

Callous-Unemotional Traits in a Community Sample of Adolescents

Cecilia A. Essau

Roehampton University

Satoko Sasagawa

Waseda University

Paul J. Frick

University of New Orleans

This study examined the structure, distribution, and correlates of a new measure of self-reported callous-unemotional (CU) traits in 1,443 adolescents (774 boys, 669 girls) between the ages of 13 to 18 years. The Inventory of Callous-Unemotional Traits was subjected to exploratory factor analysis and confirmatory factor analysis. Exploratory factor analysis produced three factors: callousness, uncaring, and unemotional. Fit indexes suggested that the three-factor model, with a single higher-order factor, represented a satisfactory solution for the data. This factor structure fit well for both boys and girls. CU traits correlated significantly with measures of conduct problems and psychosocial impairment. Furthermore, the traits showed predicted associations with sensation seeking and the Big Five personality dimensions, supporting the construct validity of the measure of CU traits.

Keywords: psychopathy; callous-unemotional traits; conduct problems; adolescents

The construct of psychopathy refers to a pattern of callous, manipulative, deceitful, and remorseless behavior (Frick, O'Brien, Wootton, & McBurnett, 1994; Hare, 1970; Sutker, 1994), which has proven to be important for understanding antisocial behavior among adults. As shown by numerous studies (see Gendreau, Goggin, & Smith, 2002; Hemphill, Hare, & Wong, 1998, for reviews), psychopathic traits can be used to designate a severe, chronic, and difficult-to-treat group of antisocial adults. Several

longitudinal studies have shown adult antisocial behavior to have their roots in childhood (Loeber, 1982). Furthermore, children with conduct problems who are unable to maintain social relationships (undersocialized) tend to be more aggressive, have a poorer prognosis, and respond less well to treatment compared to socialized antisocial children (Rogeness, Javors, & Pliszka, 1992). Given these findings, research is beginning to extend the construct of psychopathy to children and adolescents.

Two conceptual approaches have been used to study psychopathy in children and adolescents. The first approach involves creating a subtype of conduct disorder based on its comorbidity with hyperactivity and impulsivity (Lynam, 1996). It was argued that children with both impulsive/hyperactive behavior and conduct problems, compared to those with only one of these problems, tend to be at risk for having more severe and persistent antisocial behavior. In support of this model, boys with both impulsive/hyperactive and conduct problems showed more serious and stable antisocial behavior in adolescence than boys with only conduct problems (Lynam, 1997). In another study, children rated by teachers with both antisocial behavior and impulsive/hyperactive behaviors showed several characteristics that have been associated with psychopathy (e.g., problems with response modulation, inability to delay gratification). These characteristics were not found among children with either problem alone (Lynam, 1998).

Although these findings are promising, one problem with this approach is its emphasis on an impulsive-antisocial dimension of behavior, which has not proven to be specific to adults with psychopathy. That is, impulsive-antisocial tendencies appear to be elevated in most adults with significant criminal histories and/or a diagnosis of Antisocial Personality Disorder (Hare, 1985). A second approach to extending the construct of psychopathy to youth has been to focus on the callous and unemotional (CU) traits that have been central to the conceptualization of adult psychopathy (Cleckley, 1976) and that have proven important for differentiating within antisocial individuals (Hare, 1998; Vincent, Vitacco, Grisso, & Corrado, 2003). This approach also has proven to be promising for extending the construct of psychopathy to youth in a number of respects (for a review, see Frick & Marsee, 2006; Frick & Morris, 2004).

Specifically, in samples of both clinic-referred (Frick, Bodin, & Barry, 2000; Frick et al., 1994) and nonreferred (Frick et al., 2000) children, CU traits consistently emerge as a distinct dimension from other aspects of psychopathy (i.e., impulsivity and narcissism). However, impulsivity does not appear to differentiate distinct subgroups within children with severe and early-onset conduct problems (Christian, Frick, Hill, Tyler, & Frazer, 1997; Frick et al., 2000) or adolescents with severe antisocial and delinquent behaviors (Caputo, Frick, & Brodsky, 1999; Vincent et al., 2003), whereas high levels of CU traits appear to designate a group of antisocial youth who show a number of characteristics that have been associated with psychopathy.

First, elevated levels of CU traits (e.g., lack of guilt, lack of empathy) designates a subgroup of antisocial youth with more severe and aggressive behavior in forensic (Caputo et al., 1999; Kruh, Frick, & Clements, 2005; Vincent et al., 2003), mental health (Christian et al., 1997), and

community (Frick, Cornell, Barry, Bodin, & Dane, 2003; Marsee, Silverthorn, & Frick, *in press*) samples.

The ability of CU traits to designate a more severe group of antisocial youth has been found (a) in adolescent (Caputo et al., 1999; Kruh et al., 2005; Marsee et al., *in press*; Vincent et al., 2003) and preadolescent samples (Christian et al., 1997; Frick, Cornell, Barry, et al., 2003); (b) in samples of boys (Caputo et al., 1999; Kruh et al., 2005; Vicent et al., 2003), girls (Marsee et al., *in press*), and mix-gender samples (Christian et al., 1997; Frick, Cornell, Barry, et al., 2003); and (c) using parent and teacher ratings (Frick, Cornell, Barry, et al., 2003; Marsee et al., *in press*), self-report ratings (Caputo et al., 1999; Kruh et al., 2005), and clinician ratings (Vincent et al., 2003). Furthermore, the predictive utility of CU traits has been tested and these traits have shown to designate a group of students in third through seventh grades with conduct problems who exhibited more severe and more stable conduct problems and higher rates of delinquency throughout a 4-year follow-up period (Frick, Stickle, Dandreaux, Farrell, & Kimonis, 2005) and a group of adolescent offenders who are significantly more likely to show subsequent violent offenses throughout a 2-year period when released from an institution (Vincent et al., 2003).

Second, in addition to designating a particular severe and stable pattern of conduct problems, high levels of CU traits have designated a subgroup of children and adolescents who show other characteristics that are consistent with adult conceptualizations of psychopathy. Children with conduct problems who also show high levels of CU traits show a preference for novel, exciting, and dangerous activities (Barry et al., 2000; Frick, Cornell, Bodin, et al., 2003) and a decreased sensitivity to cues of punishment when a reward-oriented response set is primed (Barry et al., 2000; Fisher & Blair, 1998; Frick, Cornell, Bodin, et al., 2003). Furthermore, antisocial children (Blair, 1999; Kimonis, Frick, Fazekas, & Loney, *in press*) and adolescents (Loney, Frick, Clements, Ellis, & Kerlin, 2003; Pardini, Lochman, & Frick, 2003) with high levels of CU traits show less reactivity to threatening and emotionally distressing stimuli and deficits in cognitive and emotional empathy compared to other antisocial youth. Again, these findings have been found using parent and teacher (Barry et al., 2000; Frick, Cornell, Bodin, et al., 2003) and self-report (Kimonis et al., *in press*; Loney et al., 2003; Pardini et al., 2003) ratings of these traits.

Of importance, the use of CU traits to designate a distinct group of antisocial youth has not only been important for linking research on antisocial behavior in youth with research on the construct of psychopathy in adults but it also has helped to tie research on the development of antisocial behavior to research on conscience development (see Blair, 1999; Frick & Morris, 2004, for reviews). The preference for novel and dangerous activities, the lack of

emotional responsiveness to negative emotional material, and the lack of sensitivity to cues to punishment found in children with elevated levels of CU traits are all consistent with a temperamental style that has been variously labeled as low fearfulness (Rothbart & Bates, 1998) or low behavioral inhibition (Kagan, Reznick, & Snidman, 1987). Of importance, several studies of normally developing children have linked this temperament with lower scores on measures of conscience development in both concurrent (Kochanska, Gross, Lin, & Nichols, 2002) and prospective studies (Rothbart, Ahadi, & Hershey, 1994). These findings have led to a number of theories as to how this temperament may be involved in conscience development. For example, some developmental theories suggest that moral socialization and the internalization of parental and societal norms are partly dependent on the negative arousal evoked by the potential punishment for misbehavior (e.g., Kochanska, 1993). Furthermore, this temperament could place a child at risk for missing some of the early precursors to empathetic concern, which involves emotional arousal evoked by the misfortune and distress of others (Blair, 1999).

Given the potential importance of CU traits for designating a distinct group of children and adolescents with conduct problems and for developmental models of antisocial behavior, it is important to have an instrument that provides a comprehensive and reliable assessment of these traits and that can be used in a number of different types of samples of youth. For example, the Psychopathy Checklist-Revised (PCL-R; Hare, 1991) is one of the most widely used methods of assessing psychopathic traits in forensic samples of adults and has been modified for use in a samples of youth (PCL-YV; Forth, Kosson, & Hare, 2003). The PCL-YV has shown to have a number of similar correlates to the adult version (e.g., Campbell, Porter, & Santor, 2004) and the CU dimension tapped by this PCL-YV seems to be particularly important for designating a more severe and violent pattern of adolescent offending (Vincent et al., 2003). However, the method of scoring this measure that combines a review of the person's institutional chart with a semistructured interview makes it inappropriate for use in many noninstitutional samples. Furthermore, this method of scoring, which requires an assessor to infer a person's affective traits, may not be the most valid method of assessing a person's subjective emotional experiences, as suggested by the modest correlations between this method of assessment and person's self-report of CU traits (Lee, Vincent, Hart, & Corrado, 2003). Furthermore, there are only a few items ($n = 4$) on the PCL-YV that specifically assess the CU dimension.

As a result, much of the past research on samples of children and adolescents has used parent, teacher, or self-report ratings on the Antisocial Process Screening Device (APSD; Frick & Hare, 2001) to assess CU traits.

However, similar to the PCL-YV, the APSD assesses a number of dimensions of psychopathy; thus, the CU dimension is just one of three subscales and includes only six items that are rated on a 3-point scale. The few items and limited number of response options likely restricts the range of the measure and could contribute to the moderate internal consistency found in many studies, especially studies using the self-report format (e.g., Loney et al., 2003; Pardini et al., 2003). Furthermore, all but one of the items are worded in the positive direction (e.g., feels bad or guilty) and are inversely scored prior to computing a score on the CU dimension, thus making it likely that ratings could be influenced by a specific response set. Therefore, the main aim of this article is to report on the psychometric properties of an expanded assessment of CU traits in a community sample of adolescents. Specifically, the 24-item Inventory of Callous-Unemotional Traits (Frick, 2003) was developed to provide a more comprehensive assessment of CU traits that overcomes some of the psychometric limitations of the six-item subscale from the APSD used in past research.

In the current study, the factorial structure of the self-report version of this expanded assessment of CU traits was examined in a large community sample of adolescents using both exploratory and confirmatory factor analyses. Also, the internal consistency of the subscales derived from the factor analyses and potential age and gender differences in these scales were tested. Furthermore, concerns have been raised about interpreting scores on measures of CU traits in youth because some level of CU traits may be normative in adolescence (Seagrave & Grisso, 2002). Thus, the correlation between the measure of CU traits and indices of psychosocial impairment were tested to determine whether scores on the inventory seemed to be assessing a construct associated with impaired functioning in adolescence. Finally, the construct validity of these scales was tested through their association with measures of conduct problems, sensation seeking, and personality dimensions.

As mentioned previously, the importance of CU traits for designating a particular severe and aggressive pattern of antisocial behavior suggests that the measure of CU traits should be significantly correlated with measures of conduct problems and aggression (Christian et al., 1997). Furthermore, consistent with research on both adults and children (Frick, Lilienfeld, Ellis, Loney, & Silverthorn, 1999), the measure of CU traits is predicted to be correlated with a measure of sensation seeking, especially the thrill-seeking dimension, but uncorrelated or negatively correlated with measures of anxiety. Finally, there have been recent attempts to link the construct of psychopathy to specific personality dimensions. The CU dimension, in particular, has been hypothesized to be negatively related to the Agreeableness and Conscientious dimensions of

the Big Five Model of personality (Miller & Lynam, 2001; Miller, Lynam, Widiger, & Leukefeld, 2001). As a result, the correlations between the expanded assessment of CU traits and the Big Five personality dimensions were tested to determine if the predicted negative associations with Agreeableness and Conscientiousness emerged using this measure.

METHODS

Participants

The sample consisted of 1,443 adolescents (774 boys, 669 girls) who were enrolled in Grades 7 to 10 and who ranged in age from 13 to 18 years ($M = 15.59$, $SD = 1.56$). The mean age for boys was 15.60 ($SD = 1.55$) and for girls was 15.88 ($SD = 1.58$). The participants were recruited from three urban and three rural schools in Nordrhein Westfalia, Germany, between the fall of 2003 and spring of 2004. Schools were selected as being representative of the socioeconomic structure of the German population in general based on local census data. Almost all of the sample was of German origin (93%), with the remainder coming from other ethnic backgrounds, mostly from Southern and Eastern Europe. The socioeconomic status of participants varied greatly, ranging from parents with low-skill jobs to physicians.

Procedures

School approval and parental written informed consent were obtained before participation in the study. Children's participation was voluntary and no incentives were given for their participation. About 92% of the children who were invited to participate in the study eventually did so. Responders did not differ significantly from nonresponders in terms of age and gender. The adolescents completed questionnaires in their classroom and the order of administration was counterbalanced across classrooms. The students who did not participate in the study took part in their regular lesson. Two research assistants were available to provide assistance if necessary and to ensure independent responding. The average length of time for completing the questionnaires was 40 min.

Measures

Youth Self-Report (YSR; Achenbach, 1991). The YSR contains a list of 118 specific problems in children and adolescents and has been standardized on a sample of children and adolescents between the ages of 11 and 18 years (Achenbach, 1991). The YSR consists of two

broadband scales that reflect externalizing and internalizing syndromes (Achenbach, 1991). The internalizing composite consists of the anxious/depressed, somatic complaints, and withdrawn subscales. The externalizing composite consists of the aggressive behavior and delinquent behavior subscales. The other syndromes, which do not fall within one of the two broadband categories (i.e., social problems, thought problems, and attentional problems), are defined as the "mixed" syndromes. Children have to respond on 3-point scales whether each behavior is *not true*, *somewhat or sometimes true*, or *very true or often true* of their behavior now or in the past 6 months.

Findings on the internal consistency and validity of the YSR reported in various studies (e.g., Achenbach, 1991) have been replicated in a number of German studies of children and adolescents in the community (Essau, Muris, & Ederer, 2002). In the present study, alpha for the internalizing subscale was .86, for the externalizing subscale was .86, and for the mixed subscale was .86.

Child and Adolescent Social and Adaptive Functioning Scale (CASAFS; Price, Spence, Sheffield, & Donovan, 2002). The CASAFS was used to measure social and adaptive functioning in the areas of school performance, peer relationship, family relationship, and home duties/ self-care. The CASAFS consists of 24 items that are rated on a 4-point scale of 1 (*never*) to 4 (*always*). These 24 items are summed to give an index of social functioning: the higher the scores, the higher the level of social functioning. The construct validity of the CASAFS was supported in a sample of 1,478 adolescents ages 12 to 14 years by its significant, negative correlation with the Beck Depression Inventory, indicating that a high level of social functioning was associated with a low level of depression (Price et al., 2002). In the present study, the coefficient alpha for the whole scale was .77.

Big Five Questionnaire (Barbaranelli, Caprara, Rabasca, & Pastorelli, 2003). This 65-item self-report questionnaire was designed to measure five basic factors of personality (i.e., the Big Five) in children and adolescents and has been used in samples of youth between the ages of 12 and 17 (e.g., Muris, Meesters, & Diederens, 2005). The items can be rated on a 5-point Likert scale ranging from 1 (*almost never*) to 5 (*almost always*). The items on the scale can be divided into five scales representing the Big Five dimensions of personality: (a) Extraversion contains items such as activity, enthusiasm, assertiveness, and self-confidence (e.g., "I like to be with others"); (b) Agreeableness contains items related to concern and sensitivity toward others and their needs (e.g., "I treat my peers with affection; I understand when others need my help"); (c) Conscientiousness contains items related

to dependability, orderliness, and the fulfilling of commitments (e.g., "My room is in order; I like to keep all my school things in a great order"); (d) Emotional instability contains items related to feelings of anxiety, depression, and anger (e.g., "I easily get angry; I worry about silly things"); (e) Intellect/Openness includes items related to intellect and interest in other people (e.g., "I have a great deal of fantasy; I like to know and to learn new things"). The internal consistency of the Big Five subscales were acceptable: Extraversion (.75), Agreeableness (.88), Conscientiousness (.77), Emotional Instability (.78), and Intellect/Openness (.74).

Brief Sensation Seeking Scale (BSSS; Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002). The BSSS was developed to assess sensation seeking in children and adolescents and has been used among 12- to 17-year-olds in large-scale surveys (Stephenson, Hoyle, Palmgreen, & Slater, 2003). It consists of eight items that can be divided into four scales, with two items representing each scale. The scales were named: (a) Experience seeking (e.g., "I would like to take off on a trip with no preplanned routes or timetables"); (b) Boredom susceptibility (e.g., "I get restless when I spend too much time at home"); (c) Thrill and adventure seeking (e.g., "I would like to try bungee jumping"); and (d) Disinhibition (e.g., "I like wild parties"). The items can be answered on 5-point scales ranging from *strongly disagree* to *strongly agree*. The validity of the BSSS has been supported by the strong correlation between BSSS and marijuana use, attitudes toward and beliefs about marijuana use, and intention to use marijuana among adolescents (Stephenson et al., 1999, 2003). In the present study, the Cronbach's alpha for the total scale was .66.

Antisocial Behavior Subscale of the Social and Health Assessment (SAHA; Schwab-Stone et al., 1999). This subscale contains 20 items, which included behavior related to vandalism, carrying a weapon, theft with direct personal contact, and assault. Adolescents report on the frequency of these acts during the past year using a 5-point scale (0 time, 1 time, 2 times, 3-4 times, or 5 or more times). Antisocial behavior score was obtained by summing the 20 items. The SAHA has been used in a number of cross-cultural studies in young people age 12 to 18 years (e.g., Vermeiren et al., 2003; Vermeiren, Jones, Ruchkin, Deboutte, & Schwab-Stone, 2004). The internal consistency of the scale has been reported to be high (Vermeiren et al., 2003). In the present study, the Cronbach's alpha of the scale was .84.

Conduct Disorder Symptoms from the Bremen Psychopathology Scale (Essau, 2000). Participants rated each symptom on a 4-point scale ranging from 0 (*never*)

to 3 (*very often*). The Bremen Psychopathology Scale has been used in a large-scale epidemiology study on adolescents age 12 to 17 years and the conduct disorder symptoms were associated with substance abuse and high level of Attention-Deficit Hyperactivity Disorder symptoms (Essau, 2000). In the current study, the Cronbach's alpha for the total conduct disorder symptoms was .77.

Inventory of Callous-Unemotional Traits (ICU; Frick, 2003). The content of the ICU was based on the six-item CU scale of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001) that, as noted previously, has been shown to designate a distinct and important group of antisocial youth who show a number of characteristics associated with the construct of psychopathy. Although there are parent and teacher versions of the APSD, the self-report version has been most widely used in adolescent samples (Caputo et al., 1999; Kruh et al., 2005; Loney et al., 2003; Pardini et al., 2003; Salekin, Leistico, Neumann, DiCicco, & Duros, 2004; Silverthorn, Frick, & Reynolds, 2001; Spain, Douglas, Poythress, & Epstein, 2004). To create the ICU, the four items that loaded consistently on the CU scale of the APSD (i.e., "Is concerned about how well he/she does school or work," "Feels bad or guilty when he/she does something wrong," "Is concerned about the feelings of others," "Does not show feelings or emotions") in both community and clinic-referred samples formed the basis of the scale (Frick et al., 2000). Three positively (e.g., "Easily admits to being wrong") and three negatively worded (e.g., "Shows no remorse when he/she has done something wrong") items were developed from each original item leading to a 24-item scale with equal numbers of items worded in each direction. Items were read by several children, adolescents, and adults to ensure that they were clear. Finally, the rating scale for items was expanded to a 4-point Likert scale ranging from 0 (*not at all true*) to 3 (*definitely true*). Twelve positively worded items (items 1, 3, 5, 8, 13, 14, 15, 16, 17, 19, 23, 24) required reverse-scoring before calculation of the total scores. Although there are parent, teacher, and self-report versions of the ICU available, only the self-report version was used in the current study. The current study is the first test of the psychometric properties of this scale.

In addition to these questionnaires, the adolescents also completed a brief questionnaire to obtain demographic characteristics such as age, gender, and parental occupation.

Translation of Instruments

The English version of the questionnaires (ICU, BSSS, Big Five Questionnaire, SAHA, CASAFS) was adapted and translated according to guidelines that are widely

TABLE 1
Factor Structure of the Inventory of Callous-Unemotional Traits (ICU)

| <i>Items</i> | <i>Factor 1</i> | <i>Factor 2</i> | <i>Factor 3</i> |
|---|-----------------|-----------------|-----------------|
| Callousness | | | |
| 4. I do not care who I hurt to get what I want. | 0.54 | 0.05 | −0.29 |
| 8. I am concerned about the feelings of others. ^a | 0.53 | −0.12 | 0.08 |
| 9. I do not care if I get into trouble. | 0.50 | 0.02 | −0.12 |
| 18. I do not feel remorseful when I do something wrong. | 0.49 | 0.02 | 0.09 |
| 11. I do not care about doing things well. | 0.47 | −0.01 | 0.05 |
| 21. The feelings of others are unimportant to me. | 0.43 | 0.04 | 0.13 |
| 7. I do not care about being on time. | 0.40 | 0.03 | −0.08 |
| 20. I do not like to put the time into doing things well. | 0.35 | 0.16 | −0.003 |
| 2. What I think is right and wrong is different from what other people think. | 0.35 | 0.04 | −0.19 |
| 10. I do not let my feelings control me. | 0.34 | −0.10 | 0.10 |
| 12. I seem very cold and uncaring to others. | 0.22 | 0.01 | 0.12 |
| Uncaring | | | |
| 15. I always try my best. ^a | −0.08 | 0.73 | −0.12 |
| 23. I work hard on everything I do. ^a | −0.05 | 0.72 | −0.07 |
| 16. I apologize (“say I am sorry”) to persons I hurt. ^a | 0.18 | 0.53 | 0.17 |
| 3. I care about how well I do at school or work. ^a | 0.09 | 0.50 | 0.03 |
| 17. I try not to hurt others’ feelings. ^a | 0.17 | 0.42 | 0.07 |
| 24. I do things to make others feel good. ^a | 0.08 | 0.37 | 0.11 |
| 13. I easily admit to being wrong. ^a | −0.15 | 0.31 | 0.05 |
| 5. I feel bad or guilty when I do something wrong. ^a | 0.21 | 0.25 | 0.14 |
| Unemotional | | | |
| 1. I express my feelings openly. ^a | −0.12 | 0.03 | 0.72 |
| 19. I am very expressive and emotional. ^a | −0.16 | 0.14 | 0.51 |
| 6. I do not show my emotions to others. | 0.24 | −0.12 | 0.50 |
| 22. I hide my feelings from others. | 0.18 | −0.14 | 0.46 |
| 14. It is easy for others to tell how I am feeling. ^a | −0.13 | 0.22 | 0.41 |

NOTE: Values reported are rotated factor pattern using promax rotation method.

a. Items that require reverse scoring before calculation of the total score.

accepted for the successful translation of instruments in cross-cultural research (Brislin, 1970). As proposed by Brislin (1970), one bilingual translator who was also a native speaker or culturally informed individual blindly translated the questionnaires from the original language (English) to the second language (German) and another bilingual translated it back to the original language (German back to English). Differences in the original and the back-translated versions were discussed and resolved by joint agreement of both translators.

RESULTS

Exploratory Factor Analysis

Exploratory factor analysis was conducted to examine the dimensionality of the 24 items of the ICU. The scale was developed to be unidimensional but because there

have been no previous tests specifically of the callous-unemotional dimension of psychopathy, an initial exploratory factor analysis appeared to be warranted. For all further analysis, participants with missing data were omitted from the data set because the values were missing at random. Maximum likelihood estimation was used, with promax rotation. Results of a scree test yielded three factors (see Table 1). One factor (variance explained ignoring other factors = 3.65) consisted of items related to a callous attitude toward others (e.g., “I don’t care who I hurt to get what I want”; “I am concerned about the feelings of others,” inversely scored) and was labeled Callousness. A second factor (variance explained ignoring other factors = 4.13) consisted of items showing a lack of caring about performance (e.g., “I always try my best,” inversely scored; “I work hard on everything I do,” inversely scored) and was labeled Uncaring. The final factor (variance explained ignoring other factors = 2.93) consisted of items showing a lack of emotional expression

TABLE 2
Fit Indices Comparing the Structural Models for the Inventory of Callous-Unemotional Traits (ICU)

| <i>Model</i> | <i>df</i> | χ^2 | <i>GFI</i> | <i>AGFI</i> | <i>RMSEA</i> | <i>AIC</i> | <i>CAIC</i> |
|------------------------------------|-----------|----------|------------|-------------|--------------|------------|-------------|
| Model 1 (1 factor) | 252 | 2475.366 | 0.731 | 0.680 | 0.120 | 2571.366 | 2831.682 |
| Model 2 (3-factor intercorrelated) | 249 | 2214.166 | 0.783 | 0.738 | 0.109 | 2316.166 | 2596.808 |
| Model 3 (hierarchical model) | 228 | 1824.942 | 0.819 | 0.762 | 0.103 | 1968.942 | 2365.143 |
| Model 4 (modification indices) | 203 | 1034.464 | 0.894 | 0.844 | 0.078 | 1228.464 | 1762.235 |
| Model 5 (multiple-group model) | 475 | 3227.948 | 0.840 | 0.798 | 0.067 | 3477.948 | NA |

NOTE: GFI = Goodness of Fit Index, AGFI = Adjusted Goodness of Fit Index, RMSEA = root mean square error of approximation, AIC = Akaike information criterion, CAIC = consistent Akaike information criterion.

(e.g., “I express my feelings openly,” inversely scored; “I am very expressive and emotional,” inversely scored) and was labeled as Unemotional. When separate exploratory factor analyses were conducted for boys and girls separately, a very similar three-factor solution was obtained for boys and girls. Only items 2, 5, and 14 (see Table 1 for item descriptions) in the boys’ data and item 12 in the girls’ data failed to load onto the same factor as in the combined sample.

Confirmatory Factor Analysis

To examine the structure of the ICU scale more closely, a confirmatory factor analysis procedure was utilized. AMOS 5.0 (Arbuckle, 2003) was used for all analysis and maximum likelihood estimation was employed. The first model to be examined (Model 1) was a single-factor model in which all items loaded onto a single factor representing the callous-unemotional dimension. This model was the most parsimonious and was set in comparison to the other multifactorial models. The second model (Model 2) was a three-factor model that proposes that the items on ICU can be separated into three factors—callousness, uncaring, and unemotional—and these three factors are intercorrelated. The third model (Model 3) was a hierarchical model proposing that all items load onto a general callous-unemotional dimension as well as the three distinct factors. This model differs from Model 2 in that it assumes a general dimension common to all factors. Furthermore, comparison of this model to Model 1 would examine the validity of assuming three different factors while retaining the hypothesis that there is a common callous-unemotional dimension behind all of the items. Model 4 was a variant of Model 3, in which correlations between error variables were added according to modification indices. All models used boys’ data as their reference group and the generalizability of the best-fitting model to girls’ data was later tested (Model 5).

The goodness of fit indices for each model are shown in Table 2. Each index depicts a different aspect of model

fit (Tanaka, 1993) and thus it is advisable to consider a wide range of indices when comparing different models. High values of the Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI) indicate adequate fit of the model, although this becomes increasingly difficult to achieve when there are many parameters included (Jöreskog & Sörbom, 1989). Root mean square error of approximation (RMSEA) provides a fit index unaffected by the size of the model by taking degrees of freedom into account. RMSEA of .10 or lower is generally considered to be an acceptable value (Browne & Cudeck, 1993). Akaike information criterion (AIC) and consistent AIC (CAIC) are indices for model comparison, in which smaller values indicate better fit (Akaike, 1987). Fit indices were selected on the basis that they (a) are derived from diverse concepts of model fit (i.e., goodness of fit and information criterion) and (b) are used and are comparable to the models in previous studies (e.g., Dadds, Fraser, Frost, & Hawes, 2005).

Of all the models, Model 1 showed the poorest fit, indicating that the ICU scale consists of meaningful subgroups of items. The fit indices improved considerably in Model 2, which points to the fact that the three factors obtained in exploratory factor analysis consists of meaningful dimensions. A nested chi-square statistic between a model where the three factors were assumed to be orthogonal showed a significant increase in fit for the correlated model, $\chi^2(3) = 97.882, p < .001$. Model 3, which represents the hypothesis that there is a general dimension of callous-unemotional trait besides the three factors identified in Model 2 showed further improvement in model fit. However, because all models failed to achieve satisfactory fit, modification indices were utilized. Covariance between error variables of items where the modification indices were larger than 20 (Model 4) was allowed. A nested chi-square statistic between Models 3 and 4 showed a significant increase in fit for Model 4, $\chi^2(25) = 790.478, p < .001$. The error variances suggest that some of the items are still correlated after eliminating the effects of the three factors and the general CU

dimension. Given that Model 4 had an adequate fit and was in accordance with the unidimensionality assumed for ICU, it was concluded that Model 4 provided the best fit to these data.

Internal Consistency

The internal consistency for the whole scale was acceptable, with a coefficient alpha of .77. The internal consistency of the three subscales also was acceptable for two of the three scales, with coefficient alpha being .70 for the callousness factor and .73 for the uncaring factor. The internal consistency was marginal (.64) for the unemotional factor.

Inspection of the item-total correlation and coefficient alpha did not suggest that the deletion of any single item would significantly improve the internal consistency of the scale. The low alpha for the unemotional factor is likely related to its short test length (5 items). The three scales were moderately intercorrelated. The callousness scale correlated with the uncaring scale at .26 ($p < .001$) and unemotional scale at .25 ($p < .001$) and the uncaring scale correlated with the unemotional scale at .09 ($p < .001$). Interfactor correlations after correcting for unreliability were callousness-uncaring: .27, callousness-unemotional: .24, and uncaring-unemotional: .08.

Gender and Age Effects

The next step of our analysis was to examine potential gender differences in the factor structure of the ICU scale. Hierarchical model allowing error covariances and assuming the same factor structure (i.e., all parameters are equivalent between the groups) for boys and girls was utilized (Model 5). In spite of the strong constraints, adequate model fit was attained; model fit indices are provided in Table 2. Compared to the model where factor loadings were left free ($df = 454$, $\chi^2 = 3106.292$, GFI = .840, AGFI = .789, RMSEA = .068), nested $\chi^2(21) = 121.656$, $p < .001$, Model 5 had significantly better fit.

Given that the same factor structure held for both genders, we performed a 2×3 (Gender \times Age Groups) ANOVA on the total ICU score and each of its subscales. The mean and standard deviations for the total ICU scores and the three subscales are shown in Table 3.

Our results showed a significant main effect of gender and age for the total ICU scores, $F(1, 1282) = 218.36$, $p < .001$, but no interaction, $F(2, 1282) = 2.69$, ns , suggesting that girls had significantly lower callous-unemotional traits than boys. Further analyses using the Scheffe method revealed a significant difference between age groups: 15- to 16-year-olds had significantly higher ICU scores than

13- to 14-year-olds and 17- to 18-year-olds. Significant interaction between age and group as well as significant main effects of both factors were found for callousness, uncaring, and unemotional subscales. Girls of all age groups scored lower than boys for all subscales regardless of age, again pointing to the fact that boys display more callous-unemotional traits than girls. Similarly, 15- to 16-year-olds scored higher than all other age groups regardless of gender for callousness and uncaring subscales, despite the significant interaction. For the unemotional subscale, although 15- to 16-year-olds had the highest score, differences in scores were not significant.

Association With Psychosocial Impairment

To test whether ICU scores were associated with indices of psychosocial impairment, ICU scale scores were correlated with scores from the CAFAS. The ICU total scores was correlated negatively with the CAFAS total scores ($r = -.42$, $p < .001$) as well as in various life domains such as school performance ($r = -.21$, $p < .001$), peer relationship ($r = -.30$, $p < .001$), and home duties ($r = -.40$, $p < .001$). This finding indicated that the higher the ICU scores, the more impaired the adolescents were in various life domains. Similar results were obtained across gender, except between ICU total scores and peer relationship. That is, among boys, no significant correlation was found between ICU total scores and peer relationship; however, a significant correlation was found among girls ($r = -.13$, $p < .05$). The subscales from the ICU showed that the uncaring ($r = -.38$, $p < .001$), callousness ($r = -.22$, $p < .001$), and unemotional ($r = -.16$, $p < .001$) scales were all negatively correlated with the CAFAS total scores. Similar correlations could be found when boys and girls were analyzed separately.

Associations With Psychopathology and Personality

The next set of analyses examined the association between the ICU and various aspects of child adjustment and personality. As expected, significant correlations were found between ICU total scores and the externalizing and mixed subscales of the YSR (see Table 4). Within the ICU, a high correlation ($r = .37$, $p < .001$) was found between callousness and the externalizing scale. A significant correlation also was found between externalizing behaviors and the uncaring subscale ($r = .26$, $p < .001$); however, the unemotional subscale was negatively correlated with the externalizing subscale ($r = -.11$, $p < .001$). In contrast, most of the ICU scales were either uncorrelated or negatively correlated with the internalizing scale

TABLE 3
Distribution of the Subscales of the Inventory of Callous-Unemotional Traits (ICU) by Gender and Age Groups

| | Callousness M (SD) | Uncaring M (SD) | Unemotional M (SD) | Total ICU M (SD) |
|-------------|---|---|--|---|
| Gender | | | | |
| Boys | 8.57 (4.6) | 8.93 (4.2) | 7.65 (2.6) | 27.12 (7.7) |
| Girls | 5.80 (3.6) | 7.22 (3.5) | 5.92 (2.7) | 21.64 (6.0) |
| Age groups | | | | |
| 13–14 years | 6.96 (4.2) | 6.74 (3.9) | 6.62 (2.7) | 22.50 (6.5) |
| 15–16 years | 8.0 (4.4) | 9.20 (3.8) | 7.40 (2.7) | 26.54 (7.4) |
| 17–18 years | 6.58 (4.4) | 7.99 (3.8) | 6.77 (2.9) | 23.61 (7.7) |
| Effects | Gender: $F(1, 1340) = 152.23$, $p < .001$, Partial 2 : 0.10 Age: $F(2, 1340) = 22.85$, $p < .01$, Partial 2 : 0.03 Gender Age: $F(2, 1340) = 7.04$, $p < .01$, Partial 2 : 0.01 | Gender: $F(1, 1413) = 84.48$, $p < .001$, Partial 2 : 0.06 Age: $F(2, 1413) = 55.41$, $p < .001$, Partial 2 : 0.07 Gender Age: $F(2, 1413) = 3.73$, $p < .05$, Partial 2 : 0.01 | Gender: $F(1, 1384) = 139.81$, $p < .001$, Partial 2 : 0.09 Age: $F(2, 1384) = 4.34$, $p < .05$, Partial 2 : 0.01 Gender Age: $F(2, 1384) = 3.12$, $p = .05$, Partial 2 : 0.00 | Gender: $F(1, 1282) = 199.69$, $p < .001$, Partial 2 : 0.15 Age: $F(2, 1282) = 37.61$, $p < .001$, Partial 2 : 0.08 Gender Age: $F(2, 1282) = 2.69$, ns , Partial 2 : 0.00 |

TABLE 4
Correlations Between the Inventory of Callous Unemotional Traits (ICU)
and Measures of Psychopathology

| | <i>Total ICU</i> | | | <i>Callousness</i> | | | <i>Uncaring</i> | | | <i>Unemotional</i> | | |
|-------------------|------------------|-------------|--------------|--------------------|-------------|--------------|-----------------|-------------|--------------|--------------------|-------------|--------------|
| | <i>Total</i> | <i>Boys</i> | <i>Girls</i> | <i>Total</i> | <i>Boys</i> | <i>Girls</i> | <i>Total</i> | <i>Boys</i> | <i>Girls</i> | <i>Total</i> | <i>Boys</i> | <i>Girls</i> |
| Total YSR | .19** | .19* | .32*** | .28** | .25*** | .48*** | .09* | .12* | .15** | -.09* | -.13** | .02 |
| YSR Internalizing | .03 | .01 | .27*** | .12** | .09* | .38*** | -.03 | -.01 | .07 | -.07* | .10* | .11* |
| YSR Externalizing | .30*** | .26*** | .35*** | .37*** | .29*** | .48*** | .26*** | .26*** | .26*** | -.11* | -.17** | -.09* |
| YSR Mixed | .22*** | .23** | .30*** | .33*** | .26*** | .53*** | .09* | .14** | .08 | -.04 | -.08 | .02 |
| CD Symptoms | .44*** | .39*** | .32*** | .48*** | .38*** | .53*** | .32*** | .29*** | .19** | .07* | -.02 | -.06 |
| Aggress and Anti | .41*** | .37*** | .30*** | .37*** | .28*** | .40*** | .38*** | .37*** | .29*** | -.01 | -.06 | -.14** |

NOTE: YSR = Youth Self-Report (Achenbach, 1991); CD Symptoms = Conduct Disorder Symptoms from the Bremen Psychopathology Scale (Essau, 2000); Aggress and Anti = Antisocial Behavior Subscale of the Social and Health Assessment (Schwab-Stone et al., 1999).

* $p < .05$. ** $p < .01$. *** $p < .001$.

of the YSR, with the exception of the callousness scale, which was modestly correlated with the internalizing composite ($r = .12$, $p < .01$).

Table 4 also shows the correlations between conduct disorder symptoms and the ICU. Within the ICU subscale, the strongest correlation was found between callousness and conduct disorder symptoms ($r = .48$, $p < .001$) and the weakest was between the unemotional subscale and conduct disorder symptoms ($r = .07$, $p < .05$). The strong correlation between ICU and conduct disorder symptoms was confirmed by the findings using the SAHA that measured aggressive and antisocial behavior. This measure of antisocial behavior was significantly correlated with all of the ICU scales, with the exception of the unemotional dimension.

In Table 4, the correlations among ICU scales and measures of psychopathology also are reported for boys and girls separately. In general, the ICU showed very similar associations across gender. There were two notable exceptions. First, on most of the correlations, the ICU scales were significantly and positively associated with internalizing dimensions of the CBCL for girls but not boys. Second, the Callousness dimension showed somewhat stronger correlations with the measures of conduct problems and antisocial behavior for girls than for boys, although it was generally positive and significant for both genders. For example, the correlations between the ICU scale and aggressive/antisocial behavior measured by the SAHA were $r = .28$ for boys and $r = .40$ for girls (both $ps < .001$). The correlations among the ICU scales, sensation seeking, and the Big Five personality dimensions are reported in Table 5. As expected, the ICU scales were positively correlated with the total sensation seeking scale, with the exception of the unemotional scale ($r = -.10$, $p < .05$). The strongest correlation was found between

the disinhibition dimension of sensation seeking and the ICU total score ($r = .32$, $p < .001$), as well as with two of its ICU subscales: the callousness ($r = .33$, $p < .001$) and the uncaring subscales ($r = .25$, $p < .001$). For Big Five personality dimensions, ICU was negatively associated with the agreeableness ($r = -.57$, $p < .001$) and conscientiousness ($r = -.49$, $p < .001$) personality dimensions. In general, the subscales of the ICU showed similar correlations with Big Five personality dimensions, with the exception of the unique negative correlation between the unemotional dimension of the ICU and the emotional instability dimension of the Big Five ($r = -.20$, $p < .001$) and the unique negative correlation between the uncaring dimension of the ICU and the openness dimension of the Big Five ($r = -.26$, $p < .001$).

Independent Effects of CU Traits in Predicting Antisocial Behavior

To determine whether ICU items were associated with problematic behavior in childhood above and beyond other personality dimensions, hierarchical multiple regression analyses were conducted for each gender, controlling for age and using the ICU subscales and the subscales of the Big Five as predictors. This test involved separate hierarchical multiple regression analyses using the aggressive and antisocial behavior of SAHA, sum of conduct disorder symptoms, and the externalizing subscale of CBCL as criterion variables. Age and the Big Five subscales were entered on Step 1 and the three ICU subscales were entered in Step 2 to determine which dimension or dimensions of ICU might add to the prediction of conduct problems over these traditional dimensions of personality.

Tables 6 and 7 report beta weights, total R^2 , and incremental R^2 of the regression equations for boys and girls,

TABLE 5
Correlations Between Inventory of Callous-Unemotional Traits (ICU) Scales and Personality Dimensions

| | <i>Total ICU</i> | | | <i>Callousness</i> | | | <i>Uncaring</i> | | | <i>Unemotional</i> | | |
|--------------------|------------------|-------------|--------------|--------------------|-------------|--------------|-----------------|-------------|--------------|--------------------|-------------|--------------|
| | <i>Total</i> | <i>Boys</i> | <i>Girls</i> | <i>Total</i> | <i>Boys</i> | <i>Girls</i> | <i>Total</i> | <i>Boys</i> | <i>Girls</i> | <i>Total</i> | <i>Boys</i> | <i>Girls</i> |
| Total SSS | .19*** | .14* | .27*** | .27** | .20*** | .39*** | .11* | .08* | .16** | -.10* | -.16** | -.07* |
| Exp. Seeking | .01 | .05 | .12** | .04 | .09* | .12* | -.06* | -.04 | .01 | -.06* | -.09* | .10* |
| Boredom Susc. | .08* | .07 | .23*** | .18** | .17** | .32*** | .05 | .04 | .14* | -.11** | -.15** | -.01 |
| Thrill and Advent. | .08* | .01 | .12** | .17** | .09* | .24*** | .05 | -.02 | .24*** | -.09* | -.10* | -.17* |
| Disinhibition | .32*** | .24*** | .29*** | .33*** | .21*** | .42*** | .25*** | .21*** | .22*** | -.03 | -.13* | -.08 |
| Extraversion | -.26*** | -.28*** | -.21*** | -.01 | -.01 | -.04 | -.23*** | -.28*** | -.13* | -.36*** | -.38*** | -.32*** |
| Agreeableness | -.57*** | -.58*** | -.46*** | -.31*** | -.24*** | -.29*** | -.55*** | -.57*** | -.48*** | -.25*** | -.32*** | -.05 |
| Conscientiousnes | -.49*** | -.54*** | -.42*** | -.29*** | -.23*** | -.37*** | -.57*** | -.61*** | -.49*** | -.06* | -.18** | .12* |
| Emot Instability | -.08* | -.01 | .14** | .05 | .11* | .25*** | -.06* | .03 | -.01 | -.20*** | -.23*** | .03 |
| Openness | -.23*** | -.25*** | -.30*** | -.09* | -.05 | -.23*** | -.26*** | -.24*** | -.33*** | -.05 | -.17** | .02 |

NOTE: SSS = sensation seeking; Exp. Seeking = experience seeking; Boredom Susc. = boredom susceptibility; Thrill and Advent. = thrill and adventure seeking; Emot Instability = emotional instability. All sensation seeking scales are from the Brief Sensation Seeking Scale (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002).

* $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 6
Hierarchical Multiple Regression Analysis Predicting Problematic Behavior in Boys

| | <i>Aggressive and Antisocial Behavior</i> | | <i>Conduct Disorder Symptoms</i> | | <i>YSR Externalizing</i> | |
|-----------------------|---|-----------|--------------------------------------|-----------|--------------------------|-----------|
| | <i>Std. Beta</i> | <i>SE</i> | <i>Std. Beta</i> | <i>SE</i> | <i>Std. Beta</i> | <i>SE</i> |
| Step 1 | | | | | | |
| Age | .18*** | .29 | -.03 | .11 | .05 | .20 |
| Extraversion | .33*** | .08 | .23*** | .03 | .42*** | .06 |
| Agreeableness | -.27*** | .09 | -.23*** | .04 | -.24*** | .06 |
| Conscientiousness | -.27*** | .08 | -.22*** | .03 | -.22*** | .05 |
| Emotional instability | .24*** | .07 | .25*** | .03 | .32*** | .04 |
| Intellect/openness | -.01 | .08 | .03 | .03 | -.12* | .06 |
| | R^2 | R^2 | R^2 | R^2 | R^2 | R^2 |
| | .31 | .31*** | .21 | .21*** | .33 | .33*** |
| Step 2 | | | | | | |
| Age | .16*** | .28 | -.03 | .11 | .06 | .19 |
| Extraversion | .24*** | .08 | .16** | .03 | .30*** | .06 |
| Agreeableness | -.11 | .10 | -.03 | .04 | -.16** | .07 |
| Conscientiousness | -.19** | .08 | -.17** | .03 | -.11* | .05 |
| Emotional instability | .19*** | .07 | .21*** | .03 | .24*** | .04 |
| Intellect/openness | .03 | .08 | .09 | .03 | -.09 | .05 |
| Callousness | .15*** | .12 | .22*** | .05 | .19*** | .07 |
| Uncaring | .25*** | .16 | .19** | .06 | .24*** | .10 |
| Unemotional | -.11* | .18 | .03 | .07 | -.27*** | .12 |
| | R^2 | R^2 | R^2 | R^2 | R^2 | R^2 |
| | .36 | .05*** | .27 | .06*** | .44 | .11*** |

NOTE: YSR = Youth Self-Report (Achenbach, 1991).

* $p < .05$. ** $p < .01$. *** $p < .001$.

TABLE 7
Hierarchical Multiple Regression Analysis Predicting Problematic Behavior in Girls

| | <i>Aggressive and Antisocial Behavior</i> | | <i>Conduct Disorder Symptoms</i> | | <i>YSR Externalizing</i> | |
|-----------------------|---|-----------------------|----------------------------------|-----------------------|--------------------------|-----------------------|
| | <i>Std. Beta</i> | <i>SE</i> | <i>Std. Beta</i> | <i>SE</i> | <i>Std. Beta</i> | <i>SE</i> |
| Step 1 | | | | | | |
| Age | .10** | .14* | -.09 | .05 | -.02 | .16 |
| Extraversion | .20*** | .05 | .29*** | .02 | .34*** | .05 |
| Agreeableness | .04 | .05 | -.26*** | .02 | -.27*** | .05 |
| Conscientiousness | -.48*** | .04 | -.27*** | .02 | -.37*** | .05 |
| Emotional instability | .26*** | .03 | .16*** | .01 | .37*** | .03 |
| Intellect/openness | -.03 | .04 | -.05 | .02 | .02 | .05 |
| | <i>R</i> ² | <i>R</i> ² | <i>R</i> ² | <i>R</i> ² | <i>R</i> ² | <i>R</i> ² |
| | .35 | .35*** | .30 | .30*** | .54 | .54*** |
| Step 2 | | | | | | |
| | <i>Std. Beta</i> | <i>SE</i> | <i>Std. Beta</i> | <i>SE</i> | <i>Std. Beta</i> | <i>SE</i> |
| Age | .12** | .14 | -.01 | .00 | .01 | .16 |
| Extraversion | .09 | .05 | .19*** | .02 | .26*** | .06 |
| Agreeableness | .08 | .05 | -.19*** | .02 | -.22*** | .05 |
| Conscientiousness | -.39*** | .04 | -.20*** | .02 | -.31*** | .05 |
| Emotional instability | .25*** | .03 | .08* | .01 | .36*** | .03 |
| Intellect/openness | .02 | .04 | -.01 | .01 | .05 | .04 |
| Callousness | .23*** | .07 | .41*** | .03 | .20*** | .09 |
| Uncaring | .04 | .08 | -.05 | .03 | .00 | .09 |
| Unemotional | -.16*** | .09 | -.02 | .03 | -.11** | .11 |
| | <i>R</i> ² | <i>R</i> ² | <i>R</i> ² | <i>R</i> ² | <i>R</i> ² | <i>R</i> ² |
| | .40 | .05*** | .42 | .12*** | .57 | .03*** |

NOTE: YSR = Youth Self-Report (Achenbach, 1991).

* $p < .05$. ** $p < .01$. *** $p < .001$.

respectively. The ICU subscales provided a unique contribution in predicting problematic behaviors. For both boys and girls, callousness was a significant unique predictor of problematic behavior. In contrast, the uncaring factor predicted problematic behavior only in boys; little or no independent effect was found for girls. These results demonstrate that the callousness factor may be an important factor in identifying problematic behavior for both genders, whereas the uncaring factor may be more specifically related to problem behavior for boys. The unemotional factor seemed to be related with the aggressive and antisocial behavior and externalizing subscale but not with conduct disorder symptoms for both boys and girls. Incremental R^2 for the addition of the ICU subscales was highest for CBCL externalizing subscale in boys and for conduct disorder symptoms in girls. Overall, however, the inclusion of ICU items resulted in a significant increase of predicted variance in antisocial behaviors for both genders.

DISCUSSION

The main aim of this study was to examine the structure, distribution, and correlates of CU traits in adolescents in the community using a new measure of these traits: the ICU (Frick, 2003). In general, our findings supported the utility of the ICU as a measure of CU traits in adolescents.

Factor analyses indicated that the ICU captured three dimensions of behavior: callousness, uncaring, and unemotional. The callousness factor captured a dimension of behavior that included a lack of empathy, guilt, and remorse for misdeeds. The second factor (uncaring) captured a dimension of behavior that focused on a lack of caring about one's performance in tasks and for the feelings of other people. The third factor (unemotional) captured a dimension of behavior that focused on an absence of emotional expression. Of importance, the factor structure that appeared to fit the data best was one in which all items loaded onto three distinct factors as well as a

general dimension of CU traits. This suggests that the use of either a total ICU or the use of subscale scores could be justified. Furthermore, the three-factor hierarchical model of the ICU scale had adequate fit for both boys and girls, supporting factor structure equivalence between the two groups. However, there were differences in the mean scores for boys and girls. Specifically, boys had significantly higher scores on ICU, both for total and subscale scores. In addition, gender differences were found in the prediction of problematic behavior: the Callousness subscale had substantial predictive power for both genders, whereas the Uncaring factor made a significant contribution only for the boys' data. This finding is consistent with past research indicating that men tend to score higher on women on all dimensions of psychopathy, including the CU dimension (Vitale & Newman, 2001).

Our findings also showed significant age differences on ICU scores. Adolescents in the 15- to 16-year-old group had significantly higher ICU scores than adolescents in the other two age groups (13-14 years and 17-18 years). This pattern of age-related changes is consistent with the suggestion that a normative level of these traits may change over the course of development (Edens, Skeem, Cruise, & Cauffman, 2001; Seagrave & Grisso, 2002). Furthermore, these findings also are consistent with developmental research suggesting that some level of rebelliousness and antisocial attitudes is common in early and middle adolescence but begins to decline in later adolescence (Moffitt, 1993). It is important to note that these differences in the mean levels of these traits reflect cohort differences and not changes within individuals. Specifically, despite absolute changes in the level of traits across age groups, children's relative levels of these traits could still remain stable across time, with children scoring high on these traits remaining high relative to other children. However, there is evidence that some children scoring high on these traits may show reductions in their levels of CU traits later in adolescence (Frick, Kimonis, Dandreaux, & Farrell, 2003). Taken together, these findings suggest that much more research is needed to understand normative changes in the level of these traits. More important, these findings strongly suggest that when developing cut-off scores on scales measuring CU traits, it is important to consider normative data that capture these developmental variations.

However, our findings also suggest that high levels of these traits are not normative. That is, increasing levels of these traits were associated with psychosocial impairments and with different measures of antisocial and aggressive behavior, even after controlling for other personality dimensions (e.g., Frick et al., 1994; Harpur, Hare, & Hakstian, 1989). The independent contribution of the ICU traits for both boys and girls support the contention

that the construct being measured by the ICU is not solely captured by other dimensions of personality. Also, of the three subscales of the ICU, the strongest correlation with each measure of antisocial behavior was found for the callousness factor. This finding could help to further refine the specific aspects of CU traits that are most important for placing the child at risk for acting in an antisocial manner.

Our findings also showed a significant correlation between ICU and sensation seeking, particularly the disinhibition dimension of sensation seeking. This finding can be regarded as being consistent with previous studies showing that children with a high level of CU traits, compared to other children, showed a stronger preference for sensation seeking behaviors (Barry et al., 2000; Frick, Cornell, Barry, et al., 2003). It is also consistent with the developmental research reviewed previously suggesting that a temperament related to a lack of behavioral inhibitions can place a child at risk for problems in the development of guilt and empathy and, thus, could be a critical temperamental risk factor for the development of CU traits (Frick & Morris, 2004; Kochanska, 1993).

As in previous studies, we generally found no or negative correlations between CU traits and anxiety (Frick et al., 1994). However, this was only found for boys in the sample but not for girls, supporting the contention that more research is needed on the emotional correlates of psychopathy in female samples (Sutton, Vitale, & Newman, 2002). Also, there were some intriguing differences between the various subscales and their association with measures of anxiety. That is, callousness was generally positively associated with anxiety, whereas the unemotional dimension was negatively correlated with anxiety. This difference is likely related to the stronger positive association between callousness and the measures of conduct problems. That is, as suggested by Frick et al. (1999), higher level of conduct problems are generally associated with higher levels of emotional distress, even in the presence of CU traits (e.g., Anderson, Williams, McGee, & Silva, 1987; Walker et al., 1991). Because CU traits are associated with more severe conduct problems, they too may be positively associated with measures of distress. However, when controlling for the level of conduct problems, the association between CU traits and anxiety is typically eliminated or becomes negative (Frick et al., 1999).

The construct validity of the ICU also was supported by its associations with a measure of the Big Five personality dimensions. Consistent with predictions, the ICU was substantially correlated with the Agreeableness and Conscientiousness personality dimensions (Miller et al., 2001; Miller & Lynam, 2001). Of interest, there was some divergence in associations with other Big Five dimensions

for the ICU subscales. Specifically, the unemotional subscale of the ICU showed the strongest negative correlation with the Emotional Instability dimension, supporting the contention that this scale more specifically focuses on the lack of emotional expression component of CU traits. Furthermore, the uncaring dimension of the ICU showed a unique negative correlation with the Big Five Openness dimension, which could suggest that this dimension is uniquely tapping a lack of motivation for trying new activities or exploring new experiences.

There are several limitations to the present study, which need to be taken into consideration when interpreting our results. A major limitation of this study was its reliance on adolescent's self-report for both the measure of CU traits and the scales used to assess its validity. We felt that this method was justified because adolescents are important informants for assessing attitudes and emotions that may not be apparent to others. Furthermore, as argued by Kamphaus and Frick (1996), the validity of self-report on psychopathology and personality tends to increase from childhood to adolescence, whereas the validity of parent and teacher report tend to decrease during this time. However, because all of the instruments used were self-report, the correlations found could have been inflated due to shared method variance. Second, the cross-sectional nature of the study does not allow us to make statements about the causal linkage between variables or to make statements about the stability of these traits within individuals. Also, prospective longitudinal studies are needed to examine how predictive these traits might be for later antisocial behavior. Third, because this is a school-based survey, only adolescents who attended school could be assessed. Future studies are needed to compare the distribution of scores on the ICU traits and their associations with important external criteria between adolescents in various settings such as those in clinical or institutionalized settings. Fourth, this study utilized a German translation of the ICU and, as a result, the generalizability of these findings to other translations requires further testing.

To summarize, the ICU is designed to provide a comprehensive assessment of callous-unemotional traits in youth and to overcome limitations in measures used to assess these traits in past research. CU traits have proven to be an important construct for designating a distinct subgroup of antisocial youth. Therefore, developing comprehensive and sound measures of these traits is critical for advancing this line of research. Although much more work on the validity of the ICU is needed, the current findings provided promising initial data on its reliability and validity and support its further development in other samples of youth.

REFERENCES

- Achenbach, T. M. (1991). *Manual for the Youth Self-Report and 1991 profile*. Burlington: University of Vermont.
- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika*, 52, 317-332.
- Anderson, J. C., Williams, S., McGee, R., & Silva, P. A. (1987). DSM-III disorders in preadolescent children: Prevalence in a large sample from the general population. *Archives of General Psychiatry*, 44, 69-76.
- Arbuckle, J. L. (2003). *Amos Version 5.0*. Chicago: Small Waters.
- Barbaranelli, C., Caprara, G. V., Rabasca, A., & Pastorelli, C. (2003). A questionnaire for measuring the Big Five in late childhood. *Personality and Individual Differences*, 34, 645-664.
- Barry, C. T., Frick, P. J., DeShazo, T. M., McCoy, M. G., Ellis, M., & Loney, B. R. (2000). The importance of callous-unemotional traits for extending the concept of psychopathy to children. *Journal of Abnormal Psychology*, 109, 335-340.
- Blair, R. J. R. (1999). Responsiveness to distress cues in the child with psychopathic tendencies. *Personality and Individual Differences*, 27, 135-145.
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology*, 1, 185-216.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). New York: Russell Sage.
- Campbell, M. A., Porter, S., & Santor, D. (2004). Psychopathic traits in adolescent offenders: An evaluation of criminal history, clinical, and psychosocial correlates. *Behavioral Science and the Law*, 22, 23-47.
- Caputo, A. A., Frick, P. J., & Brodsky, S. L. (1999). Family violence and juvenile sex offending: Potential mediating roles of psychopathic traits and negative attitudes toward women. *Criminal Justice and Behavior*, 26, 338-356.
- Christian, R., Frick, P. J., Hill, N., Tyler, L. A., & Frazer, D. (1997). Psychopathy and conduct problems in children: II. Subtyping children with conduct problems based on their interpersonal and affective style. *Journal of the American Academy of Child and Adolescent Psychiatry*, 36, 233-241.
- Cleckley, H. (1976). *The mask of sanity* (5th ed.). St. Louis, MO: Mosby.
- Dadds, M., Fraser, J., Frost, A., & Hawes, D. (2005). Disentangling the underlying dimensions of psychopathy and conduct problems in childhood: A community study. *Journal of Consulting and Clinical Psychology*, 73, 400-410.
- Edens, J., Skeem, J., Cruise, K., & Cauffman, E. (2001). The assessment of juvenile psychopathy and its association with violence: A critical review. *Behavioral Sciences & the Law*, 19, 53-80.
- Essau, C. A. (2000). *Angst und Depression bei Jugendlichen (Anxiety and depression in adolescents)*. Habilitationsschrift (thesis for a postdoctoral degree), University of Bremen.
- Essau, C. A., Muris, P., & Ederer, E. M. (2002). Reliability and validity of the Spence Children's Anxiety Scale and the Screen for Child Anxiety Related Emotional Disorders in German children. *Journal of Behavior Therapy and Experimental Psychiatry*, 33, 1-18.
- Fisher, L., & Blair, R. J. R. (1998). Cognitive impairment and its relationship to psychopathic tendencies in children with emotional and behavioral difficulties. *Journal of Abnormal Child Psychology*, 26, 511-519.
- Forth, A. E., Kosson, D. S., & Hare, R. D. (2003). *The Psychopathy Checklist: Youth Version*. Toronto, Ontario, Canada: Multi-Health Systems.
- Frick, P. J. (2003). *The Inventory of Callous-Unemotional Traits*. Unpublished rating scale, The University of New Orleans.
- Frick, P. J., Bodin, S. D., & Barry, C. T. (2000). Psychopathic traits and conduct problems in community and clinic-referred samples of children: Further development of the Psychopathy Screening Device. *Psychological Assessment*, 12, 382-393.
- Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. A. (2003). Callous-unemotional traits and conduct problems in the

- prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology*, 31, 457-470.
- Frick, P. J., Cornell, A. H., Bodin, S. D., Dane, H. A., Barry, C. T., & Loney, B. R. (2003). Callous-unemotional traits and developmental pathways to severe conduct problems. *Developmental Psychology*, 39, 246-260.
- Frick, P. J., & Hare, R. D. (2001). *The antisocial process screening device*. Toronto, Ontario, Canada: Multi-Health Systems.
- Frick, P. J., Kimonis, E. R., Dandreaux, D. M., & Farrell, J. M. (2003). The four-year stability of psychopathic traits in non-referred youth. *Behavioral Sciences and the Law*, 21, 713-736.
- Frick, P. J., Lilienfeld, S. O., Ellis, M. L., Loney, B. R., & Silverthorn, P. (1999). The association between anxiety and psychopathy dimensions in children. *Journal of Abnormal Child Psychology*, 27, 381-390.
- Frick, P. J., & Marsee, M. A. (2006). Psychopathy and developmental pathways to antisocial behavior in youth. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 353-374). New York: Guilford.
- Frick, P. J., & Morris, A. S. (2004). Temperament and developmental pathways to conduct problems. *Journal of Clinical Child and Adolescent Psychology*, 33, 54-68.
- Frick, P. J., O'Brien, B. S., Wootton, J. M., & McBurnett, K. (1994). Psychopathy and conduct problems in children. *Journal of Abnormal Psychology*, 103, 700-707.
- Frick, P. J., Stickler, T. R., Dandreaux, D. M., Farrell, J. M., & Kimonis, E. R. (2005). Callous-unemotional traits in predicting the severity and stability of conduct problems and delinquency. *Journal of Abnormal Child Psychology*, 33, 471-487.
- Gendreau, P., Goggin, C., & Smith, P. (2002). Is the PCL-R really the "unparalleled" measure of offender risk? A lesson in knowledge accumulation. *Criminal Justice and Behavior*, 29, 397-426.
- Hare, R. D. (1970). *Psychopathy: Theory and research*. New York: John Wiley.
- Hare, R. D. (1985). A comparison of procedures for the assessment of psychopathy. *Journal of Consulting and Clinical Psychology*, 53, 716.
- Hare, R. D. (1991). *Manual for the Hare Psychopathy Checklist-Revised*. Toronto, Ontario, Canada: Multi-Health Systems.
- Hare, R. D. (1998). Psychopathy, affect, and behavior. In D. J. Cooke, A. E. Forth, & R. D. Hare (Eds.), *Psychopathy: Theory, research, and implications for society* (pp. 105-138). Dordrecht, the Netherlands: Kluwer.
- Harpur, T. J., Hare, R. D., & Hakstian, A. R. (1989). Two-factor conceptualization of psychopathy: Construct validity and assessment implications. Psychological assessment. *Journal of Consulting and Clinical Psychology*, 1, 6-17.
- Hemphill, J. F., Hare, R. D., & Wong, S. (1998). Psychopathy and recidivism: A review. *Legal and Criminological Psychology*, 3, 139-170.
- Hoyle, R. H., Stephenson, M. T., Palmgreen, P., Lorch, E. P., & Donohew, R. L. (2002). Reliability and validity of a brief measure of sensation seeking. *Personality and Individual Differences*, 32, 401-414.
- Jöreskog, K. G., & Sörbom, D. (1989). *LISREL 7: A guide to the program and applications* (2nd ed.). Chicago: SPSS.
- Kagan, J., Reznick, J. S., & Snidman, N. (1987). The physiology and psychology of behavioural inhibition. *Child Development*, 58, 1459-1473.
- Kamphaus, R. W., & Frick, P. J. (1996). *Clinical assessment of child and adolescent personality and behavior*. Boston: Allyn and Bacon.
- Kimonis, E. R., Frick, P. J., Fazekas, H., & Loney, B. R. (in press). Psychopathy, aggression, and the processing of emotional stimuli in non-referred children. *Behavioral Science and the Law*.
- Kochanska, G. (1993). Toward a synthesis of parental socialization and child temperament in early development of conscience. *Child Development*, 64, 325-347.
- Kochanska, G., Gross, J. N., Lin, M. H., & Nichols, K. E. (2002). Guilt in young children: Development, determinants, and relations with a broader system of standards. *Child Development*, 73, 461-482.
- Kruh, I. P., Frick, P. J., & Clements, C. B. (2005). Historical and personality correlates to the violence patterns of juveniles tried as adults. *Criminal Justice and Behavior*, 32, 69-96.
- Lee, Z., Vincent, G. M., Hart, S. D., & Corrado, R. R. (2003). The validity of the Antisocial Process Screening Device as a self-report measure of psychopathy in adolescent offenders. *Juvenile psychopathy. Behavioral Sciences and the Law*, 21, 26-38.
- Loeber, R. (1982). The stability of antisocial and delinquent child behavior: A review. *Child Development*, 53, 1431-1446.
- Loney, B. R., Frick, P. J., Clements, C. B., Ellis, M. L., & Kerlin, K. (2003). Callous-unemotional traits, impulsivity, and emotional processing in antisocial adolescents. *Journal of Clinical Child and Adolescent Psychology*, 32, 66-80.
- Lynam, D. R. (1996). The early identification of chronic offenders: Who is the fledgling psychopath? *Psychological Bulletin*, 120, 209-234.
- Lynam, D. R. (1997). Pursuing the psychopath: Capturing the fledgling psychopath in a normological net. *Journal of Abnormal Psychology*, 106, 425-438.
- Lynam, D. R. (1998). Early identification of the fledgling psychopath: Locating the psychopathic child in the current nomenclature. *Journal of Abnormal Psychology*, 107, 566-575.
- Marsee, M. A., Silverthorn, P., & Frick, P. J. (in press). The association of psychopathic traits with aggression and delinquency in non-referred boys and girls. *Behavioral Science and the Law*.
- Miller, J. D., & Lynam, D. R. (2001). Structural models of personality and their relations to antisocial behavior: A meta-analytic review. *Criminality*, 39, 765-797.
- Miller, J. D., Lynam, D. R., Widiger, T. A., & Leukefeld, C. (2001). Personality disorders as extreme variants of common personality dimensions: Can the five-factor model adequately represent psychopathy? *Journal of Personality*, 69, 253-276.
- Moffitt, T. E. (1993). Adolescence-limited and life-course persistent antisocial behavior: A developmental taxonomy. *Psychological Review*, 100, 674-701.
- Muris, P., Meesters, C., & Diederer, R. (2005). Psychometric properties of the Big Five Questionnaire for Children (BFQ-C) in a Dutch sample of young adolescents. *Personality and Individual Differences*, 38, 1757-1769.
- Pardini, D. A., Lochman, J. E., & Frick, P. J. (2003). Callous/unemotional traits and social-cognitive processes in adjudicated youths. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 364-371.
- Price, C. S., Spence, S. H., Sheffield, J., & Donovan, C. (2002). The development and psychometric properties of a measure of social and adaptive functioning for children and adolescents. *Journal of Clinical Child and Adolescent Psychology*, 31, 111-122.
- Rogeness, G. A., Javors, M. A., & Pliszka, S. R. (1992). Neurochemistry and child and adolescent psychiatry. *Journal of the American Academy of Child and Adolescent Psychiatry*, 31, 765-781.
- Rothbart, M. K., Ahadi, S. A., & Hershey, K. (1994). Temperament and social behavior in childhood. *Merrill-Palmer Quarterly*, 40, 21-39.
- Rothbart, M. K., & Bates, J. E. (1998). Temperament. In W. Damon (Ed.), *Handbook of child psychology: Vol. 3, Social, emotional, and personality development* (pp. 105-176). New York: John Wiley.
- Salekin, R. T., Leistico, A. R., Neumann, C. S., DiCicco, T. M., & Duros, R. L. (2004). Psychopathy and comorbidity in a young offender sample: Taking a closer look at psychopathy's potential importance over disruptive behavior disorders. *Journal of Abnormal Psychology*, 113, 416-427.
- Schwab-Stone, M., Chen, C., Greenberger, E., Silver, Lichtman, J., & Voyce, C. (1999). No safe haven, II: The effects of violence exposure on urban youth. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38, 359-367.
- Seagrave, D., & Grisso, T. (2002). Adolescent development and the measurement of juvenile of psychopathy. *Law and Human Behavior*, 26, 219-239.
- Silverthorn, P., Frick, P. J., & Reynolds, R. (2001). Timing of onset and correlates of severe conduct problems in adjudicated girls and boys. *Journal of Psychopathology and Behavioral Assessment*, 23, 171-181.
- Spain, S. E., Douglas, K. S., Poythress, N. G., & Epstein, M. (2004). The relationship between psychopathic features, violence and treatment

- outcome: The comparison of three youth measures of psychopathic features. *Behavioral Sciences & the Law*, 22, 85-102.
- Stephenson, M. T., Hoyle, R. H., Palmgreen, P., & Slater, M. D. (2003). Brief measures of sensation seeking for screening and large-scale surveys. *Drug and Alcohol Dependence*, 72, 279-286.
- Stephenson, M. T., Palmgreen, P., Hoyle, R. H., Donohew, L., Lorch, E. P., & Colon, S. E. (1999). Short-term effects of an anti-marijuana media campaign targeting high sensation seeking adolescents. *Journal of Applied Communication Research*, 27, 175-195.
- Sutker, P. B. (1994). Psychopathy: Traditional and clinical antisocial concepts. In D. C. Fowles, P. Sutker, & S. H. Goodman (Eds.), *Progress in experimental personality and psychopathology research* (pp. 73-120). New York: Springer.
- Sutton, S. K., Vitale, J. E., & Newman, J. P. (2002). Emotion among women with psychopathy during picture perception. *Journal of Abnormal Psychology*, 111, 610-619.
- Tanaka, J. S. (1993). Multifaceted conceptions of fit in structural equation models. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 10-39). New York: Russell Sage.
- Vermeiren, R., Jones, S. M., Ruchkin, V., Deboutte, D., & Schwab-Stone, M. (2004). Juvenile arrest: A cross-cultural comparison. *Journal of Child Psychology and Psychiatry*, 45, 567-576.
- Vermeiren, R., Schwab-Stone, M., Ruchkin, V. V., King, R. A., Van Heeringen, C., & Deboutte, D. (2003). Suicidal behavior and violence in male adolescents: A school-based study. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42, 41-48.
- Vincent, G. M., Vitacco, M. J., Grisso, T., & Corrado, R. R. (2003). Subtypes of adolescent offenders: Affective traits and antisocial behavior patterns. *Behavioral Science and the Law*, 21, 695-712.
- Vitale, J. E., & Newman, J. P. (2001). Using the Psychopathy Checklist-Revised with female samples: Reliability, validity, and implications for clinical utility. *Clinical Psychology: Science and Practice*, 8, 117-132.
- Walker, J. L., Lahey, B. B., Russo, M. F., Christ, M. A., McBurnett, K., Loeber, R., et al. (1991). Anxiety, inhibition, and conduct disorder in children: I. Relations to social impairment. *Journal of the American Academy of Child and Adolescent Psychiatry*, 30, 187-191.

Cecilia A. Essau, Ph.D., is professor of developmental psychopathology at Roehampton University. She earned her Ph.D. in clinical and developmental psychology from the University of Konstanz, Germany, in 1992. Her research interests are in

the broad area of developmental psychopathology (anxiety, depression, substance use disorders, conduct problems) and cross-cultural psychology. She has published more than 100 articles in either peer-reviewed journals or book chapters in edited volumes and is the author or coauthor of five books and editor or coeditor of six volumes.

Satoko Sasagawa, M.A., is a doctoral student at Waseda University, Japan, and is a research fellow at the Japan Society for the Promotion of Science. She earned her M.A. in human science from Waseda University in 2004. Her main research interests are in the field of developmental psychopathology and social anxiety disorder. She also has a strong interest in the practical application of psychometric methodology to the area of clinical psychology.

Paul J. Frick, Ph.D., is research professor of psychology and director of the Applied Developmental Psychology Program at the University of New Orleans. Dr. Frick earned his Ph.D. in clinical psychology from the University of Georgia in 1990. He conducts research under the broad rubric of developmental psychopathology. Dr. Frick's research focuses on understanding the many interacting causal factors that can lead children and adolescents to have serious emotional and behavioral problems and using this research to (a) enhance the assessment and diagnosis of childhood psychopathology and (b) design more effective interventions to prevent and treat such problems. He has published more than 110 manuscripts in either peer-reviewed journals or as book chapters in edited volumes and he is author or coauthor of five books and test manuals.