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Abstract

The Inventory of Callous and Unemotional Traits (ICU), developed to assess callous/unemotional (CU) traits, has recently experienced increased attention in light of the proposal to add a CU specifier to the conduct disorder diagnosis in *DSM-5*. In a sample of 70 at-risk adolescents (ages 13–17 years) in the foster care system who received a contemplative intervention program, the present study placed the ICU within a nomological network of correlates, including anxiety, depression, hopefulness, loneliness, and physiological measures of stress (e.g., cortisol). The findings offered some support for the ICU's construct validity, including significant negative associations with measures of compassion toward others. Nevertheless, unexpected substantial positive correlations emerged with multiple measures of psychological distress, raising questions concerning other aspects of the ICU's construct validity. Taken together, results of the current study suggest that rather than assessing a dearth of all major emotions as implied by its name and some previous descriptions, the ICU may be heavily saturated with negative emotionality and global maladjustment.

Keywords

ICU, callous, unemotional, uncaring, construct validity, negative emotionality, psychopathy

Psychopathy is a personality construct characterized by a constellation of interpersonal, affective, and behavioral traits, including manipulateness, superficial charm, lack of guilt and remorse, poor impulse control, high sensation seeking, and dishonesty (Cleckley, 1976). It has never been formally listed as a disorder in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, but the description of antisocial personality in *DSM-II* (American Psychiatric Association [APA], 1968) is similar to contemporary conceptualizations of psychopathy. Regardless, psychopathy is one of the most widely studied and most controversial personality disorders (Patrick, 2006). In particular, a recently emerging area of controversy concerns the translatability of adult psychopathic traits to child and adolescent populations and the development of methods of assessing these psychopathic precursors (e.g., Brandt, Kennedy, Patrick, & Curtin, 1997; Frick, 2009; Salekin & Lynam, 2010).

Callous/Unemotional Traits

The study and assessment of psychopathy have historically been restricted to adult populations, and as a consequence most instruments designed to assess psychopathic traits are

normed and validated on adults. Nevertheless, there has recently been heightened interest in the possibility that at least some psychopathic traits are relevant to child and adolescent populations (Frick, 2009). In particular, some authors have argued that callous/unemotional, or CU, traits are precursors of adult psychopathy (e.g., Frick & Marsee, 2006). These traits are associated with a “lack of guilt, absence of empathy, [and] shallow and constricted emotions” (Barry et al., 2000, p. 335), and their similarity to adult psychopathy is underscored by the criteria proposed for a CU specifier to conduct disorder in *DSM-5*, including lack of remorse, lack of empathy, and shallow or deficient affect (APA, 2012).

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Indeed, a number of studies suggest that these traits are indicative of underlying affective deficits, distinguishing high-CU adolescents who engage in antisocial behavior from their counterparts without high levels of CU traits (Frick, 2009; Kimonis, Frick, Skeem, et al., 2008). These findings suggest that the former individuals are more severe, persistent, and prone to recidivism in offending, and emotionally unaffected by the antisocial behaviors in which they engage. In contrast, the latter group may be more distressed by their antisocial behaviors and more prone to poorly regulated displays of emotion, such as anxiety and irritability (Frick, 2009).

The growing interest in CU traits stems in part from a recognition of the potential for early interventions for individuals with psychopathy. Specifically, children and adolescents with high levels of CU traits are less responsive than are their same-age peers to punishment cues, especially when a reward-oriented response is primed (see Frick & White, 2008, for a review). As a result, they may be more difficult than other children to socialize. Nevertheless, if CU traits are indeed valid predictors of adult psychopathy, the identification of these traits at a young age may permit earlier and more effective treatment options. It may also aid in identifying populations most receptive to treatment for these “prepsychopathic” traits, as interventions may be most effective for youth who are only moderately elevated on CU traits. The first step in implementing such early interventions is the valid assessment of CU traits in children and adolescents.

In service of assessing CU traits in children and adolescents, Frick and Hare (2001) developed the Antisocial Process Screening Device (APSD) to assess psychopathic traits, including CU traits, in youth using parent, teacher, and self-reports. Subsequent analyses, however, indicated psychometric limitations of the APSD, including weak or moderate internal consistencies of its subscales (e.g., alphas for the CU subscale tend to range from .36 to .56; Poythress, Dembo, Wareham, & Greenbaum, 2006), the small number of items comprising the CU subscale ($n = 6$), and item-construction concerns (Roose, Bijttebier, Decoene, Claes, & Frick, 2010). With respect to the lattermost issue, all but one of the items on the CU subscale are reverse-scored, potentially rendering this subscale susceptible to an acquiescence or counter-acquiescence response set.

Inventory of Callous and Unemotional Traits

In response to psychometric concerns with the APSD and to provide more in-depth and content valid coverage of CU traits, Frick developed the Inventory of Callous and Unemotional Traits (ICU; Frick, 2004). The ICU consists of 24 items that display a replicated three-bifactor model (Fanti, Frick, & Georgiou, 2009; Frick, 2009; Kimonis, Frick, Skeem, et al., 2008; Roose et al., 2010) in which

each item loads onto one of the three Callous (e.g., “I do not feel remorseful when I do something wrong”), Uncaring (e.g., “I always try my best,” reverse-scored), and Unemotional (e.g., “I do not show my emotions to others”) dimensions, as well as onto a higher order CU factor, which assesses general CU traits, including the aforementioned lack of guilt and empathy, as well as a poverty of emotion. A bifactor model consists of “a general factor reflecting the overlap across all items, and independent subfactors reflecting the unique coherency among particular groups of items” (Patrick, Hicks, Nichol, & Krueger, 2007, p. 1). Thus, once the variance from the general CU factor has been removed, the three subfactors of the ICU should reflect distinct and uncorrelated residual variance.

The ICU factors have been differentially linked to a number of correlates. For example, the Callous scale correlates positively with measures of aggression, in contrast to the Uncaring scale, which relates to offending, and the Unemotional scale, which is tied more exclusively with measures related to emotion, such as indices of low empathy or absence of positive affect (Kimonis, Frick, Skeem, et al., 2008).

Several studies have examined the ICU in relation to internalizing and externalizing behaviors, and a number of correlates of its total score have been reported. There is support for the ICU’s convergent validity in the form of significant correlations with measures of delinquency and aggression in male and female adolescents and significant negative correlations with measures of empathy and positive affect (Fanti et al., 2009; Kimonis, Frick, Skeem, et al., 2008). Furthermore, in a study of juvenile sexual offenders, White, Cruise, and Frick (2009) found that both parent-report and self-report ICU scores correlated positively with rates of general offending as well as with sexual offenses in particular, although the parent- and self-report scores were differentially predictive of risk factor subsets for offending.

Essau, Sasagawa, and Frick (2006) examined the self-report ICU in a noncriminal German sample of adolescents, finding that scores were correlated positively with a broad measure of externalizing behavior and, to a lesser extent, a broad measure of internalizing behavior. ICU scores were also significantly correlated with conduct disorder symptoms, as well as with a measure assessing aggression and antisocial behavior. In all cases, the subscales of the ICU (Callous, Uncaring, and Unemotional) displayed different correlational patterns; notably, the Unemotional subscale generally correlated to a lesser extent with measures of externalizing behaviors.

Finally, the ICU has demonstrated construct validity when examined in the context of other personality measures. It correlates positively and significantly with total scores on the APSD and Child Psychopathy Scale (CPS; Lynam, 1997) and—paralleling findings in the adult psychopathy literature—negatively and significantly with measures of Big Five

Agreeableness and Conscientiousness (Roose et al., 2010). Essau et al. (2006) also reported significant positive correlations with sensation seeking, and significant negative correlations with each of the “Big Five” personality factors (i.e., Extraversion, Openness, Agreeableness, Neuroticism/Emotional Instability, and Conscientiousness; Goldberg, 1990).

Given these results, the ICU appears to fill a necessary niche in psychological assessment. At the same time, a number of questions regarding the construct validity of the ICU remain unanswered. For example, it is unclear whether the ICU assesses a dearth of all major emotions or whether this unemotionality is specific to certain emotions (e.g., social emotions, such as empathy and love, vs. mood-based emotions, such as anxiety and depression). If the ICU assesses only certain classes of emotion, its title may be a misnomer, as it implies a more global unemotionality. This distinction and clarification is particularly relevant with regard to the positive correlations that have been found between the ICU and internalizing symptoms. Conceptually, CU traits include a shallow and constricted range of emotions; low guilt and low empathy are often cited as the most relevant to CU traits, but numerous studies and descriptions of this construct, as it manifests both in adults and in youth, include broader language, such as, “deficient affective experience” (Frick & White, 2008, p. 1). This suggests that the poverty of affect associated with CU traits extends across the full range of emotions (see also Barry et al., 2000; Essau et al., 2006; Frick, 2009). Empirically, high-CU children have sometimes demonstrated lower anxiety and distress in comparison with low-CU children matched on their level of conduct problems (Barry et al., 2000).

As previously mentioned, the *DSM-5* task force is considering adding a CU specifier for conduct disorder to more clearly identify children and adolescents with these traits (APA, 2012). This proposal is based largely on data that children diagnosed with conduct disorder and with high levels of CU traits are at heightened risk for physical aggression and other negative outcomes. If this specifier is added to *DSM-5*, the clinical assessment of CU traits is likely to become much more widespread and the assessment of CU traits will become considerably more important. As a consequence, the instruments used to assess these traits must be as psychometrically sound as possible to avoid the risk of errors, especially false positives, which may engender considerable stigma (see Edens, Skeem, Cruise, & Cauffman, 2001), given the ostensible link between CU traits and psychopathy. The ICU is one of the most widely used measures of CU traits and is the only major instrument focused exclusively on the assessment of these traits in childhood (the aforementioned APSD-CU scale is more widely used but is only one subscale of a broader measure). Therefore, in all likelihood, the ICU would continue to be used and may become one of the primary measures for assessing CU

traits, which are expected to become of increasing importance in *DSM-5*.

The Present Study

The goal of the present study was to further examine the construct validity of the ICU within a sample of adolescents at risk for antisocial behavior, conduct problems, and other mental health problems by virtue of having experienced childhood abuse or neglect sufficient to warrant removal from their homes (e.g., Chamberlain et al., 2008). Although we might expect this sample to have higher mean scores on many forms of psychopathology than a community sample, it may also exhibit a greater variance of scores on CU traits and both internalizing and externalizing symptoms. This greater variance may allow us to better detect correlations between CU traits and psychopathological symptoms.

To address this goal, we placed the ICU within a nomological network of correlates that are theoretically relevant to CU traits, including externalizing and internalizing characteristics, such as loneliness, emotion regulation, trait anxiety, depression, conduct problems, hope and goal planning, and compassion. These external correlates share facets relating to deep social emotions, empathy, and socially appropriate interpersonal behavior and were selected on the basis of the aforementioned validation studies to further specify the nature of the ICU’s correlates.

In addition to self-report measures of anxiety, we examined physiological measures of stress, including cortisol, alpha-amylase, and C-reactive protein, all of which have been implicated in increased levels of physiological stress, which are ostensibly negatively associated with unemotional traits (e.g., Owen, Poulton, Hay, Mohamed-Ali, & Steptoe, 2003; Takai et al., 2004). Low levels of cortisol have also been linked to psychopathic or CU traits in both adults and adolescents, respectively (Loney, Butler, Lima, Counts, & Eckel, 2006; O’Leary, Loney, & Eckel, 2007; Vaillancourt & Sunderani, 2011).

We used a measure of trait anxiety as a proxy for broader negative emotionality in our analyses, based on close associations between anxiety and neuroticism or negative affectivity (e.g., Barlow, 2000; Watson & Clark, 1984). Doing so permitted us to examine the extent to which the ICU is associated with other correlates above and beyond negative emotionality or global maladjustment.

Finally, to assess the temporal stability of the ICU, we examined associations between caregiver-report and self-report scores across three administration times, each 6 to 10 weeks apart (see below for further description of study procedure).

Our approach was based on examining the ICU’s convergent and discriminant validity with respect to a number of variables included in the aforementioned nomological network. Given that the ICU was developed specifically to

assess CU traits, defined as callousness, lack of guilt, lack of empathy, and a poverty of emotion, including an immunity or lower susceptibility to negative emotions (e.g., Frick, 2009), we predicted that ICU scores would be negatively associated with indices of depression, psychological distress, loneliness, compassion, acceptance, and difficulties with emotion regulation.

We predicted that ICU scores would be positively associated with externalizing behaviors and lower order scales assessing these behaviors (e.g., aggressive behavior, rule breaking) as reported by parents or guardians, and in contrast, we expected to observe negative associations between ICU scores and internalizing behaviors and lower order scales assessing these behaviors (e.g., anxious depression, withdrawn depression). We also predicted that because the ICU contains indices of uncaringness and callousness, ostensibly reflecting lower reactions to stress, as is sometimes seen in adults with high levels of psychopathic traits, it would be negatively associated with physiological indicators of stress, namely, baseline cortisol, alpha-amylase, and C-reactive protein.

In addition, we examined the differential correlates of the three ICU subscales of Callous, Uncaring, and Unemotional. We predicted that based on positive correlations among subscales and between each subscale and the total score, all three subscales would show patterns of correlation similar to those of the total ICU score. Nevertheless, because the Callous and Unemotional subscales each presumably assess decreased affect and emotion, we predicted that these subscales in particular would show negative correlations with indices of negative emotionality or distress.

Finally, we conducted hierarchical multiple regression analyses to ascertain the incremental validity contributed by the total ICU score for assessing maladaptive psychological states, above and beyond negative emotionality. Such analyses are essential to determine whether the ICU assesses psychologically relevant variance that is not redundant with global maladjustment.

Method

Participants

Data were collected from 70 adolescents, aged 13 to 17 years ($M = 14.74$, $SD = 1.14$), in the foster care system in the greater Atlanta metropolitan area. As mentioned earlier, this sample was recruited based on a greater presumed risk for antisocial behavior. Participants were 55.7% male ($n = 39$), 74.3% African American ($n = 52$), 10% multiracial ($n = 7$), 7.1% Caucasian ($n = 5$), and 2.9% Asian ($n = 2$).

Procedure

This sample was drawn from a study examining the effects of a contemplative intervention program on psy-

chological and physiological measures of stress. Here, we examine the construct validity of the ICU using scores from the pretreatment administration period on all measures; we do so because the data at this time period have not been influenced by the intervention.

Measures

CU traits. To assess CU traits, the ICU (Frick, 2004) was administered to children and caregivers (i.e., foster parents or group home caregivers) at three time intervals during the study; except for the purposes of assessing test-retest reliability, only data from the first time interval are reported here. The ICU is a 24-item measure designed to assess CU traits in youth; here, we used the self-report and the caregiver-report versions of the measure. In addition to a total score, we calculated subscale scores for each of the three factors described in Essau et al. (2006), that is, Callous, Uncaring, and Unemotional. In our sample, Cronbach's α for ICU total scores on the self-report was .79; on the caregiver report, Cronbach's α for total scores was .87. Cronbach's α for the ICU subscales ranged from moderate to acceptable: for self-report, $\alpha_{\text{callous}} = .68$, $\alpha_{\text{uncaring}} = .83$, $\alpha_{\text{unemotional}} = .59$; for caregiver report, $\alpha_{\text{callous}} = .81$, $\alpha_{\text{uncaring}} = .86$, $\alpha_{\text{unemotional}} = .79$.¹

Physiological measures. Saliva samples were collected using a Salivette collection device (developed at Sarstedt, Nümbrecht, Germany) at consistent times across participants. Although this method of collecting saliva has been shown to reduce cortisol concentrations in samples, it has demonstrated greater predictive validity for total serum cortisol (Poll et al., 2007), which is "the standard measurement when evaluating basal or diurnal cortisol levels" (p. 15).

Participants were instructed to collect one sample immediately on waking and immediately before sleep on the same day; samples from these two times were analyzed separately. Samples were analyzed for concentrations of cortisol, C-reactive protein, and alpha-amylase using enzyme immunoassay kits from Salimetrics (Salimetrics, State College, PA) according to manufacturer instructions.²

Other psychosocial instruments. For the analyses reported here, we examined a number of measures with well-demonstrated internal consistency and construct validity that were relevant to our hypotheses. These were as follows:

1. The Hope Scale (Snyder et al., 1991), a 12-item self-report measure assessing self-efficacy and successful determination in reaching goals (e.g., "I energetically pursue my goals") using responses on a 4-point Likert-type scale. This measure has demonstrated convergent validity through positive correlations with measures of optimism, personal control over one's life, leadership, and perceived problem-solving ability (Snyder et al., 1991).

2. The trait form of the State–Trait Anxiety Inventory Scale (STAI; Spielberger, Gorsuch, & Lushene, 1970), a 20-item subset from a widely used, reliable self-report measure assessing enduring feelings of anxiety using a 4-point Likert-type scale. It has demonstrated concurrent validity through substantial correlations with other widely-used anxiety scales (Spielberger & Vagg, 1984).
3. The Self-Other Four Immeasurables scale (SOFI; Kraus & Sears, 2008), a 16-item self-report measure assessing paired feelings of positive and negative emotions, including social and empathic emotions relevant to CU traits, directed at the self and at others (e.g., “Compassionate—toward myself,” “Compassionate—toward others”) using a 5-point Likert-type scale. The SOFI consists of four subscales: positive toward self, positive toward others, negative toward self, and negative toward others. These subscales have demonstrated convergent and discriminant validity through correlations with other instruments assessing compassion, mindfulness, and positive and negative affect (Kraus & Sears, 2008). In addition to the four subscales, we combined the “self” and “other” ratings for two characteristics, acceptance and compassion, to compute two lower-order scales based on the relevance of these constructs to CU traits.
4. The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), a 36-item self-report measure assessing impulse control, lack of emotional awareness or clarity, and nonacceptance of emotional responses using a 5-point Likert scale. The DERS has demonstrated construct validity through correlations with other measures of emotional regulation, experiential avoidance, and emotional expressivity (Gratz & Roemer, 2004).
5. The Quick Inventory of Depressive Symptomatology–Self Report 16 (QIDS; Rush et al., 2003), a 16-item self-report measure assessing symptoms of clinical depression using a 0 to 3 ordinal scale reflecting increasing symptom intensity. The QIDS has demonstrated construct validity through correlations with depressive symptoms as well as with other measures of depression (Rush et al., 2003).
6. The UCLA Loneliness Scale–Revised (UCLA; Russell, 1996), a 20-item self-report measure assessing loneliness and social isolation (e.g., “How often do you feel left out?”) using a 4-point Likert-type scale. This measure has demonstrated convergent validity through correlations with other indices of loneliness, lack of social support, neuroticism, introversion, self-esteem, and depression (Russell, 1996).
7. The Child Behavior Checklist (CBCL; Achenbach, 1991), a widely used parent-report measure assessing a child’s internalizing and externalizing maladaptive behaviors. Following common practice, we computed seven subscales from the CBCL (Achenbach, 1991): Aggressive Behavior, Rule Breaking Behavior, Externalizing, Anxious Depression, Withdrawn Depression, Somatization, and Internalizing. For correlational analyses, Externalizing and Internalizing dimensions were not examined, as they are composites of the other five subscales. The CBCL scales have demonstrated strong internal and external validity through correlations with indices reflecting adaptive and maladaptive functioning, including social support, antisocial behavior, and personality disorder symptoms (Achenbach, 1991; Dutra, Campbell, & Westen, 2004).

Only caregivers completed the CBCL whereas only adolescent participants completed each of the other measures. Unless otherwise indicated, we relied on total scores for the measures described above.

Results

For ease of reference, unless otherwise specified, reported analyses of ICU scores refer to self-report data rather than parent or guardian report data.

Reliabilities

As can be seen in Table 1, the internal consistencies (Cronbach’s α s) for all measures were largely within the acceptable range.³

Gender Differences

There were no significant differences between genders on the total ICU score or on any of the three ICU subscales at T1 (although males scored somewhat higher than females on the total ICU and each of the subscales, in two cases at a small to medium effect size): $F_{\text{tot}}(1, 68) = 1.59$ (Cohen’s $d = .30$); $F_{\text{callous}}(1, 68) = 0.23$ (Cohen’s $d = .11$); $F_{\text{uncaring}}(1, 68) = 2.53$ (Cohen’s $d = .38$); $F_{\text{unemotional}}(1, 68) = 0.08$ (Cohen’s $d = .07$); all ps n.s. Box’s M test, which tests the equality of covariance matrices of measures across two samples, in this case males and females, revealed that the covariance matrices did not differ by gender: $F = 1.54, p > .05$. Therefore, male and female subsamples were combined for all subsequent analyses.

Table 1. Reliabilities and Descriptive Statistics

| | N | M (SD) | Cronbach's α |
|----------------------------|----|---------------|---------------------|
| ICU: Self | 62 | 24.06 (8.57) | .79 |
| ICU: Caregiver | 55 | 30.92 (10.16) | .87 |
| SOFI: Positive self | 70 | 16.01 (3.69) | .83 |
| SOFI: Positive other | 69 | 14.45 (3.66) | .85 |
| SOFI: Negative self | 70 | 5.46 (2.06) | .63 |
| SOFI: Negative other | 70 | 7.44 (3.15) | .71 |
| SOFI: Acceptance | 70 | 7.70 (1.88) | .70 |
| SOFI: Compassion | 70 | 7.16 (2.15) | .74 |
| Hope Scale | 65 | 55.28 (12.44) | .77 |
| Anxiety | 63 | 18.83 (8.76) | .84 |
| Emotion Regulation | 55 | 42.90 (17.88) | .88 |
| Depression | 70 | 10.51 (6.08) | .68 |
| Loneliness | 64 | 21.54 (9.88) | .89 |
| CBCL: Aggressive Behavior | 64 | 12.47 (7.95) | .90 |
| CBCL: Rule Breaking | 64 | 7.92 (6.08) | .88 |
| CBCL: Anxious Depression | 64 | 0.39 (0.38) | .88 |
| CBCL: Withdrawn Depression | 64 | 0.51 (0.38) | .72 |
| CBCL: Somatization | 63 | 0.19 (0.33) | .88 |

Note. ICU = Inventory of Callous and Unemotional Traits; SOFI = Self-Other Four Immeasurables scale; Anxiety = State-Trait Anxiety Inventory, Trait form; Emotion Regulation = Difficulties in Emotion Regulation Scale; Depression = Quick Inventory of Depressive Symptomatology; Loneliness = UCLA Loneliness Scale-Revised; CBCL = Child Behavior Checklist.

Correlational Analyses

ICU self-report and caregiver report total scores were moderately correlated ($r = .40, p < .01$). However, inter-subscale correlations were lower than might be expected considering the similarities of the three constructs they are intended to assess; this trend was particularly notable for the Unemotional subscale, which was negligibly and nonsignificantly correlated with the other subscales (see Table 2). ICU self-report scores were significantly correlated across all three administrations ($r_{T1T2} = .671, r_{T1T3} = .459, r_{T2T3} = .566$, all $ps < .01$). Each of the ICU subscales similarly demonstrated acceptable temporal reliability across administration periods (range of $rs = .38$ to $.62$, all $ps < .01$), except for the Unemotional subscale, which was nonsignificantly correlated between the first and third administration periods ($r = .23, p > .05$).

As shown in Table 3, contrary to prediction, total scores on the ICU self-report were positively and strongly correlated with indices of anxiety, loneliness, and emotion dysregulation (respectively: STAI, UCLA, DERS). Also, contrary to prediction, they were correlated positively and moderately with depression symptoms (i.e., QIDS). As predicted, ICU self-report total scores were positively associated with the SOFI negative-self and negative-other scales.

Also as predicted, they were strongly and negatively correlated with the Hope Scale and with the positive-other and acceptance scales of the SOFI and were moderately and negatively correlated with the positive-self and compassion scales of the SOFI. Additionally, total scores on the ICU caregiver report were moderately to strongly positively correlated with all CBCL externalizing and internalizing subscale scores except for Anxious Depression and Somatization (in line with expectations regarding externalizing subscales, but contrary to expectations regarding internalizing subscales) and, as expected, were moderately negatively correlated with the Hope Scale. Contrary to prediction, ICU self-report total scores were not significantly correlated with the physiological measures of cortisol, alpha-amylase, or C-reactive protein (rs ranged from $-.037$ to $.156$).⁴

As can be seen in Table 4, ICU subscales demonstrated similar patterns of correlations across both self-reports and caregiver reports. Notably, the Unemotional subscale on both self-reports and caregiver reports were differentially correlated with many of the validation measures compared with the Callous and Uncaring subscales. The self-report Unemotional scale generally exhibited correlations that were smaller in magnitude and often nonsignificant compared with those for the Callous and Uncaring scales. This pattern was especially evident for the primary affective measures, including the Hope Scale, STAI, DERS, UCLA, and, to a lesser extent, QIDS. Similarly, the caregiver Unemotional scale correlated negatively (though largely nonsignificantly) with each CBCL subscale, barring one positive correlation that was close to zero (Withdrawn Depression). This pattern was again in contrast with both the Callous and Uncaring scales of the caregiver ICU, which were positively correlated with every CBCL subscale. In the case of the Callous scale, all these correlations were significant and moderately substantial.

For the most part, caregiver report measures were correlated most highly with other caregiver report measures, and self-report measures were similarly correlated most highly with other self-report measures. This pattern of results presumably reflects the impact of method or source covariance on ICU scores and may account for discrepant correlations (e.g., ICU self-report correlating with STAI but not with CBCL Anxious Depression, even though these two measures assess similar constructs). Finally, in light of previous research showing moderate correlations between internalizing and externalizing scores (e.g., Gould, Bird, & Jaramillo, 1993), we conducted subsidiary analyses controlling for externalizing behaviors, as assessed by the CBCL Externalizing subscale. The magnitudes of all correlations remained virtually unchanged.

Regression Analyses

A simultaneous multiple regression analysis incorporating measures of the five major psychosocial constructs (i.e.,

Table 2. The Inventory of Callous and Unemotional Traits (ICU) Subscale Correlations

| | S-Callous | S-Uncaring | S-Unemotional | C-Callous | C-Uncaring | C-Unemotional |
|---------------|-----------|------------|---------------|-----------|------------|---------------|
| S-Callous | — | | | | | |
| S-Uncaring | .301* | — | | | | |
| S-Unemotional | .038 | .239* | — | | | |
| C-Callous | .276* | .240 | .057 | — | | |
| C-Uncaring | .240 | .284* | .028 | .620** | — | |
| C-Unemotional | .096 | .265* | .349** | .107 | .202 | — |

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

ICU = Inventory of Callous and Unemotional Traits; Anxiety = State-Trait Anxiety Inventory, Trait form; SOFI = Self-Other Four Immeasurables scale; Emotion Regulation = Difficulties in Emotion Regulation Scale; Depression = Quick Inventory of Depressive Symptomatology; Loneliness = UCLA Loneliness Scale-Revised; CBCL = Child Behavior Checklist.

Table 3. Zero-Order Correlations Among Total Scores

| | ICU: Self-Report | ICU: Caregiver Report |
|----------------------------|------------------|-----------------------|
| ICU: Caregiver Report | .401** | — |
| Hope Scale | -.650** | -.336** |
| Anxiety | .506** | .176 |
| SOFI: Positive Self | -.432** | -.062 |
| SOFI: Positive Other | -.598** | -.245 |
| SOFI: Negative Self | .250* | .144 |
| SOFI: Negative Other | .327** | .214 |
| SOFI: Acceptance | -.516** | -.093 |
| SOFI: Compassion | -.433** | -.133 |
| Emotion Regulation | .482** | .197 |
| Depression | .356** | .159 |
| Loneliness | .572** | .093 |
| CBCL: Aggressive Behavior | .217 | .514** |
| CBCL: Rule Breaking | .200 | .548** |
| CBCL: Anxious Depression | .148 | .191 |
| CBCL: Withdrawn Depression | .162 | .357** |
| CBCL: Somatization | .074 | .116 |

Note. ICU = Inventory of Callous and Unemotional Traits; SOFI = Self-Other Four Immeasurables scale; CBCL = Child Behavior Checklist.

loneliness, hope, emotion dysregulation, depression, trait anxiety) showed that scores for indices of loneliness and hope (the latter of these inversely) predicted significant increments of the variance in total ICU self-report scores (respectively: R^2 change = .327, $F(1, 67) = 32.53$, $p < .001$; R^2 change = .153, $F(1, 66) = 19.34$, $p < .001$). Emotion dysregulation, depression, and trait anxiety each predicted nonsignificant increments of variance (respectively: R^2 change = .006, $F(1, 65) = 0.72$; R^2 change = .002, $F(1, 64) = 0.27$; R^2 change = .00, $F(1, 63) = 0.01$; all $ps > .4$).

Another set of simultaneous multiple regressions, examining each major correlate independently, indicated that after controlling for negative emotionality using trait anxiety scores as a proxy, ICU total scores predicted significant

amounts of the variance of hope, loneliness, and emotion dysregulation (respectively: R^2 change = .124, $F(1, 66) = 19.79$, $p < .001$; R^2 change = 0.092, $F(1, 67) = 11.59$, $p < .01$; R^2 change = .041, $F(1, 67) = 4.67$, $p < .05$). ICU scores predicted a nonsignificant amount of variance of depression symptoms (R^2 change = .002, $F(1, 67) = .209$, n.s.).

Discussion

Support for the ICU's Construct Validity

The data presented here offer promising but qualified support for the construct validity of the ICU. The correlations between ICU self-report and ICU caregiver report scores were moderate in magnitude and statistically significant. Additionally, the correlations that emerged between the ICU self-report and indices of acceptance and compassion are theoretically consistent with the constructs of callousness, uncaringness, and unemotionality that the ICU is intended to assess. ICU caregiver report scores also demonstrated expected correlations with indices of externalizing behavior on the CBCL. These findings are again consistent with the conceptualization of the ICU as assessing callousness and lack of empathy, which are often associated with psychopathy and antisocial behavior (Frick & Hare, 2001).

It is notable that both ICU self-report and caregiver report scores were negatively correlated with the Hope Scale, assessing self-efficacy and perception of one's ability to set and reach goals. This association remained robust even after controlling for trait anxiety. The ICU's relation with depression became nonsignificant when the QIDS was entered into the regression model following the Hope Scale, suggesting that this latter measure may have subsumed any variance predicted by the QIDS. However, it remains unclear whether the association between the Hope Scale and the ICU is due to the emotion of hopelessness or simply to a lack of concern about one's future, as the Hope Scale also assesses goals and planning. For the ICU self-report, all three subscales were significantly correlated with the Hope Scale, with the Uncaring subscale correlating most strongly. For the ICU

Table 4. Zero-Order ICU Subscale Correlations

| | S-Callous | S-Uncaring | S-Unemotional | C-Callous | C-Uncaring | C-Unemotional |
|----------------------------|-----------|------------|---------------|-----------|------------|---------------|
| Hope Scale | -.475** | -.540** | -.277* | -.340** | -.212 | -.180 |
| Anxiety | .433** | .345** | .250* | .149 | .240 | -.044 |
| SOFI: Positive Self | -.264* | -.369** | -.243* | -.104 | -.094 | .117 |
| SOFI: Positive Other | -.375** | -.523** | -.301* | -.271* | -.226 | .010 |
| SOFI: Negative Self | .219 | .175 | .109 | .120 | .144 | .044 |
| SOFI: Negative Other | .309** | .244* | .083 | .189 | .283* | -.054 |
| SOFI: Acceptance | -.224 | -.395** | -.259* | -.135 | -.126 | -.010 |
| SOFI: Compassion | -.435** | -.360** | -.250* | -.142 | -.144 | .153 |
| Emotion regulation | .458** | .359** | .119 | .229 | .113 | .071 |
| Depression | .393** | .211 | .099 | .210 | .107 | -.009 |
| Loneliness | .437** | .463** | .237* | .110 | .020 | .080 |
| CBCL: Aggressive Behavior | .198 | .246 | -.074 | .592** | .587** | -.223 |
| CBCL: Rule Breaking | .133 | .221 | .010 | .525** | .597** | -.021 |
| CBCL: Anxious Depression | .132 | .177 | -.063 | .329** | .181 | -.212 |
| CBCL: Withdrawn Depression | .073 | .130 | .141 | .403** | .281* | .041 |
| CBCL: Somatization | .092 | .126 | -.128 | .329** | .166 | -.423** |

Note. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

ICU = Inventory of Callous and Unemotional Traits; Anxiety = State-Trait Anxiety Inventory, Trait form; SOFI = Self-Other Four Immeasurables scale; Emotion Regulation = Difficulties in Emotion Regulation Scale; Depression = Quick Inventory of Depressive Symptomatology; Loneliness = UCLA Loneliness Scale-Revised; CBCL = Child Behavior Checklist.

caregiver report, the Callous subscale was the only significant correlate (see Table 4). Especially in light of the concerns outlined below regarding the ICU's construct validity, the nature of this relationship merits further examination.

Remaining Questions

Nevertheless, our data also raise important questions regarding the construct validity of the ICU. In particular, many of the correlations suggest that the ICU assesses not only callousness and a lack of emotions, but also negative emotionality or pervasive maladjustment. This interpretation is highlighted by positive, significant correlations with large effect sizes (all R^2 's $> .12$) between ICU self-report scores and self-reports of anxiety, depression, emotional dysregulation, and loneliness, and by positive, significant correlations with moderate to large effect sizes between ICU caregiver report scores and scores on the Withdrawn Depression subscale of the CBCL ($R^2 = .13$).

In one respect, our findings are not entirely novel given that the ICU has been linked to internalizing symptoms in prior research (Kubak & Salekin, 2009; Lee, Salekin, & Iselin, 2010; Salekin, Neumann, Leistico, DiCicco, & Duros, 2004). Nevertheless, our findings go beyond previous results in clarifying the nature of the ICU's correlates. The scale, as its name states, is intended to assess callousness and lack of emotionality, which have been identified as the "precursor traits" of primary interest in the development of psychopathy (Frick & Marsee, 2006).

Adult psychopathy is often separated into two factors, primary and secondary, the former of which consists of the

interpersonal and affective features of psychopathy (e.g., superficial charm, manipulateness, low empathy, egocentricity, lack of deep social emotions) and the latter consists of the behavioral features of psychopathy (i.e., antisocial and impulsive behavior, including lying, physical aggression, and criminality). Negative emotionality, although associated with the secondary subtype of psychopathy, is not associated with the core affective deficits of primary psychopathy (Blonigen et al., 2010). However, some research has indicated that certain conceptualizations of narcissism (i.e., as a feature of primary psychopathy, rather than an independent construct) are positively associated with internalizing symptoms in adolescents (Barry & Malkin, 2010). The ICU is not intended to assess psychopathic narcissism per se, but if the parallels between adult and youth psychopathy hold, high-CU adolescents may also have more narcissistic traits than their low-CU counterparts, which may help explain the correlations found here.

Lee et al. (2010) analyzed low, moderate, and high scores on the PCL:YV to determine if there are subtypes among high-CU adolescents, similar to primary and secondary psychopathy subtypes (e.g., Karpman, 1941, 1948). Their findings were suggestive of multiple clusters of adolescents with varying levels of psychopathic traits, with each cluster demonstrating different patterns of correlation with Big Five factors, risk of recidivism, and treatment amenability. For instance, a cluster emerged with moderate scores on all three PCL:YV factors, and moderate scores on four of the Big Five factors, but with extremely low scores on Neuroticism and on trait anxiety. This echoes some aspects of the aforementioned classic or "primary" psychopathy. Although these

clusters have not yet been followed longitudinally to ascertain temporal continuity, they may have implications for the assessment of psychopathic traits in youth. In particular, the ICU may be assessing not only CU traits, but a broader gamut of prepsychopathic indicators. If this is the case, based on the low-anxiety, high-callousness pattern that has emerged both among adults and youth with psychopathic traits, the factor structure of the ICU may need to be revised to account for the negative emotionality associated with some clusters or subtypes of adolescent psychopathy.

The ICU may also be assessing a lack of overt, rather than experienced, emotion. This is an important distinction, particularly in a maltreated and high-stress sample. Adolescents may find that it is more adaptive to pretend not to experience strong emotions, especially those related to depression and anxiety. In fact, many of the items on the ICU appear to be assessing the manifestation of emotion rather than felt emotion (e.g., “I seem very cold and uncaring to others”; “I hide my feelings from others”). This may have contributed to the correlations between the ICU and indices of distress: the greater distress adolescents were experiencing, the more they might have felt it necessary to mask that distress.

Exploratory analyses that examined correlations for each of the three subscales of the ICU in the present study revealed a markedly different pattern for the Unemotional subscale compared with the other two ICU subscales. The Unemotional subscale was uncorrelated or negatively correlated with measures of emotional dysregulation, anxious depression, and overall internalizing behaviors, in contrast with the other two subscales, which were positively and often substantially correlated with these measures. Thus, at least to a greater extent than the other two subscales, the Unemotional subscale demonstrated potentially greater discriminant validity from other measures of maladjustment; still, its modest positive correlations with indices of anxiety and loneliness suggest that it may not be entirely free of construct validity problems. Indeed, in a study by Roose et al. (2010), ICU Unemotional demonstrated weaker correlations with the APSD and Child Psychopathy Scale (CPS), suggesting that its superior discriminant validity may come at the price of weaker convergent validity with measures of psychopathy. Furthermore, the pattern of differential associations among subscales found here further raises the possibility that “CU” traits would better be referred to as “C and U” traits given that the ICU Unemotional subscale appears to exhibit markedly different correlates from the two subscales assessing callousness and lack of empathy (see Latzman, Lilienfeld, Latzman, & Clark, in press).

An additional consideration and potential explanation for these unexpected findings is heterotypic continuity (Rutter & Sroufe, 2000), the idea that a given disorder may be manifested in different ways for different individuals across the developmental life course. For example, there is some evidence that girls with high CU traits display a different pattern of onset of oppositional behavior compared with boys

(Silverthorn & Frick, 1999). Namely, although girls may have similar levels of CU traits as boys, those traits often do not manifest in antisocial or oppositional behavior until adolescence, whereas antisocial behavior can manifest in childhood among boys. However, rather than assessing immunity to anxiety, as is seen in adults with high levels of callousness, CU traits may demonstrate the opposite association in children, that is, positive correlations with anxiety and other features of negative emotionality. Indeed, preliminary research suggests that this may be the case for adolescent offenders (Kubak & Salekin, 2009). It is important to further explore this possibility, as well as the potential diagnostic, etiological, and intervention considerations for separate subtypes of adult psychopathy and antisocial personality disorder (e.g., Poythress et al., 2010).

Limitations

Although informative, this study was marked by several limitations. First, our sample was relatively small ($N = 70$), limiting the statistical power of our correlational and regression analyses. However, our limited power suggests that the significant associations that did emerge are robust and that analyses that trended toward but did not reach significance may be worth investigating further (see, e.g., Cohen, 1992). A power analysis showed that for our sample size and a medium effect size (i.e., $r = .30$), achieved power was .74, whereas for our sample size and a large effect size (i.e., $r = .50$), achieved power was .99. Hence, we are unlikely to have overlooked associations of clinically significant magnitudes between the ICU and other traits.

Second, CU traits may interact with stress levels in uncontrolled-for ways that affected the analyses, particularly in the given sample. All participants were recruited from the foster care system, which is inherently a stressful environment. Based on adult psychopathic traits, one might expect participants with high levels of CU traits to feel less anxious than other participants, but (as in the above discussion of heterotypic continuity) it is unclear how CU traits may manifest in childhood.

In addition, the stressful environment of foster care adds further layers of complexity to our analyses and may affect our understanding of the relationships between the ICU and measures of psychological distress. Of note, some researchers have suggested that childhood trauma, as might be found in elevated rates in a foster care sample, may be a major etiological contributor to secondary psychopathy (e.g., Porter, 1996). However, more recent studies have cast doubt on the strength of this association (Poythress et al., 2010). Furthermore, the link between psychopathy and abuse appears to be exclusive to secondary psychopathy, if it is present at all (Poythress, Skeem, & Lilienfeld, 2006). Because CU traits are more closely related to primary than to secondary psychopathy (Frick & White, 2008), it is unlikely that the nature of this sample unduly influenced

our findings. Further research is clearly necessary to clarify the nature of the relationship between CU traits and stress, as well as the nature of the construct(s) assessed by the ICU and their manifestations in childhood.

Conclusions and Future Considerations

The findings presented here are mixed. They offer promising support for certain aspects of the ICU's construct validity but raise pointed questions about others. In particular, our findings suggest that the description of high ICU scorers as globally "unemotional" may be misleading, because these children appear to be marked by high levels of subjective distress (see also Lordos & Fanti, 2011), and their caregivers also report significant internalizing symptoms. Hence, if the ICU is indeed assessing the construct of unemotionality—implying a lack of experienced emotion—then the present findings of substantial positive correlations with internalizing symptoms provide further support for a separation of "CU traits" into "C and U traits." This suggests that clinicians should not assume that children with high levels of subjective distress (i.e., children with low levels of unemotionality) are also, by default, low on callousness. In contrast, if the items on the ICU are not assessing a lack of experienced emotion, but rather a lack of expressed emotion, the measure must be revised to more accurately reflect this distinction, either by changing the conceptualization of the construct or by altering the ICU's item content to better capture true unemotionality.

At the same time, it is possible that low global unemotionality is itself not linked strongly to emotional maladjustment, so that the apparent failure of the ICU to assess this construct may not vitiate its construct validity as an indicator of psychopathology. Nevertheless, extremely low levels of anxiety, fear, distress, and other negative emotions may in some cases be maladaptive and could be associated with heightened risk for certain conditions, such as psychopathy (Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999; Hale, Goldstein, Abramowitz, Calamari, & Kosson, 2004). As a consequence, further research will be needed to adjudicate between these possibilities.

Conversely, our findings also raise the possibility of false positives on the ICU, as moderately high scores may at least sometimes reflect negative emotionality rather than the callousness ostensibly associated with later psychopathy. Furthermore, given extant findings (e.g., Litzman et al., in press) as well as results of the current study, it may be particularly important to note differential scores on the three subscales. As noted by Seagrave and Grisso (2002), it is the clinician's responsibility to determine whether a "psychopathic" youth, as operationalized by the ICU or cognate measures, is indeed prepsychopathic or is merely in a developmental period of antisocial behavior or tumult that will pass with time. The erroneous categorization of youth as

psychopathic may have grave consequences for juveniles assessed for rehabilitation purposes, as psychopathy is traditionally (although perhaps erroneously; see Salekin, 2002) regarded as unresponsive to treatment. Indeed, there remains intense controversy over whether psychopathic traits are applicable to youth or adolescents (Edens et al., 2001).

These points are of particular salience given our discussion of *DSM-5*'s potential inclusion of the CU diagnostic specifier for conduct disorder, and the likely resultant increase in the assessment of these traits in at-risk or offender youth populations. In fact, in the proposed specifier, only one of the four criteria corresponds to unemotionality, rendering it possible for a child to receive the label of "CU" without displaying unemotionality (APA, 2012). This imbalance provides additional support for the potential separation of CU into "C and U" (see above; Litzman et al., in press). It also suggests a need for further clarification of the constructs assessed by the ICU to ensure discrimination between these traits and others related to global negative emotionality.

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Notes

1. Based on research that has suggested the importance of considering caregiver report and self-report separately (e.g., White et al., 2009), these scores are retained. However, resolved scores using the higher of the self or caregiver responses for each item (Piacentini, Cohen, & Cohen, 1992) were computed in subsidiary analyses. The pattern of results across all variables was similar to that for self-report ICU total scores, so these scores and corresponding results are not reported here; full results are available from the first author.
2. For complete analyses of physiological data, see Pace et al. (2012).
3. Item to total correlations were low for ICU-2 ($r = -.08$) and ICU-10 ($r = -.27$). Therefore, as in previous studies (Kimonis, Frick, Munoz, & Aucoin, 2008), an alternate ICU total score was computed excluding these items. Using this alternative total score, the magnitudes of correlations between the ICU and other psychosocial measures were slightly decreased relative to those for the total scores used in the main analyses, but these differences were minimal.
4. Because all physiological variables were positively skewed, log transforms were conducted and all analyses were rerun. No results were substantially altered.

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