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Emotional Intelligence and Callous-Unemotional Traits in Incarcerated Adolescents

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Abstract

Emotional intelligence (EI) is the ability to perceive, manage, and reason about emotions and to use this information to guide thinking and behavior adaptively. Youth with callous-unemotional (CU) traits demonstrate a variety of affective deficits, including impairment in recognition of emotion and reduced emotional responsiveness to distress or pain in others. We examined the association between ability EI and CU traits in a sample of incarcerated adolescents ($n = 141$) using an expert-rater device (Psychopathy Checklist Youth Version (PCL-YV; 1) and self-report assessments of CU traits. EI was assessed using the Mayer-Salovey-Caruso Emotional Intelligence Test-Youth Version, Research Version (MSCEIT-YV-R; 2). Similar to findings in adult forensic populations, high levels of CU traits in high risk youth were associated with lower EI, particularly higher order EI skills. Identifying impairment on EI abilities may have important implications for emerging treatment and intervention developments for youth with high levels of CU traits.

Keywords

emotional intelligence; callous-unemotional traits; adolescence; ability model of emotional intelligence; strategic EI

Emotional intelligence (EI) is defined as the ability to perceive, manage, and reason about emotions within oneself and others, and to use this information to guide adaptive thinking and behavior [3–5]. As such, EI is a key ability for functioning successfully in everyday activities and social relationships. Among adults, higher EI is associated with greater positive affect and life satisfaction [6] as well as reports of psychological well-being [7, 8]. Conversely, low EI is associated with psychopathology such as depression or anxiety [9]. The association of EI with social and psychological adjustment among adolescents parallels

the research in adult populations. For instance, among adolescents, higher EI has been linked to school adjustment and social competence [10], while lower EI is related to psychological maladjustment in youth including externalizing and internalizing symptoms [10] and aggression [11].

Models of Emotional Intelligence

Emotional intelligence has typically been studied under two distinct models [12]: trait EI and ability EI. The majority of published measures are trait assessments of EI that rely on an individual to self-report their capacity for and the frequency with which they recognize and use emotional information about themselves and others. The measurement of trait EI concentrates on self-perceptions of emotional states or dispositions [13]. As such, studies examining associations between measures of trait EI and personality traits such as Extraversion in youth often report moderate correlations ($r = .39$; 14). Ability models, on the other hand, measure EI by assessing an individual's performance on emotional tasks such as identifying facial expressions or accurate perception and management of emotionally laden situations. An advantage of the ability EI approach is that it does not rely on an individual's self-assessment, but instead compares their abilities with a standard criterion, in a manner similar to the measurement of cognitive intelligence. Ability EI is often moderately associated with measures of crystallized cognitive intelligence [15]. In contrast to trait EI, correlations between ability EI and personality traits are often nonsignificant or small [16]. Meta-analyses have provided support for the distinction between trait and ability EI models by demonstrating low correlations between these measures as well as differing associations between personality factors and crystallized measures of intelligence such as verbal IQ [17].

The Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; 18) was the first battery developed to measure ability EI in adult populations. The MSCEIT has strong psychometric properties [19]. The more recently developed version (MSCEIT-YV-R) has been designed for use with youth age 10 to 18 [2] and demonstrates sound psychometric properties [10]. This ability EI measure assesses four skills organized into two broad domains EI: (i) an experiential area that assesses the degree to which an individual identifies emotional experiences and understands how these emotions interact with thought, and (ii) a strategic area that assesses the degree to which an individual can understand and manage emotions in oneself and others. Within this hierarchical framework, these abilities are thought to develop sequentially as a function of both age and cognitive maturation [3].

Given that the MSCEIT-YV-R has been published only in a "research version," few studies have examined the construct of ability EI in adolescent populations. However, those studies that have been conducted in youth parallel findings from adult samples using the MSCEIT. For instance, lower scores on ability EI among youth are associated with poorer mental health outcomes. Specifically, in a community sample of adolescents, ability EI demonstrated negative associations, albeit with small effect sizes, with self-reports of both depression and disruptive behavior even after controlling for cognitive ability and big five personality dimensions [20]. In addition, ability EI may serve as a protective factor among youth who have experienced traumatic events. For instance, among a sample of sexually abused adolescents, Cha and Nock [21] found strategic EI served as a protective factor for

suicidal ideation and suicide attempts with the moderating role of EI explaining between 9 to 12% of the variance.

Ability EI is also negatively associated with teacher ratings of conflict and hostility among male youth even after controlling for IQ and big five personality dimensions [22]. Consistent with these findings, youth with higher levels of ability EI have lower rates of discipline referrals [15] and demonstrate more social success within peer contexts [23]. Furthermore, ability EI demonstrates unique relationships with associated socio-emotional constructs. For instance, higher levels of ability EI are associated with more advanced theory of mind [24] and coping skills [15]. Taken together, ability EI in youth may predict a number of important social and emotional outcomes that are crucial for adaptive functioning in everyday life, while low ability EI may predict psychopathological outcomes.

Callous-Unemotional (CU) Traits

Psychopathy is a constellation of interpersonal, affective, and behavioral personality features. Individuals with high levels of psychopathic traits are characterized by a superficial and manipulative interpersonal style, a profound lack of empathy/remorse, frequent impulsivity and irresponsibility, and socially deviant behavior or antisociality [25–27]. The affective features of psychopathy, also referred to as callous-unemotional (CU) traits in youth (e.g., lack of empathy/remorse, shallow affect, callousness), constitute a core component of the condition, [26, 28] and are frequently studied among youth populations as a downward extension of psychopathy [29]. In support of this extension, there is evidence to suggest CU traits in childhood and adolescence predict psychopathy in adulthood, even after controlling for conduct disorder and other childhood risk factors [30].

Similar to adults with high levels of psychopathic traits, youth with CU and associated (e.g., impulsivity, narcissism) traits appear to demonstrate a number of emotional deficits despite having intact general intelligence and cognitive abilities [27]. Youth with high levels of CU and associated traits exhibit deficits in their response to and recognition of facial expressions, particularly fear and sadness [31–32]. These youth also show reduced emotional responsiveness when presented with distress cues [33] or pain in others [34]. Furthermore, youth with high levels of CU and associated traits endorse social goals consistent with deviancy and dominance; they also view aggression as an acceptable way to obtain goals and resolve social conflicts [35–36]. Thus, these youth often demonstrate low levels of prosociality and perform poorly on perspective taking tasks. Given the presence of these emotional deficits and processing abnormalities in youth with CU traits, understanding the role of EI among youth with CU traits is a potentially important consideration for improving their life outcomes.

Callous-Unemotional Traits and EI

Prior research with adult samples has consistently found an association between psychopathic traits and ability EI. Specifically, several studies using samples of undergraduates have found that ability EI, as measured by the MSCEIT, demonstrates small to moderate yet significant negative associations (r 's ranging from -0.21 to -0.40) with self-

report psychopathic traits [37–39]. Ermer and colleagues examined the association between psychopathic traits and ability EI in a large sample ($n = 374$) of incarcerated adults [40]. Using the most widely accepted diagnostic instrument for psychopathy (Psychopathy Checklist Revised; PCL-R) [27] and the MSCEIT [18], incarcerated males generally scored lower on EI than the standardized mean. In addition, after controlling for general intelligence, higher levels of psychopathic traits were associated with lower scores on ability EI (specifically strategic EI), although these effect sizes were modest (semi-partial r 's ranging from $-.11$ to $-.16$; 41). More recently, Copestake and colleagues reported no association between EI and psychopathic traits among incarcerated adult offenders and strongly advocated that psychopathy is not associated with deficits in EI [41]. However, their sample size was quite small ($n = 57$) and thus they may have been unable to detect the small to medium effect sizes that would be consistent with previous literature examining the association between these constructs.

Given the findings in adult samples with psychopathic traits, the question remains as to whether this pattern is apparent by adolescence or develops later on in life. One recent study conducted in Ireland found that a detained sample and psychiatric sample of youth scored significantly lower on the various components of ability EI, as measured by the MSCEIT-YV-R, compared to a community control sample of adolescents [42]. In addition, a study of children from the UK (mean age = 9.3) found moderate ($r = -.27$) negative associations between Machiavellianism and ability EI [24]. While there has been some initial exploration of EI among antisocial youth and potential negative personality dispositions, no study has examined the association between CU traits and ability EI in an incarcerated sample of youth. Understanding how the association between ability EI and CU traits in detained youth compares to the pattern seen in incarcerated adults with psychopathy could be an important indicator of the developmental trajectory of ability EI. That is, similar deficits in EI among youth with CU traits would suggest that these capacities may be closely linked developmentally. On the other hand, lack of evidence of an association between CU traits and ability EI among youth could suggest these emotional processes are operating independently of one another earlier in development and may suggest targets for early treatment intervention. Identifying targets for early intervention may be especially important given the integration of the specifier “with Limited Prosocial Emotions” into the most recent revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; 43). In light of this change, further research is needed to understand better the characteristics of individuals with CU traits, such as potential deficits in EI, and the implications of these characteristics for guiding optimal assessment and treatment practices.

Current Study

The present study extends previous research by examining the association between ability EI and CU traits in a sample of incarcerated youth. We expected our findings to parallel those in incarcerated adults [40]; youth with high levels of CU traits (and associated traits) were predicted to demonstrate reduced ability EI, as measured by the MSCEIT-YV-R. We examined this hypothesis by using the PCL-YV [1], and extend previous research by employing a variety of self-report measures of CU traits (as well as traits associated with psychopathy) with the expectation that youth scoring high on these measures would also

demonstrate reduced ability EI. Similar to findings in incarcerated adults, we also hypothesized that higher levels of CU traits would be most strongly associated with lower strategic EI, rather than experiential EI.

Method

Participants

One hundred seventy six adolescents (ages 14 to 18) were recruited from a southwestern US juvenile maximum-security detention facility. Participants were part of a larger neuroimaging study investigating callous conduct disorder in youth (Southwest Advanced Neuroimaging Cohort- Youth – SWANC-Y; NIMH R01 MH071896-01). Participants were incarcerated for crimes that included murder, manslaughter, armed robbery, assault, domestic assault, rape, arson, weapons possession, burglary, theft, fraud, drug possession/distribution, probation/parole violations and criminal mischief. Exclusion criteria included history of seizures or epilepsy, loss of consciousness exceeding 30 minutes or other major medical problems, and age over 18 years. Participants were required to show fluency in English at or above a fourth grade level and were excluded from the study if their IQ estimate was < 70 ($n = 4$). Using the Kiddie-Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (KSADS-PL; 44), participants were screened for Axis 1 disorders. Participants with a history of psychosis ($n = 5$), including Bipolar Disorder and Major Depressive Disorder with psychotic features, a history of Bipolar disorder ($n = 1$), and/or any current Axis I disorder ($n = 25$) except those diagnoses falling under Disruptive Behavior Disorders and Substance Use Disorders were excluded from these analyses (total $n = 31$). This led to a final sample of 141 adolescents with a mean age of 17.03 ($SD = 1.10$). The sample was 83.7% male and participant's ethnic/racial composition was 74.5% "Hispanic or Latino," 9.2% "American Indian or Alaska Native," 6.4% "White," 5.7% "Black or African-American," and 4.2% were of mixed ethnicity. Given the severity of this sample, 97% of the sample either met criteria for a diagnosis of Conduct Disorder, Substance Use Disorder, or both. Participants were classified based on self-selection to these categories. Sample size was determined using G*Power Version 3.1 [45]. We assumed up to a moderate effect size ($f^2 = .15$), based on effect sizes produced in previous research examining similar research questions [24, 40]. This effect size indicated a sample size of 138 was required to have 95% power to detect an effect with an alpha level of .05. Data from a subsample of the participants in the current study (including scores on measures of CU and associated traits) were also included in previously published research [46].

Measures

Callous-unemotional traits, IQ estimate, and level of emotional intelligence were collected from each participant. All of the assessments were administered by trained research assistants. For the purposes of the present study, we use the term CU to refer to the traits and scales used, but note that most of the measures contain items and scales that assess associated interpersonal and behavioral traits commonly found among CU youth (see detailed descriptions below).

General Intelligence—A two subtest form of the Wechsler Intelligence Scale for Children-Fourth Edition (WISC-IV; 47) was used to collect a full scale IQ estimate for participants under the age of 16. The same two subtest form of the Wechsler Adult Intelligence Scale-Third Edition (WAIS-III; 48) was administered to participants age 16 and older. The two subtests, Vocabulary and Matrix Reasoning, provide a reliable estimate of full scale IQ for both the WISC-IV [49] and WAIS-III [50].

Callous-Unemotional Traits—The PCL-YV [1] is an expert-administered rating scale used for assessing psychopathic traits in youth populations. The assessment includes a semi-structured interview that provides in-depth access into participants' school, family, work, and criminal history, as well as the integrity of their interpersonal and emotional skills. All participants signed a release form allowing the researcher to review their official criminal record located on site at the detention facility. Files were reviewed prior to completion of the PCL-YV interview and were used as a source of collateral information for scoring. The PCL-YV consists of 20 items, each of which is scored on a 3-point scale: 0 'doesn't apply', 1 'applies somewhat', and 2 'definitely applies' to the youth. Original factor analysis [1] revealed strong support for a four facet structure: Interpersonal, Affective, Lifestyle, and Antisocial. For comparison to adult samples, we also examined a two factor model [27, 51], with Factor 1 composed of interpersonal and affective traits (Facets 1 and 2) and Factor 2 composed of lifestyle and antisocial traits (Facets 3 and 4). Scores on the PCL-YV are associated with both instrumental and reactive violence [52] and predict both violent and non-violent recidivism [53]. The intra-class correlation coefficient (ICC 1,1) = .90 for PCL-YV Total scores; 12% of interviews (randomly selected) were double-rated.

The Inventory of Callous-Unemotional Traits (ICU; 54) is a 24 item self-report scale designed to assess CU traits. Derived from the CU scale of the Antisocial Process Screening Device (APSD; 55), the ICU was developed to overcome reliability limitations of the APSD. The inventory produces three subscales (Callousness, Unemotional, and Uncaring) and a total score. Items are rated on a four-point scale ranging from 0 ("not at all true") to 3 ("definitely true"). The reliability and validity of the self-report version of the ICU has been supported in both incarcerated [56], community [57], and high-risk adolescent samples [58] of mixed gender. Prior research demonstrates that the ICU correlates positively with antisocial behavior and is negatively associated with prosocial behavior [56–57]. Only the total score was used in the current analyses and items 2 and 10 were eliminated because of low corrected item-total correlations. The total ICU score demonstrated adequate internal consistency ($\alpha = .75$).

The APSD [55] is a 20-item rating scale with items scored on a 3-point scale ranging from 0 ("not at all true") to 2 ("definitely true"). The sum of all items yields a total APSD score; factor analyses [59] demonstrate support for a three factor structure including: Narcissism (7 items), Callous-Unemotional (6 items), and Impulsivity (7 items) (for exception see 60). Scores on the APSD are associated with aggression and number of arrests [59] in male and female offender samples [61–62]. In the current sample internal consistency was modest with $\alpha = .67, .53, .54$, and $.75$ for the Narcissism, Callous-Unemotional, Impulsivity, and APSD Total scales respectively.

The Child Psychopathy Scale (CPS; 63) is a 50 item rating scale with items drawn from the Child Behavior Checklist (CBCL; 64) and the California Child Q-set (CCQ; 65). The CPS was designed specifically to map onto the PCL-R [27], which is used to assess psychopathy in adults. Each item on the CPS is rated on a two point scale (0 = no; 1 = yes). Confirmatory factor analysis indicates the optimal factor structure for the CPS is a two factor solution: 1) callous/disinhibited (CD) and 2) manipulative/deceitful (MD) factor [66]. Prior research has shown that scores on the CPS are associated with recidivism and poor treatment outcomes [67] as well as negatively associated with agreeableness and conscientiousness [68] in offender samples of mixed gender. Internal consistency in the current sample was adequate for the CD factor ($\alpha = .76$), the MD factor ($\alpha = .63$), and total CPS score ($\alpha = .82$).

Finally, the Youth Psychopathic Traits Inventory (YPI; 69–70) is a self-report measure that focuses on the interpersonal and affective traits of psychopathy. This scale consists of 50 items that are rated on a 4-point Likert scale ranging from 0 = ‘Does not apply at all’ to 4 = ‘applies very well’. The YPI consists of 10 subscales that combine to create a total YPI score and also map onto 3 separate factors: Grandiose/Manipulative, Callous-Unemotional, and Impulsive-Irresponsible. Past research in offender samples has demonstrated higher scores on the YPI are associated with delinquency and violent offending in males and females [60, 71–73]. Internal consistency was good for the all three factors ($\alpha = .90$, .86, and .87) respectively as well as for the total YPI score ($\alpha = .95$).

Emotional Intelligence—The MSCEIT-YV-R [2] is a 101-item paper/pencil assessment that is individually administered to each participant and is designed to assess ability to perceive, understand, use and manage emotions to assist thought and action. The MSCEIT-YV-R is derived from the MSCEIT [18]. Similar to the MSCEIT, the MSCEIT-YV-R produces a total score (global EI) and two area scores (experiential and strategic), that are constructed from four branches [10].

Experiential Emotional Intelligence: The experiential EI area assesses the degree to which an individual identifies emotional experiences, compares this experience to other situations or feelings, and understands how these emotions interact with thought. It is composed of two branches, perceiving emotions and facilitating thought. The perceiving emotions branch asks individuals to estimate the extent to which facial expressions embody various emotional states. This branch consists of 8 faces and 32 items in total, and tasks are based on evidence that the ability to perceive consensual emotional content in visual stimuli is strongly associated with empathic ability [74]. Participants are presented with a picture of a face and asked to rate, on a scale of 1 to 5, how the person in the picture feels on five distinct emotions (e.g., happiness, fear, surprise, disgust, excitement) based on their facial expression. The facilitating thought branch asks individuals to rate emotional utility and describe emotional experience. This branch consists of 24 items and asks individuals to choose how a particular emotion is similar to color, taste, or tactile sensations. For example, the participant is asked *“Imagine that you like someone. How much is this feeling of liking someone like each of the following?”*, and asked to choose the best response among available options (e.g., warm, soft, light, or pink).

Strategic Emotional Intelligence: The strategic EI area assesses the degree to which an individual can understand and manage emotions in oneself and others. It is also composed of two branches, understanding emotions and managing emotions. The understanding emotions branch asks individuals questions about emotional progressions and combinations. The branch consists of 23 multiple choice questions and assesses the participant's ability to understand the complexity of emotional meanings, transitions, and situations. For example, *"When you have something really nice, and then you lose it, you end up feeling _____?"* The participant is asked to choose one correct response out of five choices of emotions (happy, afraid, jealous, sad, or disgusted). The managing emotions branch asks individuals to consider various scenarios and predict the emotional effects of various actions. This branch assesses the participant's ability to manage emotions in their own life and lives of others. The participant is presented with six stories (18 questions) and is asked to evaluate the effectiveness of actions with outcomes that involve other people. For example, *"A boy received some very sad news. He wants to feel happy before going to a fun party. How helpful would each of the following be in getting the boy to feel happy?"* The participant is then asked to rate the effectiveness of various actions such as *"The boy watches a sad movie"* or *"The boy plays a game with his best friend"*.

Scoring: Once completed by participants, the MSCEIT-YV-R is sent to Multi-Health Systems Incorporated, the test publisher, to be scored. Because the instrument is still in development, it is scored based on expert consensus developed by the authors of the instrument. While this contrasts to the general consensus scoring method (derived from comparing the individual's score with a group of 5,000 individuals in the normative database) often used in adult populations, these two methods produce similar scores [18]. The items are scored using a preset scale ranging from 0 (less correct) to 2 (more correct) and then summed to generate the total, area, and branch scores. Standardized scores are reported with $M = 100$ and $SD = 15$. The MSCEIT-YV-R is still in the development stage, but recent confirmatory factor analysis in a large sample of fifth through eighth grade students found support for the four-branch, two area model of EI consistent with prior theory [10]. Reported Cronbach's alphas have ranged from $\alpha = .70$ to $.79$ for the areas [10], and adequate split-half reliabilities have been found for the Experiential area (.67), the Strategic Area (.86), and global EI (.90) [75]. Additionally, recent research has provided evidence of construct validity [15, 76] as well as predictive validity [77]. For the current study we focused on both global and area scores. Reliability in our sample for these areas ranged from modest to good: global: $\alpha = .83$; experiential: $\alpha = .86$; strategic: $\alpha = .62$.

Procedure

This study was conducted as part of a larger research project. In total, the participants completed eight to fifteen hours of materials over the course of five to six visits. Research staff initiated contact with potential participants through announcements at the facility, and scheduled meetings with guardians of youth who expressed interest in participating. Parental/guardian informed consent and minor assent were obtained and participants were informed of their right to discontinue participation at any point during the course of the study. Participants were also told that their participation in the research would in no way affect their status at the facility or their probation status, and that there were no direct

benefits to them. Participant remuneration was paid at the rate of the hourly wage at the facility. All procedures were approved by the Human Research Review Committee at the research institution and correlational facility where the study was conducted.

The assessments pertinent to the present research took between two to four hours and were typically administered within the first three appointments with the participant. Trained bachelor and master level research staff interviewed the youth who participated in the study in private offices at the facility. The self-report assessments and the PCL-YV were conducted in separate sessions in order to minimize participant fatigue and as a design procedure to minimize the influence of method variance resulting from instruments being administered at the same time.

Results

Table 1 presents the means and standard deviations for age, IQ estimate, emotional intelligence, and all measures of CU traits. For all results, p values are two-tailed; we report semi-partial r s as measures of effect sizes where appropriate. Semi-partial r s indicate the unique contribution of an independent variable. To control for the false positive rate in multiple comparisons we used the Benjamini-Hochberg method [78] for all hierarchical regression models, which is a modification of the Bonferroni procedure. The Benjamini-Hochberg method is a sequentially rejective approach based on false discovery rate (the proportion of erroneous rejections to the total number of rejections) and does not compromise statistical power as severely as the Bonferroni method.

General and Emotional Intelligence in Incarcerated Youth

IQ estimates for this sample of incarcerated youth ($M = 92.65$, $SD = 10.66$) were significantly lower (one sample $t(140) = 8.18$, $p < .001$) than the mean of 100 in the general population. However, global EI scores for incarcerated youth ($M = 99.29$, $SD = 13.22$) were not significantly different from the standardized mean of 100 (one sample $t(140) = 0.63$, $p = .53$). Also, neither experiential EI nor strategic EI means for this sample were significantly different from the standardized mean of 100 (one sample $t(140) = 1.80$, $p = .07$; one sample $t(140) = 0.02$, $p = .99$ for experiential EI and strategic EI, respectively). These results indicate this sample of incarcerated youth score similar to the general population on measures of EI.¹

Zero-order correlational analyses with age and general IQ estimates were conducted with the EI and CU traits in order to assess for potential moderating effects (see Table 2). Consistent with previous research, these analyses revealed significant positive correlations between total IQ estimates and all EI scores ranging from $r = .28$ to $.48$ (all $p < .001$). Due to significant associations with both EI and callous/unemotional traits, IQ estimate was used as a covariate in all subsequent analyses.

¹Although females scored significantly higher than males on global EI ($t(141) = -2.73$, $p < .01$), experiential EI Area 1 ($t(141) = -2.40$, $p < .05$), and strategic EI Area 2 ($t(141) = -2.45$, $p < .05$), this is similar to gender differences found in other studies using the MSCEIT [7, 79]. In order to examine any moderating effects of gender, all analyses were re-run excluding females and the results were substantively similar.

Association between Emotional Intelligence and Callous-Unemotional Traits

In order to examine the relative contributions of CU and associated traits in the prediction of EI within an incarcerated sample of youth, a series of hierarchical regression analyses (see Tables 3 and 4) was conducted. CU and associated trait scores, both expert-rater (PCL-YV) and self-report measure (ICU, APSD, CPS, and YPI) scores were predictors. The EI scales were the criterion variables, and two separate regressions were conducted for each EI component. For each EI component (global, experiential area, strategic area), the control variable (IQ estimate) was entered at Step 1, and the CU total score was entered at Step 2. Similarly, for each EI component, IQ estimate was entered at Step 1, and the individual subscales from each CU measure at Step 2.

Psychopathy Checklist Youth Version—For global EI, the total PCL-YV score did not account for a significant amount of variance after controlling for IQ estimate, $\beta = 0.01$ ($p = .87$). Additionally, none of the PCL-YV facets or factors were predictors of global EI (β 's ranging from -0.10 to 0.12). Furthermore, neither the PCL-YV total, nor facets or factors were predictors for EI Experiential Area 1 or EI Strategic Area 2 with β 's ranging from -0.12 to 0.16 .

Self-Report Assessments—The total ICU score accounted for a modest but significant amount of variance (5%) after controlling for IQ estimate, $\beta = -0.22$ ($p = .01$). The ICU total was not a significant predictor of experiential EI. However, for strategic EI, the total ICU score accounted for a significant amount of variance after controlling for IQ estimate, $\beta = -0.24$ ($p = .001$), explaining approximately 6% of the variance.

Consistent with findings from the ICU measure, the CU dimension of the APSD was a predictor of global EI, $\beta = -0.20$ ($p = .01$), explaining 4% of the variance. This effect appeared to be driven by the association between the CU dimension and EI Strategic Area 2, $\beta = -0.19$ ($p = .01$), accounting for 4% of the variance. No other APSD subscales were significant predictors of EI components. For the CPS, the CD dimension was a negative predictor of EI Experiential Area 1, $\beta = -0.22$ ($p = .03$), explaining about 5% of the variance, however this effect did not hold after controlling for multiple comparisons. The MD dimension was a positive predictor ($\beta = .28$, $p = .01$), accounting for 7% of the variance. No other significant associations emerged between the CPS and EI scores. Finally, hierarchical regressions did not reveal any significant findings for the YPI measure and EI scores.

Discussion

We examined whether high levels of CU traits were associated with reduced ability EI in a sample of incarcerated youth. These predictions were based on past research in the adult literature suggesting that ability EI is negatively associated with psychopathic traits [37–40]. Results from self-report instruments of CU and other associated traits revealed an interesting pattern of findings that were relatively consistent with previous results in incarcerated adult populations [40] both in terms of direction and magnitude of effects. By collecting EI and varied measures of CU and associated traits in a sample of incarcerated youth, we were able to parse out the different facets of psychopathy that may be associated with EI. Specifically, CU traits, as assessed through self-report on the ICU and APSD, exhibited significant, yet

modest, negative associations with overall global EI and more specifically, the strategic realm, where higher order or later developing EI abilities, such as comprehending and controlling emotions, emerge.

The association between CU traits and greater deficits in the strategic realm among youth are consistent with a body of literature linking affective and cognitive processing deficits to youth with high levels of CU traits [80]. Specifically, past research in youth with CU traits suggests these youth may perform poorly on affective and cognitive perspective taking [81] and also report difficulties in recognizing emotion in others and report difficulties recognizing and regulating their own emotions [82]. These results are consistent with our finding of deficits in the strategic realm of EI. This realm considers an individual's ability to designate appropriate emotions to specific scenarios as well as assign the effectiveness of particular actions for the purpose of managing or dealing with situations where emotions are play a role in shaping their own or others behaviors.

Findings related to the CPS measure were distinct in that the CD dimension was negatively associated with EI Experiential Area 1, while the MD dimension was positively associated with this same area. Of note, the Experiential Area 1 does contain a facial recognition component as part of the assessment of EI skills. While mixed, research in affective facial recognition suggests an association between CU traits and deficits in fear recognition [31, 83] or complex emotional expressions [32]. However, other research suggests the fear deficit in particular may be eliminated when youth are instructed to attend to the eye region [84–85]. The facial recognition task in the MSCEIT-YV-R varied from facial recognition tasks used in prior research in that youth were asked to rate five distinct emotions for each facial expression on a scale of 1 to 5. Given that results from the CPS measure were associated with Experiential Area 1 EI, this may indicate that scores on this measure may tap emotional abilities that emerge earlier on in development, such as facial recognition [86]. Additionally, the positive association with the MD dimension and Experiential Area 1 EI suggests that EI abilities may be associated with the ability to delude or manipulate others for their own gain; this is consistent with research that suggests CU traits are often highly correlated with manipulative or deceitful interpersonal styles [87].

The current study produced results that differed from those in an adult incarcerated sample [40]. First of all, there was no evidence of an association between scores on the PCL-YV and EI in adolescents and associations between EI and CU traits were only found using self-report measures. It is unclear why only self-report assessments demonstrated significant associations with ability EI; however, it may be that self-report measures have the potential to provide a more comprehensive and direct assessment of CU traits in youth populations. For instance, it has been suggested that since CU traits (e.g., lack of empathy/remorse) are largely an internal process, they may be more accurately assessed through self-report [88]. Alternatively, self-report CU traits may reflect individuals with a motivational bias to avoid acquiring or using emotional information about others, leading to an attenuation of EI skills over time, or even precluding the development of adult-level EI abilities. However, we also failed to find results for the YPI, which is a self-report measure. One potential reason may be that the YPI was originally designed to measure CU and associated traits in non-referred populations. Nevertheless, the somewhat divergent findings for the different assessments of

CU traits are not surprising given recent research that suggests that these varied assessments of CU and associated traits do not demonstrate good convergent validity [46].

With regard to general deficits in EI, this sample of incarcerated youth did not score lower on any areas of EI compared to the normative sample, which also contrasts with findings in incarcerated adults [40]. Structurally, the ability EI assessments for adults and youth are similar; however, the youth version does vary in content compared to the standard adult version, which may account for the discrepant findings between incarcerated adults and youth. In addition, the scoring methods for the ability EI assessment differed somewhat between youth and adults with one using expert consensus and the other using general consensus scoring. Our findings also contrast with Hayes and O'Reilly [42] who found detained youth scored lower than youth in the community. However, the sample sizes for these group comparisons were quite small ($n = 30$ for detained; $n = 30$ for community) and the average age for these youth was younger (14.9 and 15.3 for detained and community respectively) than our sample, which had an average age of approximately 17. Furthermore, this study did not report and compare standardized scores from the MSCEIT-YV-R across their samples; thus we are not able to compare the average score obtained in the community to the standard score ($M = 100$ and $SD = 15$) used in our comparison.

Outside of measurement or sample differences, identification of EI as malleable during the lifespan may be a more convincing argument. For instance, EI is thought to be a fluid construct that can be improved at least in some degree through education or training [3]; thus it is possible that these skills could also attenuate. Cross-sectional studies on age related changes in EI among adult populations have been mixed, but there is some research suggesting a decline in certain aspects of ability EI with age that would parallel other age-related declines in cognitive function [89–91]. However, there has been no longitudinal research examining the development of EI through the lifespan to include adolescence and adulthood. Such research could be important for identifying and understanding critical periods or individual differences that may be associated with the development and maintenance of the skills necessary for EI over time. Similarly, this research may also identify sustained environmental situations or social settings (such as extended incarceration) where the skills necessary for EI may weaken. Consistent with this idea, high EI is important for adaptive levels of resilience during major life events, and high EI potentially acts as a buffer for coping with the effects of negative life events [92].

These findings represent an important replication and extension of previous work in adult samples that also found support for a link between EI deficits and CU or associated traits. Notably, our effect sizes in the current study (semi-partial r 's ranging from .14 to .25) would be considered small to intermediate according to Cohen's [93] benchmarks for effect sizes. However, rather than using these descriptive labels, benchmarks for effect size should be interpreted in light of the importance of the outcome being studied as well as in comparison to effect sizes found in previous studies [94]. From this viewpoint, our effect sizes are comparable to previous research in incarcerated adults and our outcome variable reflects a critically important mental ability. One may also consider that predictions from psychological measures to complex behavioral outcomes can be considered satisfactory in the $r = .10$ to $.20$ range, and good in the $r = .20$ to $.30$ range [95]. Taken together, the results

of this study combined with earlier research would indicate that EI represents an important construct, and CU and associated traits account for a unique amount of variance in the prediction of EI skills.

Our results need to be interpreted in the context of a few limitations. First, the study design is cross-sectional, which precludes causal conclusions. Although it is possible that the existence of CU traits may impair the growth of acceptable or adequate EI during development, it is also possible that impaired EI may progress or be associated with the development of CU traits among youth. Second, we were only able to obtain an IQ estimate for the current sample using two subtests. Although the use of abbreviated measures to estimate IQ is commonly used in other research, it does not substitute for the use of a full IQ battery. Third, internal consistencies for the subscales of the APSD were lower than desirable in the current sample, although consistent with previous research in detained samples of males and females [60, 73]. In a similar vein, recent research in a detained sample of females also failed to replicate the common three-factor structure of the APSD, suggesting these results should be interpreted with caution, especially with regard to detained female adolescents. The relative homogeneity of our sample with regard to ethnicity is another limitation, as the sample identified mostly as Hispanic or Latino. Although this may limit the generalizability of our findings to other ethnicities, this sample may also be considered distinctive in that the literature to date examining CU traits has not included such a large sample of Hispanic youth. Thus, replication in other racial and ethnic groups is warranted. Future research should also replicate these findings in clinic-referred and community samples as well as with children prior to adolescence in order to gain a broader understanding of the developmental sequence of EI and the role it may play in the development of CU traits. Longitudinal research may shed more light on the development of EI through the lifespan to include adolescence and adulthood.

Summary

Findings from the current study extend research in adult incarcerated populations [40] and suggest that deficits in strategic EI may be present in adolescence among youth with high levels of CU traits. Our results add to the growing body of research that has demonstrated links between high levels of CU traits and abnormalities in emotional processing [80]. The unique contributions of the current study are the findings that suggest adolescents with high levels of CU traits may demonstrate impairment in ability EI, especially with regard to later developing EI skills. These deficits in EI among adolescents with CU traits could be important for developing hypotheses about targeted interventions for youth with high levels of these traits. The applications of EI, including skill-based training and specially designed interventions, are already evident in school classrooms and workplace settings [96], with research suggesting some initial success in both children and young adults [97–98]. Taking these applications into consideration with the growing body of research indicating intensive treatment can successfully reduce severe conduct problems and aggression in youth with CU traits [99–100], it is possible that even greater gains can be made if treatments are tailored to take into consideration the link between CU traits and EI skills.

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Table 1

Descriptive Statistics for Key Study Variables

Measure	Mean	SD	Minimum	Maximum
General Intelligence				
Total IQ Estimate	92.65	10.66	72	117
Emotional Intelligence				
MSCEIT-YV-R Total	99.29	13.22	64.78	126.66
Experiential (Area 1)	97.97	13.44	62.51	128.44
Strategic (Area 2)	100.02	12.97	70.49	124.09
CU Assessments				
<i>PCL-YV Total</i>	24.72	6.03	2.00	35.00
Interpersonal	2.44	1.83	0	7.00
Affective	4.64	1.85	0	8.00
Lifestyle	6.92	1.85	1.00	10.00
Antisocial	8.47	1.65	0	10.00
Harpur Factor 1	7.08	3.06	0	13
Harpur Factor 2	13.47	2.92	1	19
<i>APSD Total</i>	14.82	4.24	4.00	32.00
Narcissism	4.49	2.42	0	13.00
Callous-Unemotional	4.86	1.77	1.00	10.00
Impulsivity	5.45	1.71	1.00	10.00
<i>CPS Total</i>	20.07	6.72	3.00	41.00
Callous/Disinhibited	10.97	4.37	1.00	22.00
Manipulative/Deceitful	9.12	3.59	0	19.00
<i>YPI Total</i>	120.37	20.56	60.00	184.00
Interpersonal	42.19	10.32	20.00	68.00
Affective	35.73	7.17	15.00	59.00
Behavioral	41.62	7.59	15.00	58.00
<i>ICU Total</i>	29.56	7.48	11.52	51.00

Note. MSCEIT-YV-R = Mayer Salovey Caruso Emotional Intelligence Test Youth Version; CL-YV = Psychopathy Checklist Youth Version; APSD = Antisocial Process Screening Device; CPS = Child Psychopathy Scale; YPI = Youth Psychopathy Inventory; ICU = Inventory of Callous-Unemotional Traits. Total IQ estimate and EI scores are based on a standardization of M = 100, SD = 15.

Table 2

Zero Order Correlation Coefficients among Age, General Intelligence, Emotional Intelligence, and Callous-Unemotional Traits

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Age																							
2. IQ Estimate	.05																						
3. <i>MSCEIT YV Total</i>	.13	.46																					
4. Area 1	.05	.28	.78																				
5. Area 2	.15 [†]	.48	.95	.56																			
6. <i>PCL-YV Total</i>	-.17	-.03	-.02	.00	-.03																		
7. (F1)Interpersonal	-.13	.06	.11	.14	.08	.70																	
8. (F2)Affective	-.14	-.05	-.08	-.06	-.07	.76	.39																
9. (F3)Lifestyle	-.11	-.08	-.02	-.03	-.01	.79	.39	.45															
10. (F4)Antisocial	-.14	-.02	-.03	.03	-.05	.78	.39	.54	.54														
11. Harpur Factor 1	-.16	.01	.02	.05	.01	.87	.83	.84	.50	.56													
12. Harpur Factor 2	-.16 [†]	-.05	-.05	-.03	-.05	.89	.45	.56	.89	.85	.61												
13. <i>APSD Total</i>	.03	.16	.02	.02	.02	.35	.28	.20	.29	.28	.29	.32											
14. Narcissism	.08	.16 [†]	.11	.12	.09	.15	.23	.07	.10	.06	.18	.09	.83										
15. CU	.06	.00	-.19	-.14	-.19	.33	.05	.32	.25	.34	.22	.33	.52	.10									
16. Impulsivity	-.10	.14	.09	.02	.11	.29	.27	.07	.32	.26	.20	.33	.76	.53	.10								
17. <i>CPS Total</i>	-.11	.09	.06	.06	.05	.40	.24	.34	.31	.35	.36	.37	.75	.55	.47	.67							
18. Call/Dis	-.04	.16	.00	-.06	.03	.34	.21	.30	.24	.28	.31	.29	.70	.52	.48	.56	.87						
19. Man/Dec	-.05	-.02	.10	.19	.05	.29	.15	.22	.28	.31	.22	.32	.55	.39	.30	.53	.80	.41					
20. <i>YPI Total</i>	.07	.10	.08	.11	.05	.28	.24	.14	.25	.23	.23	.28	.59	.51	.24	.53	.61	.60	.39				
21. Interpersonal	.10	.12	.09	.12	.06	.12	.18	-.02	.14	.10	.09	.14	.50	.52	.12	.40	.46	.48	.28	.89			
22. Affective	-.03	.10	-.04	-.04	-.03	.28	.17 [†]	.27	.18	.23	.27	.23	.35	.21	.34	.25	.45	.48	.27	.76	.48		
23. Behavioral	.05	.13	.17 [†]	.12	.16 [†]	.28	.17 [†]	.14	.29	.27	.18	.32	.49	.40	.17	.50	.51	.43	.41	.78	.56	.43	
24. <i>ICU Total</i>	-.24	.12	-.16 [†]	-.06	-.18	.29	.10	.31	.21	.28	.24	.28	.51	.25	.58	.30	.53	.38	.35	.22	.52	.23	

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Note. MSCEIT-YV-R = Mayer Salovey Caruso Emotional Intelligence Test Youth Version; PCL-YV = Psychopathy Checklist Youth Version; APSD = Antisocial Process Screening Device; CPS = Child Psychopathy Scale; Call/Dis = Callous-Disinhibited; Man/Dec = Manipulative-Deceitful; YPI = Youth Psychopathy Inventory; ICU = Inventory of Callous-Unemotional Traits. Area 1 = MSCEIT-YV-R Experiential Area; Area 2 = MSCEIT-YV-R Strategic Area; F1-F4 = Factor 1-Factor 4; CU = Callous-Unemotional. Correlations in bold significant at $p < .05$;

r , $p < .07$.

Table 3
Hierarchical Regressions Predicting Global and Area Emotional Intelligence Scores from PCL-YV and ICU Scores

<i>Dependent Variables</i>									
Global EI					Experiential EI				
<i>Step</i>	<i>Predictors</i>	<i>R²(p)</i>	<i>β (p)</i>	<i>sr</i>	<i>R²(p)</i>	<i>β (p)</i>	<i>sr</i>	<i>R²(p)</i>	<i>β (p)</i>
<i>Psychopathy Checklist Youth Version (PCL-YV)</i>									
1	IQ Estimate	.22(<.001)*	.46(<.001)*	.46	.08(.001)*	.28(.001)*	.28	.23(<.001)*	.48(<.001)*
2	PCL-YV Total	<.01(.94)	-.01(.94)	-.01	<.01(.91)	.01(.91)	.01	<.01(.87)	-.01(.87)
1	IQ Estimate	.22(<.001)*	.45(<.001)*	.45	.08(.001)*	.27(.002)*	.26	.23(<.001)*	.47(<.001)*
2	(F1) Interpersonal	.02(.57)	.12(.16)	.11	.03(.41)	.16(.08)	.14	.01(.68)	.08(.33)
	(F2) Affective		-.10(.30)	-.08		-.12(.25)	-.09		-.08(.42)
	(F3) Lifestyle		.03(.75)	.02		-.05(.64)	-.04		.06(.50)
	(F4) Antisocial		-.03(.74)	-.03		.06(.60)	.04		-.07(.48)
1	IQ Estimate	.22(<.001)*	.46(<.001)*	.46	.08(.001)*	.28(.001)*	.28	.23(<.001)*	.48(<.001)*
2	Harpur Factor 1	.003(.80)	.05(.58)	.04	.004(.72)	.08(.42)	.07	.002(.87)	.03(.74)
	Harpur Factor 2		-.06(.53)	-.05		-.06(.55)	-.05		-.05(.60)
<i>Inventory of Callous-Unemotional Traits (ICU)</i>									
1	IQ Estimate	.24(<.001)*	.51(<.001)*	.51	.10(<.001)*	.33(<.001)*	.33	.24(<.001)*	.52(<.001)*
2	ICU Total	.05(.003)*	-.22(.003)*	-.22	.01(.21)	-.10(.21)	-.10	.06(.001)*	-.24(.001)*

Note. sr = semipartial correlation; EI = Emotional Intelligence; F1-F4 = Factor 1-Factor 4. Bolded values significant at $p < .05$;

[†] $p < .07$;

* $p < .05$ after controlling for false discovery rate.

Table 4
Hierarchical Regressions Predicting Global and Area Emotional Intelligence Scores from Self-Report Assessments

<i>Dependent Variables</i>									
Global EI					Experiential EI				
<i>Step</i>	<i>Predictors</i>	$R^2(p)$	β (p)	<i>sr</i>	$R^2(p)$	β (p)	<i>sr</i>	$R^2(p)$	β (p)
<i>Self-Report Scales</i>									
<i>APSD</i>									
1	IQ Estimate	.25(<.001)*	.51(<.001)*	.50	.10(<.001)*	.32(<.001)*	.32	.26(<.001)*	.52(<.001)*
2	APSD Total	<.01 (.48)	-.06(.48)	-.05	<.01(.71)	-.03(.71)	-.03	<.01(.46)	-.06(.46)
1	IQ Estimate	.25(<.001)*	.49(<.001)*	.48	.10(<.001)*	.30(.001)*	.30	.26(<.001)*	.50(<.001)*
2	Narcissism	.04(.08)	.05(.62)	.04	.03(.24)	.12(.24)	.10	.04(.09)	.01(.98)
	CU		-.20(.01)*	-.20		-.15(.09)	-.14		-.19(.01)*
	Impulsivity		.02(.86)	.01		-.07(.48)	-.06		.06(.54)
<i>CPS</i>									
1	IQ Estimate	.28(<.001)*	.53(<.001)*	.53	.11(.001)*	.32(.001)*	.32	.30(<.001)*	.55(<.001)*
2	CPS Total	<.01 (.93)	.01(.93)	.01	<.01(.74)	.03(.74)	.03	<.01(.95)	-.01(.95)
1	IQ Estimate	.28(<.001)*	.56(<.001)*	.55	.11(.001)*	.37(<.001)*	.36	.30(<.001)*	.56(<.001)*
2	Call/Dis	.02(.19)	-.13(.15)	-.12	.07(.01)*	-.22(.03)	-.20	.01(.71)	-.06(.48)
	Man/Dec		.15(.10)	.16		.28(.01)*	.25		.06(.49)
<i>YPI</i>									
1	IQ Estimate	.22(<.001)*	.47(<.001)*	.47	.10(.001)*	.31(.001)*	.31	.22(<.001)*	.47(<.001)*
2	YPI Total	<.01(.70)	.03(.70)	.03	.01(.39)	.08(.39)	.08	<.01(.95)	.01(.95)
1	IQ Estimate	.22(<.001)*	.46(<.001)*	.46	.10(.001)*	.30(.001)*	.30	.22(<.001)*	.47(<.001)*
2	Interpersonal	.03(.23)	.01(.94)	.01	.03(.33)	.12(.29)	.10	.03(.26)	-.05(.66)

Dependent Variables									
Global EI					Strategic EI				
Step	Predictors	$R^2(p)$	β (p)	sr	$R^2(p)$	β (p)	sr	$R^2(p)$	sr
	Affective		-.15(.14)	-.13		-.14(.19)	-.12		-.11
	Behavioral		.17(.10)	.14		.10 (.39)	.08		.15

Note. sr = semipartial correlation; APSD = Antisocial Process Screening Device; CU = Callous-Unemotional; CPS = Child Psychopathy Scale; Call/Dis = Callous-Disinhibited; Man/Dec = Manipulative-Deceitful; YPI = Youth Psychopathy Inventory. Bolded values significant at $p \leq .05$;

$\dagger p \leq .07$;

* $p < .05$ after controlling for false discovery rate.