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## Are Fearless Dominance Traits Superfluous in Operationalizing Psychopathy? Incremental Validity and Sex Differences

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### Abstract

Researchers are vigorously debating whether psychopathic personality includes seemingly adaptive traits, especially social and physical boldness. In a large sample (N=1565) of adult offenders, we examined the incremental validity of two operationalizations of boldness (Fearless Dominance traits in the Psychopathy Personality Inventory, Lilienfeld & Andrews, 1996; Boldness traits in the Triarchic Model of Psychopathy, Patrick et al, 2009), above and beyond other characteristics of psychopathy, in statistically predicting scores on four psychopathy-related measures, including the Psychopathy Checklist-Revised (PCL-R). The incremental validity added by boldness traits in predicting the PCL-R's representation of psychopathy was especially pronounced for interpersonal traits (e.g., superficial charm, deceitfulness). Our analyses, however, revealed unexpected sex differences in the relevance of these traits to psychopathy, with boldness traits exhibiting reduced importance for psychopathy in women. We discuss the implications of these findings for measurement models of psychopathy.

### Keywords

psychopathy; boldness; sex differences; incremental validity; dominance; LSRP; PPI; PAI; interpersonal; anxiety

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Psychopathy is a condition characterized by behavioral, interpersonal, and emotional traits, including egocentricity, lack of empathy, superficial charm, deceitfulness, manipulativeness, reckless impulsivity, and diminished guilt (Cleckley, 1988; Hare, 1993; Hare & Neumann, 2008). Although there is a broad consensus regarding the place of these traits within the construct of psychopathy, theorists and researchers disagree concerning the role of several other features.

In particular, vigorous debate has recently emerged regarding the validity of “boldness” traits, such as fearlessness, reduced anxiety, surgency, interpersonal poise, and emotional resilience, as essential indicators of the psychopathy construct (Crego & Widiger, in press; Lilienfeld et al., 2013; Marcus, Fulton, & Edens, 2013; Miller & Lynam, 2012, 2015; Neumann, Uzieblo, Crombez, & Hare, 2013; Patrick, Venables, & Drislane, 2013). This study aims to shed light on this debate by examining the incremental validity of these traits in characterizing psychopathy, above and beyond other psychopathic features. Specifically, in this study we estimate the importance of boldness traits in statistically predicting psychopathic traits, particularly interpersonal traits, as assessed by the PCL-R and other well-validated measures. In exploratory analyses, we also examine the potential moderating role of sex (male or female), given that some studies have pointed to differences in the manifestation of psychopathic traits in men and women (Verona & Vitale, 2006).

Although psychopathy overlaps moderately to highly with the DSM-5 diagnosis of antisocial personality disorder (ASPD; American Psychiatric Association, 2013), most theorists agree that the two constructs are not synonymous (e.g., Kiehl, 2008; Lilienfeld, 1994; Patrick et al., 2013). Psychopathy shares characteristics with ASPD (e.g., poor impulse control, irresponsibility, lack of remorse) but also includes more affective and interpersonal features such as lack of conscience, empathy deficits, shallow moral emotions, and—in the view of many researchers—traits such as boldness, which includes interpersonal poise, venturesomeness, and immunity to stress (Berg et al., 2013). The inclusion of these seemingly adaptive traits helps to distinguish psychopathy from ASPD, which is typically correlated with heightened emotional distress (Patrick et al., 2013; Venables, Hall, & Patrick, 2014).

In his classic description, Cleckley (1941/1988) posited superficial charm, absence of delusions and irrational thinking, and low levels of nervousness as indicators of the disorder. He further described the prototypical psychopath: “everything about him is likely to suggest desirable and superior human qualities, a robust mental health” (p. 339) and “regularly we find in him extraordinary poise rather than jitteriness or worry (p. 340).” Similarly, McCord and McCord (1964) noted that “most observers would maintain that the psychopath has relatively little anxiety, worry, or inner conflict” (p. 12). In recent work, Crego and Widiger (in press) observed that community raters consistently judged Cleckley’s psychopathic patients, as found in Cleckley’s case studies, to exhibit elevated traits related to boldness, including low anxiety, providing further support for the view that boldness traits are relevant to the prototypical psychopath.

Similar to the findings of Crego and Widiger (in press), survey research in the United Kingdom (Furnham, Daoud, & Swami, 2009) and United States (Edens, Clark, Smith, Cox, & Kelley, 2013) suggests that laypersons see characteristics of boldness (e.g., social skills, fearlessness, social dominance) as highly characteristic of psychopathy (but see Miller, Lamkin, Maples-Keller, & Lynam, 2015 for conflicting evidence). Other recent research (Sörman et al., in press) indicates that criminal justice professionals (i.e., forensic mental health practitioners and probation officers) who work directly with offenders rate aspects of boldness as prototypical features of psychopathy and also associate boldness with quasi-

adaptive behaviors (e.g., better social skills, avoiding arrest) and outcomes (e.g., life success).

Psychopathic individuals' apparent paucity of anxiety, social or otherwise, may enhance their abilities to appear honest, persuasive, attractive, and psychologically sound—perceived qualities that help them acquire what they desire. These traits make for the prototypic “wolf in sheep’s clothing,” such as a successful con-artist, or a Ponzi scheme mastermind who masquerades as a pillar of the community.

Based upon prior theory and data indicating that psychopathic individuals display a blunted fear response to conditioned signals of painful electric shocks and a failure to learn from physical punishment in a “mental maze” paradigm, Lykken (1957) hypothesized that low fear is a core component of psychopathy. Numerous other researchers have similarly observed that psychopathic individuals display diminished physiological responses to fear-related or aversive stimuli, including conditioned signals prior to noxious tones (Hare, Frazelle, & Cox, 1978); insertion of a hypodermic needle (Hare, 1972); and pictures of aversive stimuli (Levenston, Patrick, Bradley, & Lang, 2000; Patrick, Bradley, & Lang, 1993; Sadeh & Verona, 2012). Meta-analytic work encompassing more than 100 studies, however, indicates that reduced fear and anxiety are correlated only with the core interpersonal and affective traits of psychopathy, such as superficial charm and reduced empathy; in contrast, the traits that overlap with ASPD, such as impulsivity, irresponsibility, and antisocial behavior, are correlated with increased anxiety (Derefinko, in press).

The diverse perspectives on adaptive traits associated with psychopathy are heavily overlapping, but not synonymous. Lykken (1957, 1995), for instance, highlighted reduced fear, whereas Cleckley (1941/1988) discussed a broader range of traits—including, but not limited to, low anxiety. Current conceptualizations informed by these prior views include relative fearlessness, stress immunity, and other largely adaptive traits under larger groupings, such as Fearless Dominance (Lilienfeld & Andrews, 1996) or Boldness (Patrick, 2010). Although these constructs have differing historical and conceptual origins, and reference different traits, they bear a strong family resemblance. Current conceptualizations (Lilienfeld & Andrews, 1996; Patrick, 2010) encompass a range of descriptors, including diminished social anxiety and physical fear, and heightened emotional resilience.

## Operationalizations of Psychopathy

The most extensively researched measure of psychopathic traits, the Psychopathy Checklist – Revised (PCL-R; Hare, 1991/2003), does not explicitly incorporate low anxiety, boldness, or fearlessness (but see Neumann, Johannson, & Hare, 2013, for evidence that such traits are present in the PCL-R), although it does include one item (out of 20) assessing the potentially related characteristic of “superficial charm” (see Lykken, 1995, for a discussion of how superficial charm may spring from dispositional fearlessness). In the two-factor model of the PCL-R, the interpersonal and affective traits are considered Factor 1 traits, whereas the impulsive/antisocial traits are viewed as Factor 2 traits (Hare, 1991/2003). Given that the Factor 2 traits overlap largely with ASPD (Hare, 1991/2003), they might be expected to be less related – or perhaps even slightly negatively related - to boldness traits.

Although boldness traits are not explicitly incorporated into the PCL-R, these kinds of adaptive traits have, however, played a substantial role in some recent conceptualizations and operationalizations of psychopathy. For instance, the questionnaire-based Psychopathic Personality Inventory (PPI; Lilienfeld, 1990; Lilienfeld & Andrews, 1996) is commonly regarded as encompassing three higher-order dimensions: *Fearless dominance* (PPI-FD); *Self-centered impulsivity* (PPI-SCI); and *Coldheartedness* (PPI-CH) (Benning et al., 2003; but see Neumann, Malterer, & Newman, 2008, and Smith, Edens, & Vaughn, 2011, for an alternative factor structure). PPI-FD, which assesses social and physical boldness, consists of the subscales of Social Influence; Fearlessness; and Stress Immunity. PPI-SCI consists of the subscales of Rebellious Nonconformity; Blame Externalization; Carefree Nonplanfulness; and Machiavellian Egocentricity. PPI-CH, which consists of fewer items than the other two higher-order dimensions, assesses callousness and paucity of social emotions, such as guilt and empathy (Benning et al., 2003).

In a similar conceptualization of psychopathy, the triarchic model, Patrick, Fowles, and Krueger (2009) subdivided the condition into three dimensions: boldness; disinhibition; and meanness, which correspond broadly to PPI-FD, PPI-SCI, and PPI-CH, respectively. *Boldness* comprises social potency, venturesomeness, and emotional resilience; *meanness* comprises callousness, cruelty, and predatory behaviors; and *disinhibition* comprises impulsivity, distrustful hostility, and emotion dysregulation; (Patrick & Drislane, 2014). Promising measures of these triarchic model constructs, referred to as the PPI-Tri, have been generated using a subset of questions from the PPI (Hall et al., 2014; Sellbom, Wygant, & Drislane, in press).

## Informative Value of Current Study

Venables, Hall, and Patrick (2014), who employed a 19-item boldness scale (Patrick, 2010) and short-versions of the Externalizing Spectrum Inventory (ESI; Krueger et al, 2007) in a sample of more than 300 incarcerated or substance-abusing men, found that boldness provided substantial incremental validity over disinhibition and meanness in predicting PCL-R scores, especially for the interpersonal facet. Boldness, however, did not contribute incremental validity to the statistical prediction of ASPD, adding to the large body of evidence regarding the distinction between psychopathy and ASPD (Venables et al., 2014). This current study aims to conceptually replicate (see Hunter, 2001, for a discussion) and extend these findings by adopting a broadly similar approach—but with multiple measures of the target constructs and a much larger and more diverse sample of both men and women. In these respects, our study provides a more rigorous and generalizable test of the incremental validity of boldness in statistically predicting criteria that are both theoretically and practically important.

As suggested earlier, some theorists question whether psychopathy is inherently characterized by such largely adaptive traits as boldness (e.g., Lynam & Miller, 2012; Miller & Lynam, 2012, 2015, in press). These researchers accept the premise that low neuroticism and heightened extraversion are characteristic of prototypically “psychopathic” individuals, but they do not consider these traits necessary to, or sufficient for, psychopathy (Miller & Lynam, in press). To them, impulsive, highly antisocial individuals can be classified as

“psychopathic” even if they are fearful, socially avoidant, and submissive. For instance, Lynam and Miller (2012, p. 341), following from meta-analytic work (Miller & Lynam, 2012), argued that the PPI’s fearless dominance dimension assesses “stable extroversion and is, at best, considered a diagnostic specifier of psychopathy rather than an essential feature (p. 351).”

Other theorists have pointed out that if boldness is not regarded as essential to psychopathy, the lines between psychopathy and antisocial personality disorder become murky (Lilienfeld et al., 2012; Patrick, Venables, & Drislane, 2013). If Lynam and Miller (2012) are correct, then psychopathy should probably be viewed through essentially the same lens as ASPD.

In the current study, we use data from a large sample of adult offenders to inform this ongoing debate (see Poythress et al., 2010, for previous analyses from this dataset). We do so principally by examining the incremental validity (Sechrest, 1963) of boldness traits above and beyond other features of psychopathy, in concurrently predicting psychopathy-relevant features. Researchers who have questioned the necessity of boldness traits to the psychopathy construct have recently called for additional evidence relevant to this question (Miller & Lynam, 2015), and this study aims to supply such evidence. Although our analyses cannot resolve whether such traits *should be* incorporated into the psychopathy construct, they can describe the extent to which such traits currently *are* already included in leading operationalizations of psychopathy.

First, we examined the incremental validity of PPI-FD or PPI-Boldness, over and above that provided by the other characteristics of psychopathy in the PPI and triarchic conceptualizations, to statistically predicting total scores on the most widely researched measure of psychopathy, namely, the PCL-R. Despite its extensive use in psychopathy research, the PCL-R should not be equated with psychopathy (Skeem & Cooke, 2010) as it is, like other measures, an imperfect indicator of the target construct. Nevertheless, if measures of boldness add incremental value above and beyond other dimensions in predicting PCL-R scores, then these presumably adaptive characteristics help define the PCL-R’s representation of the psychopathy construct.

Second, we examined these relations at the PCL-R facet level, hypothesizing that boldness traits will exhibit stronger incremental value in reference to the PCL-R’s interpersonal facet (e.g., superficial charm, deceitfulness, manipulateness, grandiosity) than to features of ASPD (as operationalized by the SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1996). Although boldness bears potential theoretical links to most aspects of psychopathy, these ostensibly adaptive traits may be especially relevant to hallmark interpersonal features of lying, charming, and manipulating others (see Venables et al., 2014). Moreover, FD and boldness may help distinguish psychopathy from ASPD, as suggested by the conceptual and empirical work reviewed earlier. These findings bear on the discriminant validity of FD and boldness with regard to psychopathy.

Third, we examined the incremental validity of boldness traits in statistically predicting scores on two self-report measures relevant to psychopathy, namely, the Levenson Self-Report Psychopathy scale (LSRP; Levenson et al., 1995) and the Antisocial Features (ANT)

scale of the Personality Assessment Inventory (PAI; Morey, 2007). The LSRP was designed to approximate the model of the PCL-R, but appears to capture ASPD more than the interpersonal and affective features of psychopathy (e.g., Lilienfeld & Fowler, 2006; Lilienfeld et al., 2010). Most research suggests that the LSRP provides, at best, only limited relations to boldness traits (e.g., Drislane, Patrick, & Arsal, 2014; Marcus, Fulton, & Edens, 2013; Patrick, 2010; Sellbom & Phillips, 2013; Poythress et al, 2010; Witt, Donnellan, Blonigen, Krueger, & Conger, 2009).

The ANT scale of the PAI was designed to capture elements of ASPD but also includes such features of psychopathy as callousness, empathy deficits, and egocentricity (Morey & Quigley, 2002). It is composed of three subcomponents, including one subcomponent (ANT-S) that has a number of items related to relatively fearless risk-taking (Morey, 1991). Data regarding the relation between fearless dominance traits and PAI ANT scores have been mixed (cf. Benning, Patrick, Salekin, & Leistico, 2005; Patrick et al., 2006), suggesting that further research on this association is necessary. This study aimed to provide a more fine-grained examination into these measures by examining them at both the total score level, and also at the subcomponent score level.

Fourth, in exploratory analyses, we used moderated multiple regression analyses to test whether the incremental validity of FD/Boldness traits above and beyond other psychopathy traits differed between men and women. Although we did not predict significant sex differences, we conducted these analyses in view of prior research and theory raising the possibility of sex differences in the phenotypic expression of psychopathy (e.g., Hamburger, Lilienfeld, & Hogben, 1996; Miller, Watts, & Jones, 2011; O'Leary, Loney, & Eckel, 2007; Verona & Vitale, 2006). For instance, at least some research supports the possibility that the manifestation of psychopathy differ in men and women due to the influence of contrasting sex norms (e.g., dominance tends to be more socially approved in men than in women), and also that the PCL-R may be less effective at discriminating psychopathic from non-psychopathic women (Verona & Vitale, 2006). Nevertheless, the evidence for the differential manifestation of psychopathy across sexes remains equivocal (Cale & Lilienfeld, 2002; Miller, Watts, & Jones, 2011), and little exists in the way of independently replicated findings, underscoring the need for further investigation of this issue.

## Method

Study participants were 1607 offenders (65.6% Caucasian; 34.4% African American) who had either been court-ordered to residential substance treatment programs (48.9%) or were serving prison sentences (51.1%). 83.3% were male and 16.7% were female (women comprised 15.0% of the prison sample and 18.3% of the substance treatment sample). Their mean age was 30.6 years ( $SD = 6.6$ ), and the percentage of the sample at each level of self-reported educational attainment was as follows: no high school diploma, 30.3%; general equivalency diploma (GED), 22.6%; high school diploma, 20.2%; some college, 23.7%; college diploma, 2.8%; and, any graduate/professional school, 0.4%.

Of 1607 participants with PPI data, we excluded 42 participants who obtained elevated scores (3 or more SDs above mean) on the validity scales of the PPI intended to identify

inconsistent and misleading self-report data: the Deviant Responding (25 or higher) and the Variable Response Inconsistency scales (57 or higher), leaving a total sample of 1565 participants for the primary analyses reported here.

## Measures

**Psychopathy Checklist – Revised (PCL-R; Hare, 1991/2003)**—The PCL-R is a measure of psychopathy designed primarily for criminal offenders that requires both a lengthy interview (approximately 1.5 hours) and a review of corroborative information, such as case files (Hare, 2003). The 20 items of the PCL-R, which are scored on a 0 (symptom not present) to 2 (symptom clearly present) point scale, were summed to yield a total score (in this dataset,  $M = 22.54$ ,  $SD = 7.49$ ,  $\alpha = .82$ ). This total score can be subdivided into four facets: *interpersonal* ( $M = 3.79$ ,  $SD = 2.27$ ) characteristics, such as manipulateness, superficial charm, grandiosity, and deceitfulness; *affective* ( $M = 4.33$ ,  $SD = 2.37$ ) characteristics, such as shallow affect, callousness, and lack of remorse; *lifestyle* ( $M = 6.50$ ,  $SD = 2.15$ ) characteristics, such as impulsivity, irresponsibility, and need for stimulation; and *antisocial* ( $M = 5.82$ ,  $SD = 2.54$ ) behavior, such as poor behavioral controls, juvenile delinquency, and adult criminal outcomes (Hare, 2003). On the basis of 51 cases, the intraclass coefficient (ICCA1) for PCL-R total scores was .88. In this sample, the correlations between these four facets ranged from  $r = 0.31$  (interpersonal and antisocial facets) to  $r = 0.57$  (interpersonal and affective facets). Men obtained higher scores than women, as indicated by point-biserial correlations between male sex and PCL-R scores as follows: total scores,  $r = 0.22$ ; interpersonal facet,  $r = 0.17$ ; affective facet,  $r = 0.25$ ; lifestyle facet,  $r = 0.07$ ; and antisocial facet,  $r = 0.22$ .

**Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996)**—The PPI is a 187-item self-report inventory for the assessment of psychopathic personality traits, scored on a 4-point Likert scale. It is designed to assess these traits in both criminal and noncriminal populations, and yields a total aggregate score (in this dataset,  $M = 386.17$ ,  $SD = 41.48$ ,  $\alpha = .91$ ). The PPI consists of eight subscales that in turn form three higher-order dimensions, as described earlier: PPI-FD (composed of Fearlessness, Social Potency, and Stress Immunity;  $M = 144.71$ ,  $SD = 20.23$ ); PPI-SCI (Machiavellian Egocentricity, Carefree Nonplanfulness, Impulsive Nonconformity, and Blame Externalization;  $M = 190.38$ ,  $SD = 31.49$ ); and PPI-CH (Coldheartedness;  $M = 44.09$ ,  $SD = 8.32$ ). These subscales displayed high internal consistency in this study (PPI-FD,  $\alpha = 0.88$ ; PPI-SCI,  $\alpha = 0.93$ ; and PPI-CH,  $\alpha = 0.78$ ). PPI-FD was slightly negatively correlated with PPI-SCI ( $r = -0.06$ ) and positively correlated PPI-CH ( $r = 0.14$ ); PPI-SCI and PPI-CH were not significantly correlated. Male sex was significantly correlated with both PPI-FD ( $r = 0.22$ ) and PPI-CH ( $r = 0.17$ ) scores.

We also drew on a limited number of items from the PPI that have been identified as assessing the dimensions of the triarchic model of psychopathy (Hall et al., 2014; Sellbom et al., in press). In our sample, the three factors of the PPI-Tri had adequate internal consistency (PPI-Boldness, consisting of 26 items,  $M = 71.44$ ,  $SD = 11.62$ ,  $\alpha = 0.82$ ; PPI-Disinhibition, 20 items,  $M = 45.58$ ,  $SD = 7.94$ ,  $\alpha = 0.74$ ; PPI-Meanness, 20 items,  $M = 40.43$ ,  $SD = 8.41$ ,  $\alpha = 0.80$ ). In this PPI-Tri model, PPI-Boldness and PPI-Meanness did not correlate significantly, but PPI-Meanness correlated positively with PPI-Disinhibition ( $r =$



0.35) and PPI-Boldness correlated negatively with PPI-Disinhibition ( $r = -0.23$ ). Male sex was significantly correlated with PPI-Boldness ( $r = 0.21$ ) and PPI-Meanness ( $r = 0.14$ ). For additional data about relationships between scores on the PPI, PCL-R, LSRP, and PAI in this population sample, see Poythress et al (2010).

The PPI and the PPI-Tri scales are similar, yet not fully synonymous with one another. In this sample, PPI-FD correlated very strongly with PPI-Boldness ( $r = 0.94$ ) and only slightly with PPI-Disinhibition ( $r = -0.16$ ) and PPI-Meanness ( $r = 0.13$ ). PPI-SCI correlated very strongly with PPI-Disinhibition ( $r = 0.86$ ) and with PPI-Meanness ( $r = 0.55$ ), but only slightly negatively with PPI-Boldness ( $r = -0.16$ ). PPI-CH correlates strongly with PPI-Meanness ( $r = 0.69$ ) and slightly with PPI-Boldness ( $r = 0.12$ ), but not significantly with PPI-Disinhibition ( $r = 0.00$ ). The major difference between the two scales is in the difference between PPI-CH and PPI-Meanness, as PPI-Meanness appears to measure not only PPI Coldheartedness but also Self-centered impulsivity, particularly its Machiavellian Egocentricity sub-dimension (Hall et al., 2014) .

**Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995)**—The LSRP is intended to provide “items for primary and secondary psychopathy that are as similar as possible to those that are used by trained observers to describe a psychopath, such as those found in the PCL” (Levenson et al., 1995, pg. 152). It yields a total score (in this dataset,  $M = 55.74$ ,  $SD = 11.56$ ), but can also be subdivided into a primary psychopathy scale and a secondary psychopathy scale. The primary psychopathy scale ( $M = 32.83$ ,  $SD = 8.13$ ,  $\alpha = .84$ ), composed of 16 items, aims to detect the interpersonal and affective features of psychopathy, whereas the secondary psychopathy scale ( $M = 23.00$ ,  $SD = 5.29$ ,  $\alpha = .73$ ), composed of 10 items, aims to detect the impulsivity, irresponsibility, and other antisocial lifestyle features of psychopathy. In this sample, the primary and secondary scales were substantially correlated ( $r = 0.48$ ). Although male sex was not significantly associated with LSRP Total scores, it was significantly but weakly positively correlated with Primary scores ( $r = 0.08$ ) and significantly but weakly negatively correlated with Secondary scores ( $r = -0.11$ ).

**Antisocial Personality Disorder (ASPD, SCID-II; First et al., 1996)**—The Structured Clinical Interview for DSM-IV Axis II disorders (SCID-II) is a semi-structured interview that assesses the DSM-IV-TR (APA, 2000) and now DSM-5 (APA, 2013) signs and symptoms of childhood conduct disorder and adult antisocial behavior. In this study, only the ASPD module was administered ( $\alpha = .83$ ;  $ICC_{A1} = .86$ ;  $n = 46$ ). Male sex was significantly correlated with ASPD Total scores ( $r = 0.15$ ), indicating higher scores among males.

**Personality Assessment Inventory (PAI; Morey, 1991)**—The PAI (Morey, 2007) is a 344-item multiscale self-report inventory that assesses a variety of psychopathological constructs. In this study, we examined the ANT scale ( $M = 70.84$ ,  $SD = 11.85$ ,  $\alpha = 0.85$ ), which is composed of 24 items. The ANT scale measures antisocial behaviors, egocentricity, callousness, sensation seeking, and other traits relevant to psychopathy and ASPD. It is subdivided into three 8-item subscales: ANT-A (“Antisocial behavior,”  $\alpha = 0.65$ ), which assesses antisocial behaviors; ANT-E (“Egocentricity,”  $\alpha = 0.66$ ), which assesses antisocial

traits like callousness and self-centeredness; and ANT-S (“Stimulus seeking,”  $\alpha = 0.77$ ), which assesses fearless risk-taking and sensation seeking. A recent meta-analysis (Gardner, Boccaccini, Biting, & Edens, 2015) reported modest to moderate effect sizes for ANT in predicting community and institutional misconduct and violence.

### Data analysis

To examine the added value of the PPI items measuring boldness, we performed hierarchical multiple regression analyses to ascertain the incremental validity of either PPI-FD or PPI-Boldness above and beyond that afforded by other PPI higher-order dimensions in the prediction of other measures of psychopathy. In step one of the analyses, we entered two of the three PPI facets or PPI-Tri facets (e.g., PPI-SCI and PPI-CH). In step two, we entered the remaining measure facet (e.g., PPI-FD) to ascertain that facet’s incremental validity above and beyond the two other measure facets. We performed this analysis for each of the six different facets (all three PPI facets and all three PPI-Tri facets) in step 2. In this way, we examined not only the incremental validity of boldness traits, but also the incremental validity afforded by the other model components. We conducted analyses for all facets on all of the following outcome variables: PCL-R total scores; the four PCL-R facet scores; LSRP total scores; LSRP primary and secondary scores; PAI-Antisocial total scores and subscale scores; and ASPD symptom count. We evaluated all statistical effects with an alpha level of 0.05 and focused on the  $R^2$  between step 1 and step 2 in evaluating the practical significance (effect sizes) of the findings.

As a follow-up set of analyses, we used moderated multiple regression techniques to test whether the incremental validity of boldness traits differed between men and women. First, we mean-centered all three PPI factor scores and all three PPI-Tri factor scores and then created the three appropriate sex multiplied by factor score moderator variables (e.g., PPI-FD multiplied by sex) per model (three for PPI models and three for PPI-Tri models). We then entered all three moderator variables into an additional third step in our multiple regression models to ascertain if sex functioned as a significant moderator of the relationship between boldness traits.

### Results

**PPI-FD incremental validity**—When all three PPI factors were included in the regression model, the model accounted for a substantial amount of the variance in PCL-R total scores for both men (adjusted  $R^2 = 0.16$ ) and women (adjusted  $R^2 = 0.22$ ). As shown in Table 1, after controlling for PPI-SCI and PPI-CH, FD afforded incremental validity ( $R^2$  equal to or greater than 0.03) for PCL-R total scores and scores on the interpersonal, affective, and antisocial facet (but the antisocial facet finding was present only when the sample was aggregated across sexes). Using Cohen’s (1988) provisional benchmarks for effect size, these percentages are in the small to medium range. PPI-FD also *negatively* predicted LSRP secondary psychopathy scores, but positively predicted PAI-ANT total scores and scores on the PAI ANT-S subscale (for PPI-FD incremental validity results related to the LSRP and the PAI as dependent variables, see Table S1 and Table S2 in the supplemental materials).

For comparison, the incremental validity (for men and women separately) of PPI-SCI, over and above PPI-FD and PPI-CH, and for PPI-CH, over and above PPI-FD and PPI-SCI, can be found in Table 3 (and, for the LSRP and PAI-Antisocial scales as dependent variables, see online Supplemental Table S5).

**PPI-Boldness incremental validity**—When all three PPI-tri factors were included in the regression model, the model accounted for a substantial amount of the variance in PCL-R total scores for both men (adjusted  $R^2 = 0.12$ ) and women (adjusted  $R^2 = 0.15$ ). As shown in Table 2, after controlling for PPI-Meanness and PPI-Disinhibition, PPI-Boldness added meaningful incremental validity for PCL-R total scores and interpersonal facet scores. Again, these effects sizes were in the small to medium range. PPI-Boldness also *negatively* predicted LSRP secondary psychopathy scores, while positively predicting PAI-ANT total scores and ANT-S scores (for PPI-Boldness incremental validity results related to the LSRP and PAI, see supplemental Table S3 and Table S4).

For comparison, the incremental validity findings (split by sex) of PPI-Disinhibition, over and above PPI-Boldness and PPI-Meanness, and also of PPI-Meanness, over and above PPI-Boldness and PPI-Disinhibition, are found in Table 3 and Supplemental Table S5.

**Sex as a moderator**—When we entered all three moderator variables (sex x PPI-FD, sex x PPI-SCI, and sex X PPI-CH) into an additional third step in our regression models, we observed a small but statistically significant effect of sex as a moderator for many dependent variables, with a range of  $R^2$  from 0.00 to 0.01. Of particular note, sex moderated the incremental validity of FD/Boldness traits in relation to PCL-R total scores, interpersonal facet scores, and affective facet scores (see Tables 1-2 and supplemental tables S1-S4).

Because of the pervasive statistical significance of sex in both our analyses, and to provide uniform data presentation in this article, we reran all incremental validity analyses for boldness traits (but not for the other PPI and triarchic model facets) for men and women separately. Main tables and supplemental tables display the results of these sex-split regression models alongside the sex-aggregated models.

In general, the pattern of meaningful incremental validity for boldness traits in predicting psychopathy scores for men was not observed among women. The only practically meaningful ( $R^2$  equal to or greater than 0.03) incremental validity result in the female group was for PPI-FD in predicting the PCL-R interpersonal facet.

## Discussion

In this large sample of offenders, boldness modestly—but meaningfully—predicted scores on the PCL-R—particularly the measure’s interpersonal facet. Using the original PPI model, Fearless Dominance (FD) uniquely accounted for approximately 6 percent of the variance in PCL-R total scores. Similarly, within the PPI-Tri model, boldness traits uniquely accounted for approximately 5 percent of this variance. Like all measures of psychopathology, the PCL-R is an imperfect indicator of the target construct. Nevertheless, these findings offer

evidence that boldness is included in the PCL-R, which is the leading operationalization of psychopathy.

### **Incremental validity of boldness: Key findings**

As hypothesized, these largely adaptive measures of boldness chiefly related to the PCL-R interpersonal facet. Across the full sample, PPI-FD provided more incremental validity ( $R^2 = 0.07$ ) than either PPI Self-Centered Impulsivity ( $R^2 = 0.02$ ) or PPI Coldheartedness ( $R^2 = 0.00$ ) in statistically predicting the PCL-R interpersonal facet scores, indicating that Fearless Dominance is more relevant than the other PPI traits to features of superficial charm, grandiosity, deceitfulness, and manipulativeness. In fact, within the PPI and the PPI-Tri models, only FD and boldness traits displayed meaningful incremental validity for this scale of the PCL-R. Removing boldness traits from psychopathy measures, as recommended by Lynam and Miller (2012), would ostensibly compromise their ability to capture interpersonal aspects of psychopathy (at least as operationalized by the PCL-R).

Although our results also indicated that boldness traits related to other aspects of psychopathy, these relations tended to be weaker ( $R^2 = .02-.04$ ; with the strongest validity observed for PPI-FD predicting PCL-R affective facet scores). Also in the PPI model, PPI-FD exhibited modest value ( $R^2 = 0.03$ ) in statistically predicting the antisocial facet of the PCL-R, but this was slightly less present for PPI-Boldness in the triarchic model ( $R^2 = 0.02$ ).

Although boldness traits provided meaningful incremental validity for predicting PCL-R total and interpersonal scores in our total sample—and in the male participants who dominated this sample—this pattern was not observed for women. For women, the only finding of meaningful incremental validity observed was for the relation between PPI-FD and the PCL-R interpersonal facet ( $R^2 = 0.03$ ). There were no other significant independent relationships between boldness traits and PCL-R scores for women.

This study's unexpected findings regarding sex differences are open to several possible interpretations. First, it remains to be seen whether these findings can be replicated in independent samples. Because statistical interactions may be considerably less replicable than main effects (see Open Science Collaboration, 2015), independent replication of these findings will be important. Second, boldness traits may be less relevant to PCL-R-defined psychopathy in women than in men; more broadly, the nomological network of psychopathy may differ by sex. For instance, perhaps the appearance of confident dominance relates less to a woman's tendency or ability to get ahead and get what she wants than a man's tendency or ability to do so. Relatedly, Grijalva et al. (2015) found sex differences in mean levels of narcissism scores were driven mostly by men's higher leadership/authority and exploitation/entitlement dimensions of narcissism, and less so by the grandiose/exhibitionist facets of narcissism. Grijalva et al. (2015) argued that this finding may reflect different sex norms regarding displays of leadership and entitlement; similar sex norm effects may be at play in regard to psychopathy, potentially helping to explain the sex differences found in this study. Third, boldness may be similarly important in men and women, but the PPI-FD and PPI-Boldness scales may differ in their ability to operationalize these traits across sex. For example, sex norms may operate differently for men and women in terms of interpersonal

functioning, particularly social power, in ways that the PPI does not effectively measure. At this point, firm conclusions cannot be drawn about the sex differences observed in this study. Further hypothesis-driven investigation of this issue is needed.

Although PPI-FD and PPI-Boldness incrementally predicted PCL-R psychopathy scores (especially for men), they did not provide such incremental validity for SCID ASPD symptom counts. This finding is consistent with the hypothesis that psychopathy and ASPD should be conceptually distinguished at least in part using adaptive traits such as fearless dominance or boldness (Patrick et al., 2013). If psychopathy is viewed as a meaningful construct that is separable from the more heterogeneous diagnosis of ASPD (see Poythress et al., 2010, for evidence of such heterogeneity), boldness should be treated as an important element of psychopathy, as reflected in the newly formulated psychopathy specifier in Section III of DSM-5 (Anderson et al., 2014).

In regard to our subsidiary analyses relating to the LSRP, our results indicate that the LSRP differs substantially from the PCL-R in terms of boldness traits. Although boldness traits provided important incremental validity in statistically predicting PCL-R scores, they did not do so for LSRP scores, except in terms of the LSRP's "secondary psychopathy" scale, where they were a significant *negative* predictor. This finding corroborates conjectures that the LSRP is more closely aligned to ASPD than to classical psychopathy (Lilienfeld & Fowler, 2006; see also Poythress et al., 2010).

The PAI ANT scale, in contrast – particularly the ANT-S subcomponent that assesses fearless risk-taking – related to boldness in a manner similar to the PCL-R. In fact, the relation between boldness and the PAI ANT scale may partly reflect content overlap (cf. Nichols, Licht, & Pearl, 1982), such as shared content relevant to fearlessness and venturesomeness.

**Limitations and Future Directions**—Our findings must be interpreted in light of several limitations. One limitation is that the PPI and PPI-Tri are questionnaires, whereas the main outcome variables, PCL-R scores and ASPD symptom counts, were derived from clinical interview and file review. Given that substantial method variance (Campbell & Fiske, 1959) has been observed among different psychopathy measures (e.g., Blonigen et al., 2010), it is difficult to compare the magnitudes of relations among these measures. At the same time, the finding that boldness traits in self-report questionnaires are associated incrementally with measures from a different mode of assessment (interview) offers compelling support for their distinctive role within the psychopathy construct. Also, our self-report findings converge with recent prototypicality analyses (Sörman et al., in press) regarding the relevance of boldness to conceptualizations of psychopathy among professionals (i.e., forensic mental health professionals and probation officers) who work directly with offenders (but see Miller et al., 2015).

An additional limitation is that, because study participants were either incarcerated or in residential substance treatment programs, these results may not generalize to psychopathy in more "successful" samples (e.g., Lilienfeld, Watts, & Smith, in press). Our offender sample may have weighted heavily toward disinhibition and poor executive functioning, relative to

community members who have not been swept into the courts or succumbed to major substance use problems. It is possible that measures of boldness relate even more strongly to interpersonal and affective features of psychopathy in non-criminal samples (see Skeem et al., 2011).

Another limitation of this study is that it did not incorporate fine-grained behavioral outcome data. For instance, it would be valuable to conduct a study to evaluate psychopathic traits using measures such as the PPI-R (Lilienfeld & Andrews, 1996; Lilienfeld & Widows, 2005), TriPM (Patrick, 2010), and PCL-R (Hare, 1991/2003), and examine their correlations with specific future behaviors, such as con artistry, instrumental versus reactive aggression, sexual exploitation such as pimping, leadership in gangs (or in criminal ventures, more broadly), and other behaviors conceptually related to boldness traits. A study employing updated measures and prospective investigation of specific behaviors would be very valuable. The only behavioral data in this study derived from global, aggregated measures of antisocial behavior as assessed by ASPD scores and scores on the antisocial facet of the PCL-R, highlighting the need for examination of the questions addressed here using more differentiated measures of antisocial and criminal behavior.

Finally, these kinds of questions can be profitably explored using structural equation modeling (SEM), using measures of psychopathic features to construct latent variables reflecting boldness and other psychopathy dimensions. Because of considerable item overlap between the PPI and the PPI-Tri scales, though, our dataset was not ideal for SEM methods. Moreover, the use of SEM necessarily precludes inferences to psychopathy measures as they are used in actual practice. Hence, our analyses allow us to generalize our findings and conclusions to commonly used measures of boldness in clinical and research settings, such as PPI Fearless Dominance, thereby providing more relevant information regarding the use of these measures in applied psychological assessment, and in research, where many studies rely on only one or two measures of psychopathy. Nevertheless, although our results imply that measures of boldness are likely to contribute statistically above and beyond other indicators of psychopathy in capturing some of the key features of psychopathy (i.e., statistical incremental validity), it remains to be seen whether practitioners can capitalize on this added information in clinical decision-making (i.e., clinical incremental validity).

Given that this study was conducted with a sample of institutionalized individuals, further research is needed to determine whether boldness traits possess incremental validity in concurrently predicting psychopathy in community samples. Moreover, it would be valuable to explore this kind of incremental validity using other well-validated or promising measures of psychopathy, such as the SRP-II (Hare, Harpur, & Hemphill, 1989), SRP-III (Paulhus, Neumann, & Hare, in press), and the TriPM (Patrick, 2010), as well as observer reports of psychopathy. The latter measures may not be susceptible to the “blind spots” found in some self-reported indices (see Lilienfeld & Fowler, 2006).

Finally, further research is needed to determine whether boldness traits are important or superfluous in the psychopathy construct in women, not only in men. Our findings regarding sex differences in this study raise intriguing questions about the boundary conditions of our findings that should be addressed in future work. The “mask of sanity” of men and women

with psychopathic traits may differ in clinically important ways, with accompanying sex differences in interpersonal patterns, distress, or both. These noteworthy caveats aside, this study sheds light on the debate about the “belongingness” of boldness traits in the psychopathy construct, indicating that they are important contributors to the psychopathy construct, at least in men.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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## References

- Benning SD, Patrick CJ, Hicks BM, Blonigen DM, Krueger RF. Factor structure of the psychopathic personality inventory: validity and implications for clinical assessment. *Psychological Assessment*. 2003; 15(3):340–350. [PubMed: 14593834]
- Benning SD, Patrick CJ, Salekin RT, Leistico AMR. Convergent and discriminant validity of psychopathy factors assessed via self-report: A comparison of three instruments. *Assessment*. 2005; 12(3):270–289. [PubMed: 16123248]
- Berg JM, Smith SF, Watts AL, Ammirati R, Green SE, Lilienfeld SO. Misconceptions regarding psychopathic personality: implications for clinical practice and research. *Neuropsychiatry*. 2013; 3(1):63–74.
- Blonigen DM, Patrick CJ, Douglas KS, Poythress NG, Skeem JL, Lilienfeld SO, Edens JF, Krueger RF. Multimethod assessment of psychopathy in relation to factors of internalizing and externalizing from the Personality Assessment Inventory: the impact of method variance and suppressor effects. *Psychological Assessment*. 2010; 22(1):96–107. [PubMed: 20230156]
- Cale EM, Lilienfeld SO. Sex differences in psychopathy and antisocial personality disorder: A review and integration. *Clinical Psychology Review*. 2002; 22:1179–1207. [PubMed: 12436810]
- Campbell DT, Fiske DW. Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*. 1959; 56(2):81–105. [PubMed: 13634291]
- Cleckley, H. *The mask of sanity: An attempt to clarify some issues about the so called psychopathic personality*. 5. St Louis: Mosby; 1988.
- Cohen, J. *Statistical power analysis for the behavioral sciences*. 2. Hillsdale, N.J: Erlbaum; 1988.
- Crego C, Widiger TA. Psychopathy and the DSM. *Journal of Personality*. in press.
- Derefinko KJ. Psychopathy and low anxiety: Meta-analytic evidence for the absence of inhibition, not affect. *Journal of Personality*. in press.
- Drislane LE, Patrick CJ, Aarsal G. Clarifying the content coverage of differing psychopathy inventories through reference to the Triarchic Psychopathy Measure. *Psychological Assessment*. 2014; 26(2): 350–362. [PubMed: 24320762]
- Edens JF, Clark J, Smith ST, Cox J, Kelley SE. Bold, smart, dangerous and evil: Perceived correlates of core psychopathic traits among jury panel members. *Personality and Mental Health*. 2013; 7:143–153. [PubMed: 24343940]
- First, MB.; Gibbon, M.; Spitzer, RL.; Williams, JBW.; Benjamin, L. *User’s guide for the Structured Clinical Interview for DSM IV Axis II Personality Disorders (SCID-II, version 2.0, July 1996 final version)*. New York, NY: Biometrics Research Department, New York State Psychiatric Institute; 1996.

- Furnham A, Daoud Y, Swami V. "How to spot a psychopath": Lay theories of psychopathy. *Social Psychiatry and Psychiatric Epidemiology*. 2009; 44(6):464–472. [PubMed: 18982232]
- Gardner BO, Boccaccini MT, Biting BS, Edens JF. Personality Assessment Inventory scores as predictors of misconduct, recidivism, and violence: A meta-analytic review. *Psychological Assessment*. 2015; 27:534–544. [PubMed: 25528162]
- Grijalva E, Newman DA, Tay L, Donnellan MB, Harms PD, Robins RW, Yan T. Sex differences in narcissism: A meta-analytic review. *Psychological Bulletin*. 2015; 141(2):261–310. [PubMed: 25546498]
- Hall JR, Drislane LE, Patrick CJ, Morano M, Lilienfeld SO, Poythress NG. Development and validation of Triarchic Construct Scales from the Psychopathic Personality Inventory. *Psychological Assessment*. 2014; 26(2):447–461. [PubMed: 24447280]
- Hamburger ME, Lilienfeld SO, Hogben M. Psychopathy, sex, and sex roles: Implications for antisocial and histrionic personality disorders. *Journal of Personality Disorders*. 1996; 10(1):41–55.
- Hare, RD. *The Hare Psychopathy Checklist–Revised*. Toronto, Ontario, Canada: Multi-Health Systems; 2003. Original work published 1991
- Hare, RD. *Without conscience: The disturbing world of the psychopaths among us*. New York, NY: Simon & Schuster; 1993.
- Hare RD. Psychopathy and physiological responses to adrenalin. *Journal of Abnormal Psychology*. 1972; 79(2):138–147. [PubMed: 5016241]
- Hare RD, Frazelle J, Cox DN. Psychopathy and physiological responses to threat of an aversive stimulus. *Psychophysiology*. 1978; 15(2):165–172. [PubMed: 652911]
- Hare, RD.; Harpur, T.J.; Hemphill, JF. *Scoring pamphlet for the Self-Report Psychopathy scale: SRP-II*. Simon Fraser University; Vancouver, Canada: 1989. Unpublished document
- Hare RD, Neumann CS. The role of antisociality in the psychopathy construct: comment on Skeem and Cooke (2010). *Psychological Assessment*. 2010; 22(2):446–454. [PubMed: 20528070]
- Hare RD, Neumann CS. Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology*. 2008; 4:217–246.
- Hunter JE. The desperate need for replications. *Journal of Consumer Research*. 2001; 28:149–158.
- Kiehl, KA. Without morals: The cognitive neuroscience of criminal psychopaths. In: Sinnott-Armstrong, W., editor. *Moral psychology, volume 3: The neuroscience of morality: Emotion, brain disorders, and development*. Cambridge: MIT Press; 2008.
- Krueger RF, Markon KE, Patrick CJ, Benning SD, Kramer M. Linking antisocial behavior, substance use, and personality: an integrative quantitative model of the adult externalizing spectrum. *Journal of Abnormal Psychology*. 2007; 116:645–666. [PubMed: 18020714]
- Levenson MR, Kiehl KA, Fitzpatrick CM. Assessing psychopathic attributes in a non-institutionalized population. *Journal of Personality and Social Psychology*. 1995; 68:151–158. [PubMed: 7861311]
- Levenson GK, Patrick CJ, Bradley MM, Lang PJ. The psychopath as observer: Emotion and attention in picture processing. *Journal of Abnormal Psychology*. 2000; 109(3):373–385. [PubMed: 11016107]
- Lilienfeld, SO. Doctoral dissertation. University of Minnesota; 1990. Development and preliminary validation of a self-report measure of psychopathic personality.
- Lilienfeld SO. Conceptual problems in the assessment of psychopathy. *Clinical Psychology Review*. 1994; 14:17–38.
- Lilienfeld SO, Andrews BP. Development and preliminary validation of a self-report measure of psychopathic personality traits in noncriminal population. *Journal of Personality Assessment*. 1996; 66(3):488–524. [PubMed: 8667144]
- Lilienfeld SO, Fowler KA, Patrick C. The self-report assessment of psychopathy. *Handbook of Psychopathy*. 2006:107–132.
- Lilienfeld SO, Patrick CJ, Benning SD, Berg J, Sellbom M, Edens JF. The role of fearless dominance in psychopathy: Confusions, controversies, and clarifications. *Personality Disorders*. 2012; 3(3): 327–340. [PubMed: 22823232]
- Lilienfeld SO, Watts AL, Smith SF. Successful psychopathy: A scientific status report. *Current Directions in Psychological Science*. in press.



- Lilienfeld, SO.; Widows, M. Professional Manual for the Psychopathic Personality Inventory-Revised (PPI-R). Lutz, Florida: Psychological Assessment Resources; 2005.
- Lykken DT. A study of anxiety in the sociopathic personality. *Journal of Abnormal and Social Psychology*. 1957; 55(1):6–10.
- Lynam DR, Miller JD. Fearless dominance and psychopathy: a response to Lilienfeld et al. *Personality Disorders*. 2012; 3(3):341–353. [PubMed: 22823233]
- MacKinnon DP, Lockwood CM, Hoffman JM, West SG, Sheets V. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*. 2002; 7:83–104. [PubMed: 11928892]
- Marcus DK, Fulton JJ, Edens JF. The two-factor model of psychopathic personality: Evidence from the Psychopathic Personality Inventory. *Personality Disorders*. 2013; 4(1):67–76. [PubMed: 23355982]
- McCord, W.; McCord, J. The psychopath: An essay on the criminal mind. Princeton, NJ: Van Nostrand; 1964.
- Miller, JD.; Lamkin, J.; Maples-Keller, JL.; Lynam, DR. Viewing the Triarchic Model of Psychopathy Through General Personality and Expert-Based Lenses. *Personality Disorders: Theory, Research, and Treatment*. 2015 Sep 21. Advance online publication <http://dx.doi.org/10.1037/per0000155>
- Miller JD, Lynam DR. Psychopathy and personality: Advances and debates. *Journal of Personality*. in press.
- Miller JD, Lynam DR. Understanding Psychopathy Using the Basic Elements of Personality. *Social and Personality Psychology Compass*. 2015; 9(5):223–237.
- Miller JD, Lynam DR. An examination of the Psychopathic Personality Inventory's nomological network: A meta-analytic review. *Personality Disorders*. 2012; 3:305–326. [PubMed: 22452764]
- Miller JD, Watts A, Jones SE. Does psychopathy manifest divergent relations with components of its nomological network depending on sex? *Personality and Individual Differences*. 2011; 50:564–569.
- Morey, LC. Personality Assessment Inventory: Professional manual. 2. Odessa, FL: Psychological Assessment Resources; 2007.
- Morey LC, Quigley BD. The use of the Personality Assessment Inventory (PAI) in assessing offenders. *International Journal of Offender Therapy and Comparative Criminology*. 2002; 46(3):333–349. [PubMed: 12113211]
- Neumann CS, Johansson PT, Hare RD. The Psychopathy Checklist-Revised (PCL-R), low anxiety, and fearlessness: A structural equation modeling analysis. *Personality Disorders*. 2013; 4:129–137. [PubMed: 22642462]
- Neumann CS, Malterer MB, Newman JP. Factor structure of the Psychopathic Personality Inventory (PPI): Findings from a large incarcerated sample. *Psychological Assessment*. 2008; 20:169–174. [PubMed: 18557694]
- Neumann CS, Uzieblo K, Crombez G, Hare RD. Understanding the Psychopathic Personality Inventory (PPI) in terms of the unidimensionality, orthogonality, and construct validity of PPI-I and-II. *Personality Disorders*. 2013; 4(1):77–79. [PubMed: 23339315]
- Nicholls JG, Licht BG, Pearl RA. Some dangers of using personality questionnaires to study personality. *Psychological Bulletin*. 1982; 92(3):572–580.
- O'Leary MM, Loney BR, Eckel LA. Sex differences in the association between psychopathic personality traits and cortisol response to induced stress. *Psychoneuroendocrinology*. 2007; 32(2): 183–191. [PubMed: 17289279]
- Open Science Collaboration. Estimating the reproducibility of psychological science. *Science*. 2015; 349(6251):aac4716. [PubMed: 26315443]
- Patrick, CJ. [9 April 2015] Triarchic Psychopathy Measure (TriPM). 2010. (<https://www.phenxtoolkit.org/index.php?pageLink=browse.protocoldetails&id=121601>)
- Patrick CJ, Bradley MM, Lang PJ. Emotion in the criminal psychopath: Startle reflex modulation. *Journal of Abnormal Psychology*. 1993; 102(1):82–92. [PubMed: 8436703]
- Patrick CJ, Drislane LE. Triarchic model of psychopathy: Origins, operationalizations, and observed linkages with personality and general psychopathology. *Journal of Personality*. in press.

- Patrick CJ, Fowles DC, Krueger RF. Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology*. 2009; 21(03):913–938. [PubMed: 19583890]
- Patrick CJ, Venables NC, Drislane LE. The role of fearless dominance in differentiating psychopathy from antisocial personality disorder: comment on Marcus, Fulton, and Edens. *Personality Disorders*. 2013; 4(1):80–82. [PubMed: 23339316]
- Paulhus, DL.; Neumann, CS.; Hare, RD. *Manual for the Hare Self-Report Psychopathy scale*. Toronto, ON, Canada: Multi-Health Systems; in press
- Poythress NG, Lilienfeld SO, Skeem JL, Douglas KS, Edens JF, Epstein M, Patrick CJ. Using the PCL-R to help estimate the validity of two self-report measures of psychopathy with offenders. *Assessment*. 2010; 17(2):206–219. [PubMed: 19915197]
- Sadeh N, Verona E. Visual complexity attenuates emotional processing in psychopathy: implications for fear-potentiated startle deficits. *Cognitive, Affective, & Behavioral Neuroscience*. 2012; 12(2): 346–360.
- Sellbom M, Phillips TR. An examination of the triarchic conceptualization of psychopathy in incarcerated and nonincarcerated samples. *Journal of Abnormal Psychology*. 2013; 122(1):208. [PubMed: 22867118]
- Sellbom M, Wygant DB, Drislane LE. Elucidating the Construct Validity of the Psychopathic Personality Inventory Triarchic Scales. *Journal of Personality Assessment*. in press.
- Smith ST, Edens JF, Vaughn MG. Assessing the external correlates of alternative factor models of the Psychopathic Personality Inventory-Short Form across three samples. *Journal of Personality Assessment*. 2011; 93:244–256. [PubMed: 21516583]
- Sobel ME. Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological Methodology*. 1982; 13:290–312.
- Sprague J, Javdani S, Sadeh N, Newman JP, Verona E. Borderline personality disorder as a female phenotypic expression of psychopathy? *Personality Disorders*. 2012; 3(2):127. [PubMed: 22452756]
- Sörman K, Edens JF, Smith ST, Clark JW, Kristiansson M, Svensson O. Boldness and its relation to psychopathic personality: Prototypicality analyses with forensic mental health, criminal justice, and layperson raters. *Law and Human Behavior*. in press.
- Venables NC, Hall JR, Patrick CJ. Differentiating psychopathy from antisocial personality disorder: A triarchic model perspective. *Psychological Medicine*. 2014; 44(05):1005–1013. [PubMed: 23834781]
- Verona, E.; Vitale, J. Psychopathy in women: Assessment, manifestations, and etiology. In: Patrick, CJ., editor. *Handbook of psychopathy*. New York, NY: Guilford Press; 2006. p. 415-436.
- Witt EA, Donnellan MB, Blonigen DM, Krueger RF, Conger RD. Assessment of fearless dominance and impulsive antisociality via normal personality measures: Convergent validity, criterion validity, and developmental change. *Journal of Personality Assessment*. 2009; 91(3):265–276. [PubMed: 19365767]

Relationships between PPI psychopathy scores and PCL-R and ASPD scores in an offender sample (n=1546), aggregated across sex or split by sex: multiple regression statistics

**Table 1**

Criterion measure	Model Summary Statistics					
	Standardized Coefficients			Step 1 <sup>1</sup>	Step 2 <sup>2</sup>	Sex Moderation <sup>3</sup>
	PPI-FD	PPI-SCI	PPI-CH	R	R <sup>2</sup>	F
<b>PCL-R (Psychopathy)</b>						
Total	0.25	0.33	0.14	0.36	0.44	0.00
Men	0.24	0.30	0.14	0.33	0.41	0.00
Women	0.11	0.46	0.09	0.46	0.47	0.01 0.04
<b>Interpersonal</b>						
Men	0.26	0.15	0.06	0.17	0.31	0.00
Women	0.25	0.12	0.05	0.13	0.28	0.06 0.00
<b>Affective</b>						
Men	0.19	0.17	0.17	0.26	0.32	0.04 0.00
Women	0.17	0.14	0.16	0.22	0.27	0.03 0.00
<b>Lifestyle</b>						
Men	0.10	0.32	0.14	0.34	0.35	0.01 0.10
Women	0.11	0.40	0.06	0.40	0.42	0.01 0.00
<b>Antisocial</b>						
Men	0.12	0.39	0.06	0.39	0.41	0.01 0.00
Women	0.01	0.43	0.06	0.43	0.43	0.00 0.90
<b>Antisocial Personality Disorder</b>						
ASPD Total	0.18	0.26	0.11	0.29	0.34	0.03 0.00
Men	0.16	0.24	0.10	0.27	0.31	0.02 0.00
Women	0.08	0.37	0.05	0.37	0.38	0.01 0.20
<b>ASPD Total</b>						
Men	0.16	0.44	0.15	0.47	0.50	0.02 0.00
Women	0.15	0.43	0.14	0.46	0.48	0.02 0.00
<b>ASPD Total</b>						
Men	0.07	0.49	0.13	0.49	0.50	0.00 0.24
Women	0.07	0.49	0.13	0.49	0.50	0.00 0.24

<sup>1</sup> Step 1, entered PPI-SCI and PPI-CH

<sup>2</sup> Step 2, entered PPI-FD

$\epsilon^2$  when three appropriate gender moderator variables are added in an additional Step 3 in these models.

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**Table 2**

Relationships between PPI-Tri psychopathy scores and PCL-R and ASPD scores in an offender sample (n=1546), aggregated across sex or split by sex: multiple regression statistics

Criterion measure	Model Summary Statistics							
	Standardized Coefficients			Step 1 <sup>4</sup>		Step 2 <sup>5</sup>		Sex Moderation <sup>6</sup>
	Bold.	Disin.	Mean.	R	R	R <sup>2</sup>	sig. F	R <sup>2</sup> (sig. F)
<b>PCL-R</b>								
Total	0.22	0.18	0.22	0.31	0.38	0.05	0.00	0.01 ( <u>p=0.01</u> )
Men	0.22	0.19	0.19	0.29	0.36	<b>0.05</b>	0.00	
Women	0.06	0.24	0.25	0.39	0.40	0.00	0.35	
<b>Interpersonal</b>								
Men	0.25	0.08	0.12	0.16	0.29	<b>0.06</b>	0.00	0.01 ( <u>p=0.03</u> )
Women	0.24	0.07	0.09	0.12	0.26	<b>0.06</b>	0.00	
Women	0.13	0.16	0.19	0.28	0.31	0.02	0.05	
<b>Affective</b>								
Men	0.16	0.02	0.22	0.23	0.28	0.02	0.00	0.01 ( <u>p=0.00</u> )
Women	0.14	0.02	0.18	0.19	0.23	0.02	0.00	
Women	0.03	0.08	0.25	0.29	0.29	0.00	0.63	
<b>Lifestyle</b>								
Men	0.11	0.33	0.14	0.38	0.39	0.01	0.00	0.00 ( <u>p=0.05</u> )
Women	0.13	0.34	0.12	0.37	0.39	0.02	0.00	
Women	-0.02	0.29	0.21	0.42	0.42	0.00	0.71	
<b>Antisocial</b>								
Men	0.14	0.12	0.18	0.24	0.28	0.02	0.00	0.00 ( <u>p=0.11</u> )
Women	0.12	0.12	0.16	0.22	0.25	0.01	0.00	
Women	0.04	0.20	0.15	0.29	0.29	0.00	0.57	
<b>ASPD Total</b>								
Men	0.07	0.29	0.21	0.41	0.41	0.01	0.00	0.00 ( <u>p=0.58</u> )
Women	0.12	0.27	0.26	0.42	0.44	0.01	0.00	
Women	0.07	0.29	0.25	0.44	0.44	0.01	0.25	

<sup>4</sup>Step 1, entered Meanness and Disinhibition

<sup>5</sup>Step 2, entered Boldness

<sup>6</sup> R<sup>2</sup> when three appropriate gender moderator variables are added in an additional Step 3 in these models.

Incremental validity for each component of the PPI and PPI-Tri, above and beyond the other two components, in an offender sample (n=1511); hierarchical multiple regression analyses, R<sup>2</sup> between Step 1 and Step 2

**Table 3**

Criterion measure	<i>PPI Scales</i>			<i>PPI-Tri Scales</i>		
	FD	SCI	CH	Bold.	Disin.	Mean.
<i>PCL-R Total</i>						
Men	0.06	0.09	0.02	0.05	0.03	0.03
Women	0.01	0.21	0.01	0.00	0.05	0.05
<i>PCL-R Interpersonal</i>						
Men	0.06	0.01	0.00	0.06	0.00	0.01
Women	0.03	0.12	0.00	0.02	0.02	0.03
<i>PCL-R Affective</i>						
Men	0.03	0.02	0.02	0.02	0.00	0.03
Women	0.01	0.10	0.02	0.00	0.01	0.06
<i>PCL-R Lifestyle</i>						
Men	0.01	0.15	0.00	0.02	0.09	0.01
Women	0.00	0.19	0.00	0.00	0.07	0.04
<i>PCL-R Antisocial</i>						
Men	0.02	0.06	0.01	0.01	0.01	0.02
Women	0.01	0.14	0.00	0.00	0.03	0.02
<i>ASPD Total</i>						
Men	0.02	0.19	0.02	0.00	0.06	0.06
Women	0.00	0.23	0.02	0.01	0.07	0.05