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# Fledgling Psychopathy in the Classroom: ADHD Subtypes Psychopathy, and Reading Comprehension in a Community Sample of Adolescents

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## Abstract

The current study explores characteristics that are associated with fledgling psychopathy and educational outcomes relating to reading comprehension performance in a community sample of 432 middle school students. Latent class analysis (LCA) produced a four-class solution. Class 1 was a large (71.5% of sample) ‘‘control’’ group of youths with no attention/hyperactivity deficits and the highest reading comprehension scores. Class 2 was 11.6% of the sample and was consistent with traits associated with attention deficit hyperactivity disorder (ADHD) predominantly inattentive type. Class 3 was 7.4% of the sample and was consistent with traits associated with ADHD predominantly hyperactive–impulsive type. Class 4 was 9.5% of the sample and was consistent with traits associated with ADHD combined type. Classes 2 and 4 were characterized by elevated levels of psychopathic and callous-unemotional (CU) traits and lower educational performance. This study extends the utility of fledgling psychopathy to educational outcomes, which has broad implications for adolescent development, delinquency, and youth violence.

### Keywords

ADHD; psychopathy; educational outcomes; callous-unemotional; psychopathic traits; fledgling psychopathy

## Introduction

A paradigmatic feature of severe maladaptive and antisocial behavior centers on the comorbidity of symptoms, traits, characteristics, and behaviors indicating risk. Whether the outcome variable is externalizing psychopathology in childhood, multiple problem delinquency in adolescence, or life-course-persistent offending in adulthood, pathological

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antisociality is characterized by overlapping problems that affect functioning in multiple life domains (Achenbach, 1993; Beauchaine, 2003; Elliott, Huizinga, & Menard, 1989; Gottfredson & Hirschi, 1990; Kessler et al., 2006; Moffitt, 1993; Moffitt & Scott, 2008; Raine et al., 2005). Conceptually and analytically, the overlapping nature of antisocial traits and the comorbidity of allied psychiatric conditions render it difficult to study individuals with severe behavioral problems. For example, according to the American Psychiatric Association (APA; 2000), approximately 50% of children and adolescents with attention deficit hyperactivity disorder (ADHD) also have a diagnosis for oppositional defiant disorder (ODD) or conduct disorder (CD), yet, childhood difficulties with inattention, self-control, and self-regulation are exceedingly common. As such, theory and research must disentangle symptoms, traits, and behaviors to arrive at the clearest understanding of youths' psychopathology. Indeed, Lahey et al. (2004) observed that ''There has long been agreement that child and adolescent psycho-pathology is not unitary [references omitted]. Consequently, researchers have often used empirical methods in an attempt to define multiple dimensions or types of child and adolescent psychopathology'' (p. 358).

## Literature Review

### Fledgling Psychopathy

An influential thesis that sought to provide empirical clarity to the overlap of antisocial conditions is Lynam's (1996) fledgling psychopathy hypothesis. According to Lynam, the empirical regularity that the most persistent and pathological 5% of male offenders account for the bulk of crime in a population (DeLisi, 2005; Wolfgang, Figlio, & Sellin, 1972) is suggestive of a similar group identifiable earlier in life that similarly presents with severe behavioral problems. From this perspective, the fledgling psychopath is a child who manifests hyperactivity, impulsivity, and attention (HIA) problems in conjunction with severe conduct problems (CP). Fledgling psychopathy is a more severe risk profile than those who present HIA or CP alone. Behaviorally, these children have the earliest onset of antisocial symptoms and commit more severe, frequent, and varied antisocial behavior. Overall, their affective, interpersonal, cognitive, and behavioral repertoire is consistent with the suite of traits that typify adult psychopathic personality (Cleckley, 1941; Hare, 1993, 1996; Hare & Neumann, 2008; Patrick, 2006).

In a subsequent empirical study, Lynam (1997) developed the Childhood Psychopathy Scale (CPS; Lynam) and found that it predicted serious forms of antisocial behavior above and beyond competing confounds including HIA and CP. Additional empirical research similarly indicated that similar to adult psychopaths, fledgling psychopaths were the most antisocial, most disinhibited, and the most neuropsychologically impaired adolescents even when compared to others with HIA deficits and CP (Lynam, 1998; Lynam, Derefinko, Caspi, Loeber, & Stouthamer-Loeber, 2007). Irrespective of specific reference to Lynam's fledgling psychopathy hypothesis, a multitude of studies have examined the interrelations between HIA and CP symptoms by comparing behavioral outcomes among subgroups of children and adolescents with clinically relevant diagnoses (e.g., ADHD, CD, ODD, and ASPD) or psychopathic traits (Biederman et al., 2006; Colledge & Blair, 2001; Dick, Viken, Kaprio, Pulkkinen, & Rose, 2005; Frick & Marsee, 2006; Gresham, Lane, & Lambros, 2000; Hinshaw, Carte, Sami, Treuting, & Zupan, 2002; Nigg, Hinshaw, Carte, & Treuting, 1998; Sevecke, Kosson, & Krischer, 2009; Waschbusch, 2002). Generally, youths with multiple deficits and/or with multiple diagnoses demonstrate more severe antisocial behaviors (Frick & Marsee, 2006).

## Callous-Unemotional (CU) Traits

Within the nexus of characteristics that typify children and adolescents with ADHD, CP, and psychopathy, it is important to note that significant heterogeneity exists in terms of behavioral profile, course, treatment amenability, and long-term outcomes (Hinshaw, 1987; Hinshaw, Lahey, & Hart, 1993; Lilienfeld & Waldman, 1990; Waschbusch, 2002). However, an important construct that likely differentiates among the most severely impaired youths is CU traits. CU traits refer to affective and interpersonal deficits including guiltlessness, emotional coldness, failure to show empathy, and an exploitative interpersonal style that emerges in childhood and represent the cardinal symptoms of psychopathic personality (Blair, 1999; Frick 1998a, 1998b). Importantly, even among youths with severe CP and other signs of externalizing psychopathology, persons who also have CU traits represent the extremity in terms of antisocial traits and conduct. For example, Barry et al. (2000) studied a clinic-referred sample of 154 children (mean age = 8.4 years) and found that youths with CU traits demonstrated a fearless, reward-dominant response style and manifested less stress in response to their behavioral problems—a repertoire that is most consistent with adult psychopathy.

Based on data from a community sample of 98 children (mean age = 12.4 years), Frick, Cornell, Barry, Bodin, and Dane (2003) found that CU traits independently predicted self-reported delinquency in a 1-year follow-up. Moreover, children with CU traits and baseline CP displayed significantly high levels of self-reported delinquency, aggression, and proactive forms of aggression at follow-up. Using the same sample and a 4-year assessment period, Frick, Stickle, Dandreaux, Farrell, and Kimonis (2005) found that children with CU traits accumulated the most police contacts and were responsible for 50% of the total police contacts experienced by the cohort across the 4-year period. This was in addition to the most severe CP and highest self-reported delinquency. Overall, researchers using diverse analytical techniques on different research groups have linked CU traits to antisocial behavior and related maladaptive outcomes among samples of foster care youths (Vaughn, DeLisi, Beaver, & Wright, 2009a; Vaughn, Litschge, DeLisi, Beaver, & McMillen, 2008), clinic-referred samples of male children and adolescents (Burke, Loeber, & Lahey, 2007), community samples of high school students (Jolliffe & Farrington, 2006), community samples of high-risk youths (Pardini, Obradović, & Loeber, 2006), and correctional samples of institutionalized delinquents (Caputo, Frick, & Brodsky, 1999; Pardini, Lochman, & Frick, 2003; Vaughn & DeLisi, 2008; Vaughn, DeLisi, Beaver, Wright, & Howard, 2007).

## Educational Outcomes

Although a hallmark of externalizing psychopathology is impairment in multiple life domains, compared to antisocial behavioral outcomes, less research has investigated educational outcomes among youths with ADHD, psychopathic, and/or CU traits. This is surprising because school problems, academic failure, and academic underachievement are indicative of both ADHD and conduct disorders (Barkley, 1997a, 1997b; Hinshaw, 1992; Moffitt, 1993) and academic deficits and school-based problems are particularly pronounced among youths with ADHD predominantly inattentive type (APA, 2000, p. 88). Research on the interrelations among ADHD and HIA symptoms, psychopathy, CU traits, and educational outcomes has produced mixed findings. Investigators have variously found that ADHD but not conduct disorder was associated with academic underachievement (Frick et al., 1991), that HIA symptoms but not HIA symptoms coupled with aggression were related to school underachievement (Stewart, Cummings, Singer, & DeBlois, 1981), and that HIA plus aggression predicted school problems (McGee, Williams, & Silva, 1984). In sum, a rich literature documented the association between educational deficits and negative school outcomes and difficulties with self-regulation and antisocial conduct (Arnold, 1997; Beaver, DeLisi, Wright, Vaughn, & Boutwell, 2008; Gottfredson & Hirschi, 1990; Hinshaw, 1992;

Moffitt, 1993; Shelley-Tremblay, O'Brien, & Langhinrichsen-Rohling, 2007; Trzesniewski, Moffitt, Caspi, Taylor, & Maughan, 2006; Willcutt & Pennington, 2000). In addition, the next step is for research to disentangle the mechanisms underlying these associations.

## Current Aims

The current study sought to extend research on the overlap between traits associated with ADHD and psychopathy in two main ways. First, the main variable of interest is educational outcomes relating to performance on three reading comprehension tests that extends the study of externalizing disorders to the school domain. Second, we extend research by Frick and colleagues by examining the relation of CU traits vis-à-vis HIA and psychopathic traits. The practical importance of these findings has implications for adolescent development namely because children with pronounced psychosocial, behavioral, and educational deficits personify the risk profile for youths at risk for antisocial behavior and juvenile justice interventions.

## Method

### Participants

The current study was conducted in seven middle schools in two sites in a southwestern state. All seven schools had participated in previous reading intervention research. The sample represented a highly diverse student population in terms of ethnicity and socioeconomic status. Specifically, 43% of the sample was female, 173 students (40%) were African American, whereas 186 (43%) were Hispanic, 59 (14%) were Caucasian, 12 (3%) were Asian, and 2 (0.41%) were American Indian. In addition, reduced free lunch ranged from 40% to 86% across the seven schools. According to state accountability standards, three schools were rated as recognized, three were rated as acceptable, and one school was rated as unacceptable.

The participants were 432 students in Grades 7 ($n$ = 277) and 8 ($n$ = 155). Of the 432 students, 78 were defined as typically developing and 354 were defined as struggling readers, in the fall of 2006 when the study was initiated. Typically developing was defined as attainment of a standard score greater than 2,150 on the Texas Assessment of Knowledge and Skills (TAKS). Struggling readers were defined as students who either failed TAKS (performance below 2,100 standard score), whose test score was within one-half of one standard error of measurement above the passing criteria (performance within 2,100–2,150 standard scores) on the first administration of TAKS in the spring of the previous school year, or students who took the School Determined Alternative Assessment (SDAA) in lieu of TAKS, a test designed for students in special education with very low academic achievement in reading. Of the 354 struggling readers, 181 students did not respond to instruction provided the previous year and were randomized to receive a second year of more intensive reading intervention. The institutional review boards from each of the participating universities approved the conduct of this research, as did the three school districts.

### Measures

#### Indicator Variables

**Attention and hyperactivity:** The Strengths and Weaknesses of ADHD and Normal behavior (SWAN) is a rating scale of behavioral attention/activity–impulsivity completed by the primary classroom teacher of each student. Behaviors corresponding to each of the 18 behaviors used in the *Diagnostic and Statistical Manual of Mental Disorders* (Fourth Edition; *DSM-IV*) AD/HD criteria were reworded away from a strict pathology indication to

neutral statements rated on a 7-point Likert-type scale ranging from −3 to +3, with negative scores representing problematic behavior and positive scores better development of the behavior. In contrast to traditional ratings for ADHD symptoms, which led to distributional non-normality because of the pathology-oriented coding, the SWAN generates a normalized continuum of behavior. The SWAN yields scores for Attention and Activity–Impulsivity traits. Internal consistency is high for both the Attention and Active/Impulsive scales (range α = .93 to .98). We opted to use the dichotomous items as indicator variables in the LCA. These 18 items and associated descriptive statistics used to identify latent classes across the pool of study participants are displayed in Table 1.

## External Variables

**Psychopathic features:** The Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002) and the Inventory of Callous-Unemotional traits (ICU; Teacher Report, Unpublished rating scale by Paul J. Frick, Department of Psychology, University of New Orleans) were used to assess traits associated with psychopathy. The YPI is a group-administered social rating scale. It was administered in small groups and read aloud to students who selected an appropriate response. Students are read statements (e.g., I like to be where exciting things happen) and they decided how well the particular statement applied to them by choosing between four answers: does not apply at all, applies a little, applies a fair amount, or applies very much/definitely. There have been a proliferation of studies using the YPI in recent years (e.g., Andershed, Kerr, & Stattin, 2002; Dolan, & Rennie, 2006a, 2006b; Larsson, Andershed, & Lichtenstein, 2006; Poythress, Dembo, Wareham, & Greenbaum, 2006; Skeem, & Cauffman, 2003) with results supporting the reliability and validity of this instrument in assessing psychopathic features in children and adolescents. Factor analytic tests of the YPI indicate a three-factor structure that consists of affective (lack of empathy), behavioral (impulsivity), and interpersonal (narcissistic and exploitive) factor domains. In the current study, we conducted principal components analysis with promax rotation and found these same three factors. Given that these are more empirically parsimonious compared to the 10 scales, we opted to use these three factors. Reliability analyses indicated good reliability for the YPI total score (α = .91) and affective (α = .71), behavioral (α = .83), and interpersonal (α = .86) factors.

The ICU Rating scale was completed by classroom teachers. Teachers read items (e.g., expresses his or her feelings openly) and selected an appropriate rating for each student. Responses included not at all, somewhat true, very true, and definitely true. Substantial research has indicated that CU traits are an important feature of psychopathy syndromes and are associated with a wide array of problem behavior in children and adolescents (DeLisi, 2009; Frick & White, 2008). The ICU is a relatively new measure that is an extension of the Antisocial Process Screening Device (APSD; Frick & Hare, 2001), which has been shown to be a useful measure of psychopathic traits (Frick & White, 2008; Vaughn & Howard, 2005). However, one of the weaknesses of the APSD is the lack of items and subsequent reliability of CU domain. The ICU was designed to surmount the weaknesses of assessing callous-unemotionality in the APSD. A recent study of the ICU using confirmatory methods suggests a three-factor structure comprised of a callous factor, uncaring factor, and unemotional factor (Kimonis et al., 2008). Dimension reduction techniques in the current study also supported a three-factor structure consisting of callous (α = .94), uncaring (α = .93), and unemotional factors (α = .89). The total score internal consistency reliability was excellent (α = .92).

**TAKS. (Texas Education Agency [TEA], 2006):** The TAKS is the state of Texas accountability test. It is an untimed, criteria-referenced reading comprehension test comprised of multiple choice questions that assess key skills (i.e., literal meaning,

vocabulary, and critical reasoning). The internal consistency of the Grade 7 test as indexed by coefficient α is .89 and .88 for Grade 8. Raw scores are converted to both standard scores and lexile scores. Standard scores are the dependent measure used in this report.

**Group Reading Assessment and Diagnostic Evaluation. (GRADE; Williams, 2001):** The GRADE is a group-based, norm-referenced untimed test. For Passage Comprehension, the students read five to six narrative or expository excerpts and answer multiple choice questions that require questioning, predicting, clarifying, and summarizing text. A standard score was computed for passage and represents the dependent measure analyzed. Coefficient α for the Passage Comprehension subtest in the entire sample was .87 at the pretest time point.

**Woodcock-Johnson III Reading Comprehension:** (WJ-III; Woodcock, McGrew, & Mather, 2001). The Passage Comprehension subtest uses a cloze procedure to assess sentence level comprehension by requiring the student to read a sentence or short passage and fill in missing words based on the overall context. The Passage Comprehension subtest has a median reliability of .83 for students aged 5 to 19 years and for this sample internal consistency was excellent (α = .93). Standard scores from this test were used as the dependent measure.

**Kaufman Brief Intelligence Test–2. (KBIT-2; Kaufman & Kaufman, 2004):** To assess Intelligence Quotient (IQ), both the Matrices and Verbal Knowledge subtests of the KBIT-2 were administered. Internal consistency values for the subtests and composite range from . 87 to .95 and test–retest reliabilities range from .80 to .95, in the age range of the students in this study (Kaufman & Kaufman, 2004). The Verbal Knowledge subtest assesses receptive vocabulary and general information (e.g., nature and geography). Matrices assess nonverbal memory and problem-solving ability. The participant is required to choose one of the six illustrations that best corresponds to the question read by the examiner. The composite score was used for analyses.

### Data Analysis Plan

We used LCA to determine the optimal number of latent subgroups based on the SWAN items. The basic advantage of LCA is that it finds unobservable trends in data or relatively distinct ‘‘types’’ of youths within the sample. The underlying assumption of LCA is that the relationship among indicator variables (i.e., dichotomous variables used to derive latent classes) can be explained by a finite number of categorical latent subgroups. These techniques are thus person-centered analyses as opposed to factor analyses that are variable centered (Ruscio & Ruscio, 2004).[1]

## Results

### LCA

All 18 symptoms of attention and activity–impulsivity were significant contributors to distinguishing classes. The empirical fit indices showed that the four-class solution exhibited

[1]Latent class analysis (LCA) was carried out using LatentGOLD version 4.5 (Vermunt & Magidson, 2005) software. Analyses examine the fit of a series of different models based on several fit indices, including the Bayesian Information Criterion (BIC). As model fit improves, the value on the BIC decreases. Conceptual fit of models was examined using visual representations of the indicators, their theoretical interpretability, and practical implications. Missing data were imputed using full information maximum likelihood estimation. Next, the nature of the classes was investigated by examining class differences on a series of external covariates. Chi-square and analysis of variance (ANOVA) using Bonferroni and Games-Howell post hoc tests were used for the examination. We also computed effect sizes ($\eta^2$) to assess the magnitude of the class differences. These analyses were executed using SPSS (version 17.0) and provide a detailed empirical portrait of the identified classes and also facilitates establishment of external validity.

the best fit with respect to Bayesian Information Criterion (BIC) values (BIC = 3,322.33). To test whether the three-class solution was more parsimonious compared to the four-class solution, a conditional bootstrap simulation with 1,000 iterations was executed comparing the four-class solution with the three-class solution. Results revealed that the four-class solution was the superior fit to the data (−2LL differential = 231.13, $p < .0001$).

The conceptual fit of the models was determined through visual inspection. This procedure involves plotting the proportional values for each indicator variable (i.e., symptom) by each class. Results (see Figure 1) show that classes are clearly distinguishable and are comprised of an attentive/ non-hyperactive subgroup (Class 1, $N = 309$), an inattentive/non-hyperactive–impulsive subgroup (Class 2, $N = 50$), or attentive/hyperactive–impulsive subgroup (Class 3, $N = 32$), and a combined inattentive/hyperactive–impulsive subgroup (Class 4, $N = 41$). In sum, the four-class model was conceptually clear and matched current *DSM-IV-TR* criteria (APA, 2000), was parsimonious, and possessed greater statistical fit than alternative solutions did.

### Comparative Analysis of Classes

The comparative analysis of external covariates across latent classes is shown in Table 2. Demographically, chi-square proportional tests revealed that classes differed to a statistically significant degree in gender, $\chi^2(3) = 20.29$, $p < .001$. Classes 1 (*attentive/non-hyperactive-impulsive; No I/H-I*) and 3 (*attentive/hyperactive–impulsive; HI*) were relatively evenly distributed with respect to gender while Classes 2 (*inattentive/non-hyperactive-impulsive; I*) and 4 (*inattentive/hyperactive–impulsive; I/H-I*) were predominately male (72% and 78%, respectively). There were no compositional differences across classes with respect to race/ethnicity.

There were significant mean differences across classes with respect to the ICU psychopathy total score ($F = 41.88$, $p < .001$) and YPI total score ($F = 8.30$, $p < .001$). There were also significant mean differences in each measures factor scores. Class 4 (I/H-I) possessed the highest ICU and YPI total scores while Class 1 (no I/H-I) possessed the lowest scores on these measures. The largest effect sizes were observed for the ICU callousness ($\eta^2 = 0.24$) and uncaring factors ($\eta^2 = 0.28$). Although statistically significant differences were found for the YPI factor scores, these effects were small. Across the psychopathy scores, Class 4 (I/H-I) consistently differed from Class 1 (no I/H-I) group in post hoc tests. Greater variation was found in post hoc testing across classes for the ICU total and factor scores compared to the YPI total and factor scores. There were also significant ($p < .001$) mean score differences across the three academic achievement tests. Class 4 had the lowest mean level scores on these tests and once again differed from Class 1 in post hoc tests. Class 4 (I-H/I) also differed from the Class 3 (H-I) on the TAKS and Test of Sentence Reading Efficiency (TOSRE). The effect sizes were similar in size across all achievement tests ranging from 0.07 to 0.10. Finally, there were no significant mean differences with respect to IQ. The substantive and practical differences among the four classes are discussed next.

## Discussion

Naturally, there are limitations that must be considered before interpreting the current findings. There are limits to the extent to which study findings are generalizable to all youths because the study sample is comprised of middle school students who were predominantly economically disadvantaged and struggling in school. The limitations of questionnaires, even with self and teacher informants are well known (Lahey et al., 2004). The study would have been stronger with reports from parents and data on a broader range of behaviors associated with psychopathy. Moreover, the data are correlational and cannot be used to infer causal directions. Longitudinal studies are sorely needed in this area, given

the high rates of school-based difficulties and educational failure among youths with ADHD and conduct disorders in addition to juvenile and adult offender populations. Despite these limitations, the current study provides new evidence of the expanding role of affective or CU traits to the HIA–CP overlap and the importance of fledgling psychopathy to other developmental outcomes beyond aggression and delinquency.

### Implications for Fledgling Psychopathy Research

The best-fitting latent class solution yielded categories of traits that largely comported with diagnostic information on the subtypes of ADHD (APA, 2000; Lahey et al., 1994). Without question, most youths (71.5% that comprised Class 1) had neither attention nor hyperactivity–impulsivity problems. These youths were also the least psychopathic, least callous, and most caring. Their personalities were characterized by low scores on the affective and behavioral facets of psychopathy as measured by the YPI. Youths in Class 1 (no I/H-I) had among the highest IQs, scored highest on the GRADE and TAKS, and scored second highest on the TOSRE. To recall the items from Figure 1, youths in Class 1 are able to demonstrate close and sustained attention, listen and follow directions, organize, keep track of things, and remember daily activities. In the classroom, youths in Class 1 are able to sit still, to remain seated, play quietly, settle themselves, control their talking, blurting out, and interrupting, and wait their turn. In short, youths in Class 1 were prosocial, demonstrated social competence, and did not present with psychopathic traits. Youths in Class 1 would not meet criteria for behavioral disorders and serve as a normative control group.

Youths in Class 2 (I) comprised 11.6% of the sample and demonstrated traits that appeared consistent with the ADHD predominantly inattentive type. Males were overrepresented in Class 2 by a factor of 2.6. Other than Class 4 (I-H/I), which is discussed later, youths in Class 2 scored highest on the ICU total score, ICU uncaring factor, and YPI interpersonal factor. Youths in Class 2 scored highest on the ICU unemotional factor, even higher than youths in Class 4. Although the group differences were not statistically significant, youths in Class 2 had the lowest IQ and scored significantly lower on the GRADE, TAKS, and TOSRE than youths in Class 1.

Youths in Class 3 (H-I) comprised 7.4% of the sample and had traits that appeared consistent with the ADHD predominantly hyperactive–impulsive type. Compared to their control peers in Class 1, youths in Class 3 had significantly greater CU traits evidenced by elevated scores on the ICU total score and callousness and uncaring factors. They also had higher YPI scores albeit not at conventional levels of statistical significance. Youths in Class 3 had the highest IQs (again, IQ differences were not significant in the ANOVA model) and they scored comparably on the GRADE, TAKS, and TOSRE. As conveyed in Figure 1, youths in Class 3 were noteworthy for their hyperactivity, impulsivity, and generally low self-regulation.

Youths in Class 4 (I-H/I) comprised of 9.5% of the sample and had traits that appeared consistent with the ADHD combined type. Males were overrepresented in Class 4 by a factor of 3.5. With the exception of IQ, youths in Class 4 were significantly discrepant from the control youths in Class 1 (no I/H-I) for every measure. Youths in Class 4 were the most CU, the most psychopathic, and had the lowest scores on the GRADE, TAKS, and TOSRE. These youths had global impairments in self-regulation (as displayed in Figure 1) and behaviorally appeared to be the contrapositive of the pro-social youths in Class 1. Youths in Class 4 were similar to the most severe externalizing groups in other studies of ADHD, CP, and self-regulation (e.g., Beaver, DeLisi, Vaughn, & Wright, 2010;Beaver, DeLisi, Wright, & Vaughn, 2009;Hinshaw et al., 2002;Lahey et al., 2004;Lynam, 1996,[1997],[1998];Moffitt,

1993;Nigg et al., 1998;Vaughn, Beaver, & DeLisi, 2009;Vaughn, DeLisi, Beaver, & Wright, 2009b).

## Implications for School and Juvenile Justice Practitioners

Substantively and theoretically, the most intriguing findings center on the co-occurrence of CU traits and reading comprehension among youths in Class 4. Although youths in Class 4 were generally the most inattentive, hyperactive, and psychopathic, their IQs were not significantly different from peers in the control or other two classes. Yet, their GRADE scores were significantly lower than their control peers, their TAKS and TOSRE scores were significantly lower than Class 1 (no I/H-I) and Class 3 (H-I) peers. Youths in Class 4 scored lower than Class 2 (I) on all educational measures and had lower IQs although these differences were not statistically significant. Compared to youths in Class 2 (I), who were inattentive and low performers on the GRADE, TAKS, and TOSRE, youths in Class 4 were significantly more psychopathic based on ICU unemotional traits and YPI total score.

We speculate that the affective, behavioral, and interpersonal deficits that psychopathic youths demonstrate not only have implications for their externalizing behaviors but also for their educational performance. An interpersonal style characterized by callousness and unemotionality could mean that psychopathic youths simply do not care, engage, or connect enough to their school work, and the result is comparatively lower performance on tests. The same indifference and CU style that facilitates harming others also likely explains an indifferent, underachieving style in school, and this is even more glaring when IQ levels are not discrepant from peers. It is also more broadly consistent with the stress immunity that is characteristic of psychopathic personality generally. For example, Barry et al. (2000) observed that, ‘‘children high on CU traits, despite showing high rates of conduct problems and the negative events often associated with them (e.g., peer rejection and discipline confrontations), are not as distressed by these behaviors as children with conduct problems who do now show these traits’’ (p. 339).

By including measures of CU traits, the LCA allows further discernment of the overlap between HIA and CP problems as they relate to educational outcomes. This has important implications for theory and practice. There is interesting overlap between children who are primarily inattentive (Class 2) and the most severe group (Class 4; I/H-I) in that both groups performed relatively poorly on the reading tests. Whereas poor school performance for Class 2 (I) appears to be a function of global problems of inattention, it appears to be a function of global insouciance, or a devil-may-care approach for youths in Class 4. This is a meaningful distinction theoretically (Lynam, 1996) as fledgling psychopaths are less likely to care about school performance compared to youths with attention deficits who may be earnest in their studies yet still underperform. A multitude of school-based interventions exist for students with ADHD (Power, Tresco, & Cassano, 2009), and strategies that seek to improve academic competence (e.g., active participation, goal setting, peer and parent tutoring, etc.) and strategies that seek to improve social competence (e.g., social skills training, promoting sustained friendships, lunchroom and playground interventions, etc.) might inculcate greater school attachment in youths who display psychopathic traits.

Beyond teaching, learning, and school-based interventions, children who demonstrate signs of fledgling psychopathy will also invariably face social control mechanisms in school. They are likely to receive in-school and out-of-school suspensions as a result of their CP, which given their educational deficits, sets them further behind their peers academically. Here, school resource officers can serve as an effective resource to recognize the cardinal features of fledgling psychopathy—namely, the CU traits—to best connect adolescents and their parents to needed services. For students with formal diagnoses and an Individualized Education Program (IEP), school resource officers and other staff can address the

callousness and uncaring, which the current findings suggest also extends to educational performance.

### Implications for Youth Violence

Earlier in this discussion, we examined a snapshot profile of the prosocial, competent youths in Class 1 a group for whom there is relatively low risk of violence. The behavioral futures of youths in Class 2 and especially Class 4 are conversely not likely as pleasant. Youths who are characterized by HIA and CP problems face a litany of hardships as a result of their deficits in self-regulation and the attendant interpersonal and social responses to those deficits. For instance, a recent survey of an incarcerated youths sample found that adolescents with low self-control or HIA problems were greater than fivefold more likely to become chronic criminal offenders (DeLisi & Vaughn, 2008; Vaughn, Howard, & DeLisi, 2008). Even in nonclinical samples, adults with ADHD are significantly more likely than peers without ADHD too evince psychopathic personality traits, such as blame externalization, rebellious noncomformity, and carefree nonplanfulness (Eisenbarth et al., 2008). In addition, when CU traits are added to this mix, the behavioral outcomes tend to become more severe and the life outcomes more negative. Thus, even though the current study assayed fledgling psychopathy and its relation to academic performance on reading comprehension tests, it is easy to see how fledgling psychopathic personalities will manifest in violent delinquency. Youth violence overwhelmingly correlates with school failure, CP, low self-control, peer rejection, and so on, and CU traits potentiate all of these problems.

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**Figure 1.**
Indicators of inattention and hyperactivity across latent classes.

**Table 1**

Summary of Indicators of Inattention and Hyperactivity

| Indicator | *N* | % |
|---|---|---|
| 1. Give close attention to detail and avoid careless mistakes | 221 | 71.1 |
| 2. Sustain attention on tasks or play activities | 227 | 73.0 |
| 3. Listen when spoken to directly | 262 | 84.2 |
| 4. Follow through on instructions and finish school work/chores | 221 | 71.1 |
| 5. Organize tasks and activities | 232 | 74.6 |
| 6. Engage in tasks that require sustained mental effort | 236 | 75.9 |
| 7. Keep track of things necessary for activities | 244 | 78.5 |
| 8. Ignore extraneous stimuli | 201 | 64.6 |
| 9. Remember daily activities | 253 | 81.4 |
| 10. Sit still (control movement of hands/feet or control squirming) | 245 | 78.8 |
| 11. Stay seated (when required by class rules/social conventions) | 246 | 79.1 |
| 12. Modulate motor activity (inhibit inappropriate running/climbing) | 268 | 86.2 |
| 13. Play quietly (keep noise level reasonable) | 254 | 81.7 |
| 14. Settle down and rest (control constant activity) | 256 | 82.3 |
| 15. Modulate verbal activity (control excess talking) | 223 | 51.6 |
| 16. Reflect on questions (control blurting out answers) | 255 | 71.7 |
| 17. Await turn (stand in line and take turns) | 263 | 84.6 |
| 18. Enter into conversations and games (control interrupting/intruding) | 248 | 79.7 |

**Table 2**

Comparisons Among Four-Class Solution Using Chi-Square and analysis of variance (ANOVA; $N = 432$)

| Covariates | Class 1 (Attentive/ Non-hyperactive, $N = 309$) %, $M$ ($SD$) | Class 2 (Inattentive/ Non-hyperactive, $N = 50$) %, $M$ ($SD$) | Class 3 (Attentive/ Hyperactive, $N = 32$) %, $M$ ($SD$) | Class 4 (Inattentive/ Hyperactive, $N = 41$) %, $M$ ($SD$) | $\chi^2$ | $F$ | $p$ Value | $\eta^2$ |
|---|---|---|---|---|---|---|---|---|
| Gender | | | | | | | | |
| Female | 51.8 | 28.0 | 43.8 | 22.0 | 20.29 | | <.001 | |
| Male | 48.2 | 72.0 | 56.3 | 78.0 | | | | |
| Race/ethnicity | | | | | | | | |
| African American | 36.9 | 30.0 | 40.6 | 41.5 | 5.53 | | n.s. | |
| Asian/Native American | 2.2 | 0.0 | 0.0 | 2.4 | | | | |
| Caucasian | 13.3 | 18.0 | 18.8 | 17.1 | | | | |
| Hispanic | 47.6 | 52.0 | 40.6 | 39.0 | | | | |
| ICU total score | 51.44 (6.61) | 59.64 (9.25) | 56.43 (7.51) | 62.98 (10.97) | | $41.88^{acdf}$ | <.001 | 0.23 |
| ICU callousness | 24.86 (3.79) | 27.95 (4.96) | 29.14 (4.82) | 32.54 (6.87) | | $45.53^{abcd}$ | <.001 | 0.24 |
| ICU uncaring | 12.82 (2.90) | 16.83 (3.35) | 15.68 (3.16) | 17.93 (3.56) | | $55.81^{acdf}$ | <.001 | 0.28 |
| ICU unemotional | 13.75 (2.40) | 14.86 (3.57) | 12.51 (3.83) | 11.61 (3.04) | | $11.44^{bcde}$ | <.001 | 0.07 |
| YPI total score | 117.33 (17.07) | 120.96 (18.70) | 123.36 (15.84) | 131.31 (21.57) | | $8.30^{de}$ | <.001 | 0.06 |
| YPI affective | 28.90 (5.22) | 30.56 (4.82) | 32.07 (6.08) | 29.42 (5.55) | | $5.19^{d}$ | .002 | 0.04 |
| YPI interpersonal | 43.62 (8.27) | 43.69 (9.48) | 45.93 (7.32) | 47.75 (10.38) | | $3.30^{d}$ | .02 | 0.02 |
| YPI behavioral | 35.48 (7.18) | 37.16 (7.06) | 38.24 (6.47) | 41.55 (7.47) | | $9.69^{de}$ | <.001 | 0.06 |
| K-BIT IQ | 96.76 (14.25) | 91.89 (12.15) | 97.03 (12.72) | 93.81 (13.82) | | 1.99 | ns | 0.02 |
| GRADE | 90.89 (11.03) | 83.47 (9.09) | 87.19 (10.60) | 81.92 (10.61) | | $13.80^{ad}$ | <.001 | 0.09 |
| TAKS | 2,174.98 (194.0) | 2,051.97 (149.0) | 2,140.09 (185.4) | 1,998.33 (155.4) | | $5.39^{adf}$ | <.001 | 0.10 |
| TOSRE standard score | 90.57 (14.48) | 82.62 (12.91) | 91.28 (14.87) | 79.67 (16.46) | | $10.22^{adf}$ | <.001 | 0.07 |

*Note.* GRADE = Group Reading Assessment and Diagnostic Evaluation; ICU = Inventory of Callous-Unemotional traits; YPI = Youth Psychopathic Traits Inventory; TAKS = Texas Assessment of Knowledge and Skills.

*Other includes White, Latino/Hispanic, Native American, and Asian. Post hoc comparisons (Bonferroni and Games-Howell) conducted for all ANOVAs:

[a]Classes 1 and 2 are different;

[b]Classes 2 and 3 are different;

[c] Classes 1 and 3 are different;

[d] Classes 1 and 4 are different;

[e] Classes 2 and 4 are different;

[f] Classes 3 and 4 are different;

K-BIT IQ = Kaufman Brief Intelligence Test-2; TOSRE = Test of Sentence Reading Efficiency; Texas Assessment of Knowledge and Skills. (2007).