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# Psychopathy: Relations With Three Conceptions of Intelligence

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Psychopathy is often associated with heightened intelligence in the eyes of clinicians and laypersons despite mixed research support for this possibility. We adopted a fine-grained approach to studying the relations among psychopathy and multiple indices of intelligence, including both cognitively based intelligence (CBI) and emotional intelligence (EI), in a large sample of undergraduates ($N$ = 1,257, 70% female, 82% Caucasian). We found no clear support for marked associations between psychopathy and CB I measures, with the magnitudes of these relations being small. With the exception of the dimensions of Fearless Dominance (FD) and Coldheartedness (C), psychopathy dimensions were negatively associated with (EI). In contrast, we found some support for the hypothesis that intelligence served as a protective factor against antisocial behavior among individuals with high levels of psychopathy. On balance, our findings show weak relations between psychopathy and intelligence, suggesting that the link between them may be less robust than theoretical models portray, at least among undergraduates.

*Keywords:* psychopathy, intelligence, emotional intelligence, personality, antisocial behavior

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Psychopathy (or psychopathic personality) comprises a distinctive constellation of interpersonal, affective, and behavioral features, including superficial charm, callousness, impulsivity, and irresponsibility (Hare, 1991/2003). In his classic monograph, *The Mask of Sanity*, Cleckley (1941) depicted psychopaths as hybrid creatures who exhibit a deceptive façade of outward charm, likability, and competence, despite their considerable affective deficits. Cleckley delineated 16 characteristics central to psychopathy, one of which he referred to as good "intelligence." He described psychopaths as possessing "high abilities," "indications of sound reasoning," and "excellent rational powers" (pp. 204–205). At the same time, Cleckley (1946) placed the word intelligence in quotation marks to highlight the point that psychopaths frequently engage in foolish or unwise behaviors that may not *seem* particularly intelligent. Moreover, the assertion that psychopathy is associated with heightened intelligence has been widely disputed by researchers owing to decidedly mixed results (Hare & Neumann, 2008). Some of these conflicting results may stem in part from differences in the operationalization and measurement of both psychopathy and intelligence, both of which are multifaceted constructs. In this article, we attempt to examine further this relation in an undergraduate sample using diverse indices of intelligence.

## Psychopathy

Psychopathy has been increasingly studied in nonforensic settings (Lilienfeld & Fowler, 2006), which is supported by burgeoning evidence that psychopathy is underpinned by one or more dimensions (Edens, Marcus, Lilienfeld, & Poythress, 2006). Researchers have developed several well-validated self-report measures of psychopathy, including the Psychopathic Personality Inventory (now the PPI-R; Lilienfeld & Widows, 2005) and the Personality Assessment Inventory Antisocial Features scale (PAI ANT; Morey, 1991), the latter of which captures predominantly the behavioral features of psychopathy and the overlapping condition of antisocial personality disorder (Edens, Hart, Johnson, Johnson, & Olver, 2000). Factor analyses of psychopathy measures have typically yielded at least two broad, higher-order factors, and sometimes three or four lower-order factors (e.g., Cooke & Michie, 2001; Hare, 2003). Whereas Factor 1 comprises interpersonal and affective traits, such as egocentricity, superficial charm, and callousness, Factor 2 comprises antisocial behavior and

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lifestyle traits, such as impulsivity, irresponsibility, and criminality.

Like other psychopathy measures, factor analyses of the PPI-R generally yield two higher-order factors (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003), FD and Self-Centered Impulsivity (SCI), but the PPI-R places more emphasis on psychopathic personality features and less emphasis on overt antisocial behaviors. Moreover, in contrast to the factors of most psychopathy measures, the PPI-R dimensions are largely orthogonal (Lilienfeld & Widows, 2005). FD maps somewhat onto several other self-report measures of Factor 1 psychopathy and consists of classic primary psychopathy features such as superficial charm and glibness, but also includes potentially adaptive features such as social boldness, stress immunity, venturesomeness, and physical fearlessness. SCI, which overlaps substantially with Factor 2 psychopathy, consists of recklessness, blame externalization, and a narcissistic tendency to exploit others. FD appears to reflect psychologically healthy or adaptive functioning to some extent, whereas SCI reflects maladaptive functioning. This distinction is reflective of the two factors' differential correlates with internalizing and externalizing symptomology and normal personality (Derefinko & Lynam, 2006; Lilienfeld, et al., 2012). In addition, one of the eight subscales of the PPI-R, C, does not load highly on either factor and can be used as a standalone psychopathy indicator assessing lack of empathy, remorse, and lovelessness.

## Psychopathy and Intelligence

The notion that psychopathy is associated with intact or superior intellectual functioning has a long history in clinical lore. Cleckley (1941) was among the first to note that many, if not most, of his psychopathic patients exhibited good "intelligence": "The psychopath is often, if not usually, of superior intelligence when measured scientifically. Some of his accomplishments also indicate he has ability that is average or better when he is using it" (p. 260). Supporting this anecdotal evidence, Crego and Widiger (2016) demonstrated that independent raters considered all but one of Cleckley's (1941) 15 cases, who were ostensibly selected to illustrate prototypical psychopathy, to possess above average to superior intelligence. Furthermore, others have suggested that certain psychopathic traits and behaviors (i.e., superficial charm, interpersonal manipulation) may *require* at least average intelligence (Salekin, Neumann, Leistico, & Zalot, 2004). For instance, intelligence may facilitate the psychopathic individual's success in charming and manipulating others. This idea has pervaded popular culture because laypersons also associate psychopathy with intelligence, high achievement, and superior social skills (Furnham, Daoud, & Swami, 2009). These case descriptions notwithstanding, not all research has supported the notion that psychopathic individuals exhibit heightened levels of intelligence. Some researchers have even deemed psychopathy's association with intelligence the "Hannibal Lecter myth" (DeLisi, Vaughn, Beaver, & Wright, 2010), arguing that the popular film character's marked psychopathic features and superior intelligence have conflated the relationship between the two constructs in the eyes of the public. Nevertheless, their sample comprised forensic inmates, which differed drastically from Cleckley's samples. This lack of a consistent association between psychopathy and heightened intelligence may be due, in part, to differences in the operationalization of psychopathy.

Salekin and colleagues (2004) stated that "Despite the widespread adoption of the connection between psychopathy and intelligence during Cleckley's era, today's notion of psychopathy is no longer explicitly linked to good intelligence" (p. 740). Furthermore, Hare's Psychopathy Checklist-Revised (PCL-R; Hare, 1991/2003), the most widely used psychopathy measure, was largely influenced by Cleckley's work. The PCL-R assesses a number of Cleckley's criteria but does not explicitly include his criterion of good "intelligence." Some researchers contend that the equivocal findings may be due to the type of sample (e.g., forensic, community, undergraduate) in which the association between psychopathy and intelligence is explored. For example, Hare and Neumann (2008) have argued that Cleckley's sample largely comprised educated individuals of average or high socioeconomic status, and that patients—perhaps psychopathic patients, in particular—may be more likely to present with above average intelligence. Nevertheless, Johansson and Kerr (2005) contended that Cleckley may have described only his most striking, potentially most intelligent, patients in his writings, which may conflate the association between psychopathy and intelligence.

Research examining psychopathy's association with intelligence has yielded mixed findings. A meta-analysis by O'Boyle, Forsyth, Banks, and Story (2013) found a very small positive but nonsignificant relation between psychopathy and general mental ability ($r = -.07$). Nevertheless, O'Boyle and colleagues treated psychopathy as a global construct, did not examine the correlates of psychopathy subdimensions due to lack of statistical power, and did not include several studies which have found a positive association between psychopathy and intelligence. Thus, the relation between psychopathy and intelligence may be more nuanced than presented by O'Boyle and colleagues. More broadly, findings concerning the relation between psychopathy and intelligence are inconsistent. A few studies have identified positive relations between psychopathy and intelligence (e.g., McKenzie & Lee, 2015; Vitacco, Neumann, & Jackson, 2005; Vitacco, Neumann, & Wodushek, 2008), whereas others have identified no significant relations (e.g., Gladden, Figueredo, & Jacobs, 2009), and several have found negative relations (e.g., DeLisi et al., 2010; Neumann & Hare, 2008).

Furthermore, psychopathy factors appear to relate differentially to intelligence (Vitacco et al., 2005; Vitacco et al., 2008). Salekin et al. (2004) found that the interpersonal factor of psychopathy correlated modestly and positively with two types of verbal intelligence whereas the affective factor showed a negative association with various types of intelligence. Similarly, Vitacco and colleagues (2008) found that total scores on the screening version of the PCL (PCL: SV) were not significantly associated with IQ scores. Nevertheless, the PCL: SV interpersonal factor displayed an extremely strong positive relationship with a latent variable reflecting full-scale intelligence, and the antisocial factor was moderately positively associated with this latent variable. In contrast, the affective and lifestyle factors were negatively related to intelligence (see also Vitacco et al., 2005). These findings suggest that although some aspects of intelligence, particularly the interpersonal features, relate positively to intelligence, others relate negatively to intelligence. Hence, treating psychopathy as a global construct may obscure opposing relations with intelligence at the

psychopathy factor level, thereby resulting in a net correlation of close to zero (see also Harpur, Hare, & Hakstian, 1989).

## Psychopathy and Multiple Intelligences

Treating intelligence as a global construct may be equally as problematic, because psychopathy appears to relate differentially to different dimensions or types of intelligence. Neumann and Hare (2008) found that global psychopathy was negatively associated with verbal IQ, and relations were strongest for the affective factor (see also DeLisi et al., 2010). Other work has been influenced by alternative models of intelligence, such as those positing multiple intelligences. For example, Sternberg's (1985) influential triarchic model proposes three types of intelligence: analytical, creative, and practical. According to Sternberg, analytical intelligence ("book smarts") is captured by traditional intelligence measures, whereas creative intelligence measures the ability to generate effective solutions in response to novel situations; practical intelligence ("street smarts") measures the ability to respond effectively to real-world social situations. Nevertheless, only one study has examined psychopathy's relations with Sternberg's model of intelligence. Salekin and coauthors (2004) administered multiple measures of intelligence, including measures of verbal intelligence and Sternberg's triarchic abilities, to a sample of detained children and adolescents. Like Vitacco and colleagues (2005), they found that psychopathy's relations with intelligence depended on both the psychopathy dimension and the aspect of intelligence examined. Interpersonal aspects of psychopathy, but not affective traits, were positively associated with verbal intelligence. Similarly, a composite of Sternberg's triarchic abilities were positively but nonsignificantly associated with psychopathy ($r$ = .16) and the interpersonal traits were positively associated whereas the affective traits were negligibly correlated with IQ. Taken together, it is likely that inconsistent research findings in this literature reflect differing conceptualizations of both psychopathy and intelligence.

## Psychopathy and EI

Psychopathy has long been associated with profound emotional deficits. EI may offer additional insight into psychopathy's emotional deficits that may not be adequately captured by traditional intelligence constructs. Broadly defined, EI is the ability to "monitor one's own and others' emotions, to discriminate among them, and to use the information to guide one's thinking and actions" (Mayer & Salovey, 1993, p. 433). Furthermore, research typically distinguishes trait EI from ability EI, the former of which is assessed by self-report measures and the latter of which is assessed by performance-based measures. Broadly, EI relates to adaptive functioning in everyday life, which is evidenced by its positive correlations with social support, better relations with friends and family, stress management skills, and lower rates of substance abuse (Brackett, Mayer, & Warner, 2004). EI may clarify why, regardless of general cognitive ability, psychopathic individuals experience difficulty across multiple domains of functioning, particularly with respect to interpersonal and antisocial behavior (Cleckley, 1941). Nevertheless, few studies have examined psychopathy's associations with EI, and the findings have again been equivocal. Although some researchers have found that psychopathy relates negatively to aspects of EI (Ermer, Kahn, Salovey, & Kiehl, 2012; Malterer, Glass, & Newman, 2008), at least one study has revealed positive relations between psychopathy and EI, even after controlling for IQ (Copestake, Gray, & Snowden, 2013). Making matters more complicated, these relations appear to depend on the subdimensions of psychopathy examined (Ali, Amorim, & Chamorro-Premuzic, 2009; Hanson et al., 2015): Factor 2 traits tend to relate negatively to EI, whereas Factor 1 traits tend to relate positively (Pham, Ducro, & Luminet, 2010).

## Intelligence as a Protective Factor

Heilbrun (1982) proposed that in the presence of psychopathy, intelligence may serve as a protective factor against antisocial behavior, particularly violent crime (see also Salekin, Lee, Schrum Dillard, & Kubak, 2010). Statistical tests of this hypothesis involve examining intelligence as a moderator of the relation between psychopathy and antisocial behavior, with this moderation statistically reflecting a buffering effect. Although psychopathic individuals are not necessarily criminal, the disinhibitory features of psychopathy place individuals at heightened risk for antisocial behaviors (Kennealy, Skeem, Walters, & Camp, 2010). Given these findings, Heilbrun and others have posited that higher levels of intelligence may diminish psychopathic individuals' risk for violent crime, or, at the very least, facilitate their ability to evade detection. Nevertheless, this possibility has received mixed support. Among a sample of offenders, Beggs and Grace (2008) found that psychopathic individuals with higher levels of intelligence were less likely to sexually recidivate. Furthermore, Wall, Sellbom, and Goodwin (2013) demonstrated that intelligence served as a protective factor against relatively frequent antisociality (e.g., petty theft and driving while intoxicated) among undergraduates. In contrast, other studies examining this protective hypothesis have reported either null results (Walsh, Swogger, & Kosson, 2004) or findings in the opposite direction, namely, a potentiating interaction in which high IQ placed psychopathic youths at an *increased* risk of offending (Hampton, Drabick, & Steinberg, 2014). The reasons for these discrepancies are unclear, although they may stem from differences in the operationalizations of psychopathy, especially those that have drifted from Cleckley's conceptualization, and intelligence.

## Current Study

The current study aimed to further clarify psychopathy's relations with multiple conceptions of intelligence: verbal and abstract intelligence, Sternberg's triarchic abilities, and EI. Given the inconsistent findings in the literature, we used two measures of CBI to adopt a more fine-grained approach to examining these relations in a large sample of undergraduates. Additionally, we used a measure of psychopathy that is tied more closely to Cleckley's conceptualization of psychopathy (i.e., the PPI-Short Form) as well as a measure that is more closely tied to the maladaptive and antisocial behaviors and attitudes associated with Factor 2 (or secondary) psychopathy (viz., PAI ANT). Consistent with the idea that intelligence might be specific to each of the dimensions, we hypothesized that psychopathy total scores would not correlate significantly with indices of global intelligence. In light of recent findings suggesting that psychopathy subdimensions may relate

differentially to intelligence, we expected that Factor 1 traits, would correlate positively, albeit modestly, with verbal intelligence and Sternberg's analytical and creative intelligences, whereas Factor 2 traits, including SCI, would correlate negatively, albeit again modestly, with these indices. Similarly, we expected that SCI would correlate negatively with EI, whereas FD would correlate positively with various aspects of EI. In addition, we hypothesized that, in an undergraduate sample, intelligence would serve as a protective factor in the statistical prediction of antisocial behavior, particularly among individuals with elevated Factor 2 psychopathy traits. Finally, in exploratory analyses, we examined whether the associations between psychopathy dimensions and intellective variables differed by gender. Although we advanced no explicit hypotheses concerning these relations, we undertook these analyses in view of scattered but mixed findings that the correlates of psychopathy sometimes differ in males versus females (e.g., Cale & Lilienfeld, 2002; Miller, Watts, & Jones, 2011).

# Method

## Participants and Procedure

Participants ($N$ = 1,257) were undergraduates enrolled in a large, public university in the Southeast United States who completed the study in partial fulfillment of a class research requirement. Data were drawn from a larger study examining personality and interpersonal traits (e.g., Lester, Salekin, & Sellbom, 2013). The sample largely comprised females (70%) who were mostly freshmen (60%) or sophomores (24%). Participants were predominantly Caucasian (82%) or African American (11%). The mean age was 19.32 years ($SD$ = 2.31). The mean self-reported GPA was 3.11 ($SD$ = .55). Participants provided informed consent prior to completing the protocol; the measures required approximately three hours for most participants to complete.

## Measures

### Psychopathy

***Psychopathic Personality Inventory-Short Form (PPI-SF).*** The PPI-SF (Lilienfeld & Andrews, 1996). is a 56-item shortened version of the PPI-R, a well-validated self-report inventory designed to assess core psychopathic personality features. The PPI-SF yields a total score: eight lower-order subscale scores, including C (αs ranged from .57 to .82); and scores on two higher-order factors, PPI FD (α = .81) and PPI SCI (α = .80; Benning et al., 2003).

***PAI ANT.*** PAI ANT is a scale within the PAI, a widely used, multiscale self-report inventory of psychopathology. The 24-item ANT scale is sometimes used as a proxy for psychopathy, given that it was designed to assess both the personality and behavioral (antisocial) features relevant to this condition. We examined Total ANT scores (α = .87) and the three subscale scores (Egocentrism, Stimulus Seeking, and Antisocial Behavior). The first two subscales generally reflect personality features related to psychopathy, whereas the third reflects a longstanding antisocial lifestyle.

### CBI

***Shipley Institute of Living Scale.*** The Shipley is a 60-item short-form test that correlates highly with scores on other standardized IQ measures (Zachary, 1986). Part One consists of a vocabulary section in which participants are required to choose the synonym of a given word. Part Two consists of abstract reasoning questions in which participants are required to complete the missing portion of a provided series of words, letters, or numbers. We administered the Shipley as a pure power (i.e., untimed) test as opposed to the traditional administration protocol, which allows 20 min for the completion of both sections.

***Sternberg Triarchic Abilities Test (STAT).*** The STAT is a 36-item instrument designed to assess Sternberg's triarchic model of intelligence, which comprises analytical (A), creative (C), and practical (P) intelligence (Sternberg, 1993). Each aspect of intelligence is tested through three modes of presentation, verbal, figural, and quantitative.

### EI

***Emotional Quotient Inventory (EQi).*** The EQi is a 133-item self-report EI inventory (Bar-On, 2006).. The EQi provides a total score, scores on five higher-order factors, and 15 lower-order subscale scores. We examined EQi Total scores and the five EQi higher-order factor scores for this study. The factor scores parse EI into five broad dimensions: Intrapersonal, the ability to be aware of and express one's emotions; Interpersonal, the ability to be aware of others' feelings and to establish relationships; Adaptability, the ability to manage and regulate emotions; Stress Management, the ability to adapt and cope with a situation and solve problems as they arise; and General Mood, the ability to generate positive affect to facilitate self-motivation to achieve goals.

### Antisocial Behavior

***Antisocial Action Scale (AAS).*** The AAS (Levenson, Kiehl, & Fitzpatrick, 1995) comprises 24 self-report items that assess both antisocial (e.g., plagiarism, vandalism) and prosocial (e.g., being careful to return borrowed items, driving carefully around bicyclists) behaviors more typical of college-aged students. These items are rated on a 4-point Likert scale and summed to yield a total, antisocial, and prosocial score. Given that the correlation between the two subscales was negative and small to medium in magnitude, $r = -.24$, $p < .001$, we used the subscale scores as opposed to the total antisocial behavior score. We log-transformed both the subscale AAS scores before entering them into linear regression models, given that they were slightly nonnormally distributed.

***Self-reported legal contact.*** Participants also self-reported the number of times they had ever been (a) in trouble with the law ($M$ = .43, $SD$ = .96), (b) arrested ($M$ = .12, $SD$ = .47), and (c) spent time in a jail or detention center ($M$ = .12, $SD$ = .66). Given the moderate associations among these variables ($r$s ranged from .31 to .52, $p$s < .001), an antisocial behavior composite was created by standardizing all variables and summing them (α = .63). Given that this composite comprised count data (e.g., number of times arrested), we conducted zero-inflated negative binomial regression analyses in light of the overdispersed nature of these variables (i.e., there was a marked excess of zeros in the distribution). This statistical approach increases statistical power in the case of nonnormally distributed data (Wang, 2003).

**Normative Data Comparisons.** To compare the similarity of our sample with other samples, we compared the present dataset with that from two other samples, one a community sample and another an offender sample, both of which were used to construct the norms for the PPI-R (Lilienfeld & Widows, 2005). The first sample, a community sample ($N$ = 160), comprised largely fe-

males (58%) of Caucasian (80%) or African American (9%) descent from a midsized metropolitan city; the mean age was 28.2 years ($SD = 14.0$). The second sample, an offender sample ($N = 154$) from the Northeast United States, comprised males of African American (73%) or Caucasian (17%) descent; the mean age was 34.9 years ($SD = 10.0$) and the mean years of education were 11.5 ($SD = 1.5$).

First, we conducted two sample Kolmogorov–Smirnov (K-S) tests to explore whether our sample's distribution of PPI-R scores differed from those of potentially more "variable" samples. To this end, we compared the distributions of PPI-R total and subdimension scores with those of the two aforementioned normative samples. These tests were statistically significant, suggesting that the distribution of psychopathy scores in our data were significantly different than those of the two normative samples. Second, we conducted Levene's tests of equality of variances between the total psychopathy scores in our sample and the two normative samples. All but one of these eight tests were significant, indicating that the variation in psychopathy scores in the current dataset were significantly different than those of the normative data. In the community sample, the variation in psychopathy scores was lower than the psychopathy scores in our undergraduate sample, with one exception; PPI C was significantly more variable among the community sample. In contrast, psychopathy scores were less variable among our undergraduate sample compared with the offender sample, again with one exception; PPI FD was significantly more variable among the undergraduates. Taken together, although there was little reason to believe that psychopathy scores were less variable among our undergraduates compared with community members, psychopathy scores, in general, were less variable in our sample of undergraduates compared with the offender sample. Third, we also computed Cohen's *d* effect size estimates for the differences between the PPI-R scores for the present sample and the two normative samples. On average, the differences in effect sizes were medium to large, and very large in some cases, suggesting that the two normative samples were more "severe" with respect to psychopathy scores than were our undergraduate sample (See supplemental Table 3 for a summary).

## Results

### Zero-Order Correlations Between Psychopathy and Intelligence

Descriptive statistics for psychopathy and intelligence measures are presented in Table 1. All of the psychopathy indices were significantly negatively associated with Shipley Verbal scores, with the exception of PPI FD, PAI Antisocial Behaviors, and PAI Stimulus Seeking; these correlations were very small in magnitude. All of the psychopathy indices, with the exception of PPI FD and PAI Stimulus Seeking, were significantly negatively correlated with Shipley Abstract scores (*r*s ranged from −.02 to −.09); PPI-FD was positively associated with Shipley Abstract scores and STAT A scores (*r*s = .02 and .06, respectively). PPI SCI, PPI C, PAI Antisocial Behaviors, and PAI Egocentricity manifested slightly more robust, but still small negative correlations with STAT C scores (*r*s ranged from −.11 to −.13); PPI FD was, however, not significantly correlated with STAT C ($r = .03$). Lastly, PPI SCI, PPI C, and PAI Egocentricity were slightly but significantly negatively associated with STAT P (*r*s ranged from −.06 to −.07). Statistically controlling for total EQi scores yielded a virtually identical pattern of results; there were no statistically significant changes in correlations. A mere 15% of

Table 1
*Descriptive Statistics for Psychopathy and Intelligence Indices*

| Measure | Total *M* (*SD*) | Men *M* (*SD*) | Women *M* (*SD*) |
|---|---|---|---|
| Psychopathy | | | |
| PPI Total | 123.94 (14.87) | 130.58 (13.53) | 121.02 (14.40) |
| PPI Fearless Dominance | 53.91 (9.34) | 57.92 (8.99) | 52.17 (8.96) |
| PPI Self-Centered Impulsivity | 56.20 (9.72) | 57.89 (9.74) | 55.44 (9.56) |
| PPI Coldheartedness | 13.83 (3.19) | 14.77 (3.48) | 13.41 (2.96) |
| PAI Total | 21.11 (11.30) | 25.93 (10.86) | 18.98 (10.83) |
| PAI Antisocial Behaviors | 7.52 (5.22) | 9.91 (5.27) | 6.48 (4.85) |
| PAI Egocentricity | 5.48 (3.80) | 6.30 (3.89) | 5.10 (3.70) |
| PAI Stimulus Seeking | 8.15 (4.72) | 9.79 (4.68) | 7.43 (4.56) |
| Cognitively-based intelligence | | | |
| Shipley Verbal | 51.49 (6.60) | 52.22 (6.70) | 51.16 (6.53) |
| Shipley Abstract | 56.51 (5.46) | 56.03 (6.08) | 56.70 (5.18) |
| STAT A | 5.56 (2.45) | 6.06 (2.56) | 5.34 (2.38) |
| STAT C | 5.77 (2.23) | 5.55 (2.27) | 5.86 (2.20) |
| STAT P | 5.29 (2.31) | 5.58 (2.41) | 5.16 (2.26) |
| Emotional intelligence | | | |
| EQi Intrapersonal | 144.49 (22.26) | 142.87 (23.73) | 145.19 (21.57) |
| EQi Interpersonal | 92.32 (13.44) | 87.89 (13.83) | 94.22 (12.82) |
| EQi Adaptability | 88.61 (13.46) | 87.42 (15.17) | 89.13 (12.63) |
| EQi Stress Management | 61.95 (10.49) | 62.43 (10.91) | 61.74 (10.31) |
| EQi General Mood | 66.17 (10.59) | 64.80 (11.24) | 66.75 (10.25) |

*Note*. PPI = Psychopathic Personality Inventory; PAI = Personality Assessment Inventory; STAT = Sternberg Triarchic Abilities Test; A = Analytical; C = Creative; P = Practical; EQi = Emotional Quotient Inventory.

these significant findings survived Bonferroni correction (.05/40); significant correlations after correcting for multiple comparisons are noted in Table 2.

## Zero-Order Correlations Between Psychopathy and EI

Whereas PPI FD was generally positively associated with self-reported EI, PPI SCI and all of the PAI subscales were negatively associated with EI. More specifically, PPI FD demonstrated small to moderate relations with all EI indices (*r*s ranged from .16 to .30), with the exception of EQi Interpersonal ($r = .05$, *ns*). PPI SCI, PAI Antisocial Behavior, and PAI Egocentricity were significantly negatively associated with all EQi indices (*r*s ranged from −.10 to −.47). PPI C was positively but weakly correlated with EQi Adaptability and Stress Management (*r*s = .08 and .13, respectively), was essentially uncorrelated with EQi Total ($r = .02$) and General Mood ($r = -.01$), and was negatively correlated with EQi Interpersonal ($r = -.22$) scores. Controlling statistically for Shipley total scores produced a virtually identical pattern of results; there were no statistically significant changes in correlations. In contrast with the Bonferroni correction of the relations between psychopathy and CBI indices, 65% of these analyses survived Bonferroni correction (.05/40); significant correlations after correcting for multiple comparisons are noted in Table 2.

## Intelligence as a Protective Factor

The majority of analyses examining the protective role of intelligence were not significant, with the following notable exceptions (presented in Table 3). With the AAS subscales, the statistical interaction between PPI C and several intelligence variables (i.e., Shipley Abstract, Sternberg's triarchic abilities) significantly predicted prosocial behaviors, such that higher levels of these intelligences predicted a *weaker* association between psychopathy and antisocial behavior. Nevertheless, the practical significance of these findings is uncertain, given that the interaction effects accounted for a small percentage of the variance in antisocial behavior (i.e., $R^2$ values were typically under .01). The statistical interaction between PPI FD and several intelligence variables (i.e., verbal intelligence, Sternberg's triarchic abilities, EQi Interpersonal, and EQi Adaptability) significantly predicted antisocial behavior such that higher intelligence *weakened* the association between psychopathy and antisocial behavior. Similarly, the statistical interaction between PAI Egocentricity and various EI indices (i.e., EQi Intrapersonal, Interpersonal, Adaptability, Stress Management, and General Mood) significantly predicted antisocial behavior, such that intelligence served as a protective factor against antisocial behavior. In contrast, and contrary to our hypotheses, the statistical interaction between PAI Antisocial Behaviors and several intelligence indices (i.e., verbal intelligence, Sternberg's triarchic abilities) significantly predicted antisocial behavior such that higher intelligence scores were associated with a *stronger* association between psychopathy and antisocial behavior.

## Corrections for Restriction of Range

To address the potential criticism that our analyses were underpowered to detect significant effects due to restriction of range among psychopathy and intelligence scores, we used a widely used formula for correcting correlation estimates (Hunter & Schmidt, 1990). With respect to psychopathy, we used the two aforementioned normative samples to represent the "unrestricted" samples. Using this formula, we computed the unrestricted correlation (i.e., the "true" *r* value) by imputing the unrestricted standard deviation for each PPI-R subscale from the normative datasets, the restricted correlation (i.e., the *r* value between each psychopathy subscale and intelligence index), and the restricted standard deviation (i.e., the standard deviation for each psychopathy subscale). The final unrestricted correlation represents the correlation corrected for the restricted range in our sample. Doing so resulted in no statistically significant changes in correlations, suggesting that the relations between psychopathy and intelligence indices would have been essentially equivalent in comparable samples with more variable psychopathy scores (presuming that the true associations between psychopathy and intelligence are not moderated by sample type); these data are presented in supplemental Table 4.

Intelligence data were not available in these two normative samples. Nevertheless, to address the potential issue of restricted intelligence scores among our sample, we gathered descriptive statistics of Shipley intelligence scores presented in several recent peer-reviewed articles (i.e., Baskin-Sommers, Wallace, MacCoon,

Table 2
*Correlations Between Psychopathy and Intelligence Indices*

| | Cognitively-based intelligence | | | | | Emotional intelligence | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Psychopathy index | Verbal | Abstract | STAT A | STAT C | STAT P | EQi Intrapersonal | EQi Interpersonal | EQi Adaptability | EQi Stress Management | EQi General Mood |
| PPI Total | −.04 | *−.06* | .01 | **−.08** | −.04 | −.01 | **−.28**[a] | **−.18**[a] | **−.15**[a] | −.06 |
| PPI Fearless Dominance | .03 | .02 | *.06* | .03 | .03 | **.30**[a] | .05 | **.16**[a] | **.20**[a] | **.26**[a] |
| PPI Self-Centered Impulsivity | *−.06* | **−.09** | −.05 | **−.12**[a] | *−.06* | **−.32**[a] | **−.40**[a] | **−.46**[a] | **−.47**[a] | **−.34**[a] |
| PPI Coldheartedness | *−.06* | *−.06* | −.02 | **−.11**[a] | **−.07**[a] | *.08* | **−.22**[a] | **.08** | **.13** | −.01 |
| PAI Total | *−.06* | *−.07* | −.02 | **−.12** | −.03 | **−.18** | **−.37** | **−.33** | **−.34** | **−.20** |
| PAI Antisocial Behaviors | −.04 | **−.08** | *−.03* | **−.13** | −.04 | **−.18** | **−.35** | **−.33** | **−.36** | **−.23** |
| PAI Egocentricity | *−.06* | **−.08** | *−.06* | **−.11** | *−.07* | **−.16** | **−.33** | **−.26** | **−.24** | **−.14** |
| PAI Stimulus Seeking | −.05 | −.02 | .03 | −.05 | .02 | **−.10** | **−.22** | **−.23** | **−.24** | **−.11** |

*Note.* Bolded is $p < .01$, italicized is $p < .05$. PPI = Psychopathic Personality Inventory; PAI = Personality Assessment Inventory; STAT = Sternberg Triarchic Abilities Test; A = Analytical; C = Creative; P = Practical; EQi = Emotional Quotient Inventory. None of the correlations were significantly different after controlling for restriction of range.
[a] Indicates significant after Bonferroni correction for multiple comparisons ($p < .001$).

Table 3
*Regression Weights From Selected Zero-Inflated Negative Binomial Psychopathy by Intelligence Models Predicting Antisocial Behavior*

| Psychopathy | Interaction term | Outcome | Std *B* | *SE* (*B*) | Sig. (*p*) | $R^2$ model |
|---|---|---|---|---|---|---|
| PPI Fearless Dominance | Verbal intelligence | Legal contact composite | .00 | .00 | .01 | .0000 |
| | Abstract intelligence | | .00 | .00 | .84 | .0000 |
| | STAT Analytical | | −.01 | .00 | .00 | .0109 |
| | STAT Creative | | .00 | .00 | .01 | .0001 |
| | STAT Practical | | .00 | .00 | .03 | .0008 |
| | EQi Intrapersonal | | .00 | .00 | .68 | .0000 |
| | EQi Interpersonal | | .00 | .00 | .05 | .0004 |
| | EQi Adaptability | | .00 | .00 | .00 | .0001 |
| | EQi Stress Management | | .00 | .00 | .57 | .0003 |
| | EQi General Mood | | .00 | .00 | .37 | .0002 |
| | EQi Interpersonal | AAS Prosocial | .14 | .06 | .03 | .0044 |
| | EQi Intrapersonal | | .10 | .04 | <.001 | .0081 |
| | EQi General Mood | | .18 | .08 | .03 | .0045 |
| PPI Self-Centered Impulsivity | Abstract intelligence | AAS Antisocial | .00 | .00 | .01 | .0064 |
| | EQi Intepersonal | | .34 | .17 | .06 | .0037 |
| | EQi Stress Management | | .58 | .22 | .08 | .0069 |
| | EQi General Mood | | .45 | .22 | .06 | .0040 |
| PPI Coldheartedness | Abstract intelligence | AAS Prosocial | .00 | .00 | .01 | .0055 |
| | STAT Analytical | | .00 | .00 | <.001 | .0122 |
| | STAT Creative | | .00 | .00 | .04 | .0035 |
| | STAT Practical | | .00 | .00 | .02 | .0047 |
| PAI Egocentricity | EQi Intrapersonal | Legal contact composite | .00 | .00 | <.001 | .0009 |
| | EQi Interpersonal | | .00 | .00 | <.001 | .0010 |
| | EQi Adaptability | | .00 | .00 | <.001 | .0005 |
| | EQi Stress Management | | .00 | .00 | .28 | .0000 |
| | EQi General Mood | | .00 | .00 | .17 | .0001 |

*Note*. PPI SF = Psychopathic Personality Inventory Short Form; AAS = Antisocial Action Scale; PAI = Personality Assessment Inventory; STAT = Sternberg Triarchic Abilities Test; EQi = Emotional Quotient Inventory; Std *B* = standardized beta; *SE* = standard error.



Curtin, & Newman, 2010; Hiatt, Schmitt, & Newman, 2004) and computed the unrestricted correlations between psychopathy and intelligence using the same methodology described earlier; data for the STAT were not available. We did so in a twofold manner. We first computed these correlations assuming that the unrestricted standard deviation represented the average dispersion of intelligence test scores among the two recently published datasets used as our normative data (i.e., the weighted average of the *SD*s was approximately 11).[1] Correcting for restriction of range in intelligence scores did not result in any statistically significant differences in the relations between psychopathy and intelligence indices, again suggesting that our findings were not markedly attenuated by limited variability in intelligence scores.

## Exploratory Analyses of Gender Differences

Finally, to explore the possibility that the associations among the key variables in our sample differed in males versus females, we conducted these same analyses excluding females. The correlational patterns between psychopathy and CBI remained virtually identical, with only 5% of the results differing statistically from those of the total sample. This was not the case, however, for the relations between psychopathy and self-reported EI. Whereas the relations between psychopathy and EI among the overall (i.e., predominantly female) sample were small to moderate in magnitude, these findings were attenuated dramatically among males; 77% of these findings differed significantly from the total sample. Among males, the relations between psychopathy and EI were near zero, ranging from −.10 to .04 (see s9upplemental Table 3, for full results).

# Discussion

## Summary

We sought to clarify further psychopathy's relations with multiple conceptions of intelligence. Clinical lore has long associated psychopathy with heightened intelligence (e.g., Cleckley, 1941) despite conflicting research support. Consistent with the equivocal research literature, we expected broadly that psychopathy would not relate markedly to intelligence. Nonetheless, we did hypothesize that the PPI factors would diverge in their associations with several intelligence indices including Shipley Verbal, STAT A, STAT C, and EI such that FD would correlate modestly positively with these constructs and SCI would correlate modestly negatively. Lastly, we explored whether intelligence would serve as a risk or protective factor in the relation between psychopathy and antisocial behavior (Wall et al., 2013).

[1] Given that the variance in intelligence scores presented in the publications that represented our "normative" intelligence data were slightly lower than that of the normal distribution of intelligence scores (i.e., $M$ = 100, $SD$ = 15), we also computed the correlations correcting for restriction of range using an unrestricted standard deviation of 15. These two sets of corrected correlations did not differ significantly, so we have elected to present solely the former set of correlations.

**CBI.** We found little support for Cleckley's (1941) hypothesis that psychopathy is associated with heightened cognitive intelligence. PPI scores were consistently slightly *negatively* associated with CBI indices, although these negative relations were generally very small in magnitude. In contrast, PPI FD was significantly and positively associated with STAT A intelligence, although, again, these relations were very small in magnitude. Furthermore, FD was not significantly associated with Shipley Verbal or Abstract intelligence, which raises questions regarding the stability of the aforementioned positive association. Taken together, although there was support for psychopathy's differential relations with CBI indices, psychopathy was not markedly associated with heightened intelligence, as the statistical effects were generally quite small. These relations are potentially of theoretical interest, however, and may point to differential processes underpinning PPI FD, SCI, and C (Patrick, Fowles, & Krueger, 2009). Nevertheless, the extent to which these findings are of practical importance is less clear.

**EI.** Further highlighting this point, psychopathy indices manifested diverging relations with self-reported EI in some instances. The overwhelming majority of psychopathy indices were modestly negatively associated with EI subscales, consistent with broad emotional deficits in psychopathy. Nevertheless, there were several exceptions. FD was significantly and modestly positively associated with various aspects of EI. For example, those with elevated FD traits reported experiencing higher levels of emotional self-awareness, assertiveness, self-esteem, and confidence in their ideas and beliefs. C was associated positively with emotional adjustment-related indices but negatively associated with interpersonal EI. Those with elevated SCI traits showed the opposite pattern such that they reported very low levels of the aforementioned EI features. Taken together, these results buttress previous research pointing to broad emotional deficits in psychopathy, although the arguably more adaptive psychopathy features displayed positive relations with EI. Our results call to mind Johns and Quay's (1962) argument that psychopaths "know the words, but not the music" (p. 217), suggesting that they either understand, or can behave in accord with, social conventions despite their profound emotional deficits.

Furthermore, our results leave open the question of whether EI is a distinct index of intellect or whether it instead reflects genuine personality variance, especially variance stemming from (reversed) Neuroticism/negative emotionality, Extraversion/positive emotionality, and Conscientiousness, as suggested by some authors (Petrides, Pita, & Kokkinaki, 2007). Subsidiary analyses revealed significant and substantial overlap between EI indices and normal range personality variables (as assessed by the Revised Interpersonal Adjectives Scales—Big Five version: Trapnell & Wiggins, 1990; mean *r*s between EI subscales ranged from .17 for Agreeableness and .47 for Extraversion). Given these findings, we controlled statistically for normal range personality dimensions[2] in the relations between psychopathy and EI, which yielded dramatically reduced relations between measures of the two constructs. Following this adjustment, most partial correlations were under .2, with a few notable exceptions (see supplemental Table 1). Nevertheless, Interpersonal and Adaptability subscales were exceptions to this trend, suggesting that normal personality may not account for the entirety of EI, although some of the variance in trait EI appears to be accounted for by normal range personality. With respect to the hypothesis that EI indices reflect emotionality broadly defined, statistical adjustment for scores on personality measures (including indices relevant to emotionality and the regulation of emotion, such as Neuroticism), resulted in statistically significant reductions in the magnitude of the relations between psychopathy and EI indices. Although these analyses do not address directly this issue, much of the variance in EI appears to be attributable to general personality, including emotionality and emotion regulation.

**Intelligence as a protective factor.** Although our examination of intelligence as a protective factor against antisocial behavior yielded only mixed support, there were several notable patterns of significance. First, the vast majority of CBI and several EI indices served as protective factors in the relation between FD and the self-reported legal contact composite. Similarly, FD and PAI Egocentricity interacted with several indices of self-reported EI to predict higher levels of prosocial behavior and lower levels of antisocial behavior, respectively. These results mirror Wall and colleagues' (2013) findings in which protective effects were noted particularly for FD. Furthermore, our findings suggest that higher levels of intelligence among those with FD and traits may facilitate (a) the channeling of their basic tendencies into more adaptive, noncriminal manifestations (see Harkness & Lilienfeld, 1997, for a discussion), and (b) the evasion of detection for antisocial behavior, or both.

In addition, we found that certain indicators of Factor 2 psychopathy interacted statistically with CBI indices in statistically predicting antisocial behavior; this time, we found a potentiating interaction such that higher levels of intelligence *increased* the risk of engaging in antisocial behavior for those with pronounced Factor 2 psychopathy features. Wall and colleagues (2013) found that this was the case specifically for PPI SCI and nonverbal intelligence, although our findings suggest that this relation may generalize to other forms of intelligence. Although provisional and in need of replication, these results suggest that heightened intelligence may serve as a risk factor for some psychopathic feature, perhaps because it profits those with marked levels of certain psychopathic traits such that they more successfully act on their antisocial urges. Finally, we found that C and various intelligence indices statistically interacted such that higher levels of intelligence predicted lower levels of prosocial behavior. Nevertheless, the magnitudes of these interactions were quite small. Given the small magnitudes of our findings and the fact that related research evidence is mixed (i.e., Salekin et al., 2010), further research should attempt to replicate these findings.

## Implications

Our fine-grained approach to examining the relation between psychopathy and intelligence is novel, although our findings are largely consistent with the body of literature suggesting that psychopathy is not associated with heightened intelligence. The psychopathy factors' differential relations with various aspects of intelligence highlights the importance of examining the separable dimensions of both constructs. For instance, those with high FD may have average to slightly above average IQ scores and display a number of emotionally intelligent behaviors. Alternatively, those

[2] This analysis was performed by partialing out the variance for all Revised IAS Big Five subscales.

with primarily high SCI scores may display lower levels of cognitive and EI.

Despite this possibility, it must be noted that the magnitude of the correlations in this study were generally small. One potential explanation is that, although not actually more intelligent than nonpsychopathic individuals, psychopathic individuals may merely *appear* more intelligent or competent than others, which is compatible with Cleckley's (1941) "mask of sanity." If so, psychopathy's interpersonal impact may help to explain Cleckley's conjecture. In a sample of prisoners, Fowler, Patrick, and Lilienfeld (2009) found that thin slice ratings of IQ (i.e., brief ratings from laypersons viewing excerpts of a PCL-R interview) were associated with thin slice ratings of psychopathy, suggesting that independent raters tend to conflate IQ and psychopathy or they exaggerate the extent to which they are intelligent. Importantly, however, thin slice IQ ratings and IQ scores were essentially unassociated with psychopathy criterion measures (e.g., the PCL-R and PPI). Hence, the "gift of gab" associated with psychopathy, which may contribute to the impression of high verbal intelligence, may engender evaluators to give psychopathic individuals more credit for their level of intelligence than is warranted. Alternatively, given extensive media coverage and the memorability of intelligent, psychopathic individuals of either the fictional or factual variety (e.g., Hannibal Lecter, Ted Bundy), an availability heuristic may give rise to a perceived connection between the two constructs (Johansson & Kerr, 2005).

Moreover, some authors have questioned the relevance of FD to psychopathy, arguing that FD exhibits minimal relations with other psychopathy measures (Miller & Lynam, 2012, but see Lilienfeld et al., 2012). Consistent with this view, two meta-analyses revealed that PPI-R FD does not manifest robust relations with the higher-order dimensions of the PCL-R (Marcus, Fulton, & Edens, 2013; Miller & Lynam, 2012). In contrast, a recent meta-analysis of 32 studies (Lilienfeld et al., 2015) showed that these low associations may be largely exclusive to PCL-based psychopathy measures. In this meta-analysis, measures of FD or Boldness manifested medium to large (mean weighted $r = .39$) relations with non-PCL-based psychopathy measures. Thus, the difference between their findings and previous meta-analyses may reflect legitimate differences in the conceptualization and operationalization of psychopathy across measures. The authors conjectured that because the PCL was developed and initially validated among prisoners, it accorded little emphasis to FD and other largely adaptive features of psychopathy.

## Limitations and Future Directions

Despite the aforementioned inroads into this body of literature, our results should be interpreted in light of several limitations. First, our sample comprised undergraduates at a large public university, which suggests that our results may not extend to other populations (e.g., community, forensic). Furthermore, given that these students were currently enrolled at a university, our distribution of intelligence scores may not represent those of other populations. We conducted several subsidiary curvilinear multiple regression analyses[3] to explore whether effects were more pronounced at high or low levels of intelligence, the latter of which would ostensibly better reflect intelligence levels in prison settings. We also explored the possibility that effects were more pronounced at high or low levels of psychopathy, the former of which would potentially reflect psychopathy levels in prison settings. Our results yielded minimal support for either possibility.

Nevertheless, it is likely that our psychopathy or intelligence measures do not capture the full distribution of their respective constructs. Furthermore, our analyses do not address whether the lower end of our intelligence distributions and the higher end of our psychopathy distributions adequately reflect those found in forensic or clinical settings. Research examining these hypotheses in samples characterized by a broader range of intelligence scores will be necessary, although examination of these hypotheses in forensic settings has yielded similar results (e.g., DeLisi et al., 2010). When comparing the distributions of our psychopathy and intelligence scores with those reported in several recently published manuscripts, we found that our data were more restricted in range. Nevertheless, correcting for restriction of range yielded a nearly identical pattern of results, insofar as no statistically significant differences in correlations emerged.

Second, our sample comprised predominantly females, who tend to engage in fewer antisocial behaviors compared with males (Verona & Vitale, 2006). Nevertheless, mean level differences in antisocial behavior do not imply differential correlational patterns across gender. When excluding all females, we found that the correlational patterns between psychopathy and CBI remained virtually identical, suggesting no clear gender differences with respect to these relations. This was not the case for psychopathy and self-reported EI, however. Whereas the relations between psychopathy and EI in the overall (predominantly female) sample were small to moderate in magnitude, these findings were attenuated dramatically among males. This unexpected finding suggests that the former findings were driven by the predominance of females in the sample. The reasons for this differential pattern of correlates across genders are unclear and requires independent replication. As such, we believe that these findings are too provisional to allow for firm explanations. Although females tend to score higher on at least some EI dimensions compared with males, such as those relevant to social skills (Petrides & Furnham, 2000), it is not evident whether or why this mean difference would translate into correlational differences. Further research is needed to determine whether this finding is robust across samples. Fourth and finally, our antisocial count data were less than ideal for a number of reasons, with the foremost being that the base rates for these behaviors were low and the distributions of these variables were considerably zero-inflated. To account for this, we used zero-inflated negative binomial regression models for these interaction analyses, which have been shown to be more valid, given skewed distributions. Our antisocial behaviors index by no means spanned the full scope of externalizing behaviors, however, and our results should be interpreted with this limitation in mind. Even so, we examined a broad array of antisocial behaviors particularly salient to undergraduates and failed to replicate the self-reported legal contact findings.

[3] To do so, we entered the squared term for each psychopathy measure and examined its contributions over and above the main effects of psychopathy. Results of these analyses are available from the first author on request.

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