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Callous-Unemotional Traits Robustly Predict Future Criminal Offending in Young Men

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Abstract

Callous-unemotional (CU) traits (e.g., lack of empathy, deficient guilt/remorse, and shallow affect) are a circumscribed facet of the adult psychopathic personality. Although several studies have found that adult psychopathy is a robust predictor of future criminal offending, research exploring the predictive utility of CU traits and future offending are lacking. Moreover, empirical studies examining the predictive utility of psychopathic features often neglect to account for other well-documented risk factors (e.g., prior offending, delinquent peers, marital status), and thus the incremental predictive utility of CU traits remains uncertain. To address these limitations, the current study examined the unique contribution of CU traits in the prediction of future criminal offending in a large ethnically diverse community sample of young adult males (Mean Age = 25.76, $SD = .95$). Official criminal record information was collected approximately 3.5 years later using multiple sources. Results indicated that after controlling for several other well-established predictors of future offending, men with elevated CU traits had a greater number of arrests and criminal charges and were more likely to be charged with a serious offense and obstruction of justice. CU traits also predicted future theft for Caucasian men, but not African American men. Overall, the results support the notion that CU traits significantly add to the prediction of future offending, even after controlling for several other risk factors.

Keywords

callous-unemotional; psychopathy; criminal offending; risk prediction

Adults with high levels of psychopathic traits tend to demonstrate more severe and chronic patterns of antisocial behavior, including higher levels of recidivism and unremitting criminality (Hart, Knopp, & Hare, 1988; Hemphill, Hare, & Wong, 1998; Kosson, Smith, & Newman, 1990; Serin, Peters, & Barbaree, 1990). The affective features of psychopathy, often referred to as callous-unemotional (CU) traits (e.g., shallow affect, callousness, and lack of empathy/remorse), constitute a core component of this disorder (Cleckley, 1976; Hart & Hare, 1996). As such, substantial research has examined the clinical utility of CU traits for predicting future antisocial behavior across the life span. Evidence suggests CU traits are important for identifying both adolescents and adults who are at an increased risk

for reoffending (Caputo, Frick, & Brodsky, 1999; Kruh, Frick, & Clements, 2005; Vincent, Vitacco, Grisso, & Corrado, 2003) and have a more severe and stable pattern of aggression (Edens, Campbell, & Weir, 2007; Leistico, Salekin, Decoster, & Rogers, 2008; Pardini & Fite, 2010).

Despite recent advances, empirical work examining the predictive utility of CU traits within adult populations has been limited by a number of factors. First, studies often fail to comprehensively assess CU traits and only examine their utility in combination with other features of psychopathy, limiting firm conclusions about unique associations with criminal offending. Second, the utility of self-reported CU traits rather than interviewer ratings of these characteristics in the prediction of future offending is rarely examined, despite the fact that self-report measures have advantages in terms of time efficiency and cost effectiveness. Lastly, studies rarely account for other known risk factors, such as prior criminal history or peer delinquency, and as such little is known about the incremental predictive utility of CU traits.

Methods for Assessing CU Traits

Methods for assessing psychopathic features (including CU traits) typically fall into one of two categories: expert-rating scales or self-report measures. Within offender populations, psychopathic traits are traditionally measured using the *Hare Psychopathy Checklist-Revised* (2nd ed.; PCL-R; Hare, 2003). The PCL-R is a well known expert rating scale of psychopathy that assesses several facets of psychopathy, which include interpersonal (e.g., grandiose, deceptive), affective (e.g., CU traits), lifestyle (e.g., impulsive, unstable), and antisocial (aggression, chronic offending) components (Hare, 2003; Harpur, Hare, & Hakstian, 1989). However, most research to date examines psychopathy as a broad construct and fails to assess the unique contributions of CU traits (although see Walters, Knight, Grann, & Dahle, 2008 for one exception). Furthermore, the ability of the PCL-R to comprehensively measure CU traits is limited by the fact that the affective scale is only composed of four items (i.e., lack of remorse/guilt, shallow affect, callous/lack of empathy, and failure to accept responsibility for actions), which also may serve to reduce construct reliability and validity (DeVellis, 2003). The small number of items on this scale may be one reason why researchers have not evaluated the affective facet separately and why its predictive utility is often less robust than would be theoretically expected. For example, the relatively few studies examining facets of the PCL-R suggest that the behavioral and antisocial components of psychopathy are generally better predictors of reoffending than the affective or interpersonal features (see Leistico et al., 2008; Walters, 2003; Walters et al., 2008 for review). The PCL-R is also time consuming and expensive to administer (Lilienfeld & Fowler, 2006), making it difficult to administer outside institutional settings (DeMatteo, Heilbrun, & Marczyk, 2006). Several investigators have also cautioned against conflating the PCL-R with the construct of psychopathy, particularly since the instrument mixes personality features of the disorder with criminal behavior (Patrick, 2006; Skeem & Cooke, 2010a, 2010b). Consequently, there has been a movement to develop more varied instruments for use in community samples to assess variations in the core personality features of psychopathy among adolescents and adults (Blonigen, Hicks, Krueger, Patrick, & Iacono, 2006; Hall & Benning, 2006; Ray, Weir, Poythress, & Rickelm, 2011).

In response to these limitations, self-report measures have become increasingly popular as a method for assessing psychopathic features, including CU traits. Despite concerns about deception, lack of insight, or a heightened vulnerability to self-presentation bias or response distortion (Edens, Hart, Johnson, Johnson, and Olver, 2000; Kroner & Loza, 2001), there is evidence to support the validity of self-report measures of psychopathy. For example, a recent comparison of self and other informant reports found that when no direct

consequences are present, self-reported psychopathic traits do not significantly differ from other informant reports (Miller, Jones, & Lynam, 2011). Additionally, at least one other study found that self-report psychopathy instruments are similar to expert or clinician ratings of psychopathy in their prediction of institutional misconduct (Edens, Poythress, & Lilienfeld, 1999). Furthermore, the existing literature indicates that self-report measures of psychopathy often manifest sound psychometric properties, are better designed for use within community populations, and include the benefits of cost effectiveness and time efficiency (Lilienfeld & Fowler, 2006). Perhaps even more important than efficiency or ease of administration, self-report measures of psychopathy have the potential likelihood of providing a more comprehensive and direct assessment of CU traits. For instance, it has been suggested that since CU traits (e.g., lack of empathy/remorse) are largely an internal process, they may be most accurately measured using self-report (Lilienfeld & Fowler, 2006).

Given the theoretical link between CU traits and persistent offending, a purer assessment of these affective traits (independent of the other components of psychopathy) may provide a better understanding of their unique role in criminal offending. One measure that overcomes some of the previous limitations of separate examination and thorough assessment of CU traits is the Inventory of Callous Unemotional Traits (ICU; Essau, Sasagawa, & Frick, 2006; Kimonis et al., 2008). The self-report version of the ICU is a 24-item measure derived from the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), which was developed in an attempt to more comprehensively examine the nuanced affective components of psychopathy that may serve to perpetuate chronic and severe offending. The measure was developed to be applicable for both adolescents and young adults to facilitate studies examining the developmental factors that predict the early emergence and subsequent change in CU traits over time. So far, the construct validity for the measure has been tested in several cross-sectional studies with older adolescent populations. These studies have found evidence that the ICU measure consists of three interrelated facets of CU traits, including features of callousness, uncaring, and unemotionality (Essau et al., 2006; Fanti, Frick, & Georgiou, 2009; Kimonis et al., 2008; Roose, Bijttbier, Decoene, Claes, & Frick, 2010). Studies have also found that higher total scores, as well as the callousness and uncaring subscale scores of the ICU measure are uniquely associated with increased aggression and delinquency (Kimonis, Frick, Munoz, & Aucoin, 2007; Kimonis et al., 2008), even after controlling for other personality factors, such as extraversion and conscientiousness that are thought to be related to antisocial behavior (Essau et al., 2006). However, we are aware of no published longitudinal studies that have examined the predictive utility of CU traits measured using the ICU. In addition, the association between the ICU measure and criminal offending within young adults has not been examined, which would help to support its usefulness for assessing the affective features of psychopathy from adolescence into adulthood. Consistent with this goal, investigators have begun examining the validity of other self-report measures of psychopathy originally tested in adolescents (e.g., Youth Psychopathy Inventory) with young adult populations (Campbell, Doucette, & French, 2009). Work in this area can support the inclusion of these measures in longitudinal studies aimed at understanding factors that promote stability and change in psychopathic features during the transition from adolescence into adulthood.

Other Risk Factors for Offending

It is important to examine the extent to which CU traits provide valuable prognostic information about future offending above and beyond other known risk factors. Although one of the most robust predictors of future offending is prior criminal history (Gendreau, Little, & Goggin, 1996), little is known about the incremental predictive utility of CU traits, after controlling for prior criminal behavior using self-report measures and official records.

In addition, individual characteristics like heightened levels of impulsivity (e.g., ADHD symptoms) and substance abuse problems have consistently been linked to an increased risk for criminal offending (Andrews & Bonta, 1994; Brown, St. Amand, & Zamble, 2009; Gendreau et al. 1996; Langevin & Curnoe, 2011; Makarios, Steiner, & Travis, 2010). Low socioeconomic status (SES; Lynam, Loeber, & Stouthamer-Loeber, 2008; Walsh & Kosson, 2007) and affiliation with criminal peers (Gendreau et al., 1996) have both been associated with increased risk for offending, whereas being involved in a stable marriage and being consistently employed have been associated with a reduced risk for criminal behavior (Farrington & West, 1995; Laub, Nagin, & Sampson, 1998; Sampson & Laub, 1993, 2003). Many of the factors outlined above are similar to the behavioral (i.e., unstable employment, impulsivity) and antisocial (prior arrests) features of psychopathy as delineated by the PCL-R, and have shown to be more robust predictors of future offending than the PCL-R-measured affective traits of psychopathy (Walters, 2003). However, studies examining the predictive utility of CU traits using self-report measures often fail to account for these potential confounds, making it unclear whether CU traits uniquely contribute to the prediction of future offending.

Current Study

The current study addresses the aforementioned limitations by examining the association between self-reported CU traits and future criminal offending in a large, ethnically diverse community sample of young men. First, we examined the utility of a comprehensive self-report measure of CU traits in a young adult population, specifically, its role in the prediction of future offending, measured using official records. We also evaluated whether self-reported CU traits, as measured by the ICU, possessed incremental utility in the prediction of criminal-charge outcomes after controlling for a diverse array of known risk factors of persistent criminal offending (e.g., age, race, employment/education status, prior criminal history, SES, marital status, ADHD symptoms, alcohol and illicit substance use, and peer delinquency). In addition, we controlled for duration of follow-up, self-reported delinquency, and incarceration status at time of interview. Furthermore, we tested the incremental utility of CU traits in predicting different types of criminal-charge outcomes, including number of times charged, total number of charges, and charges for different types of crimes (e.g., serious, violent, theft, and obstruction of justice). Consistent with previous investigations (Cooke, Kosson, & Michie, 2001; Skeem, Edens, Camp, & Colwell, 2004), we also examined whether CU traits predicted future offending similarly for Caucasian and African American men.

Method

Participants

Participants in the current study are part of the Pittsburgh Youth Study (PYS), an ongoing longitudinal study of boys recruited from Pittsburgh public schools (Loeber, Farrington, Stouthamer-Loeber, & Van Kammen, 1998). Three cohorts of first, fourth, and seventh graders in Pittsburgh public schools were randomly selected for an initial screening in 1987. From this initial pool of students, families of 1,165 first graders (i.e., youngest cohort), 1,146 fourth graders (i.e., middle cohort), and 1,125 seventh graders (i.e., oldest cohort) participated in a screening assessment that included mother-, teacher-, and self-report of the boys' externalizing behavior problems. Utilizing this screening assessment, those rated in the top 30% on behavior problems ($n \approx 250$) from each cohort were selected for further study. In addition, an approximately equal number of boys were randomly selected from the remaining boys in each cohort for follow-up assessments (total $N = 503$ for the youngest, total $N = 508$ for the middle, total $N = 506$ for the oldest).

The current study focuses on the youngest cohort of boys who were selected for longitudinal follow-up. This cohort was used because they completed the ICU at the most recently completed follow-up assessment in early adulthood. At follow-up, 417 participants were successfully recontacted and completed all measures used in the current study. Participants were approximately 25 years of age ($M = 25.76$, $SD = .95$) and 43% were Caucasian, 53% were African American, and less than 5% were either Hispanic, Asian, American Indian or biracial. We assessed for differential participation rate by comparing those who participated in the follow-up, with nonparticipants in terms of initial risk status, race, and SES at the initial assessment in childhood. No consistent pattern was found with regard to initial risk status or SES; however, nonparticipants were significantly more likely to be African American. There were 11 African American participants who died prior to the most recent assessment (predominately as the result of homicide); no Caucasian males were confirmed dead. This contributed substantially to the differential attrition rate between the races. Moreover, other studies have found that African American participants are more difficult to locate and are more likely to refuse participation than Caucasians (Fischer, Dornelas, & Goethe, 2001; Goodman & Blum, 1996; Siddiqui, Flay, Phil, & Hu, 1996). Further demographic information regarding the Pittsburgh Youth Study cohorts can be found in Loeber et al. (1998, 2008).

Procedure

The majority of participants were assessed privately in their homes. Interviews were occasionally completed by phone for participants who moved outside of an acceptable driving distance. Most questionnaires were verbally administered to participants and responses were recorded by trained interviewers. For both in-person and telephone interviews, the ICU and Adult Self-Report (described below) were completed independently by the participant as part of a self-administered booklet. Official records of arrest were obtained annually for all participants throughout their participation in the study, from childhood (age ≈ 10) through early adulthood (age ≈ 30) using juvenile, state, and federal records. Informed written consent was obtained prior to the assessment and men were paid for their participation. Procedures during all phases of this study were reviewed and approved by the Institution Review Board at the University of Pittsburgh.

Measures

Callous-unemotional traits—The ICU (Essau et al., 2006; Kimonis et al., 2008) was administered to all participants. This scale includes 24 items that are rated on a 4-point Likert scale from 0 (*not at all true*) to 3 (*definitely true*). The measure was created to comprehensively assess callous and unemotional traits and was derived from four of the core items on the CU subscale of the APSD (Frick & Hare, 2001). For each of these four items (“I am concerned about the feelings of others,” “I feel bad or guilty when I do something wrong,” “I care about how well I do at school or work,” and “I do not show my emotions to others”), three additional positively and negatively worded items were created, totaling 24 items, with an equal number of items worded in each direction. Factor-analytic evidence supports a three-factor conceptualization of the ICU scale (callousness, uncaring, and unemotional), with one higher-order factor. Scores for each subscale and the total score were created by reverse scoring positively worded items and then summing all items. The coefficient alpha for each of the three subscales in the current study was .70, .84, and .55 for callousness, uncaring, and unemotional, respectively. The internal consistency for the ICU total score was .80.

Potential Confounds

Given consistent associations between future offending and a number of risk factors (e.g., Loeber et al., 1998, 2008), several additional variables were assessed in the current study. These variables were based on information collected at the early adulthood assessment and were thus collected concurrently with the ICU. Two exceptions to this were number of prior arrests and duration of follow-up. All variables are described in further detail below.

Duration of follow-up—Because participants were assessed at different times in early adulthood, the total amount of time that elapsed between the date of the early adulthood assessment, where the ICU measure was administered, and the date that the official criminal record data was obtained was used as a control variable.

Demographics—Age and race were assessed using a demographic questionnaire. Due to the low base rate of other racial/ethnic groups (e.g., Hispanic, mixed race), participants were dichotomized into two groups: Non-African American = 0 vs. African American = 1. Participants also provided information on their education and occupation, which was used to calculate SES using the Hollingshead Index (Hollingshead, 2011/1975).

Employed/attending college—As a part of a demographic questionnaire, participants reported on their current employment as well as enrollment in school. Those participants who reported being employed and/or attending college for the past year were coded as 1. Those participants who were not employed and/or were not enrolled in college for the duration of the past year were coded 0.

Marital status—Participants were asked about their marital status as a part of a demographic questionnaire. This item was coded 1 if the participant was married and 0 if he was not.

ADHD problems—ADHD problems were assessed using the Adult Self-Report (ASR; Achenbach & Rescorla, 2003), a recent revision of the 1997 edition of the Young Adult Self-Report (YASR). This measure provides scales identified as being consistent with the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*) categories (Achenbach & Rescorla, 2003). Participants were asked to rate aspects of their functioning in terms of how well it had described them over the past 6 months. Items were rated on a 3-point Likert scale (i.e., 0 = *not true*; 1 = *somewhat/sometimes true*; 2 = *very often true*). ADHD problems were assessed with 13 items and this scale demonstrated good internal consistency ($\alpha = .86$) within our sample.

Peer delinquency—Participants completed the Peer Delinquency Scale (PDS; Loeber et al., 1998) to assess the number of the participants' friends who engage in various delinquent behaviors. Participants rated how many of their friends engaged in a specific delinquent act (e.g., theft, vandalism, assault) using a 5-point scale (from 0 = *none of them* to 4 = *all of them*). The internal consistency of the scale is .89 in the current sample.

Prior arrests—Total number of prior arrests was calculated by summing the number of arrests that occurred prior to the assessment where the ICU measure was collected in early adulthood. This was based on official records of arrests using information that was collected annually from four sources: Allegheny County Juvenile Court Records, Pennsylvania Juvenile Court Judges' Commission, Pennsylvania Police Repository, and the Federal Bureau of Investigation.

Self-reported delinquency—Participants' self-reported criminal behavior within the year at the early adult assessment was assessed using the Self-Reported Delinquency Scale (SRD; Elliott, Huizinga, & Ageton, 1985). A delinquency variety score was created by summing the number of different types of delinquent acts participants reported committing in the past year out of a total of 25 (e.g., destruction of property, theft, burglary, robbery, rape).

Incarcerated at interview—Any participants who were incarcerated at the time of the assessment in early adulthood were coded as 1; all other participants were coded as 0.

Alcohol and illicit substance use—Alcohol and illicit drug use was assessed using two items from the Adult Self-Report (ASR; Achenbach & Rescorla, 2003). Participants were asked to report on how many days in the past 6 months they were drunk and how many days they used drugs for nonmedical purposes (all drugs, except alcohol and nicotine).

Official Criminal-Record Outcomes

In the current study, all outcome variables were based on official records of criminal charges. Any criminal charges that occurred after the follow-up assessment in early adulthood were included. Information about official criminal charges was derived from a number of sources, including Pennsylvania State Police, the Pennsylvania Court of Common Pleas, and the Federal Bureau of Investigation. Records were double entered into a database, checked for accuracy, and then compared to prevent redundancy of coding criminal charges across data sources. Several criminal-charge outcomes were created for the purposes of the current study. Specifically, variables representing the total number of arrests resulting in a criminal charge and the total number of overall charges were calculated. In addition, the presence or absence of criminal charges across three distinct charge categories were created: (a) violent offending, which included charges for homicide, robbery, kidnapping, sexual assault, aggravated assault, and simple assault; (b) theft, such as burglary, larceny, unauthorized use of a motor vehicle, possession of stolen property, fraud, and forgery; and (c) obstruction of justice, which included parole/probation violation, obstruction of justice, escape/fleeing, evidence tampering, and giving a false report to police. Offenders could be classified as committing offenses across one or more of these categories. Based on a previously developed delinquency seriousness classification system (Loeber et al., 1998, 2008), we also created a binary variable that represented any serious criminal charge, including homicide, robbery, sexual assault, aggravated assault, kidnapping, and burglary. This variable is unique in the sense that it focuses specifically on delineating individuals who have been charged with the most serious offenses across both the violence and theft categories.

Data Analysis

Data were analyzed using STATA 11 (College Station, TX). Negative binomial regressions appropriate for overdispersed count outcomes were used for outcomes involving number of arrests and total number of charges. Logistic regression was used for the binary outcomes of serious charge, violent charge, theft charge, and obstruction of justice charge. All models were estimated using robust standard errors. The association between CU traits and the criminal record outcomes was initially examined using bivariate regression analysis. Specifically, the total ICU score and each of the subscale scores (i.e., callousness, uncaring, unemotional) were entered into separate regression models predicting each criminal record outcome. Next, regression analyses were run to predict each of the outcomes by simultaneously including all of the previously described potential confounds and the total ICU score into a single regression model. These models were then rerun to include all three of the ICU subscale scores into the model in place of the total score. This latter step was

done to determine whether the facets of CU traits uniquely predicted the criminal record outcomes after statistically controlling for their overlap and the potential confounds.

Supplemental regression analyses were also performed to determine whether the predictive utility of CU traits differed by race. These analyses were limited to Caucasian and African American participants due to the low base rate of other racial/ethnic groups. For these models, the product term between the ICU total score and the binary race variable was entered into the regression models to predict each criminal outcome. Similarly, we examined whether the predictive utility of the ICU significantly varied based on whether participants had prior criminal justice involvement (any prior arrest) by adding a product term between these two variables. All of the potential confounding variables outlined in the measures section were included as covariates in these supplemental regression models.

Results

The average follow-up interval for the participants in the study was 3.5 years (range 1.9 – 4.3). During this period, 31.4% ($n = 125$) of men were charged with a crime and 12.2% ($n = 51$) were charged with a crime on more than one occasion. Among males who had been arrested, the mean number of charges accumulated during the follow-up period was 5.57 ($SD = 4.73$). In terms of the charge categories used in the current study, 7.2% ($n = 30$) had a serious charge, 11% ($n = 46$) had a violent charge, 9.1% ($n = 38$) had a theft charge, and 8.9% ($n = 37$) had an obstruction of justice charge.

Table 1 presents correlations between the ICU scores and the potential confounds included in the study, as well as descriptive statistics for these variables. The average number of prior arrests within the sample was 4.1, with 63.8% of the participants having been charged with a crime at some point prior to the most recent assessment. This is consistent with the oversampling of boys with elevated conduct problems at study onset. Total ICU scores in this sample ranged from 4 to 42 with a mean of 22.1 ($SD = 7.9$), which is similar to scores in male community samples where ages ranged from 12 to 21 (Fanti et al., 2009; Roose et al., 2010), but somewhat lower when compared to detained individuals where ages ranged from 12 to 20 (Kimonis et al., 2008). Small to moderate correlations were found between the CU trait subscales of callousness, uncaring, and unemotional ($r_s = .18 - .34$). Males with higher total CU trait scores were significantly more likely to be African American and less likely to be employed or in college. Higher CU scores were also negatively associated with SES and positively associated with ADHD problems, peer delinquency, self-reported delinquency, illicit substance use, and prior arrests. However, the magnitude of these associations was relatively small (i.e., r_s from $-.26$ to $.29$).

Bivariate analyses investigating the association between the CU trait scales and the criminal-charge outcomes are presented in Table 2. Total CU traits significantly predicted all criminal-record outcomes. In addition, all three of the CU trait subscales were significantly associated with the number of arrests and charges for serious crime, violent crime, and obstruction of justice. However, only the uncaring subscale significantly predicted the total number of charges received and being charged with theft.

Regression analyses examining the incremental utility of CU traits in predicting criminal-charge outcomes after controlling for all study confounds are presented in Table 3. These regression models indicated that CU traits significantly predicted a greater number of charges, more arrests, and receipt of an obstruction of justice charge even after controlling for all study confounds. In the regression models, the association between CU traits and being charged with theft was reduced to nonsignificance and the association with violent crime was reduced to marginal significance ($p = .07$). However, CU traits continued to

predict the receipt of any serious charge, which represents a subset of the most severe charges in the violence and theft categories. Among the covariates, the number of prior arrests was the most robust predictor of future offending. Being employed and/or attending college predicted fewer total charges and number of arrests, as well as a decreased likelihood of being charged with a violent offense. Males with higher levels of illicit substance use experienced a greater number of arrests and were more likely to have a theft charge. Higher SES was associated with fewer total charges, and African American participants were more likely to be charged with a violent crime.

There were a couple of counterintuitive findings. ADHD problems were associated with fewer total charges and peer delinquency was associated with a reduced probability of receiving a serious charge. However, these associations only emerged when controlling for other covariates in the model. Specifically, the bivariate association between ADHD problems and the number of charges was nonsignificant ($B = -.02$, 95% CI = $-.08$ – $.03$), as was the association between peer delinquency and serious offending ($B = .00$, 95% CI = $-.07$ – $.08$).

The regression models were rerun using the three subscales of the ICU measure in place of the total score. All of the potential confounds were also included in these models. The only significant finding indicated that the uncaring scale was associated with a greater number of future charges ($B = .06$, 95% CI = $.01$ – $.11$). This suggests that the common variance across the scales accounted for much of the predictive utility of the ICU measure.

A product term between race and the ICU total score was entered into each regression model (along with all potential confounding variables) to determine whether the predictive utility of CU traits differed based on the participants' race. This analysis was limited to Caucasian and African American participants due to the low base rate of other racial/ethnic groups. The only significant interaction that emerged was for the outcome of theft ($B = -.11$, 95% CI = $.01$ – $.20$). Post hoc probing indicated that CU traits were associated with a significantly increased risk for being charged with theft for Caucasian males ($B = .08$, 95% CI = $.01$ – $.16$), but not for African American males ($B = -.02$, 95% CI = $-.09$ – $.02$). Similarly, a product term was added to the model to determine whether the predictive utility of CU traits significantly differed between participants with and without a prior history of criminal-justice involvement (i.e., any arrest). None of these interactions was statistically significant (all p s from $.12$ – $.69$).

Discussion

The current study examined the utility of a comprehensive self-report measure of CU traits for predicting future criminal offending in a community sample of young men. Our results indicate that self-reported CU traits are a unique and robust predictor of future offending, even after controlling for several other well-established risk factors (e.g., prior offending, substance use, employment status). Specifically, self-reported CU traits predicted a greater number of arrests, a greater number of total charges, and being charged with a serious offense and obstruction of justice charge. Of importance, we only found a marginal association between CU traits and arrest for a violent offense after controlling for other risk factors. All of these results were largely consistent across racial groups, although higher levels of CU traits were associated with an increased risk of being charged with theft for Caucasian males, but not African American males. This is consistent with past literature suggesting that there may be weaker associations between CU traits and criminality among minorities (Edens et al., 2007). Nonetheless, future research should continue to explore the role of race, as well as important contextual factors such as SES. This is especially important

with regard to the role these factors may play in the expression and predictive utility of CU or psychopathic traits.

The results revealed that the predictive utility of CU traits could not be attributed to one specific subscale of the ICU measure. Specifically, the callousness, uncaring, and unemotional components were associated with three of the five official criminal-record outcomes in the bivariate analysis, with the exceptions being the total number of charges and receipt of a theft charge. In addition, when the subscales were simultaneously entered into a regression, there was very little evidence that one particular subscale predicted criminal offending after accounting for the overlapping variance across the subscales. This was somewhat surprising given that the correlations between the subscales were relatively low (r s from .18 – .34). The sole exception was that the uncaring scale was the only subscale that predicted the total number of charges. Although we made no a priori hypotheses about the independent contribution of the ICU subscales, past research also shows stronger support for the uncaring subscale, compared with the callousness and unemotional subscales, including its unique association with other relevant factors, such as proactive and reactive aggression (Fanti et al., 2009), history of violent and nonviolent crime, and overall risk for reoffending, measured concurrently with a risk assessment inventory (Kimonis et al., 2008). The results of the current study suggest that this particular dimension of CU traits may also be most strongly related with increased likelihood of future criminal offending.

While CU traits were associated with an increased risk for receiving a future violent charge, this association became nonsignificant after controlling for several other predictors of offending. Past research using incarcerated and psychiatric populations has found that the interpersonal and affective components of psychopathy significantly predict future arrests (Salekin, Rogers, Ustad, & Sewell, 1998), including violent recidivism (Serin, 1996). However, the current study was more rigorous in terms of controlling for other potential predictors of offending (e.g., self-reported delinquency, substance use, ADHD symptoms, peer delinquency). Moreover, evidence suggests that the affective and interpersonal components of psychopathy may not predict violent recidivism as strongly as the impulsive/unstable lifestyle and antisocial facets of the disorder, particularly when these features are measured using the PCL–R (Walters, 2003).

Building upon previous studies, our results provide evidence suggesting that CU traits do play a unique role in predicting repeated and serious offending, even after controlling for prior criminal behavior and other well-established risk factors. At least two plausible explanations exist for why prior studies have failed to find support for the incremental utility of CU traits. First, the measure of CU traits used in the current study was designed to be a more pure and comprehensive assessment of the affective features of psychopathy than previously used measures. Second, studies have often relied on the PCL–R as a measure of CU traits, which is based on interviewer ratings and contains only four items assessing the affective features of psychopathy. Recent examinations of the independent contribution of CU traits in adult populations using more comprehensive assessment methods have found evidence supporting the incremental utility of self-reported CU traits. For instance, the callous affect scale of the Self-Report of Psychopathy (SRP-III; Paulhus, Neumann, & Hare, in press) was uniquely associated with aggression and antisocial behavior in a community sample (Seibert, Miller, Few, Zeichner, & Lynam, 2010), as well as general levels of misconduct even after controlling for criminal tendencies or past criminal behavior (Williams, Paulhus, & Hare, 2007). It is also possible that eliciting self-reports of CU traits in a comprehensive manner allowed for a more direct and accurate assessment of these traits than having interviewers rate these features based on a semistructured interview.

It is important to consider our findings in light of several other risk factors measured in the current study, which show robust associations with future offending. That is, although CU traits were unique predictors of future offending in the current study, the variance accounted for by CU traits was modest in comparison with the variance contributed by other well-known risk factors. For instance, our results, which are consistent with past research, suggest that risk factors such as prior criminal history and employment status are strong and robust predictors of future offending. Indeed, prior criminal history was the most robust predictor of future offending in the current study, suggesting CU traits may not play the largest role in the prediction of future offending. Furthermore, our results indicate the consideration of other well-known risk factors such as age, SES, and peer delinquency, though these factors were less consistent in their predictive utility across criminal-charge outcomes in the current study.

Given that CU traits contributed to the prediction of future arrests even after controlling for several contextual factors, assessing these features may prove useful within a clinical context. A growing body of research suggests that these traits may be distinctive of a group of antisocial individuals who demonstrate more severe patterns of aggressive and violent behavior than antisocial individuals without these traits (Frick, 2009). Screening for CU traits may be useful for identifying individuals in need of intensive treatment efforts designed to prevent future offending, as well as delineating criminal offenders on parole or probation who warrant close supervision. Second, although prior criminal history was the most robust predictor of future offending in the current study, this risk factor is static in nature and is therefore not malleable to treatment. Risk factors that are malleable in nature are more useful to examine, especially when considering successful treatment or intervention designs that address prevention of criminal behavior.

The treatability of psychopathy in both youth and adults is a heavily debated topic that is influenced by a lack of consistent or comprehensive treatment studies, as well as the belief that specific personality characteristics definitive of psychopathy, such as motivation to change, tendency to lie and manipulate, and lack of empathy/shallow affect may act as barriers to treatment success (Salekin, Worley, & Grimes, 2010). In support of the treatability of psychopathy, research in youth populations suggests that individuals with high levels of CU traits, at least at an earlier age, may be more amenable to specifically tailored treatment designs than previously thought (Caldwell, Skeem, Salekin, & Van Rybroek, 2006; Hawes & Dadds, 2005; Kolko et al., 2009). Other research in adults suggests that dynamic and cognitive-behavioral treatments may be more effective for treating psychopathy than more commonly implemented therapeutic communities used in institutional settings (Salekin, 2002). Although there are inconsistent findings (for a review see Salekin et al., 2010) and reasonable skepticism surrounding the treatment of psychopathy, there is also little support for the claim that psychopathic traits are inflexible and immutable to treatment approaches. Therefore, if future research demonstrates that CU traits are a construct more dynamic in nature, they may prove useful when designing intervention or treatment programs to reduce future offending. Additionally, given speculation that individuals with CU traits may respond differentially to treatment or intervention strategies (Salekin et al., 2010), assessment of these traits may help to proactively identify individuals who require special motivational enhancement strategies to actively engage them in treatment and promote positive behavioral change.

There are methodological limitations to consider when interpreting our results. Since we used a community sample, the participants in our sample varied in their prior level of criminal behavior. Though nearly two thirds of the sample had been arrested and charged with a crime prior to the most recent assessment, it is important to note that the findings reported here may not be generalizable to a detained or incarcerated sample with a more

extensive history of prior offending. However, the predictive utility of CU traits did not significantly differ between men with and without prior involvement in the justice system in the current study. That said, understanding the expression of CU traits in a community population is beneficial and relevant for several reasons. First, CU or psychopathic traits are indicative of a difficult personality style that does not exist solely among offender populations and should be explored among general populations (Salekin, Troubst, & Krioukova, 2001). Second, studying the expression of these traits in both offender and nonoffender populations, as well as potential differences between these groups, could be important in identifying protective factors for criminal behavior (Lilienfeld, 1994). Lastly, the assessment of CU traits may help identify individuals who are at increased risk for future criminal behavior, which in turn may have potential relevance for intervention strategies or efforts prior to intensive involvement in the justice system.

An additional limitation to consider is that our criminal charge outcomes were based solely on official criminal records and did not incorporate self-reported criminal acts. Including self-reports of antisocial behavior would result in a larger number of offenses, and may be more accurate than official records (see Farrington & West, 1993; Monahan et al., 2001). To account for any recent incidents of unexposed criminal behavior, we controlled for self-reported delinquency in all of our analyses. Also relevant are concerns about individuals with psychopathic traits being willing to provide accurate self-reports (Lilienfeld & Fowler, 2006), especially in a legal setting where negative consequences may be applicable. This is an important area to address, but one we cannot explore given the sample used in this study. Further investigations should continue to explore the usefulness of self-report measures in offender populations, particularly outside of a research context where confidentiality is ensured. Notwithstanding the limitations in the current study, the prospective design of the study is a methodological strength and was the most appropriate for examining the predictive utility of self-reported CU traits. In addition, the duration of follow-up for the current study was considerably longer than other previous studies investigating the predictive utility of self-report measures or expert-rating scales of psychopathic features in both adolescents (Boccaccini et al., 2007; Douglas, Epstein, & Poythress, 2008; Salekin, Ziegler, Larrea, Anthony, & Bennett, 2003) and adults (Edens, Poythress, Lilienfeld, & Patrick, 2008; Leistico et al., 2008).

It is also important to mention that the ICU measure used in the current study has previously been used with older adolescent populations up to age 20, but not in older adult populations. Therefore, this is the first study demonstrating that CU traits assessed using this particular measure are robustly associated with future criminal offending in a young adult sample. We chose to use this measure because it is explicitly designed to comprehensively assess CU traits and the item content is appropriate for both adolescents and adults (Essau et al., 2006). The findings from this study and others demonstrate that the ICU measure is useful for assessing CU traits from adolescence (Frick & White, 2008) into early adulthood. This is particularly important because CU traits should be measured using the same instrument across development to effectively examine issues of stability and change in these features over time (Campbell et al., 2009). Therefore, by evaluating the predictive utility of the ICU measure at an adult level, the current study helps provide support for the utility of this instrument across developmental stages. Future research should continue to evaluate the usefulness of the ICU measure in both adolescent and adult populations and further explore the utility of self-reported CU traits in general.

Within the context of these limitations, our findings suggest that self-reported CU traits may be an important risk factor for future criminal offending in adult populations. Our results add to the literature by enhancing knowledge surrounding the utility of CU traits, specifically in self-report form and within an adult community population. Most notably, the current study

provides some of the first evidence to support the incremental utility of CU traits in the prediction of criminal offending, even after controlling for prior arrests and other well-known risk factors. These results, combined with past findings, demonstrate the importance of CU traits in predicting antisocial behavior and aggression (Seibert et al., 2010; Vitacco, Neumann, & Jackson, 2005). Furthermore, these results indicate that comprehensive measures of CU traits may be relevant to include in adult assessment batteries, especially within a risk-assessment context.

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Table 1
Descriptive Statistics and Correlations Between Callous-Unemotional Traits and Control Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	M/%	SD/N
1. Callous-unemotional traits																	22.1	7.9
2. Callousness subscale	.69																6.1	3.8
3. Uncaring subscale	.81	.25															8.5	4.6
4. Unemotional subscale Control Variables	.61	.18	.34														7.5	2.5
5. Duration of follow-up (years)	-.10	-.08	-.07	-.07													41.8	7.4
6. Age	.11	.07	.09	.07	-.58												25.8	0.9
7. African American	.18	.06	.16	.17	-.25	.28											53.0%	221
8. Socioeconomic status	-.26	-.13	-.27	-.10	.14	-.28	-.30										29.8	11.7
9. Employed/attending college	-.24	-.14	-.24	-.07	.04	-.11	-.18	.35									49.6%	207
10. Married	-.04	-.01	-.08	.01	-.01	.06	-.13	.15	.13								12.6%	53
11. ADHD problems	.20	.20	.11	.12	.04	.01	.10	-.14	-.20	-.09							2.0	3.4
12. Peer delinquency	.21	.35	.06	.00	-.02	-.05	-.05	-.03	-.10	-.03	.18						4.2	4.2
13. Number of prior arrests	.29	.12	.30	.16	-.32	.31	.30	-.44	-.29	-.13	.15	.02					4.1	5.3
14. Self-reported delinquency	.22	.23	.15	.07	-.05	-.02	.03	-.12	-.20	-.09	.52	.21	.20				1.5	2.0
15. Incarcerated at interview	.09	.07	.03	.12	-.18	.16	.25	-.24	-.14	-.13	-.03	.01	.48	-.07			10.6%	44
16. Alcohol use	.05	.03	.09	-.03	-.04	.00	-.01	.04	-.04	-.08	.22	.10	-.05	.30	-.24		15.3	26.5
17. Illicit substance use	.16	.10	.16	.06	-.13	.05	.23	-.15	-.25	-.11	.24	.11	.12	.36	-.07	.29	25.6	53.5

Note. Correlations in bold significant at $p < .05$.

Table 2
Bivariate Associations Between Callous-Unemotional Traits and Future Criminal Charges

	Number of charges		Number of arrests		Serious offense		Violence		Theft		Obstruction of justice	
	<i>B</i>	95% CI	<i>B</i>	95% CI	<i>B</i>	95% CI	<i>B</i>	95% CI	<i>B</i>	95% CI	<i>B</i>	95% CI
Callous-unemotional traits	.06	[.03, .09]	.06	[.04, .08]	.10	[.05, .14]	.07	[.03, .11]	.05	[.01, .10]	.09	[.05, .13]
Callousness subscale	.06	[.00, .11]	.05	[.01, .10]	.10	[.03, .18]	.07	[.01, .14]	.03	[-.03, .09]	.08	[.00, .15]
Uncaring subscale	.12	[.08, .17]	.10	[.07, .14]	.14	[.06, .22]	.11	[.04, .17]	.11	[.03, .19]	.14	[.07, .21]
Unemotional subscale	.08	[-.04, .19]	.10	[.03, .16]	.14	[.03, .26]	.14	[.04, .24]	.06	[-.05, .17]	.17	[.06, .27]

Note. CI = confidence interval. Analyses represent bivariate associations between the Inventory of Callous-Unemotional Traits total and subscale scores and each offending outcome. Negative binomial regression was used for number of charges and arrests outcomes. Logistic regression was used for serious offense, violence, theft, and obstruction of justice outcomes. All bolded values are significant at $p < .05$.

Table 3
Incremental Utility of Callous-Unemotional Traits in Predicting Future Criminal Charges

	Number of charges ^a		Number of arrests ^b		Serious offense ^c		Violence ^d		Theft ^e		Obstruction of justice ^f	
	B	95% CI	B	95% CI	B	95% CI	B	95% CI	B	95% CI	B	95% CI
Duration of follow-up	.02	[-.01, .05]	.02	[-.01, .04]	.02	[-.07, .11]	-.01	[-.07, .06]	.00	[-.08, .08]	.03	[-.05, .12]
Age	-.28	[-.56, .01]	-.10	[-.32, .12]	-.04	[-.58, .51]	-.08	[-.52, .36]	-.22	[-.76, .32]	-.67	[-1.16, -.18]
African-American	.31	[-.14, .77]	.29	[-.12, .69]	.92	[-.10, 1.94]	.89	[.04, 1.73]	-.30	[-1.21, .61]	.68	[-.31, 1.67]
Socioeconomic status	-.03	[-.06, -.01]	-.01	[.03, .01]	.00	[-.05, .05]	.00	[-.04, .04]	-.03	[-.07, .01]	-.03	[-.07, .01]
Employed/college	-.72	[-1.18, -.26]	-.64	[-1.05, -.23]	-.15	[-1.21, .91]	-.91	[-1.78, -.04]	.24	[-.68, 1.15]	-.36	[-1.29, .58]
Married	-.60	[-1.54, .35]	-.46	[1.05, .12]	.17	[-.99, 1.32]	-.49	[-1.64, .66]	-.87	[-2.46, .73]	.43	[-.64, 1.50]
ADHD problems	-.08	[-.14, -.02]	-.03	[-.07, .01]	.01	[-.07, .10]	.03	[-.04, .09]	-.02	[-.10, .06]	-.11	[-.22, .00]
Peer delinquency	.03	[-.03, .09]	.00	[-.04, .03]	-.19	[-.35, -.03]	-.13	[-.29, .03]	.05	[-.05, .16]	-.03	[-.14, .07]
Number of prior arrests	.19	[.12, .25]	.10	[.07, .14]	.15	[.07, .22]	.09	[.01, .16]	.14	[.07, .21]	.14	[.05, .22]
Self-reported delinquency	.05	[-.08, .18]	.02	[-.05, .09]	.17	[-.04, .38]	.18	[-.01, .37]	.02	[-.15, .18]	-.03	[-.22, .17]
Incarcerated at interview	-.164	[-2.54, -.73]	-.133	[-1.90, -.75]	-.131	[-2.73, .11]	-.113	[-2.36, .10]	-.206	[-.67, -.45]	-.117	[-2.59, .24]
Alcohol use	-.02	[-.04, .01]	-.01	[-.02, .01]	.01	[-.03, .05]	.00	[-.03, .04]	-.04	[-.08, .00]	.00	[-.04, .04]
Illicit substance use	.01	[-.01, .03]	.01	[.00, .02]	.01	[-.02, .03]	-.02	[-.04, .01]	.03	[.00, .05]	.02	[-.00, .05]
Callous-unemotional traits	.04	[.01, .07]	.03	[.00, .05]	.07	[.01, .13]	.04	[-.00, .09]	.02	[-.04, .07]	.07	[.02, .11]

Note. CI = confidence interval. All variables were simultaneously entered into the regression models predicting offending outcomes. Negative binomial regression was used for number of charges and number of arrests. Logistic regression was used for serious offense, violence, theft, and obstruction of justice outcomes. Bolded values are significant at $p < .05$. McFadden's pseudo R^2 for each model:

^a .09;

^b .15;

^c .21;

^d .15;

^e .18;

^f .22. All R^2 values are significant at $p < .001$.