy and is one of the few measures that utilizes clinician ratings. However, because the PCL:YV assesses the broader construct of psychopathy, only four of its 21 items directly relate to CU traits. Further, the items of the PCL:YV were not based on the same criteria used for the specifiers included in

the *DSM-5* and ICD-11, and the PCL-YV was largely developed for adolescents ages 12 years and older, making its utility for younger children questionable.

Based on these reasons, the Clinical Assessment of Prosocial Emotions (CAPE 1.1; Frick, 2013) was developed as a clinician rating system to assess CU traits specifically in a wide age range of children and adolescents (3 to 21 years), and with direct reference to the specifiers in *DSM-5* (American Psychiatric Association, 2013) and ICD-11 (World Health Organization, 2018). To date, preliminary support for the validity of the measure has been indicated based on a small at-risk sample of disadvantaged families (Centifanti et al., 2019); however, research has yet to validate the CAPE 1.1 in clinical populations. The aim of this study was to examine the criterion validity, construct validity, and incremental validity of the CAPE 1.1 in children and adolescents referred for treatment of conduct problems. In addition to examining the categorical classification of LPE (i.e., whether or not at least two LPE criteria are met), a secondary aim was to examine the validity of the CAPE 1.1 interview as a dimensional measure of LPE (i.e., the actual number of LPE criteria met). Although the CAPE 1.1 was originally designed as a categorical measure, dimensional data on LPE are potentially also important. As presented elsewhere, arguments for evaluating dimensional symptom scales from diagnostic interviews have included growing interest in dimensional models of mental health (e.g., the National Institute of Mental Health's Research Domain Criteria; Sanislow et al., 2010) and evidence that the validity of dimensional scales may at times be superior to categorical classifications (see Markon, Chmielewski, & Miller, 2011; Shankman et al., 2018). Moreover, research into CU traits and child conduct problems has often been based on dimensional conceptualizations of these constructs, and at least some research has found dimensional indices of these constructs to be more informative with regard to related clinical correlates (e.g., Colins, Van Damme, Fanti, & Andershed, 2017).

Although research has supported the applicability of the CD diagnosis to preschool-aged children, the need for further research into the disorder in early childhood has been highlighted (see Moffitt et al., 2008). Likewise, support for the reliable and valid measurement of CU traits in children as young as 3 years of age has been reported in studies from various countries, using a range of measures, including the ICU (Ezpeleta, de la Osa, Granero, Penelo, & Domènech, 2013), the Child Problematic Traits Inventory (Colins, Veen, Veenstra, Frogner, & Andershed, 2018), and the modified APSD-based scale used in the current study (e.g., Dadds, Kimonis, Schollar-Root, Moul, & Hawes, 2018). Measurement research into the LPE specifier in children this young, however, has been lacking to date, and therefore stands to contribute significantly to the assessment literature.

Based on the extension of the LPE specifier to ODD in ICD-11 (World Health Organization, 2018), and the considerable evidence that CU traits not only predict risk and prognosis in children with CD but also ODD (e.g., Ezpeleta, Granero, de la Osa, & Domènech, 2015; Hawes, Price, & Dadds, 2014), scores on the CAPE 1.1 were examined in relation to both CD and ODD symptoms. It was predicted that scores on the CAPE 1.1 would be associated with ratings of CU traits by mothers, fathers, and teachers (criterion validity), and with established correlates of CU traits including severity of ODD/CD symptoms, proactive aggression, and affective empathy (construct validity). Finally, it was

predicted that CAPE 1.1 scores would explain unique variance in these correlates of CU traits above and beyond that explained by questionnaire ratings of CU traits (incremental validity).

Method

Participants

Participants were 82 children aged 3 to 15 years ($M_{\text{age}} = 7.40$, $SD = 2.69$; 75% male) referred to the Child Behavior Research Clinic at the University of Sydney for treatment of conduct problems. Inclusion and exclusion criteria were functional English, no major neurological/physical illness, and an IQ more than 70. Given that children with high levels of CU traits are known to form only a minority of children with clinic-referred conduct problems, a subset of the participants ($n = 34$) were drawn from a study that involved the screening and recruitment of children with high levels of CU traits.

Participants were predominantly Caucasian/European (91.6%), with the next most common ethnic groups being Middle Eastern/North African (4.8%), Oceanic/Pacific Islander (2.4%), and Asian/Indian (1.2%). Participating parents were 78 mothers ($M_{\text{age}} = 40.6$ years) and 66 fathers ($M_{\text{age}} = 43.1$ years), whose relationship status was married (65.1%), de facto (8.4%), separated/divorced (21.7%), or single parent (2.4%). The most common level of parent education was a university degree (mothers, 59.0%; fathers, 43.0%), followed by other tertiary/trade certificates (mothers, 26.5%; fathers, 31.6%). Diagnostic characteristics of the child participants were as follows. Disruptive behavior disorders (ODD or CD) occurred as full diagnoses in 69.6% of participants, and as features (i.e., subclinical symptoms) in 25.3%. Attention-deficit/hyperactivity disorder (ADHD) occurred as a full diagnosis in 38.0% of participants, and as features in 36.7%. Internalizing disorders (anxiety or depression) occurred as full diagnoses in 7.6% of participants, and as features in 16.4%. Other disorders were fully diagnosed in 7.6% (features 8.9%).

Measures

The CAPE 1.1 (Frick, 2013) is a clinician-rating system designed to assess the four core symptoms for the *DSM-5* (American Psychiatric Association, 2013) criteria for LPE: (a) lack of remorse or guilt, (b) callous lack of empathy, (c) unconcerned about performance, and (d) shallow or deficient affect. It utilizes the structured professional judgment method whereby prototypes for each key indicator of CU traits are provided in order to guide the clinician using the tool and are rated using a 3-point scale. The final item on the Coding Form for the CAPE 1.1 requires the clinician to record how many key descriptors of CU traits were rated "2" ("highly descriptive"), thereby providing a continuous rating ranging from 0 to 4. When this value is 2 or greater (i.e., two or more symptoms are rated as "highly descriptive"), severity is considered to reach the diagnostic threshold for applying the LPE specifier as operationalized in *DSM-5*. To aid in the clinician rating, semistructured interviews are provided that can be administered to the child and to informants who are familiar with the child. In the current study, the interview was conducted with the parents of the referred child. Author recommendations emphasize that the interview results should be integrated with other data from multiple sources of

information (e.g., file information, standardized questionnaires) when making ratings on the CAPE 1.1 (Frick, 2013). However, in order to investigate questions related to the validity of the measure, which include its correlations with other measures of CU traits and its incremental validity in predicting important outcomes when controlling for other measures, it was necessary that CAPE 1.1 ratings in the current study were completed without reference to other such data.

The Diagnostic Interview Schedule for Children, Adolescents and Parents (DISCAP; Johnson, Barrett, Dadds, Fox, & Shortt, 1999) is a semistructured diagnostic interview used with parents, and the child for those older than 8 years. It provides both categorical and continuous data on *DSM-IV* (American Psychiatric Association, 2000) disorders through clinician ratings on a 7-point severity scale (0 = no features, 1–3 = subclinical, 4–6 = marked to very severe). The DISCAP was the primary measure of diagnostic symptoms of CD and ODD, both of which were of key interest to the study aims based on the reasons previously outlined.

Severity of CU traits and general conduct problems were also assessed using the system developed by Dadds et al. (2005) for scoring rater-based responses on the Antisocial Process Screening Device (Frick & Hare, 2001) and items from the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). This measurement system, developed through principal components analysis, utilizes items that load uniquely onto distinct factors related to these domains. The CU traits scale it provides comprises items from the original CU Traits subscale of the APSD and items from the Prosocial Behavior subscale of the SDQ. The resulting CU traits scale is weighted toward the “callous” end of the CU traits spectrum, with a focus on items such as “unkind,” “lacks empathy,” and “doesn’t care about other’s feelings.” The items of Antisocial scale refer to behaviors such as “blames others,” “breaks rules”, and “often fights.” Parent and teacher reports on these subscales showed good internal consistency in the current sample. For the CU Traits scale, the following alphas were obtained: .80 for mothers; .81 for fathers; .84 for teachers. For the Antisocial scale, the following alphas were obtained: .81 for mothers; .83 for fathers; .89 for teachers.

The Griffith Empathy Measure (Dadds et al., 2008) is a 23-item parent-report questionnaire measure of child empathy comprising scales for global empathy as well as specific dimensions of affective empathy (e.g., “gets upset seeing another child being punished for being naughty”; “cries or gets upset when seeing another child cry”) and cognitive empathy (e.g., “can’t understand why other people get upset”; “doesn’t seem to notice when I get sad”). Items appear on a Likert scale spanning *strongly disagree* (–4) to *strongly agree* (+4). Internal consistency for these scales in the current sample ranged from and alpha of .62 (cognitive empathy, fathers) to an alpha of .89 (global empathy, mothers).

The Aggressive Behavior Rating Scale (ABRS; Brown, Atkins, Osborne, & Milnamow, 1996) is a 23-item teacher-report measure developed through factor analysis of items related to distinct forms of aggression in the school setting. Items are rated on a 3-point Likert scale and contribute to subscales for proactive aggression and reactive aggression. In previous research, the strongest associations between ABRS scores and CU traits have been seen for the Proactive Aggression subscale (e.g., $r = .35, p < .05$; Kimonis

et al., 2006). Good internal consistency was observed for both subscales in the current sample (Proactive Aggression, $\alpha = .91$; Reactive Aggression, $\alpha = .92$).

Procedure

Ethics approval to conduct the research was obtained from the administering university, and informed consent obtained from participants prior to data collection. The interviews used to score the CAPE 1.1 were administered to parents as part of a broader clinical interview lasting approximately 90 min by intern psychologists with at least 6 months of experience in the clinical assessment of children and families. These psychologists were trained and supervised by a senior clinical psychologist with extensive experience in child psychopathology. Interviewers were masked to the pretreatment questionnaire data collected from parents and teachers, as outlined below.

Analytic Plan

Criterion validity was analyzed, first, by grouping participants based on those who did or did not meet criteria for the LPE specifier according to the CAPE 1.1 (i.e., at least two LPE criteria rated as “highly descriptive” of the child). A one-way MANOVA was used to test whether these LPE groups (independent variable [IV]) differed on questionnaire-based ratings of CU traits by mothers, fathers, and teachers (dependent variables [DVs]). In line with the secondary aim of the study concerned with dimensional data, an additional test of criterion validity was conducted based on the actual number of LPE criteria met for each case, as recorded in the final rating of the CAPE 1.1. Associations between the continuous data provided by this rating and mother, father, and teacher ratings on CU Traits scales were examined in multivariate analyses controlling for covariates associated with CAPE 1.1 scores, and the extent to which interviewers were blind to the possibility that the child being interviewed may have been recruited high levels of CU traits. Three linear regression models were run in which continuous CAPE 1.1 ratings (IV) were tested as predictors of CU traits questionnaire scores from mothers, fathers, and teachers, respectively (DVs). Covariates comprised child age and sample type (dummy coded 0 or 1 based on whether or not the child was originally recruited for a study focused on children with high levels of CU traits).

Tests of construct validity focused on established correlates of CU traits, comprising severity of ODD/CD symptoms, proactive aggression, and affective empathy. Although our primary interest in these variables was as correlates of the LPE specifier among children diagnosed with ODD/CD, in previous research, they have also been associated with CU traits independent of conduct problem severity and in nonclinical samples (see Frick et al., 2014a). As such, in addition to examining these correlates as indicators of construct validity among children and adolescents with ODD/CD diagnoses, they were further examined in subsequent analyses that included subthreshold through to diagnosable presentations of these disorders. First, a one-way MANOVA was used to test whether groups based on diagnostic status differed in these correlates (DVs: mother-reported antisocial behavior, mother-reported affective empathy, teacher-reported antisocial behavior, and teacher-reported proactive aggression). The between-subjects

diagnostic-status factor comprised three levels: (a) subthreshold ODD/CD (−ODD/CD); (b) diagnoses of ODD/CD without the LPE specifier (ODD/CD − LPE); and (c) diagnoses of ODD/CD with the LPE specifier (ODD/CD + LPE). Given that more parent data were available from mothers than fathers, this analysis was conducted on mother and teacher measures only in order to maximize power. Based on recommendations regarding covariates (Miller & Chapman, 2001), sample type was not included as a covariate in this analysis, as the groups based on the presence–absence of the LPE specifier differed significantly on this variable. Second, linear regression was used to examine unique associations between continuous CAPE 1.1. scores (IV), with covariates of child age and sample type. Separate models were run for the respective DVs of (a) parent diagnostic interview data on ODD/CD symptom severity; (b) mother-reported affective empathy; (c) father-reported affective empathy; (d) teacher-reported proactive aggression; and (e) teacher reported antisocial behavior.

Incremental validity was examined in a final set of analyses that tested whether continuous CAPE 1.1 scores explained unique variance in established correlates of CU traits above and beyond that explained by the CU traits questionnaire scores of mothers and fathers. For this purpose, the same five linear regression models used to test for construct validity were rerun following the addition of CU traits questionnaire scores (combined for mothers/fathers by taking the highest score of the two) as a further IV in the models.

Results

Descriptive Statistics

Means, bivariate correlations, and reliability statistics for key study variables are reported in Table 1. Symptoms of ODD/CD ($M = 3.81, SD = 1.23$) were non-normally distributed, with skewness of $-1.28 (SE = .27)$ and kurtosis of $2.64 (SE = .53)$. Continuous scores for the CAPE 1.1, based on the number of

symptoms rated 2, ranged from 0 to 3 ($M = .90, SD = 1.03$) and were normally distributed, with skewness of $.67 (SE = .26)$ and kurtosis of $-.93 (SE = .52)$. Participants scoring zero on the CAPE 1.1 comprised 50% of the sample, whereas 8.5% scored 3. Among the 54 participants diagnosed with ODD/CD in the sample, 20 (37%) met *DSM-5* (American Psychiatric Association, 2013) criteria for the LPE specifier according to the CAPE 1.1 (i.e., two or more criterion items rated as 2, “highly descriptive”). This is consistent with previous estimates for the prevalence of the LPE specifier in clinic-referred children (Kahn et al., 2012). Prior to examining the validity of the CAPE 1.1, Cronbach’s alpha was used to examine the internal consistency of the four core LPE items of the measure when combined as a single scale. In order to do so based on the most fine-grained data collected, this Cronbach’s alpha was calculated for raw ratings (0, 1, 2) on these items. A high level of internal consistency ($\alpha = .82$) was found, indicating that clinicians’ ratings of these items form a highly reliable scale.

Criterion Validity (Concurrent Validity)

In a one-way MANOVA testing whether children who did or did not meet criteria for the LPE specifier according to the CAPE 1.1 (IV) differed on questionnaire-based ratings of CU traits by mothers, fathers, and teachers (DV), a significant multivariate main effect was found (Wilks’ $\lambda = .70, F(3, 57) = 7.78, p < .001, \eta_p^2 = .29$). Power to detect the effect was .98. Significant univariate main effects were seen for mother-rated CU traits, $F(1, 59) = 20.21, p < .001, \eta_p^2 = .25$, and father-rated CU traits, $F(1, 59) = 14.82, p < .001, \eta_p^2 = .20$, whereas the test for teacher ratings did not reach statistical significance ($p = .08$). Based on the partial-eta-squared values reported, these significant associations were in a medium to large range for effect size.

Continuous CAPE 1.1 scores were directly associated with concurrent questionnaire-based ratings of CU traits collected from mothers ($r = .51, p < .01$) and fathers ($r = .36, p < .01$) but not

Table 1
Descriptive Statistics for Measures of Callous and Unemotional Traits and Related Child Characteristics

Variable name	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. CAPE 1.1 Symptom count	1													
2. CU Traits scale (M)	.51**	1												
3. CU Traits scale (F)	.36**	.58**	1											
4. CU Traits scale (T)	.20	.29*	.06	1										
5. Antisocial scale (M)	.37**	.54**	.32**	.19	1									
6. Antisocial scale (T)	.27*	.14	.04	.44**	.43**	1								
7. ODD/CD severity	.38**	.32**	.26*	.33**	.41**	.25*	1							
8. Affective empathy (M)	-.41**	-.61**	-.37**	-.16	-.49**	-.15	-.26*	1						
9. Global empathy (M)	-.53**	-.78**	-.48**	-.23*	-.55**	-.23*	-.28*	.89**	1					
10. Affective empathy (F)	-.41**	-.43**	-.51**	.00	-.23	-.13	-.16	.49**	.53**	1				
11. Global empathy (F)	-.54**	-.59**	-.67**	-.05	-.33**	-.22	-.24*	.57**	.63**	.85**	1			
12. Proactive aggression (T)	.29*	.26*	.16	.62**	.45**	.36**	.30*	-.14	-.22	-.12	-.21	1		
13. Reactive aggression (T)	.00	.03	.14	.38**	.08	.22	.11*	-.01	-.08	-.09	-.09	.56**	1	
14. Child age	-.28*	.00	-.04	.04	.13	-.02	.03	-.04	.00	.09	.04	.00	.11	1
<i>M</i>	.90	8.10	8.24	8.58	10.46	7.28	3.81	-1.30	3.96	1.23	9.82	7.34	5.78	7.40
<i>SD</i>	1.03	3.33	3.31	3.59	4.67	5.83	1.24	11.99	27.09	10.07	23.43	5.38	4.01	2.69
α	.82	.80	.81	.84	.81	.89	—	.82	.89	.80	.87	.91	.92	—

Note. CAPE 1.1 = Clinical Assessment of Prosocial Emotions; CU = callous and unemotional; M = mother; F = father; T = teacher; ODD/CD = oppositional defiant disorder or conduct disorder.
* $p < .05$. ** $p < .01$.

teachers ($r = .20, ns$). Three linear regression models were then run, in which CAPE 1.1 scores were tested as predictors of CU traits questionnaire scores (DVs) of mothers, fathers, and teachers, respectively. In each of these models, IVs/covariates were continuous CAPE 1.1 scores, child age, and sample type (dummy coded 0 or 1 based on whether or not the child was originally recruited for a study focused on children with high levels of CU traits). The regression coefficients for these models are reported in Table 2. Sample type was associated with CU traits ratings by mothers ($\beta = .34, p < .01$) and fathers ($\beta = .48, p < .01$), such that these ratings were significantly higher among children who were recruited for research focused on children with high levels of CU traits than those who were not. Independent of these effects, CAPE 1.1 scores were found to significantly predict CU traits questionnaire scores in the models examining questionnaire scores of mothers ($\beta = .36, p < .01$) and teachers ($\beta = .32, p < .05$) but not fathers ($\beta = .13, ns$).

Construct Validity (Convergent Validity)

As detailed in the analytic plan, a one-way MANOVA was used to test whether correlates of LPE (DVs: mother-reported antisocial behavior, mother-reported affective empathy, teacher-reported antisocial behavior, and teacher-reported proactive aggression) differed between groups defined by diagnostic status ($-$ ODD/CD; ODD/CD $-$ LPE; ODD/CD $+$ LPE). A significant multivariate main effect was found (Wilks' $\lambda = .64$), $F(8, 118) = 3.64, p < .01, \eta_p^2 = .19$. Power to detect the effect was .98. Significant univariate main effects were found for mother-reported antisocial behavior, $F(2, 62) = 10.44, p < .01, \eta_p^2 = .25$, mother-reported affective empathy, $F(2, 62) = 6.63, p < .01, \eta_p^2 = .17$, teacher-reported antisocial behavior, $F(2, 62) = 4.43, p < .05, \eta_p^2 = .12$, and teacher-reported proactive aggression, $F(2, 62) = 5.09, p < .01, \eta_p^2 = .14$. Based on the partial-eta-squared values reported, effect sizes for these significant associations were in a medium to large range. Following post hoc comparisons using Bonferroni correction, the ODD/CD $+$ LPE group was found to differ significantly from the $-$ ODD/CD group in terms of mother-reported antisocial behavior ($p < .001$), affective empathy ($p = .001$), teacher-reported antisocial behavior ($p = .006$), and proactive aggression ($p = .004$). The only significant difference between the ODD/CD $+$ LPE and ODD/CD $-$ LPE groups was in terms of affective empathy, which was significantly lower among the ODD/CD $+$ LPE group ($p = .008$). Group means, standard deviations, and related indices for these post hoc comparisons

can be found in the online supplemental materials (Supplementary Tables 1 and 2).

Bivariate correlations showed that continuous CAPE 1.1 scores were positively associated with severity of general conduct problems, as indexed by self-report (Antisocial scale) ratings of mothers ($r = .37, p < .01$), fathers ($r = .34, p < .01$), and teachers ($r = .27, p < .05$), and by the severity of ODD/CD symptoms indexed by diagnostic interviews with mothers/fathers ($r = .38, p < .01$). CAPE 1.1 scores were also significantly associated with teacher ratings of proactive aggression ($r = .29, p < .05$) and with the affective empathy ratings of mothers ($r = -.53, p < .01$) and fathers ($r = -.41, p < .001$). In order to test whether continuous CAPE 1.1 scores remained associated with these correlates when controlling for relevant covariates, a series of linear regression models were run for the respective DVs of (a) parent diagnostic interview data on ODD/CD symptom severity, (b) mother-reported affective empathy, (c) father-reported affective empathy, (d) teacher-reported proactive aggression, and (e) teacher-reported antisocial behavior. The same set of IVs/covariates was included in each of these models, comprising child age, sample type, and continuous CAPE 1.1 scores. As shown in the regression coefficients for these models reported in Table 3, CAPE 1.1 scores were uniquely associated with parent diagnostic interview data on ODD/CD symptom severity ($\beta = .43, p < .01$), mother-reported affective empathy ($\beta = -.33, p < .05$), father-reported affective empathy ($\beta = -.28, p < .05$), teacher-reported proactive aggression ($\beta = .33, p < .05$), and teacher-reported antisocial behavior ($\beta = .32, p < .05$).

Incremental Validity

The same linear regression models used to test for construct validity were rerun following the addition of CU traits questionnaire scores as a further IV in the models in order to examine the incremental validity of the CAPE 1.1 parent interview. Unique variance was explained by CU traits questionnaire scores in the models testing predictors of father-reported affective empathy ($\beta = -.27, p < .05$) and teacher-reported proactive aggression ($\beta = .50, p < .01$). Across the remaining models, there were no unique effects for CU traits questionnaire scores. CAPE 1.1 scores were found to explain unique variance in the prediction of mother-reported affective empathy ($\beta = -.28, p < .05$) and ODD/CD symptom severity ($\beta = .39, p < .01$; for full regression coefficients see the online supplemental materials, Table 3).

Table 2
CAPE 1.1 Interview Scores as Predictors of CU Traits Questionnaire Scores Across Informants

Predictor variable	Mother-report CU traits questionnaire scores			Father-report CU traits questionnaire scores			Teacher-report CU traits questionnaire scores		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Child age	.29	.13	.23*	.25	.16	.19	.06	.18	.05
Sample type	2.38	.87	.34**	3.23	.99	.48**	-1.43	1.12	-.20
CAPE 1.1 symptom count	1.18	.38	.36**	.35	.41	.11	1.05	.47	.32*

Note. CAPE 1.1 = Clinical Assessment of Prosocial Emotions; CU = callous and unemotional; *SE* = standard error.
* $p < .05$. ** $p < .01$.

Table 3
 CAPE 1.1 Interview Scores as Predictors of Established Correlates of CU Traits

Predictor variable	ODD/CD severity			Mother-report affective empathy			Father-report affective empathy			Teacher-report proactive aggression			Teacher-report antisocial behavior		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Child age	.05	.04	.13**	-.95	.51	-.21	-.17	.51	-.04	.00	.26	.02	-.13	.29	-.06
Sample type	-.09	.34	-.04	-4.91	3.37	-.20	-4.66	3.18	-.23	-.62	1.61	-.06	-1.20	1.79	-.10
CAPE 1.1 symptom count	.45	.14	.43**	-3.90	1.47	-.33*	-2.66	1.32	-.28*	1.58	.68	.33*	1.69	.76	.32*

Note. CAPE 1.1 = Clinical Assessment of Prosocial Emotions; CU = callous and unemotional; ODD/CD = oppositional defiant disorder or conduct disorder; *SE* = standard error.

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

Discussion

Research supporting the clinical importance of child and adolescent CU traits has grown considerably, yet tools for the assessment of CU traits in clinical settings have been largely limited to questionnaires. This limitation has become increasingly apparent in recent years, as these traits have been included in diagnostic systems for CD (*DSM-5*) and ODD/CD (*ICD-11*). Here, we examined the validity of a clinician-rating method for assessing CU traits, the CAPE 1.1 (Frick, 2013), in children and adolescents with clinic-referred conduct problems. Evidence of criterion validity was seen in significant associations between CAPE 1.1 scores and multi-informant reports on rating scales for CU traits by mothers, fathers, and teachers. This evidence is valuable given that much of the research establishing the importance of CU traits has been based on such rating scales, and the LPE specifier itself was developed based on ratings scales (i.e., APSD, ICU).

In the primary test of criterion validity, children and adolescents classified as meeting criteria for the *DSM-5* (American Psychiatric Association, 2013) LPE specifier according to the CAPE 1.1 were found to receive higher scores on mother and father CU traits questionnaires than those who were not. Although these specifier-based groups did not differ on teacher questionnaire scores, teacher ratings provided some support for criterion validity in secondary analyses examining continuous data from the CAPE 1.1 corresponding to the actual number of LPE criteria met. Specifically, there was a significant association between continuous CAPE 1.1 scores and teacher-rated CU traits in the multivariate analysis, whereas this association did not reach statistical significance at the bivariate level. It should be noted that the association was positive in both cases ($r = .20$ vs. $\beta = .31$ after controlling for age and sample type). However, these findings suggest that interplay involving other variables in these multivariate models (e.g., child age, sample type) had a modest influence on the association between CAPE 1.1 scores and teacher-rated CU traits in the context of these models. For example, it could be that both parents and teachers may be more aware of the child's behavior at younger ages, and as a result, the reports of the two may converge more in younger children. Such interpretations need to be made tentatively because of the relatively modest difference between zero order and semipartial associations and because the current study was not powered to explore the reasons for the difference. However, these results do support the need for more research on potential influences on the assessment of CU traits across methods.

Evidence of construct validity was found in significant associations between CAPE 1.1 scores and established correlates of CU

traits, including severity of ODD/CD symptoms indexed via diagnostic interview, teacher ratings of proactive aggression, and reports of affective empathy by mothers and fathers. Again, such evidence is important because these correlates have been used to support the clinical (i.e., designating a more severe and aggressive pattern of antisocial behavior) and the etiological (i.e., designating a distinct casual pathway to serious conduct problems) relevance of CU traits (Frick et al., 2014a).

Echoing the tests of criterion validity, the CAPE showed more positive associations with indicators of construct validity in the analyses of continuous CAPE scores than those based on the categorical application of the LPE specifier. These categorical tests were, however, stricter than the tests involving continuous data, as they compared correlates of the LPE specifier within subgroups diagnosed with ODD/CD when separated from those with sub-threshold ODD/CD. Among children with full diagnoses of ODD/CD, it was only reduced levels of mother-rated affective empathy that differed significantly between those who were or were not assigned the LPE specifier by the CAPE 1.1. Although these children did not differ in antisocial behavior or proactive aggression, it is unclear whether this reflects a limitation of the CAPE 1.1 or a limitation of the categorical criteria for the LPE specifier as found in the *DSM-5* (American Psychiatric Association, 2013). Given that antisocial behavior and proactive aggression were nonetheless associated with continuous CAPE 1.1 scores, such evidence could be seen to support the clinical utility of a dimensional perspective on LPE.

Use of clinician ratings on the CAPE 1.1 is consistent with best-practice guidelines regarding the role of comprehensive assessments in important clinical decision making (Frick & Ray, 2015). However, given that the CAPE 1.1 requires more training and time to administer than questionnaire rating scales, it is important to determine whether such time and expense results in valuable information over and above that obtained from more time- and cost-efficient scales. Our findings on the incremental validity of the CAPE 1.1 were mixed, with it accounting for unique variance in parent ratings of ODD/CD severity and mother-reported empathy but not for father-reported empathy or teacher ratings of aggression or antisocial behavior. Thus, although promising, the incremental clinical utility of the CAPE 1.1 warrants further research.

Although there has been some success in using rating scales to assess the LPE specifier (Kimonis et al., 2015; Kolko & Pardini, 2010), the utility of this approach is limited in several ways. First, although rating scales assess the frequency of CU traits, they

typically do not allow for the assessment of the persistence (e.g., at least 12 months) and pervasiveness (e.g., typical pattern of functioning across relationships and settings) of the traits that is required by the specifier. Second, it is not clear what response from these rating scales (e.g., “often” or “very often”; “very true” or “definitely true”) should be used to determine symptom presence (see Kimonis et al., 2015, for a more extended discussion of this issue). Third, the CAPE 1.1 allows the assessor to determine whether the person being assessed understood questions and is answering questions in the way they are intended. Fourth, with the exception of the ICU, most rating scales do not assess CU traits exactly as they are defined by the LPE specifier in the *DSM-5* (American Psychiatric Association, 2013). For example, the Youth Psychopathic Traits Inventory (Andershed, Kerr, Stattin, & Levander, 2002) does not include items related to concern about performance in important activities. Further research is nonetheless needed regarding the relative importance of the four LPE criteria items in *DSM-5*, with Centifanti et al. (2019) finding that the item “unconcerned about performance” was endorsed just as frequently among children who did and did not meet the diagnostic criteria for LPE.

The importance of integrating multimethod, multi-informant data on child mental health has received growing recognition in recent years (McLeod et al., 2013), and the use of CU traits rating scales in conjunction with CAPE 1.1 interviews would be one way to meet this objective. When time and resources do not permit for the routine administration of the CAPE 1.1, using rating scales assessing CU traits as a potential screener in a multiple gating assessment strategy may be useful. That is, limiting the CAPE 1.1 to referrals first identified as scoring high on parent/teacher questionnaire ratings of CU traits may be an efficient strategy. However, for this to be effective, more work is needed to develop optimal cutoffs based on either normative comparisons (Ueno, Ackermann, Freitag, & Schwenck, 2019) or empirically derived cut scores (Kimonis, Fanti, & Singh, 2014). Further, the use of the CAPE 1.1 could help to clarify the reasons that may lead to marked discrepancies between informants on rating scales, given that the CAPE allows for extensive follow-up questions to determine the reason for informants’ responses. It is noteworthy that neither the current study nor that of Centifanti et al. (2019) focused exclusively on LPE in the context of CD. The design of the CAPE 1.1 does not require its administration to be coupled with a specific focus on CD, and the findings from both of these studies can be seen to support this aspect of the measure. As such, the CAPE 1.1 has the potential to contribute to research concerning the emergence of CU traits in developmental periods that precede the typical onset of CD as well as research into the clinical utility of CU traits as a transdiagnostic construct.

Our findings should be considered in light of some limitations. First, the CAPE 1.1 was developed to be scored with the assistance of available rating scale data, and this could not be done here, as it would have confounded the validation tests involving those scales. Second, and also related to how the CAPE 1.1 was scored, is the failure to include youth self-report interviews in this study, as recommended for the CAPE 1.1. Little research has focused on the relative importance of different informants when assessing CU traits and whether this might differ across ages. However, the absence of youth self-report data is likely to be especially limiting for children at the older ages of our sample, when youth self-report

seems to become more important for assessing personality traits and antisocial tendencies (Frick, Barry, & Kamphaus, 2010). As such, future research is needed that uses self-report and other potential informants (e.g., teachers) to score the CAPE 1.1 before its utility can be fully evaluated. Third, although the CAPE 1.1 was found to show a high level of reliability in terms of internal consistency, the scope of the study was limited largely to tests of validity. Future research should address additional forms of reliability (e.g., test–retest, interrater reliability). Finally, the limited number of adolescents in the sample prevented us from examining convergence between CAPE 1.1 scores and youth self-reports of CU traits. In addition to incorporating such tests, future research is needed to examine the validity of the CAPE 1.1 against indices other than those based on the subjective reports of informants, such as observational coding of aggressive and prosocial behavior, and independent data on neurocognitive correlates of CU traits.

In conclusion, we found promising support for the validity of the clinician-administered CAPE 1.1 when administered with parents of children and adolescents with clinic-referred conduct problems. Our findings suggest that the CAPE 1.1 could contribute to the comprehensive clinical assessment of child and adolescent externalizing problems, yet further systematic research is needed to investigate approaches to using other sources of data (e.g., file information, standardized questionnaires, youth self-reports) to inform clinician ratings on the CAPE 1.1. Given the potential complexity of integrating such data, this represents an important next step in future research.

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