

## Juvenile Psychopathic Personality Traits are Associated with Poor Reading Achievement

Michael G. Vaughn · Matt DeLisi · Kevin M. Beaver ·  
Jade Wexler · Amy Barth · Jack Fletcher

Published online: 19 October 2010  
© Springer Science+Business Media, LLC 2010

**Abstract** The current study sought to further the understanding of the linkage between maladaptive behavior and cognitive problems by examining the relations between psychopathic personality traits and reading comprehension performance. Data were derived from a study of 432 predominately African-American and Hispanic middle-school students. Dependent variables consisted of three measures of reading comprehension. Psychopathy measures included the Inventory of Callous-Unemotional traits (ICU—teacher rated) and the self-reported Youth Psychopathic traits Inventory (YPI). Findings from regression models indicated that self-report and teacher ratings of psychopathy were statistically significant inverse predictors of reading performance. Specifically, affective facets of psychopathy were potent predictors of reading comprehension over and above ADHD, IQ, and an impulsivity component of psychopathy. Study results extend the utility of psychopathy construct generally and affective traits specifically to reading achievement, which has broad implications. Findings are discussed with respect to future research and prevention.

---

M. G. Vaughn (✉)  
School of Social Work and Department of Community Health, Division of Epidemiology,  
School of Public Health, Saint Louis University, Tegeler Hall, 3550 Lindell Boulevard,  
St. Louis, MO 63103, USA  
e-mail: mvaughn9@slu.edu

M. DeLisi  
Criminology and Criminal Justice Studies, Department of Sociology, Iowa State University,  
Ames, IA, USA

K. M. Beaver  
College of Criminology and Criminal Justice, Florida State University, Tallahassee, FL, USA

J. Wexler  
Meadows Center for Preventing Educational Risk, University of Texas, Austin, TX, USA

A. Barth · J. Fletcher  
Department of Psychology, University of Houston, Houston, TX, USA

**Keywords** Youth psychopathy · Reading comprehension · Academic achievement · Callous-unemotional · Psychopathic traits

### Abbreviations

YPI	Youth Psychopathic traits Inventory
ICU	Inventory of Callous Unemotional traits
TAKS	Texas Assessment of Knowledge and Skills
GRADE	Group Reading Assessment and Diagnostic Evaluation
WJ	Woodcock-Johnson III Reading Comprehension
K-BIT2	Kaufman Brief Intelligence Test-2

### Introduction

There is longstanding evidence of a relationship between antisocial behavior and cognitive and academic functioning [3, 4, 14, 19, 26, 27, 36] as well as a specific linkage between antisociality and reading comprehension difficulties [28, 30, 35, 40]. In her seminal developmental taxonomy, Moffitt [26] theorized that failure to attain basic reading skills contributed to social and academic deficits that facilitate a persistent offending pathway. Empirically, research based on diverse samples (e.g., [25, 34, 35, 36]) has shown multifaceted effects whereby reading problems and antisocial behaviors unfold in a reciprocal fashion. More specifically, these findings suggest that reading problems contribute to antisocial conduct which in turn compromises reading achievement, and/or reading problems directly contribute to antisocial conduct.

Despite the relatively established interrelations between externalizing behavior and reading ability, comparatively less is known about the linkages between reading ability and psychopathic traits. In some studies, for example, there is evidence that suggests higher reading comprehension ability among psychopathic individuals. For instance, Blair and Cipolotti's [5] case study of a patient who developed "acquired sociopathy" following trauma to the right frontal region including the orbitofrontal cortex indicated a reading IQ of 123 on the National Adult Reading Test. Maughan and her colleagues [25] reported that reading problems were associated with disruptive behaviors, but that boys with conduct disorder (not analogous but overlapping with psychopathy) had reading abilities that were on par with boys without the disorder. Similarly, DeMatteo et al. [9] comparative study of 54 community residents with or without criminal history found that mean reader scores among psychopathic persons (as measured by the PCL-R; [15, 16]) were slightly higher than non-psychopathic persons.

Ironically, the above findings contrast with a literature which suggests that psychopathy is a personality disorder which includes neurocognitive impairments relating to the processing of emotional, affective, and abstract information/language [6, 7, 17, 18, 21]. In their review of the cognitive dimensions of psychopathy, Hiatt and Newman [18] observed:

Although psychopaths/language abilities are grossly intact...psychopaths have difficulty using the more subtle or contextual aspects of language. In many instances, this difficulty involves the use of emotional connotation in language, although psychopaths also have difficulty with abstract concepts and global cohesion (p. 340).

In this sense, the language impairments that psychopaths experience center on their inability to “read” or truly appreciate the emotional valence of language [17, 21, 24, 38]. But is the impairment specific to comprehension of emotional language, or do psychopaths evince more basic deficits such as reading comprehension difficulties?

### Study Aims

The current study sought to further the understanding of the linkage between psychopathy and cognitive problems by examining relations between specific features of psychopathy and reading comprehension performance. Specifically, we used two measures of psychopathy—a self-reported inventory that assesses the affective, behavioral, and interpersonal facets of the disorder; and a teacher-report of callous and unemotional traits that assesses the callous, uncaring, and unemotional factors that comprise the central emotional deficit of the syndrome. Although little research has accrued in this area we suspect that youth who exhibit callous personality traits and hence have little commitment and may care very little about performance are not likely to do well on standardized tests. Further, test content that required emotional processing would result in reduced performance. Therefore, we hypothesize that traits that tap the central emotional deficits of primary psychopathy will be inversely associated with reading comprehension performance such that youth with higher levels of these psychopathic personality features will demonstrate lower reading comprehension ability even while controlling for variables such as race, gender, age, IQ, inattention symptoms, and hyperactivity symptoms.

### Methods

#### Participants

The current study was conducted in seven middle schools in a southwestern state. All seven schools had participated in our previous Tier II and Tier III intervention research (see [42, 43]). Although none of these schools met the Title I eligibility, all served highly diverse student populations in terms of ethnicity, gender, and socioeconomic status. Specifically, 43% of the sample was female, 194 students (40%) were African-American, while 211 (43%) were Hispanic, 67 (14%) were Caucasian, 13 (3%) were Asian and 2 (0.41%) were American Indian. The proportions of students did not differ with respect to site. In addition, reduced fee lunch ranged from 40 to 86% across the seven schools.

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 attainment of a standard score greater than 2150 on the Texas Assessment of Knowledge and Skills. Struggling readers were defined as students who either failed TAKS (performance below 2100 standard score), whose test score was within one-half of one standard error of measurement above the passing criteria (performance within 2100–2150 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 special education students with very low academic achievement in reading. Of the 354 struggling readers, 181 students did not respond to instruction provided the previous year (see [42, 43]) and were randomized to receive a second year of

Tier III intervention. The institutional review boards from each of the participating universities approved the conduct of this research, as did the three school districts.

## Measures

### *Psychopathic Features*

The Youth Psychopathic Traits Inventory (YPI) [1] and the Inventory of Callous-Unemotional traits (ICU; Teacher Report, Unpublished rating scale by Paul J. Frick, Department of Psychology, University of New Orleans, pfrick@uno.edu) were implemented one time in the spring of 2008. 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 were 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, applies very much/definitely). There have been a proliferation of studies using the YPI in recent years (e.g., [2, 10, 11, 23, 29, 31] with results supporting the reliability and validity of this instrument in assessing psychopathic features in children and adolescents. Factor analytic tests of the YPI identified a 3-factor structure consisting of affective, behavioral, and interpersonal domains. In the present study, we conducted principal components analysis with promax rotation and found these same three factors. The reliability coefficients are good to excellent for the YPI total score ( $\alpha = .91$ ) and affective ( $\alpha = .71$ ), behavioral ( $\alpha = .83$ ), and interpersonal ( $\alpha = .86$ ) facets.

The ICU Rating scale was completed by classroom teachers. Teachers read items (e.g. expresses his/her feelings openly) and selected an appropriate rating for each student. Responses included: not at all, somewhat true, very true, and definitely true. Callous-unemotional traits are an important feature of psychopathy syndromes and are associated with a wide array of problem behavior in children and adolescents [8, 13]. The ICU is a relatively new measure that is an extension of the Antisocial Process Screening Device (APSD; [12], which has been shown to be a useful measure of psychopathic traits [13, 41]. However, one of the weaknesses of the APSD is the lack of items and subsequent reliability of callous-unemotional 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 indicated a three factor structure comprised of a callous factor, uncaring factor, and unemotional factor [22]. Dimension reduction techniques in the present study also supported a three factor structure consisting of callous ( $\alpha = .94$ ), uncaring ( $\alpha = .93$ ), and unemotional factors ( $\alpha = .89$ ). The total score internal consistency reliability was excellent ( $\alpha = .92$ )

### *Texas Assessment of Knowledge and Skills (TAKS; [32, 33])*

The TAKS is the state of Texas accountability test. It is an untimed, criteria-referenced reading comprehension test. Multiple choice questions are designed to assess the literal meaning of the passage, vocabulary, and different aspects of critical reasoning about the material read. The internal consistency (coefficient alpha) of the Grade 7 test is .89 [33]. In latent-variable analyses of the students in Grades 6–8 who comprised the parent sample of the students reported here, the TAKS measure loaded strongly on a comprehension factor with other measures of reading comprehension including the WJ-III Passage Comprehension subtest and the GRADE (see below). Other studies evaluating criterion-related

validity have compared student performance on TAKS with student performance on national assessments, such as The National Assessment of Educational Progress (NAEP) and the norm-referenced Iowa Tests<sup>®</sup>, and on college readiness measures [33]. 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; [37])*

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. Reliability and validity information is provided in the GRADE technical manual [37]. A standard score was computed for Passage Comprehension and represents the dependent measure analyzed. Coefficient alpha for the Passage Comprehension subtest in the entire sample was .87 at the pre-test time point.

#### *Woodcock-Johnson III Reading Comprehension (WJ-III; [39])*

At both pre-test and post-test, students were administered the Passage Comprehension subtest. The Passage Comprehension subtest utilizes 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 0.83 in the age range of 5–19 years. The Passage Comprehension subtest was administered individually to students. Standard scores from this test were used as the dependent measure. Internal consistency was excellent ( $\alpha = .93$ ).

#### *Kaufman Brief Intelligence Test-2 (KBIT-2; [20])*

To assess 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 [20]. The most difficult items use abstract stimuli to complete a  $2 \times 2$  or  $3 \times 3$  matrix. The Verbal Knowledge subtest assesses receptive vocabulary and general information (e.g., nature, geography). The participant is required to choose one of six illustrations that best corresponds to the question read by the examiner. The composite score was used for analyses.

#### *Attention and Hyperactivity*

The Symptoms and Normal-behavior Rating Scale (SWAN) was used to assess attention, hyperactivity and related behavioral dimensions. The SWAN was developed to address the non normality present in pathology oriented rating scales typically used to rate behavior for ADHD. As these scales are based on ratings of severity, distributions are often skewed. The SWAN was developed to address this issue by rewording the 18 DSM- IV ADHD items dimensionally, placing each one on a 7 point Likert-type scale ranging from Far Below Average (−3) to Far Above Average (+3). The SWAN is completed by the teacher and yields scores for Inattention and Hyperactivity-Impulsivity behaviors.

## Analyses

Data analysis proceeded in several interlocked steps. First, a zero-order correlation matrix was computed for study variables. Next, we executed Ordinary Least Squares (OLS) regression analyses with the TAKS, Woodcock-Johnson reading passage comprehension, and GRADE serving as dependent variables. OLS regression is appropriate due to the interval nature of the dependent variables. Given the somewhat different way these measures assessed reading comprehension we executed separate regression instead of examining a general latent construct for two reasons: (1) the relations between psychopathy facets and reading comprehension are largely unexplored, and (2) we wanted to replicate the effects across several measures.

The first set of regression models included age, gender, ethnicity, K-BIT 2, and attention and hyperactivity measures along with the total scores from the YPI and ICU. The second step of regression models evaluated the factor scores from the YPI and ICU in order to elucidate which facets of psychopathy were associated with the reading assessment measures. Data was evaluated with respect to its distributional properties both statistically and graphically for skewness, kurtosis, normality, and multicollinearity, with few difficulties noted in this regard. Analyses were conducted using SPSS 17.0 and Stata 10SE.

## Results

### Bivariate Correlations

The zero-order correlations along with means and standard deviations of study variables are presented for in Table 1. There are significant positive intercorrelations between both of the psychopathy assessments total and factor scores. Importantly, there is a significant moderate association between the teacher rating total ICU score and the self-reported total YPI score ( $r = .33$ ,  $P < .001$ ). Overall, there was a pattern of significant correlations between the psychopathy total and factor scores and each of the dependent reading measures, the TAKS, WJ Passage Comprehension, and the GRADE.

### Multivariate Models Predicting TAKS Scores

The first regression model (Table 2) predicting TAKS scores used the total scores from both psychopathy measures. Findings indicate that both the YPI ( $\beta = -.14$ ,  $P < .01$ ) and ICU ( $\beta = -.21$ ,  $P < .001$ ) total scores were inversely associated with the TAKS score while controlling for age, ethnicity, gender, IQ, and inattention and hyperactivity symptoms. Age ( $\beta = -.19$ ,  $P < .001$ ) and IQ ( $\beta = .48$ ,  $P < .001$ ) were also significantly associated with TAKS scores with age being inversely related and IQ displaying a strong positive effect. Both inattention and hyperactivity were not significant with the other variable in the equation. Next, we wanted to assess which specific psychopathy factors were associated with TAKS score (Table 3). Results of this second regression model indicated that the ICU callousness factor ( $\beta = -.14$ ,  $P < .05$ ) and the YPI behavioral factor ( $\beta = -.17$ ,  $P < .05$ ) were driving the associations with TAKS scores.

**Table 1** Means, standard deviations, and zero-order correlations of study variables

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. ICUtotal	54.30	9.86	–													
2. ICUcallous	26.58	5.83	.91***	–												
3. ICUuncaring	14.10	4.18	.84***	.74***	–											
4. ICU-UE	13.62	3.26	.33***	.03	–.06	–										
5. YPItotal	119.89	19.32	.31***	.31***	.31***	0.00	–									
6. YPIbehavior	36.90	7.58	.29***	.31***	.31***	–.05	.85***	–								
7. YPIinterspers	44.07	9.25	.19***	.20***	.19***	–.04	.88***	.60***	–							
8. YPIaffective	29.52	5.49	.33***	.28***	.27***	.17**	.72***	.46***	.50***	–						
9. TAKS	2110.23	188.96	–.41***	–.39***	–.34***	–.11*	–.24***	–.27***	–.13**	–.25***	–					
10. WJ-passage comp	90.37	13.36	–.31***	–.34***	–.34***	–.26***	.01	–.17**	–.14**	–.11*	–.24***	.62***	–			
11. GRADE	88.17	11.73	–.29***	–.25***	–.25***	–.32***	–.02	–.28***	–.23***	–.20***	–.33***	.66***	.61***	–		
12. IQ	95.23	14.03	–.12*	–.15**	–.09	.03	–.02	–.00	.01	–.13*	.57***	.63***	.46**	–		
13. Inattention	2.23	3.19	.49***	.48***	.54***	–.06	.22***	.22***	.13*	.22***	–.29***	–.26***	–.30***	–.11	–	
14. Hyperactive	1.72	3.00	.36***	.47***	.40***	–.26***	.23***	.24***	.16**	.15**	.19**	–.19**	–.21***	–.06	.69**	–

Note: \*  $P < .05$ , \*\*  $P < .01$ , \*\*\*  $P < .001$

**Table 2** Summary of regression models predicting TAKS scores

	B	S.E	$\beta$
Model 1			
Race	2.58	4.81	.02
Gender	-10.67	17.41	-.03
Age	-51.97	12.70	-.19***
K-BIT IQ	6.51	.63	.48***
Inattention	-3.73	3.82	-.06
Hyperactivity	1.04	3.76	.02
YPI total score	-1.32	.46	-.14**
ICU total score	-3.98	1.00	-.21***
Constant	2490.35	189.56	
<i>F</i>	34.25		
<i>R</i> -square	.492		
Model 2			
Race	5.00	4.93	.05
Gender	-9.82	18.32	-.03
Age	-50.63	12.66	-.19***
K-BIT IQ	6.40	.64	.48***
Inattention	-3.81	3.94	-.06
Hyperactivity	1.20	4.06	.02
ICU callousness	-4.41	2.22	-.14*
ICU uncaring	-1.98	3.12	-.04
ICU unemotional	-4.31	2.77	-.07
YPI behavioral	-4.14	1.51	-.17*
YPI interpersonal	1.51	1.23	.07
YPI affective	-3.26	1.97	-.10
<i>F</i>	23.70		
<i>R</i> -square	.51		

\*  $P < .05$ , \*\*  $P < .01$ , \*\*\*  $P < .001$ 

### Multivariate Models Predicting Woodcock Johnson Reading Comprehension Scores

We employed identical models as those reported in the prediction of the TAKS scores above. The first regression model (Table 3) predicting WJ Passage Comprehension scores used the total scores from both psychopathy measures. Findings indicated that both the YPI ( $\beta = -.10$ ,  $P < .05$ ) and ICU ( $\beta = -.13$ ,  $P < .05$ ) total scores were inversely associated with the TAKS score while controlling for age, ethnicity, gender, IQ, and inattention and hyperactivity symptoms. Age ( $\beta = -.12$ ,  $P < .05$ ) and IQ ( $\beta = .56$ ,  $P < .001$ ) were also significantly associated with reading passage scores. Again, IQ showed a strong positive effect in the model. Both inattention and hyperactivity were not significant. Next, we again wanted to assess which specific psychopathy factors were associated with WJ Passage Comprehension score (Table 3). Results of this second regression model indicated that the ICU callousness factor ( $\beta = -.16$ ,  $P < .05$ ) and the YPI affective factor ( $\beta = -.15$ ,  $P < .05$ ) were the psychopathy facets most associated with reading comprehension scores.



**Table 3** Summary of regression models predicting Woodcock Johnson Passage Comprehension Scores

	B	S.E	$\beta$
<b>Model 1</b>			
Race	-.18	.34	-.02
Gender	1.71	1.25	.06
Age	-2.25	.91	-.12*
K-BIT IQ	.54	.04	.56***
Inattention	-.29	.27	-.07
Hyperactivity	-.19	.27	-.04
YPI total score	-.07	.03	-.10*
ICU total score	-.17	.07	-.13*
Constant	82.55	13.57	
<i>F</i>	32.53		
<i>R</i> -square	.479		
<b>Model 2</b>			
Race	-.33	.35	-.04
Gender	2.43	1.31	.09
Age	-2.38	.90	-.13*
K-BIT IQ	.51	.05	.54***
Inattention	-.37	.28	-.09
Hyperactivity	-.06	.29	-.01
ICU callousness	-.37	.16	-.16*
ICU uncaring	.06	.22	.02
ICU unemotional	.13	.20	.03
YPI behavioral	.11	.11	.06
YPI interpersonal	-.09	.09	-.06
YPI affective	-.36	.14	-.15*
<i>F</i>	22.73		
<i>R</i> -square	.494		

\*  $P < .05$ , \*\*  $P < .01$ , \*\*\*  $P < .001$ 

### Multivariate Models Predicting GRADE Scores

The final dependent measure of reading achievement is the GRADE. Consistent with other analyses, the first regression model (Table 4) predicting GRADE scores used the total scores from both psychopathy measures. Findings indicate that only the YPI ( $\beta = -.22$ ,  $P < .001$ ) total score was inversely associated with the GRADE score. Again, age ( $\beta = -.13$ ,  $P < .05$ ) and IQ ( $\beta = .38$ ,  $P < .001$ ) were also significantly associated with GRADE scores. As in previous models, both inattention and hyperactivity were not significant with the other variable in the equation. With respect to specific psychopathy factor scores, the second regression model (Table 3) revealed that the ICU uncaring factor ( $\beta = -.18$ ,  $P < .05$ ) and the YPI affective factor ( $\beta = -.26$ ,  $P < .001$ ) were driving the associations with GRADE scores.

**Table 4** Summary of regression models predicting GRADE scores

	B	S.E	$\beta$
<b>Model 1</b>			
Race	.52	.34	.08
Gender	.29	1.21	.01
Age	-2.11	.89	-.13*
K-BIT IQ	.32	.04	.38***
Inattention	-.60	.27	-.16*
Hyperactivity	.08	.26	.02
YPI total score	-.13	.03	-.22***
ICU total score	-.08	.07	-.07
Constant	101.90	13.21	
<i>F</i>	19.80		
<i>R</i> -square	.359		
<b>Model 2</b>			
Race	.61	.34	.09
Gender	1.10	1.26	.05
Age	-2.08	.87	-.13*
K-BIT IQ	.31	.04	.37***
Inattention	-.42	.27	-.12
Hyperactivity	-.10	.28	-.02
ICU callousness	.22	.15	.11
ICU uncaring	-.50	.21	-.18*
ICU unemotional	-.04	.19	-.01
YPI behavioral	-.06	.10	-.04
YPI interpersonal	-.02	.08	-.01
YPI affective	-.55	.14	-.26***
<i>F</i>	15.07		
<i>R</i> -square	.393		

\*  $P < .05$ , \*\*  $P < .01$ , \*\*\*  $P < .001$ 

## Discussion

We examined the relations between psychopathic personality features and reading achievement. The main study hypothesis that psychopathic personality traits would be inversely associated with reading performance in controlled multivariate analysis was supported. Both self-report and teacher ratings of psychopathy were significant inverse predictors across regression models. Specifically with respect to the ICU, the callousness factor was a significant a predictor of TAKS and WJ scores and the uncaring factor was a significant predictor of GRADE scores. The YPI behavioral factor was predictive of TAKS score and the YPI affective factor predicted both WJ and GRADE scores. As expected, IQ was positively associated with reading achievement across models. Unexpectedly, inattention and hyperactivity were non-significant with the psychopathy measures in the models.

These findings extend the utility of the psychopathy construct generally and affective traits specifically to reading achievement, which has broad implications. Although there is an established reciprocal relationship between reading deficits and antisocial behavior globally (e.g., [28, 30, 35]), the role that psychopathic features play is understudied. Although it is not surprising that behavioral features of psychopathy such as impulsivity would be associated with poor reading achievement, the comparatively more potent effects of affective features as assessed by both self-report and teacher rating measures in this equation is unique. We speculate that there are two ways by which affective features manifest in producing lower reading achievement scores. First, numerous studies have shown that youth with callous-unemotional deficits process emotion-laden information (i.e., words, pictures) in abnormal ways compared to youth without these traits [13]. Some reading comprehension involves understanding emotion to some degree. Youth compromised in this ability are likely to score lower. Second, just as youth who harm others are relatively indifferent to the consequences of their actions and lack the requisite empathy that facilitate caring toward others, youth with affective deficits are also quite likely not to care about their performance on reading achievement tests. These youth are also perhaps not likely to generate sufficient emotional investment in their own academic careers, not care enough about teachers and parent concerns regarding their achievement, or be otherwise disengaged in school.

The findings possess several implications for future research and prevention. Future investigations of reading should employ measures that assess affective deficits. This would not only include standard teacher and self-report measures, but also neuropsychological tests involving emotional processing. More refined analyses that examine specific emotional evocative words or passages in relation to affective trait status of youth are needed. With respect to prevention, finding ways to intervene with youth who are relatively unconcerned or emotionally disengaged with school could be an important avenue of future intervention. Interventions that assume all youth are motivated to do well in reading achievement may be inefficient if indeed affective deficits are important moderators of success.

As with other studies, there are several limitations that must be considered when interpreting study results. First, there are limits to the extent to which study findings are generalizable to all youth. The study sample is comprised of middle school students who were struggling in school. The limitations of questionnaires, even with self and teacher informants are well-known. The study would have been stronger with reports from parents and data on a broader range of behaviors associated with psychopathy. Given that the data is cross-sectional in nature, correlational and regression analyses cannot infer causal directions. It is not clear whether reading problems led to psychopathic tendencies, or vice versa, but both are possibilities in terms of the previous literature, as well as reciprocal, bi-directional models. Additionally, the relations could be correlational and not causal in nature. Longitudinal studies are sorely needed in this area given the high rates of reading difficulties apparent in juvenile and adult offender populations. Further, we do not have item level data to assess whether there are differential effects with respect to words and passages that contain emotion-laden language. Despite these limitations the present study provides new evidence of the expanding role of affective or callous-unemotional traits and their importance to other developmental outcomes beyond delinquency and aggression.

**Acknowledgments** This research was supported by grant P50 HD052117 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Eunice Kennedy Shriver National

Institute of Child Health and Human Development or the National Institutes of Health. The authors are grateful for support from the Greater Texas Foundation and the Meadows Center for Preventing Educational Risk. The contents of the article are solely the responsibility of the authors and do not necessarily represent the official view of the National Institutes of Health.

## References

1. Andershed H, Kerr M, Stattin H, Levander S: Psychopathic Traits in Non-Referred Youths: A New Assessment Tool. In: Blaauw E, Sheridan L (Eds) *Psychopaths: Current International Perspectives*, The Hague, Elsevier, pp. 131–158, 2002
2. Andershed H, Kerr M, Stattin H: Understanding the abnormal by studying the normal. *Acta Psychiatrica Scandinavica* 106:75–80, 2002
3. Arnold DH: Co-occurrence of externalizing behavior problems and emergent academic difficulties in young high-risk boys: A preliminary evaluation of patterns and mechanisms. *Journal of Applied Developmental Psychology* 18:317–330, 1997
4. Beaver KM, DeLisi M, Wright JP, Vaughn MG, Boutwell B: The mutual unfolding of self-control and language skills: Evidence of a common etiological pathway. *Criminology* 46:939–970, 2008
5. Blair RJR, Cipolotti L: Impaired social response reversal: A case of “acquired sociopathy.” *Brain* 123:1122–1141, 2000
6. Brinkley CA, Bernstein A, Newman JP: Coherence in the narratives of psychopathic and nonpsychopathic criminal offenders. *Personality and Individual Differences* 27:519–530, 1999
7. Brinkley CA, Newman JP, Harpur TJ, Johnson M: Cohesion in texts produced by psychopathic and nonpsychopathic criminal inmates. *Personality and Individual Differences* 26:873–885, 1999
8. DeLisi M: Psychopathy is the unified theory of crime. *Youth Violence and Juvenile Justice* 7:256–273, 2009
9. DeMatteo D, Heilbrun K, Marczyk G: Psychopathy, risk of violence, and protective factors in a noninstitutionalized and noncriminal sample. *International Journal of Forensic Mental Health* 4:147–157, 2005
10. Dolan NC, Rennie CE: Reliability, validity, and factor structure of the Swedish Youth Psychopathic Traits Inventory in a UK sample of conduct disordered boys. *Journal of Forensic Psychiatry & Psychology* 17:217–229, 2006
11. Dolan NC, Rennie CE: Psychopathy checklist: Youth Version and Youth Psychopathic Traits Inventory: A comparison study. *Personality and Individual Differences* 41:779–789, 2006
12. Frick PJ, Hare RD: *The Antisocial Process Screening Device*. Toronto, Multi-Health Systems, 2001
13. Frick PJ, White SF: The importance of callous-unemotional traits for developmental models of aggressive and antisocial behavior. *Journal of Child Psychology and Psychiatry* 49:359–375, 2008
14. Gottfredson MR, Hirschi T: *A General Theory of Crime*. Stanford, CA, Stanford University Press, 1990
15. Hare RD: *The Hare Psychopathy Checklist-Revised manual*. North Tonawanda, NY, Multi-Health Systems, 1991
16. Hare RD: *The Hare Psychopathy Checklist-Revised manual (second edition)*. North Tonawanda, NY, Multi-Health Systems, 2003
17. Hervé HF, Hayes PJ, Hare RD: Psychopathy and sensitivity to the emotional polarity of metaphorical statements. *Personality and Individual Differences* 35:1497–1507, 2003
18. Hiatt KD, Newman JP: Understanding Psychopathy: The Cognitive Side. In: Patrick CJ (Ed) *Handbook of Psychopathy*. New York, The Guilford Press, pp. 334–352, 2006
19. Hinshaw SP: Externalizing behavior problems and academic underachievement in childhood and adolescence: Causal relationships and underlying mechanisms. *Psychological Bulletin* 111:127–155, 1992
20. Kaufman AS, Kaufman NL: *Kaufman Brief Intelligence Test, Second Edition (K-BIT-2)*. Minneapolis, MN, Pearson Assessment, 2004
21. Kiehl KA, Hare RD, McDonald JJ, Brink J: Semantic and affective processing in psychopaths: An event related potential (ERP) study. *Psychophysiology* 36:765–774, 1999
22. Kimonis ER, Frick PJ, Skeem JL, Marsee MA, Cruise K, Munoz LC, Aucoin KJ, Morris AS: Assessing callous-unemotional traits in adolescent offenders: Validation of the Inventory of Callous-Unemotional Traits. *International Journal of Law and Psychiatry* 31:241–252, 2008
23. Larsson H, Andershed H, Lichtenstein P: A genetic factor explains most of the variation in the psychopathic personality. *Journal of Abnormal Psychology* 115:221–230, 2006

24. Lorenz AR, Newman JP: Deficient response modulation and emotion processing in low anxious Caucasian psychopathic offenders: Results from a lexical decision task. *Emotion* 2:91–104, 2002
25. Maughan B, Pickles A, Hagell A, Rutter M, Yule W: Reading problems and antisocial behavior: Developmental trends in comorbidity. *Journal of Child Psychology and Psychiatry* 37:405–418, 1996
26. Moffitt TE: Adolescence-limited and life-course-persistent antisocial behavior: A developmental taxonomy. *Psychological Review* 100:674–701, 1993
27. Patterson GR, DeBaryshe BD, Ramsey E: A developmental perspective on antisocial behavior. *American Psychologist* 44:329–335, 1989
28. Pennington BF, McGrath LM, Rosenberg J, Barnard H, Smith SD, Willcutt EG, Friend A, DeFries JC, Olson RK: Gene  $\times$  environment interactions in reading disability and attention-deficit/hyperactivity disorder. *Developmental Psychology* 45:77–89, 2009
29. Poythress N, Dembo R, Wareham J, Greenbaum PE: Construct validity of the Youth Psychopathic Traits Inventory (YPI) and the Antisocial Process Screening Device (APSD) with justice-involved adolescents. *Criminal Justice and Behavior* 33:26–55, 2006
30. Shelley-Tremblay J, O'Brien N, Langhinrichsen-Rohling J: Reading disability in adjudicated youth: Prevalence rates, current models, and innovative treatments. *Aggression and Violent Behavior* 12:376–392, 2007
31. Skeem JL, Cauffman E: Views of the downward extension: Comparing the Youth Version of the Psychopathy Checklist with the Youth Psychopathic traits Inventory. *Behavioral Sciences and the Law* 21:737–770, 2003
32. Texas Assessment of Knowledge and Skills: Retrieved February 4, 2008, from <http://www.tea.state.tx.us>, 2007
33. Texas Education Agency: Report on the Texas assessment program: A report to the 80th Texas legislature. Austin, TX, Author, 2006
34. Tomblin JB, Zhang X, Buckwalter P, Catts H: The association of reading disability, behavioral disorders, and language impairment among second-grade children. *The Journal of Child Psychology and Psychiatry and Allied Disciplines* 41:473–482, 2000
35. Trzesniewski KH, Moffitt TE, Caspi A, Taylor A, Maughan B: Revisiting the association between reading achievement and antisocial behavior: New evidence of an environmental explanation from a twin study. *Child Development* 77:72–88, 2006
36. Willcutt EG, Pennington BF: Psychiatric comorbidity in children and adolescents with reading disability. *The Journal of Child Psychology and Psychiatry and Allied Disciplines* 41:1039–1048, 2000
37. Williams KT: The Group Reading Assessment and Diagnostic Evaluation (GRADE). Teacher's scoring and interpretive manual. Circle Pines, MN, American Guidance Service, Inc, 2001
38. Williamson SE, Harpur TJ, Hare RD: Abnormal processing of affective words in psychopaths. *Psychophysiology* 28: 260–273, 1991
39. Woodcock RW, McGrew KS, Mather N: Woodcock-Johnson III Tests of Achievement. Itasca, IL, Riverside Publishing, 2001
40. Vacca JS: Crime can be prevented if schools teach juvenile offenders to read. *Children and Youth Services Review* 30:1055–1062, 2008
41. Vaughn MG, Howard MO: Self-report measures of juvenile psychopathy: A comparative review. *Journal of Emotional and Behavioral Disorders* 11:152–162, 2005
42. Vaughn S, Cirino PT, Wanzek J, Wexler J, Barth A, Romain M, et al.: Response to intervention for middle schools students with reading difficulties: Effects of a primary and secondary intervention. *School Psychology Review*, 2009
43. Vaughn S, Wanzek J, Wexler J, Barth A, Cirino PT, Fletcher JM, et al.: The relative effects of group size on reading progress for older students with reading difficulties. *Reading and Writing*, in press

## Author Biographies

**Michael G. Vaughn, PhD** is Assistant Professor in the School of Social Work and holds joint appointments in the Department of Community Health, Division of Epidemiology, School of Public Health and the Department of Public Policy Studies at Saint Louis University.

**Matt DeLisi, PhD** is Associate Professor and Coordinator of Criminal Justice Studies at Iowa State University.

**Kevin M. Beaver, PhD** is Assistant Professor in the College of Criminology and Criminal Justice at Florida State University.

**Jade Wexler, PhD** is Senior Research Associate at the Meadows Center for Preventing Educational Risk.

**Amy E. Barth, PhD** is Assistant Professor in the Department of Psychology, Texas Center for Learning Disabilities, University of Houston, Texas.

**Jack M. Fletcher, PhD** is Distinguished Professor in the Department of Psychology, Texas Center for Learning Disabilities, University of Houston, Texas.