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The reliability, concurrent validity and association with salivary oxytocin of the self-report version of the Inventory of Callous-Unemotional Traits in adolescents with conduct disorder

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ABSTRACT

The present study evaluated the self-report version of the Inventory of Callous-Unemotional Traits (ICU-SR) in terms of reliability, concurrent validity, and correlation with salivary oxytocin levels, a potential biomarker of CU traits. 67 socially at-risk male adolescents (mean 16.2 years) completed the ICU-SR, ICU teacher-version (ICU-TR), Strengths and Difficulties Questionnaire, and their medical files were coded for previous antisocial acts using Brown-Goodwin Lifetime Aggression Scale. Salivary samples were assayed for oxytocin. The reliability of ICU-SR was lower (α = 0.71) than ICU-TR (α = 0.86). ICU-SR mean score was significantly lower than ICU-TR (M = 25.29, SD = 8.02; M = 33.14, SD = 9.47). ICU-TR but not ICU-SR, significantly correlated with history of antisocial acts (r = 0.40). Two-way analysis of variance showed a significant effect of conduct disorder and oxytocin on ICU-TR but not ICU-SR [F(1,59) = 6.53; F(1,59) = 6.08], and a significant interaction only for ICU-TR [F(1,59) = 2.89]. Subjective self-reports of CU traits may be less reliable and valid than teachers' reports.

1. Introduction

Self-report inventories are being increasingly used in the assessment of psychopathy in youth, as they are relatively easy to perform and lack third-party confounders. Yet, as dishonesty and deviated insight are among the core characteristics of psychopathy, the reliability and validity of self-reports demand careful evaluation. This study is part of a larger project investigating Callous-Unemotional (CU) traits in youth (Levy et al., 2015). The present report describes our evaluation of the self-report version of the Inventory of Callous-Unemotional Traits (ICU), which was used as a diagnostic tool (Kimonis et al., 2016).

Conduct Disorder (CD) is typified by a prevailing pattern of violation of social norms and the rights of others (American Psychiatric Association, 2013). CD is a heterogeneous construct, and there is cumulative evidence suggesting that psychopathy, as a different construct, contributes to the specificity of the developmental trajectory of CD (Frick and Dickens, 2006; Frick and White, 2008). The diagnosis of CD focuses primarily on antisocial behavior (American Psychiatric Association, 2013), whereas psychopathy describes a group of deficits with unique affective, cognitive, and interpersonal characteristics (Hare, 2003). Thus, patients who have conduct disorder and a high level of psychopathic traits will exhibit more premeditated and instrumental violence compared with non- or low–psychopathic CD youth (Viding and McCrory, 2012). Indeed, it has been suggested that psychopathy may specify a group of antisocial youth in whom different causal processes are leading to antisocial outcomes (Blair et al., 2006).

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Youth with CD and a high level of psychopathic traits show more serious antisocial and aggressive behavior, more violent crimes, and a poorer treatment response (Blair et al., 2006).

There have been several attempts to characterize psychopathy in children and adolescents, with appropriate developmental modifications. One of the dimensions that emerged from these analyses is a pattern of behavior reflecting lack of remorse or guilt, callous lack of empathy, lack of concern over performance, and shallow or deficient affect, collectively termed Callous-Unemotional (CU) traits (Frick and Ray, 2014). Recently, an additional specifier for CD, "with limited prosocial emotions", based on the definition of CU traits, was included in the DSM-5 (American Psychiatric Association, 2013). In youth with conduct problems, the presence of high CU traits was found to have negative prognostic implications (Frick et al., 2014) and to predict a particularly early onset of a severe, persistent variant of conduct disorder (Dandreaux and Frick, 2009; Rowe et al., 2009). CU traits identify a subgroup of individuals with distinctive clinical and neurocognitive characteristics (Blair et al., 2014).

Psychopathy in adolescents has been assessed with interview-based checklists derived from instruments designed for adults, such as the Psychopathy Checklist: Youth Version (Forth, 2005). However, because this method relies on detailed case-file reviews and interviews, it requires time and resources. Therefore, researchers have turned their attention to self-report measures (Brandt et al., 1997). Self-reports have a long history of use in adaptive functioning, psychopathology, personality assessment, and treatment outcome, and they may offer numerous advantages specifically for evaluating psychopathic traits. A number of self-report scales have been developed using items that are developmentally appropriate for the pediatric age group (Vaughn and Howard, 2005), and were reported to have some reliability and predictive validity (Forth et al., 1990; Spain et al., 2004). Nevertheless, critics of self-report measures argue that they are highly susceptible to defensive or self-presentational biases and to overvaluation of adaptive traits. Furthermore, an explicit awareness and conceptualization of psychological dysfunctions, interpersonal problems, or maladaptive behaviors may not be readily accessible to young people (DeFife et al., 2010).

Studies have shown that oxytocinergic transmission may be involved in antisocial behavior and psychopathy. In adolescents with conduct problems, low salivary oxytocin levels predicted high CU traits, as measured by the ICU-TR (Levy et al., 2015). Moreover, serum oxytocin levels in youth were correlated with CU trait severity (Dadds et al., 2014a). Molecular studies associated single nucleotide polymorphisms (SNPs) in the oxytocin receptor gene with persistent and pervasive childhood-onset aggressive behaviors (Malik et al., 2012) and with high levels of CU traits in youth with disruptive behavior disorder (Beitchman et al., 2012; Dadds et al., 2014b; Malik et al., 2012). Moreover, the risk alleles of these SNPs were associated with lower circulating oxytocin levels (Dadds et al., 2014a). Most of these studies were based on parent or teacher reports using the Psychopathy Screening Device. In a previous study we found evidence to suggest that oxytocin may serve as a biomarker for CU traits and could be of value in assessing diagnostic tools used to determine CU trait severity (Levy et al., 2015). The present study aims to elaborate on this findings by using oxytocin levels to assess the construct validity of the instrument which is currently used in studies of callous unemotional traits.

The purpose of the present study was to assess the qualities of the self-report version of the ICU (ICU-SR) in at-risk adolescents with and without an antisocial background. First, the psychometric properties of the ICU-SR were compared with those of the ICU-teacher version (ICU-TR) to contrast ratings of psychopathy and to assess its reliability. Second, the utility of the ICU-SR in predicting delinquent behavior was examined. Finally, we evaluated the predictive value of oxytocin levels for CU trait severity, as measured with the ICU-SR.

2. Method

2.1. Participants and procedures

The study group included 67 male patients aged 15–19 years recruited from 8 similar governmental residential treatment facilities for socially at-risk youth. The facilities are part of the social welfare system, not the juvenile justice system, and none of the adolescents were placed there for criminal offenses. The psychiatric diagnosis had been previously established on the basis of an open clinical interview and anamnesis performed by senior child and adolescent psychiatrists. It was retrospectively recorded from the medical files for purposes of the present study. Of the total sample, 35 patients (52%) met the DSM IV-TR criteria for CD. There was no dependency between CD diagnosis and the other diagnoses, i.e. attention deficit- hyperactivity disorder, oppositional-defiant disorder, affective disorders, anxiety disorders, tic disorder, pervasive developmental disorder, psychosis or alcohol abuse (using χ^2 tests, $p > 0.05$ for all diagnoses). Most of the sample came from a low socioeconomic sector; we were unable to collect more exact details of their socioeconomic status. We had no information specific to the IQ and the reading skills of the participants. However we took particular care to ensure that the participants understood the items in the questionnaire. The demographic characteristics of the sample and their clinical and legal data are shown in Table 1.

2.2. Diagnostic evaluation

Instruments included the ICU- SR and ICU-TR, Strengths and Difficulties Questionnaire (SDQ), and Brown-Goodwin Lifetime Aggression Scale (BGLAS). Scores on the ICU-SR were compared with the ICU-TR and analyzed against the reported salivary oxytocin levels. The clinical evaluation was performed immediately after salivary sampling. Salivary specimens were collected independently of administration of the psychological battery. The researcher who administered the questionnaires was blinded to the oxytocin results. It should be noted that since the subjects were living in a residential settings, the raters were residential staff, and therefore had relatively intimate knowledge of their behavior.

Table 1
Background and legal characteristics of adolescent at-risk males ($N = 67$).

Age (yrs), range	15–19
Mean (SD)	16.2 (1.15)
Country of origin	
Israel	78%
Ethiopia	12%
Former USSR	10%
Diagnosis	
Attention-deficit-hyperactivity disorder	36%
Conduct disorder	52%
Oppositional defiant disorder	3%
Substance use	18%
Alcohol use	2%
Anxiety	3%
Depression	0%
Sub-normal IQ	5%
Tics	3%
Psychosis	5%
Type of offence	
Assault	41%
Sexual offence	6%
Breaking	10%
Property destruction	10%
Theft	35%
History of arrest for criminal charges	16%

Note: Diagnoses were made by open clinical interview performed by a senior child and adolescent psychiatrist, thorough chart review including the relevant clinical and forensic material, and staff consensus. All diagnoses were based on the DSM-IV-TR criteria.