

## **INTEGRATING ALTERNATIVE CONCEPTIONS OF PSYCHOPATHIC PERSONALITY: A LATENT VARIABLE MODEL OF TRIARCHIC PSYCHOPATHY CONSTRUCTS**

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This study undertook confirmatory factor analyses (CFAs) of data from 567 participants to quantify constructs specified by the triarchic model of psychopathy (Patrick, Fowles, & Krueger, 2009)—boldness, meanness, and disinhibition—as latent variables. Indicators for the CFAs consisted of subscales of the Triarchic Psychopathy Measure along with triarchic scales derived from items of the Psychopathic Personality Inventory, Youth Psychopathic Traits Inventory, and Multidimensional Personality Questionnaire. A modified three-factor model provided good fit to the data and outperformed alternative two- and one-factor models. Multiple-group CFAs demonstrated gender differences (male > female) in factor means and covariances, but not in factor loadings or intercepts. These findings support the idea that the triarchic model dimensions are embedded in differing models and measures of psychopathy and comprise essential building blocks for this clinical condition. Implications for understanding the structure of psychopathy, gender differences in psychopathic traits, and applications of latent variable modeling in future research are discussed.

Psychopathy is a clinical condition marked by impulsive-irresponsible behavior in conjunction with a lack of prosocial emotions or social connectedness that is associated with a host of negative personal and societal outcomes, including violent offending and recidivism (Douglas, Vincent, & Edens, in press), substance abuse (S. S. Smith & Newman, 1990), and sexual coercion (Knight & Guay, 2006). At the same time, classic conceptions of psychopathy (e.g., Cleckley, 1941/1976; Karpman, 1941; see also Lykken, 1995) have emphasized a distinct veneer of normalcy that operates to conceal these pathological tendencies. Despite the clear importance of psychopathy for critical public policy decisions (Skeem, Polaschek, Patrick, & Lilienfeld, 2011), re-

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Preparation of this article was supported by grant W911NF-14-1-0027 from the United States Army. The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of the U.S. Government, Department of Defense, Department of the Army, Department of Veterans Affairs, or U.S. Recruiting Command. This article is based on data from a federally funded, IRB-approved project. All participants provided informed written consent prior to testing. The authors have no financial interest in the research documented in this report.

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search in this area has been hampered by disagreement as to what psychopathy encompasses diagnostically and how it should be assessed in differing samples and settings. The current work seeks to shed light on these theoretical and measurement issues by advancing a quantitative model informed by the triarchic conceptual framework (Patrick, Fowles, & Krueger, 2009) that can serve as a referent for integrating differing assessment methods for psychopathy and organizing knowledge of their correlates.

### **TRIARCHIC MODEL OF PSYCHOPATHY**

Researchers have disagreed on the core features of psychopathy. Some suggest that antisocial (including criminal) behavior is intrinsic to psychopathy (Neumann, Hare, & Pardini, 2015), whereas others contend that such behavior is a consequence, or secondary symptom, of more basic psychopathic traits (Cooke, Michie, Hart, & Clark, 2004). Additionally, the role of seemingly adaptive characteristics (commonly referred to as fearless-dominance or boldness) has been hotly debated (Crego & Widiger, 2015; Lilienfeld et al., 2012; Miller & Lynam, 2012; Patrick, Venables, & Drislane, 2013a). By contrast, callous-exploitative tendencies appear to be emphasized in most models of psychopathy for both children and adults (Drislane, Patrick, & Arsal, 2014; Frick & Hare, 2001; Hare, 2003; Lynam & Derefinko, 2006). Given these contrasting conceptions, a variety of different inventories have been developed to assess for psychopathic tendencies, creating challenges for integration of findings across research labs and studies.

The triarchic model was advanced as a framework for integrating differing conceptions and measures of psychopathy and helping to guide ongoing research (Patrick et al., 2009). The model characterizes psychopathy in terms of distinct dispositional constructs—boldness, meanness, and disinhibition—emphasized in both past and contemporary accounts of the condition in forensic and nonforensic adult and youth samples. These triarchic model constructs are explicitly neurobehavioral (Patrick, Durbin, & Moser, 2012) and connect to twin-based structural models (Kramer, Patrick, Krueger, & Gasperi, 2012; Krueger et al., 2002), developmental psychopathology concepts (Patrick et al., 2009), and process constructs in the NIMH Research Domain Criteria framework (Kozak & Cuthbert, 2016). Boldness entails venturesomeness, resiliency to stressors, and a dominant interpersonal style, and is presumed to reflect a biologically based fearless temperament (Kramer et al., 2012; Patrick et al., 2012). Meanness, entailing aggressive exploitativeness and callous disregard for others, is also theorized to reflect some aspects of fearless temperament (Frick & Marsee, in press) along with dysfunction in social-affiliative systems (Patrick et al., 2009). Disinhibition, entailing general proneness to impulse control problems, also shows prominent heritability (Krueger et al., 2002), has well-established brain correlates (e.g., Patrick et al., 2006, 2013b; Yancey, Venables, Hicks, & Patrick, 2013), and is presumed to reflect deficits in fronto-regulatory regions of the brain (Patrick et al., 2012; Young et al., 2009).

## **OPERATIONALIZING THE TRIARCHIC MODEL CONSTRUCTS**

A growing body of support has accumulated for the triarchic model (Patrick & Drislane, 2015), with most studies to date operationalizing the model's constructs using the self-report-based Triarchic Psychopathy Measure (TriPM; Drislane et al., 2014). Scores on the TriPM's Boldness, Meanness, and Disinhibition scales covary with psychopathy-relevant personality traits and account for substantial variance in other self-report psychopathy measures (Drislane et al., 2014; Poy, Segarra, Esteller, López, & Moltó, 2014; Sellbom & Phillips, 2013). Triarchic scales have also been created from items of other questionnaires, including the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996; Lilienfeld & Widows, 2005) and the Youth Psychopathic Traits Inventory (YPI; Andershed, Kerr, Stattin, & Levander, 2002), using a method in which candidate items are first identified through a construct-rating process and then evaluated for inclusion based on psychometric properties. Evidence for the validity of alternative triarchic scale measures has been demonstrated in terms of expected relations with counterpart scales of the TriPM and scores on other psychopathy inventories and psychopathy-relevant criterion variables (e.g., anxiety and fearfulness, antisocial and narcissistic tendencies, alcohol and drug problems; see Patrick & Drislane, 2015).

An important benefit of developing triarchic scales using items from established inventories is the opportunities this creates for studying psychopathy facets in specialized existing datasets, including etiologically informed (e.g., twin, longitudinal, cross-cultural) datasets, that include these inventories. Another benefit is that it provides a basis for establishing a latent variable operationalization of the triarchic model that can serve as a referent for ongoing research. More concretely, support for clear expected patterns of convergent and discriminant relations among TriPM, PPI-Tri, and YPI-Tri scale operationalizations of boldness, meanness, and disinhibition (Drislane et al., 2015; Hall et al., 2014; Sellbom, Wygant, & Drislane, 2015) sets the stage for a latent variable modeling analysis of the triarchic constructs utilizing counterpart scales from these inventories as indicators.

However, it is important to acknowledge weaknesses in some reported scale operationalizations. For example, the YPI contains a preponderance of items worded in the direction of deviancy, and thus provides for less distinctive representation of boldness than the TriPM or PPI. In particular, the Boldness scale of the YPI shows a moderate positive association with its Disinhibition scale, contrary to the idea of these constructs as independent from one another (Fowles & Dindo, 2009; Patrick et al., 2009), and in contrast with their representations in the TriPM and other operationalizations (e.g., Hall et al., 2014; Sellbom et al., 2015). Because it does not index boldness as characterized in the triarchic framework, the YPI Boldness scale is not expected to operate as an effective indicator of latent boldness in a structural model of the triarchic constructs. Other measures that index boldness more distinctively, such as fearless dominance scores (Benning, Patrick, Blonigen, Hicks, & Iacono, 2005) estimated using trait scales from the Multidimen-

sional Personality Questionnaire (MPQ; Tellegen, 2011), could be expected to function better as indicators.

## **CURRENT STUDY**

The current study utilized confirmatory factor analysis (CFA) to (a) formally evaluate the degree to which alternative triarchic scale operationalizations index the same underlying constructs, and (b) establish an initial latent variable model of the triarchic conceptualization to serve as a point of reference for further research. This approach provides for a representation of the structure of the broader psychopathy construct spanning multiple inventories, rather than being limited to one particular operationalization. Specifically, three alternative models were specified and evaluated for fit, utilizing the TriPM and PPI-Tri scales, along with the Meanness and Disinhibition scales of the YPI and MPQ-estimated fearless dominance scores, as indicators. The model of primary interest was a correlated three-factor model in which differing scale operationalizations were parameterized as indicators of latent triarchic model variables. This three-factor model reflects the notion—depicted schematically in Figure 1 of Patrick et al. (2009)—that the triarchic model constructs are coherent dispositional tendencies embodied in alternative assessment instruments with contrasting theoretical referents (e.g., emphasis on Cleckley [1941/1976] versus the Psychopathy Checklist-Revised [PCL-R; Hare, 2003]) and designed for use with differing samples (e.g., adolescents vs. adults). Per the schematic model depiction in Patrick et al. (2009), it was predicted that (a) latent boldness and meanness variables would be positively correlated, to a modest degree; (b) latent meanness and disinhibition would be positively correlated, to a moderate degree; and (c) latent boldness and disinhibition would be uncorrelated.

The second model we evaluated was a two-factor model in which alternative scale measures of boldness were specified as indicators of one coherent latent variable, and available measures of meanness and disinhibition were specified as loading together on a separate, externalizing-proneness variable. Referents for this model were two-factor models of psychopathy measures such as the PPI and PCL-R that distinguish aggressive-externalizing tendencies from interpersonal features that uniquely reflect boldness (Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Venables, Hall, & Patrick, 2014). The third model was a one-factor model in which all scales were specified as loading together on an overarching psychopathy construct. This model is consistent with unitary conceptions of psychopathy (Hare, 1996).

We predicted that the three-factor model would provide better fit to the data than either alternative model. Additionally, given gender differences in the prevalence and presentation of Cluster B personality disorders (Cale & Lilienfeld, 2002; Johnson et al., 2003) and externalizing (Hicks et al., 2007), and evidence for differing etiological influences underlying psychopathic traits in men and women (Blonigen, Hicks, Krueger, Patrick, & Iacono, 2005), multiple-group CFA was also used to evaluate the invariance of the three-factor model across gender.

## METHOD

### PARTICIPANTS

Data were collected from 567 undergraduate students ( $M$  age = 18.84; 46.4% male) in Florida. The racial composition of the sample was representative of the surrounding urban community: 81.0% White, 11.1% Black, 2.2% Asian, 0.3% Native American or Alaska Native, and 5.4% Mixed or Other. Eighteen percent of study participants identified as Hispanic or Latino.

### PROCEDURE

Participants provided informed written consent prior to testing. Questionnaire data were collected in two waves, with the first 197 participants tested in person via pencil-and-paper in groups of 5 to 20, and the remainder ( $n = 370$ ) completing the questionnaires online using a secure Internet-based survey system. The latter participants completed study measures online in order to increase the efficiency of data collection. Participants tested in person versus electronically did not differ significantly in age, race, or gender—or in TriPM total or scale scores ( $ps = .37-.97$ ). Data from the two waves of administration were thus combined for analyses. As compensation, participants received either \$15, course credit, or a combination of the two.

### MEASURES

#### Manifest Indicators Included in Structural Models

*Triarchic Psychopathy Measure (TriPM)*. The 58-item TriPM (Drislane et al., 2014) yields scores on Disinhibition, Meanness, and Boldness subscales. Responses are on a 4-point Likert format (3 = *true*, 2 = *somewhat true*, 1 = *somewhat false*, 0 = *false*). The TriPM Disinhibition and Meanness subscales (20 and 19 items, respectively) index the general externalizing (“disinhibition”) factor and callous-aggression subfactor, respectively, of the Externalizing Spectrum Inventory (ESI; Krueger, Markon, Patrick, Benning, & Kramer, 2007), whereas the Boldness scale (19 items) indexes the factor in common among scale measures of fear and fearlessness (Kramer et al., 2012), keyed in the direction of fearless-dominant tendencies. Internal consistencies (Cronbach’s  $\alpha$ ) for these three subscales in the current sample were .79, .79, and .83, respectively. Scores on TriPM Boldness and Disinhibition were not significantly correlated ( $r = -.12$ ), whereas Meanness was correlated moderately with Disinhibition and modestly with Boldness ( $rs = .47$  and  $.22$ ).

*Psychopathic Personality Inventory-Triarchic (PPI-Tri) Scales*. The 187-item PPI (Lilienfeld & Andrews, 1996) indexes personality traits described in influential historical and contemporary accounts of psychopathy through eight subscales: Social Potency, Stress Immunity, Fearlessness, Carefree Nonplanfulness, Rebellious Nonconformity, Blame Externalization, Machiavellian Egocentricity, and Coldheartedness. Item-based PPI triarchic (PPI-Tri) scales were developed by Hall et al. (2014) and validated by these authors and by

Sellbom et al. (2015). Values of  $\alpha$  for the PPI-Tri scales in the current study sample were .86 for Meanness (26 items), .82 for Boldness (20 items), and .75 for Disinhibition (20 items). Correlations for PPI-Meanness with PPI-Boldness and Disinhibition were .20 and .27, respectively, with PPI-Boldness and Disinhibition correlated at  $-.02$ .

#### Manifest Indicators Included in Structural Models

*Youth Psychopathic Traits Inventory-Triarchic (YPI-Tri) Scales.* Patterned after the PCL-R, the 50-item YPI (Andershed et al., 2002) assesses interpersonal, affective, and behavioral features of psychopathy via self-report. Triarchic scales were constructed from items of the YPI by Drislane et al. (2015). The current study used only the YPI-Meanness and Disinhibition scales as indicators in CFA models, due to weaker coverage of boldness in the YPI as distinct from disinhibition ( $r$  for YPI-Boldness with YPI-Disinhibition in the current sample = .48; see Drislane et al., 2015, for a discussion of reasons for this). YPI-Meanness (10 items) and YPI-Disinhibition (14 items) showed high  $\alpha$  coefficients (.82 and .81) in the current sample and were modestly intercorrelated ( $r = .34$ ).

*Multidimensional Personality Questionnaire-Estimated Fearless Dominance (MPQ-FD).* As a third indicator of boldness in the CFA models, scores on fearless dominance (FD) were computed as a weighted composite of trait scales from a 35-item version of Tellegen's (2011) Multidimensional Personality Questionnaire (MPQ). Scores for the 10 traits covered by this MPQ version (all but Absorption; Javaras et al., 2012) were combined according to the regression approach used in prior research (Benning et al., 2005; Blonigen et al., 2005), which emphasizes high Social Potency along with low Stress Reaction and Harm Avoidance in estimating FD.

#### External Validation Measures

*Self-Report Psychopathy Scale-III (SRP-III).* The 60-item SRP-III (Paulhus, Hemphill, & Hare, 2009), like the YPI, indexes facets of psychopathy as defined by the PCL-R in the domain of self-report. The SRP-III yields a total score and scores on four subscales: Interpersonal Manipulation, Callous Affect, Erratic Lifestyle, and Criminal Tendencies. Internal consistency in the current sample was acceptable for the total score ( $\alpha = .93$ ) and subscale scores ( $\alpha$ s = .76–.86). Scores on the four subscales of the SRP-III were moderately intercorrelated in the current sample ( $r$ s = .42–.64).

*Levenson's Self-Report Psychopathy (LSRP) Scale.* The 26-item LSRP (Levenson, Kiehl, & Fitzpatrick, 1995) is intended to index "primary" and "secondary" variants of psychopathy as described historically (Karpman, 1941). The Primary Psychopathy subscale consists of items assessing interpersonal callousness and manipulateness. The Secondary subscale indexes impulsive, behavioral deviance features of psychopathy. The two subscales were moderately correlated ( $r = .41$ ) in the current sample, with  $\alpha$ s of .83 and .68, respectively ( $\alpha$  for LSRP total score = .84).

*Antisocial Process Screening Device, Self-Report Version (APSD-SR)*. The 20-item APSD-SR is a questionnaire version of the original informant-rated APSD, which was developed as a youth counterpart to the PCL-R (Frick & Hare, 2001). The APSD-SR yields a total score and three subscale scores: Callous/Unemotionality, which reflects lack of remorse, deficient empathy, and shallow affect; Impulsivity, reflecting rashness, risk-taking, and boredom proneness; and Narcissism, which taps egocentric manipulateness. Scores on the three APSD-SR subscales were modestly intercorrelated in the current sample ( $r_s = .23-.35$ ).

*Inventory of Callous-Unemotional Traits (ICU)*. The 23-item ICU (Frick, 2004) was developed to extend and refine the measurement and conceptualization of callous-unemotional traits provided by the APSD. Work with undergraduates has shown that scores on the ICU correlate moderately to strongly with adult psychopathy measures, symptoms of antisocial personality disorder, and deficient empathy (Kimonis, Branch, Hagman, Graham, & Miller, 2013). The  $\alpha$  for ICU total scores in the current sample was .84.

*NEO Personality Inventory-Revised Antagonism (NEO-PI-R Antagonism)*. The NEO-PI-R (Costa & McCrae, 1992) is a well-validated self-report measure of five-factor model personality traits. The current study administered the 48 items of the NEO-PI-R's Agreeableness-Antagonism domain, which is considered most central to psychopathy (Lynam & Derefinko, 2006). Along with a total Antagonism score (quantified as Agreeableness-reversed), scores were computed for six lower-order facet scales—Trust, Straightforwardness, Altruism, Compliance, Modesty, Tendermindedness—also coded so that higher scores reflected greater antagonistic tendencies. Cronbach's  $\alpha$  was high for the domain score ( $\alpha = .89$ ) and somewhat lower (.51–.79) for the 8-item facet scales.

## DATA ANALYTIC APPROACH

Alternative structural models were evaluated using CFA routines in MPLUS v. 7 (Muthén & Muthén, 1998–2013). All CFAs were based on covariance matrices, and analyses were conducted using full information maximum likelihood estimation to account for missing data. Model fit was assessed using differing indices. Overall model fit was first evaluated using the chi-square method, in which the  $p$  value for the chi-square test reflects the probability of obtaining the observed variance-covariance matrix if the model is true for the population; thus, a nonsignificant chi-square is desired. However, because this index is overly conservative with large samples, other fit statistics were also used: the Tucker-Lewis Index (TLI) and the Comparative Fit Index (CFI) as indicators of relative fit, and the root-mean-square error of approximation (RMSEA) and the standardized root-mean-square residual (SRMR) as indices of absolute fit. For TLI and CFI, a value of .95 is considered indicative of good fit, and for RMSEA and SRMR, values between .05 and .08 indicate acceptable fit, values from .09 to .10 indicate marginal fit, and values above .10 indicate inadequate fit (Hu & Bentler, 1999).

TABLE 1. Descriptive Statistics and Intercorrelations for Manifest Indicator Variables in the Full Sample

| Variable               | 1          | 2          | 3    | 4          | 5          | 6    | 7          | 8          | 9    |
|------------------------|------------|------------|------|------------|------------|------|------------|------------|------|
| 1. TriPM Boldness      | —          |            |      |            |            |      |            |            |      |
| 2. PPI-Boldness        | <b>.80</b> | —          |      |            |            |      |            |            |      |
| 3. MPQ-estimated FD    | <b>.62</b> | <b>.64</b> | —    |            |            |      |            |            |      |
| 4. TriPM Meanness      | .22        | .24        | .12  | —          |            |      |            |            |      |
| 5. PPI-Meanness        | .20        | .20        | .09  | <b>.61</b> | —          |      |            |            |      |
| 6. YPI-Meanness        | .24        | .24        | .12  | <b>.50</b> | <b>.64</b> | —    |            |            |      |
| 7. TriPM Disinhibition | -.12       | -.03       | -.07 | .47        | .29        | .22  | —          |            |      |
| 8. PPI-Disinhibition   | -.07       | -.02       | -.06 | .38        | .27        | .22  | <b>.64</b> | —          |      |
| 9. YPI-Disinhibition   | .05        | .08        | -.02 | .34        | .26        | .34  | <b>.65</b> | <b>.66</b> | —    |
| Mean                   | .69        | 2.64       | .00  | .42        | 1.99       | 1.82 | .44        | 1.98       | 2.04 |
| SD                     | .10        | .46        | .69  | .10        | .40        | .49  | .09        | .37        | .46  |

Note. Listwise  $N = 555$ ; all correlations in boldface significant at  $p < .001$ . Mono-trait, cross-instrument correlations are underlined. TriPM = Triarchic Psychopathy Measure; PPI = Psychopathic Personality Inventory; MPQ = Multidimensional Personality Questionnaire; FD = Fearless Dominance; YPI = Youth Psychopathic Traits Inventory. Underlined values reflect within-construct correlations.

## RESULTS

### DESCRIPTIVE STATISTICS FOR INDICATOR VARIABLES

Means and standard deviations for the differing manifest score variables used in the structural analyses and intercorrelations among them in the sample as a whole are presented in Table 1.<sup>1</sup> Univariate outliers were identified and recoded to be no greater or less than two interquartile ranges from the median. No bivariate or multivariate outliers were identified.

All manifest indicators of each latent factor (boldness, meanness, disinhibition) were significantly correlated with one another ( $r_s > .42$ ,  $p < .001$ ). Also, indicators of *meanness* were significantly related to indicators of *disinhibition* ( $Mdn r = .29$ ), but generally at lower levels than among meanness indicators themselves ( $Mdn r = .61$ ). Correlations between indicators of *boldness* and *meanness* were more modest ( $Mdn r_s = .20$ ), and those between indicators of *boldness* and *disinhibition* were small and in all cases nonsignificant ( $Mdn r = -.03$ ). These results indicate that the manifest score variables cohered together as indicators within and in some cases across the triarchic model constructs they were expected to index.

### EVALUATION OF ALTERNATIVE STRUCTURAL MODELS

Based on hypotheses as described earlier, CFA models specifying one and two factors were evaluated as nested alternatives to the three-factor triarchic model, which specified distinct higher-order factors of *Boldness*, *Meanness*, and *Disinhibition*. All models were identified, indicating that a unique set of parameter estimates was obtained.

1. Associations among the manifest indicators were similar for men and women. Summary statistics separated by gender are available upon request.



Initially, analyses were performed using random split halves of the data to ensure replicability of model solutions. In the first random half sample, the one-factor model did not converge, while the two-factor model provided inadequate fit to the data ( $\chi^2[26] = 299.23$ , RMSEA = .193, CFI = .75, and TLI = .65). By contrast, a three-factor model fit the data significantly better than the two-factor model ( $\Delta\chi^2[2] = 159.53$ ,  $p < .001$ ); however, the fit of this model was still less than adequate ( $\chi^2[24] = 139.70$ , RMSEA = .13, CFI = .90, and TLI = .84). As such, modification indexes (MIs) were evaluated and applied to improve the overall fit of the model. The largest MIs were between YPI-Meanness and Disinhibition and TriPM-Meanness and Disinhibition (50.78, 27.83), presumably because indicators of these constructs derived from subscales of the same inventory contain shared residual variance unrelated to the specific content of the scales. Including correlated residual terms for each of these scale pairs significantly improved model fit ( $\Delta\chi^2[2] = 79.60$ ,  $p < .001$ ), resulting in adequate fit for the modified three-factor model ( $\chi^2[22] = 60.10$ , RMSEA = .078, CFI = .97, and TLI = .94).

Parallel CFAs were then performed using data for the second random half sample to assess the stability of the final factor solution (including MIs). As in Half Sample 1, the three-factor model provided superior fit to the data relative to an alternative two-factor model ( $\Delta\chi^2[2] = 144.56$ ,  $p < .001$ ). Critically, in Half Sample 2, the largest MIs for the three-factor model were again for YPI-Meanness with YPI-Disinhibition (58.84) and TriPM-Meanness with TriPM Disinhibition (20.05). As in the first half sample, the addition of these modifications significantly improved the fit of the model ( $\Delta\chi^2[2] = 78.96$ ,  $p < .001$ ). The fit of the three-factor model with correlated residuals between YPI-Meanness and Disinhibition and TriPM-Meanness and Disinhibition in Half Sample 2 was marginal ( $\chi^2[22] = 68.85$ , RMSEA = .087, CFI = .96, and TLI = .93).

After establishing the replicability of the model across half samples, data from the two subsamples were combined and CFAs were performed using the entire dataset in order to maximize stability of the results. Fit indices for the differing models within the full sample are presented in Table 2. The fit statistics indicate that a three-factor model provided superior fit to the data over both the one-factor and two-factor alternative models. The two- and one-factor models provided inadequate fit to the data as indicated by all model fit indexes. Chi-square difference tests were conducted to compare the two-factor and one-factor models to the three-factor model. The significant chi-square difference tests obtained ( $\Delta\chi^2[2; 3] = 302.03$ ; 1074.76,  $ps < .001$ ) indicated that the constraints imposed on the three-factor model to obtain the two-factor and one-factor models provided a worse fit to the data than did the three-factor model. Although the absolute fit of the basic, unmodified three-factor model was less than adequate (RMSEA = .125, TLI = .85, CFI = .90), addition of correlated error terms for TriPM Meanness and TriPM Disinhibition (MI for participant sample as a whole = 46.58) and YPI-Meanness and YPI-Disinhibition (MI = 114.01) as suggested by the modeling analyses for half samples resulted in a good-fitting model (RMSEA = .066, CFI = .98, TLI = .96) superior to the simple three-factor model ( $\Delta\chi^2[2] = 161.47$ ,  $p < .001$ ). The modified three-factor model produced a significant chi-square

TABLE 2. Model Fit Indices for Alternative Models

| Model                                    | $\chi^2$ | <i>df</i> | <i>p</i> | $\chi^2/df$ | BIC     | RMSEA | CFI  | TLI  | $\Delta\chi^2$ | $\Delta df$ | <i>p</i> -value     |
|--|----------|-----------|----------|-------------|---------|-------|------|------|----------------|-------------|---------------------|
| 1. 1 Factor (General Psychopathy)        | 1311.76  | 27        | < .001   | 48.58       | 1182.90 | .290  | .402 | .203 | —              | —           | —                   |
| 2. 2 Factor (Boldness and Externalizing) | 539.03   | 26        | < .001   | 20.73       | 416.52  | .187  | .761 | .669 | 302.03         | 2           | < .001<br>(2 vs. 3) |
| 3. 3 Factor (Triarchic Psychopathy)      | 237.00   | 24        | < .001   | 9.88        | 127.16  | .125  | .901 | .851 | 1074.76        | 3           | < .001<br>(3 vs. 1) |
| 4. 3 Factor with 2 Modification Indices  | 75.53    | 22        | < .001   | 3.43        | -21.62  | .066  | .975 | .959 | 161.47         | 2           | < .001<br>(3 vs. 4) |

Note. *N* = 567; BIC = Bayesian information criterion; RMSEA = root mean squared error of approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index. Results for best-fitting model are bolded.

value ( $\chi^2[22] = 75.53, p < .001$ ), but as noted earlier this may be attributable to large sample size. Furthermore, the ratio of chi-square to degrees of freedom for this model (3.43) was also suggestive of acceptable fit (H. W. Marsh & Hocevar, 1985). The observed relations among the latent variables were consistent with a priori hypotheses (cf. Patrick et al., 2009, Figure 1): Latent Meanness covaried moderately with latent Disinhibition (.45) and more modestly with latent Boldness (.30), whereas the covariance between latent Boldness and latent Disinhibition did not differ significantly from zero (-.03). The three-factor model, including two correlated error terms, is depicted in Figure 1 with standardized factor loadings.

#### TESTING FOR GENDER INVARIANCE

*Invariance of Factor Structure.* Additional analyses were undertaken to assess the extent to which the modified three-factor model provided adequate fit to the data for both male and female participants. Specifically, analyses were performed to evaluate the equivalency across gender groups of (a) factor loadings and indicator intercepts, (b) factor variances, and (c) factor covariances (see Table 3, upper part). With respect to (a), a model in which factor loadings and intercepts of the manifest indicators were constrained to be equal for male and female participants provided near-adequate fit to the data ( $\chi^2[50] = 143.23, \chi^2/df = 2.86, RMSEA = .081, CFI = .95, TLI = .93$ ) and importantly, did not show a significant decrement in fit relative to the baseline model ( $\Delta\chi^2[6] = 11.05, p > .05$ )—providing support for full model invariance across genders. Regarding (b) and (c), models in which the variances and covariances of the three factors were constrained to be equal across groups yielded support for equivalence with regard to factor variances ( $\Delta\chi^2[5] = 6.50, p > .05$ ), but indicated that men and women differed in patterns of covariance among the three factors ( $\Delta\chi^2[5] = 48.47, p < .001$ ). Specifically, the magnitude of covariance between the Meanness and Disinhibition factors was higher for men than women (model path coefficients = .54 and .44, respectively;  $\Delta\chi^2[2] = 96.96, p < .001$ ). Men also showed greater covariance between the Boldness and Meanness factors compared to women (model path coefficients = .30 and .19;  $\Delta\chi^2[2] = 16.07, p < .001$ ). However, women and men did not differ in the magnitude of covariance between the Boldness and Disinhibition factors, which was negligible for each gender group (path

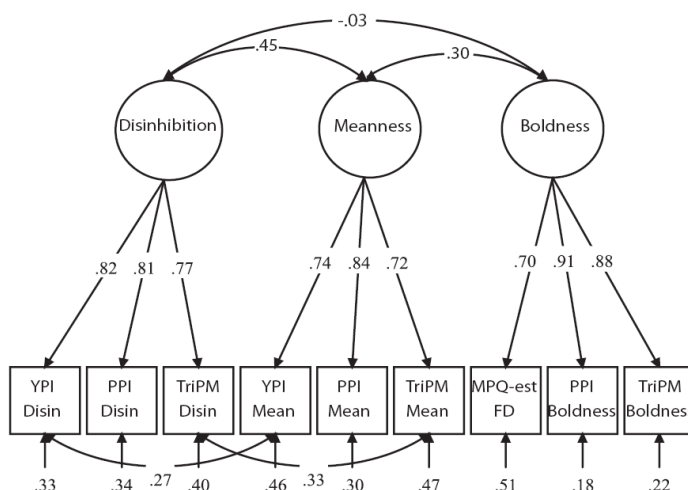


FIGURE 1. Three-factor confirmatory factor analytic model of the triarchic psychopathy constructs with standardized parameter estimates in the full sample. YPI = Youth Psychopathic Traits Inventory; PPI = Psychopathic Personality Inventory; TriPM = Triarchic Psychopathy Measure; MPQ-est FD = Multidimensional Personality Questionnaire-estimated Fearless Dominance; Disin = Disinhibition; Mean = Meanness.

coefficients =  $-.05$  and  $-.03$ ;  $\Delta\chi^2[2] = 0.17$ ,  $p > .05$ ).<sup>2</sup> These results suggest that the structure of the triarchic model is largely equivalent across gender.

*Invariance of Factor Means.* Analyses were also conducted to evaluate whether latent factor means differed by gender (Table 3, lower part). Inclusion of mean structure into the three-factor model reduced absolute fit somewhat ( $\Delta\chi^2[8] = 37.36$ ,  $p < .001$ ) due to increased model complexity, but the model still provided adequate overall fit to the data,  $\chi^2(50) = 145.27$ ,  $\chi^2/df = 2.91$ , RMSEA = .077, CFI = .96, TLI = .94. A model in which factor means were constrained to be equal for men and women provided poorer absolute fit to the data,  $\chi^2(56) = 203.80$ ,  $\chi^2/df = 4.44$ , RMSEA = .101, CFI = .93, TLI = .91, and showed reduced fit relative to the baseline model in which all means were estimated ( $\Delta\chi^2[2] = 58.53$ ,  $p < .001$ ). These results suggest that factor means *did* differ across genders. To clarify the nature of differences, follow-up analyses were conducted in which means for one of the latent factors were allowed to vary, while means for the other two factors were constrained to be equal across groups. Chi-square difference tests indicated that men and women differed in mean levels of Boldness and Meanness ( $\Delta\chi^2[1] = 56.03$  and  $28.53$ ,  $ps < .001$ ), but not Disinhibition ( $\Delta\chi^2[1] = 0.07$ ,  $p > .05$ ). In each case, factor means were higher for men than women (standardized difference =  $.68$ ,  $p < .001$ ;  $.93$ ,  $p < .001$ ; and  $.09$ ,  $p > .32$ , for Boldness, Meanness, and

2. Male and female participants also differed significantly in the variances and covariances of disturbances or error terms, which was expected given the highly restrictive nature of such tests.

TABLE 3. Tests of Model Invariance

| Model   | $\chi^2$ | df | p     | $\chi^2/df$ | BIC     | RMSEA | CFI   | TLI   | $\Delta\chi^2$ | $\Delta df$ | p-value          |
|---|----------|----|-------|-------------|---------|-------|-------|-------|----------------|-------------|------------------|
| <i>Tests of Structural Invariance</i>                         |          |    |       |             |         |       |       |       |                |             |                  |
| 1. 3 Factor with 2 Mod. Ind. -- Gender Specified              | 132.18   | 44 | <.001 | 3           | -117.6  | 0.084 | 0.957 | 0.929 | —              | —           | —                |
| 2. Full Model Invariance (Equal Factor Loadings & Intercepts) | 143.23   | 50 | <.001 | 2.86        | -144.6  | 0.081 | 0.954 | 0.934 | 11.05          | 6           | n.s. (2 vs. 1)   |
| 3. Factor Variance Constraint                                 | 149.73   | 55 | <.001 | 2.72        | -169.79 | 0.078 | 0.954 | 0.939 | 6.5            | 5           | n.s. (3 vs. 2)   |
| 4. Factor Covariance Constraint                               | 191.7    | 55 | <.001 | 3.49        | -127.82 | 0.094 | 0.933 | 0.912 | 48.47          | 5           | <.001 (4 vs. 2)  |
| 5. Boldness/Disinhibition Covariance Unconstrained            | 143.4    | 52 | <.001 | 2.76        | -157.11 | 0.079 | 0.955 | 0.938 | 0.17           | 2           | n.s. (5 vs. 2)   |
| 6. Boldness/Meanness Covariance Unconstrained                 | 159.3    | 52 | <.001 | 3.06        | -141.2  | 0.085 | 0.947 | 0.927 | 16.07          | 2           | <.001 (6 vs. 2)  |
| 7. Meanness/Disinhibition Covariance Unconstrained            | 240.19   | 52 | <.001 | 4.62        | -60.31  | 0.113 | 0.908 | 0.872 | 96.96          | 2           | <.001 (7 vs. 2)  |
| <i>Tests of Mean Difference</i>                               |          |    |       |             |         |       |       |       |                |             |                  |
| 8. 3 Factor with 2 Mod. Ind. -- Gender (No Mean Structure)    | 132.18   | 44 | <.001 | 3           | -117.6  | 0.084 | 0.957 | 0.929 | —              | —           | —                |
| 9. 3 Factor with 2 Mod. Ind. -- Unconstrained Factor Means    | 145.27   | 50 | <.001 | 2.91        | -781.07 | 0.077 | 0.958 | 0.94  | 37.36          | 8           | <.001 (9 vs. 8)  |
| 10. Equal Factor Means Constraint                             | 203.8    | 52 | <.001 | 4.44        | -735.22 | 0.101 | 0.933 | 0.908 | 58.53          | 2           | <.001 (10 vs. 9) |
| 11. Disinhibition Factor Mean Unconstrained                   | 145.34   | 51 | <.001 | 2.85        | -787.34 | 0.081 | 0.959 | 0.941 | 0.07           | 1           | n.s. (11 vs. 9)  |
| 12. Boldness Factor Mean Unconstrained                        | 201.3    | 51 | <.001 | 3.95        | -731.38 | 0.102 | 0.934 | 0.907 | 56.03          | 1           | <.001 (12 vs. 9) |
| 13. Meanness Factor Mean Unconstrained                        | 173.8    | 51 | <.001 | 3.41        | -758.88 | 0.092 | 0.946 | 0.924 | 28.53          | 1           | <.001 (13 vs. 9) |

Note. N = 567; BIC = Bayesian information criterion; RMSEA = root mean squared error of approximation; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; Mod. Ind. = Modification Indices.

Disinhibition, respectively). Thus, while the factor structure of the triarchic model was largely equivalent across gender, results from these additional analyses indicated significant mean-level differences in certain psychopathy facets for men compared to women.

#### RELATIONS WITH EXTERNAL CRITERION MEASURES

To evaluate the content validity of the latent triarchic factors, additional bivariate- $r$  and regression analyses were performed, examining relations of factors of the best-fitting three-factor model (estimated using least-squares regression) with scores on other self-report adult and youth psychopathy measures (SRP-III, LSRP, APSD-SR, ICU) and NEO-PI-R Antagonism. Correlational findings for each factor of the model are presented in Table 4, and summarized here.

*Boldness.* Boldness factor scores showed modest to moderate positive correlations with scores on the SRP-III as a whole and each of its subscales ( $r_s = .19-.41$ ), and with Straightforwardness and Modesty (reversed) facets of NEO-PI-R Antagonism ( $r_s = .31$  and  $.28$ ). Boldness showed weaker but still significant  $r_s$  with LSRP Primary, APSD-SR total, NEO-Compliance and Tendermindedness (reversed) facets, and NEO-Antagonism total scores ( $r_s = .14-.21$ ). When all three factors (Boldness, Meanness, and Disinhibition) were entered concurrently as predictors of criterion measures, Boldness continued to predict unique variance in SRP-III total and Erratic Lifestyle scores ( $\beta_s = .26$  and  $.40$ ), and to a weaker degree scores on the Straightforwardness and Modesty (reversed) facets of the NEO-PI-R and the Interpersonal Manipulation and Callous Affect subscales of the SPR-III ( $\beta_s = .14-.17$ ). Whereas predictive relations for Boldness were positive in these cases, Boldness showed negative relations with reversed-Trust and Altruism facets of NEO-Antagonism, and with LSRP total and Secondary scores ( $\beta_s = -.14$  to  $-.28$ ). These associations for the Boldness factor did not differ significantly across gender subsamples.

*Meanness.* Scores on the Meanness factor were robustly correlated with all criterion measures ( $r_s = .35-.72$ ; see Table 4), indicating that Meanness is central to the operationalization of psychopathy across alternative models and measures. Meanness scores were strongly and preferentially associated with ICU, overall NEO-Antagonism and reversed-Trust and Tendermindedness facets, SRP-III Callous Affect, LSRP Primary, and APSD-SR Callous-Unemotionality scores ( $\beta_s = .46-.67$ ). Meanness scores also showed strong unique relations with scores on NEO-Antagonism facets of Straightforwardness, Altruism, Compliance, and Modesty (reversed), SRP-III Interpersonal Manipulation and Criminal Tendencies, LSRP total, and APSD-SR total and Narcissism subscales ( $\beta_s = .29-.59$ ). Notably, after controlling for variance in common among the three factors, the associations for Meanness with SRP-III Erratic Lifestyle and APSD-SR Impulsivity scores dropped to non-significance ( $\beta_s \leq .08$ ), while the association between Meanness and LSRP Secondary became much more modest, although still significant ( $\beta = .14$ ,  $p$

TABLE 4. Relations Between Triarchic Factor Scores and Self-Report Psychopathy and Normal-Range Personality Measures: Pearson Correlations and Regression Coefficients

|   | Boldness<br><i>r</i> ( $\beta$ ) | Meanness<br><i>r</i> ( $\beta$ ) | Disinhibition<br><i>r</i> ( $\beta$ ) | Multiple<br><i>R</i> |
|---|----------------------------------|----------------------------------|---------------------------------------|----------------------|
| Self-Report Psychopathy Scale-III               |                                  |                                  |                                       |                      |
| SRP-III Total Score                             | <b>.39 (.26)</b>                 | <b>.67 (.39)</b>                 | <b>.58 (.39)</b>                      | .77                  |
| Interpersonal Manipulation                      | <b>.32 (.15*)</b>                | <b>.63 (.49)</b>                 | <b>.42 (.19*)</b>                     | .66                  |
| Callous Affect                                  | <b>.36 (.14*)</b>                | <b>.70 (.64)</b>                 | <b>.33 (.03)</b>                      | .71                  |
| Erratic Lifestyle                               | <b>.41 (.40)</b>                 | <b>.50 (.08)</b>                 | <b>.64 (.61)</b>                      | .77                  |
| Criminal Tendencies                             | <b>.19* (.09)</b>                | <b>.46 (.29)</b>                 | <b>.42 (.29)</b>                      | .52                  |
| Levenson Self-Report Psychopathy Scale          |                                  |                                  |                                       |                      |
| LSRP Total                                      | <b>.04 (-.14*)</b>               | <b>.63 (.47)</b>                 | <b>.67 (.44)</b>                      | .76                  |
| Primary   | <b>.21 (-.03)</b>                | <b>.70 (.64)</b>                 | <b>.45 (.13)</b>                      | .71                  |
| Secondary                                       | <b>-.15* (-.21)</b>              | <b>.36 (.14*)</b>                | <b>.67 (.61)</b>                      | .70                  |
| Antisocial Process Screening Device-Self Report |                                  |                                  |                                       |                      |
| APSD-SR Total Score                             | <b>.16* (.03)</b>                | <b>.63 (.38)</b>                 | <b>.69 (.51)</b>                      | .77                  |
| Narcissism                                      | <b>.12 (.00)</b>                 | <b>.48 (.35)</b>                 | <b>.43 (.26)</b>                      | .53                  |
| Callous-Unemotionality                          | <b>.06 (-.13)</b>                | <b>.55 (.55)</b>                 | <b>.37 (.11)</b>                      | .58                  |
| Impulsivity                                     | <b>.10 (.11)</b>                 | <b>.35 (-.02)</b>                | <b>.68 (.69)<sup>a</sup></b>          | .69                  |
| Inventory of Callous-Unemotional Traits         |                                  |                                  |                                       |                      |
| ICU Total Score                                 | <b>.13 (-.10)</b>                | <b>.62 (.65)</b>                 | <b>.31 (.00)</b>                      | .62                  |
| NEO-PI-R Antagonism                             |                                  |                                  |                                       |                      |
| Antagonism Total Score                          | <b>.18 (-.04)</b>                | <b>.72 (.67)<sup>a</sup></b>     | <b>.46 (.14*)</b>                     | .73                  |
| (lack of) Trust                                 | <b>-.12 (-.28)</b>               | <b>.40 (.46)</b>                 | <b>.29 (.06)<sup>b</sup></b>          | .49                  |
| (lack of) Straightforwardness                   | <b>.31 (.17*)</b>                | <b>.58 (.43)<sup>a</sup></b>     | <b>.39 (.19*)<sup>a</sup></b>         | .62                  |
| (lack of) Altruism                              | <b>-.04 (-.24)</b>               | <b>.57 (.59)<sup>a</sup></b>     | <b>.42 (.13)</b>                      | .64                  |
| (lack of) Compliance                            | <b>.19* (.06)</b>                | <b>.50 (.40)</b>                 | <b>.37 (.18*)</b>                     | .57                  |
| (lack of) Modesty                               | <b>.28 (.16)</b>                 | <b>.41 (.35)<sup>a</sup></b>     | <b>.18* (.01)<sup>a</sup></b>         | .44                  |
| (lack of) Tendermindedness                      | <b>.14* (-.04)</b>               | <b>.50 (.53)</b>                 | <b>.21 (-.04)</b>                     | .50                  |

Note. \**rs* and  $\beta$ s > .14 are significant at  $p < .001$ ; *rs* and  $\beta$ s  $\geq .20$  are highlighted in bold. Superscripts denote results from Fisher's *Z* tests indicating significant differences between male and female participants in the magnitude of zero-order correlation between Factor score and criterion measure, <sup>a</sup>female > male and <sup>b</sup>male > female.

< .001). Meanness factor scores were more strongly correlated with overall NEO-Antagonism and with scores on its reversed Straightforwardness, Altruism, and Modesty facets in females than males.

*Disinhibition.* As with Meanness, Disinhibition factor scores showed significant bivariate *rs* with all criterion measures (Table 4). When all three factors were entered concurrently as predictors, Disinhibition showed (a) predictive relations comparable to or greater than those for Meanness with total scores on the SRP-III, LSRP, and APSD-SR; (b) strong preferential relations with APSD-SR Impulsivity ( $\beta = .69$ ), LSRP Secondary ( $\beta = .61$ ), and SRP-III Erratic Lifestyle scores ( $\beta = .61$ ); (c) a moderate association with the Criminal Tendencies subscale of the SRP-III ( $\beta = .29$ ); and (d) modest predictive rela-

tions with APSD-SR Narcissism, SRP-III Interpersonal Manipulation, and overall NEO-Antagonism and reversed Straightforwardness and Compliance facets. By contrast, associations for Disinhibition with other facets of NEO-Antagonism and scores on the ICU, SRP-III Callous Affect, LSRP Primary, and APSD-SR Callous-Unemotionality measures dropped to nonsignificance in regression models ( $\beta_s \leq .13$ ). Similar to Meanness, Disinhibition scores were more strongly correlated with reversed Straightforwardness and Modesty facets of NEO-Antagonism and with APSD-SR Impulsivity in women than in men; however, Disinhibition was more strongly correlated with NEO (lack of) Trust in male participants.

## DISCUSSION

Current study findings demonstrate that the constructs of the triarchic conceptual framework can effectively be modeled as latent variables using manifest indicators drawn from differing psychopathy self-report inventories—including measures developed prior to formulation of the triarchic framework (e.g., PPI, YPI). As such, current results provide support for the idea that the dimensions of boldness, meanness, and disinhibition are embedded within alternative models and measures of psychopathy and may reflect fundamental building blocks underlying this clinical construct (Patrick et al., 2009). Moreover, triarchic scales derived from different inventories functioned similarly as indicators of latent variables for both men and women; however, differences in the mean levels and covariance between latent variables were observed. These findings have important implications for understanding the structure of psychopathy, for discerning how psychopathic traits manifest in men and women, and for clarifying unresolved issues in the field.

### MODELING BOLDNESS, MEANNESS, AND DISINHIBITION

As hypothesized, a three-factor latent variable model fit the data better than did alternative one- or two-factor models. This finding indicates that psychopathy is indeed a multifaceted construct, and it provides further support for the utility of distinguishing callous-aggressive tendencies (i.e., meanness) from general externalizing proneness or disinhibition (Frick & Marsee, in press; Krueger et al., 2007). Each manifest indicator loaded substantially ( $\geq .70$ ) on its respective factor. For Disinhibition, loadings were comparable for each inventory (TriPM, PPI, and YPI), whereas loadings for Boldness were higher for TriPM and PPI scale measures than for MPQ-estimated FD. The PPI-Meanness scale exhibited the highest loading on the Meanness latent variable. Notably, this scale includes several items from the Coldheartedness subscale of the PPI, suggesting that lack of empathic concern is likely an essential feature that distinguishes meanness from boldness or disinhibition. Overall, these loadings indicate that these differing operationalizations of the triarchic model constructs (TriPM, PPI-Tri, YPI-Meanness and Disinhibition plus MPQ-FD) index these constructs in a similar way.

Two correlated residual terms needed to be included in the model to achieve adequate fit. The use of correlated residual (error) terms in CFA and structural equation modeling has been criticized by some over concerns that such modifications may reflect random, sample-specific characteristics of the data (Tomarken & Waller, 2003). However, modifications used in the current work (TriPM-Meanness with Disinhibition, and YPI-Meanness with Disinhibition) can be viewed as reflecting method variance because error terms were between scales from the same parent inventory. Indeed, Cole, Ciesla, and Steiger (2007) argued that the use of correlated residuals may not only be permissible, but is also likely very important for accounting for method variance in latent variable models in order to extract meaningful factors that reflect construct variability rather than method effects. Furthermore, model modifications in the current study replicated across random split halves and the full sample, reducing the likelihood that these residual terms reflect random characteristics of the data. An alternative approach that researchers may wish to consider in future studies of this type would be to specify method factors within the latent variable model to account for within-instrument covariance among indicators; this approach could be particularly useful in cases where all scale indicators from a given inventory are intercorrelated, as opposed to only pairs of scales.

A notable strength of the current study is that it evaluated the structure of psychopathy using scales drawn from differing inventories (and associated theoretical conceptions), rather than using items from a single instrument. Researchers have argued that CFA may be overly conservative for evaluating structural model fit with item-level data, particularly for personality-oriented inventories (Hopwood & Donnellan, 2010). The use of scale measures in the present study obviates some of the concerns with item-level CFA (e.g., item keying or difficulty; Nunnally & Bernstein, 1994) and provides a basis for clarifying the content coverage of alternative instruments. This approach helps clarify points of contact versus separation among the constructs of the triarchic model and provides empirical support for the position that boldness, meanness, and disinhibition are core psychopathic traits that transcend particular operationalizations.

## ROLE OF BOLDNESS IN THE PSYCHOPATHY CONSTRUCT

The role of adaptive features in defining psychopathy is highly controversial. Opponents of the inclusion of boldness in the psychopathy construct have noted that fearless dominance is uncorrelated with the impulsive-deviancy factor of the PPI, is not a strong predictor of antisocial behavior, and is associated with a markedly different personality profile (i.e., low Neuroticism, high Extraversion) than the impulsive, externalizing features of psychopathy (Miller & Lynam, 2012). By contrast, others have argued that boldness reflects the psychological adjustment features of psychopathy originally described by Cleckley (Lilienfeld et al., 2012; see also Crego & Widiger, 2016), moderates associations with criterion measures (S. T. Smith, Edens, & McDermott, 2013), and is crucial to differentiating psychopathy from other



externalizing disorders, including antisocial personality (Patrick et al., 2012; Venables et al., 2014; Wall, Wygant, & Sellbom, 2015).

Results of the current work provide some insight into this debate. Consistent with meta-analytic findings for the PPI factors (Miller & Lynam, 2012), latent Boldness and Disinhibition factors were uncorrelated in the current sample. Critically, however, both exhibited significant covariance with latent Meanness. Thus, boldness appears more psychopathic (rather than purely adaptive) when considered in relation to meanness and disinhibition. Within the triarchic framework, meanness operates as the “phenotypic glue” that binds distinguishable facets of psychopathy together. This perspective is consistent with the argument of Lynam and Miller (2015) that Antagonism is the central disposition underlying psychopathy, and with the idea that meanness is the main source of overlap between Factors 1 and 2 of the PCL-R (Patrick et al., 2009). Indeed, latent Meanness in the current study was associated very strongly with NEO-PI-R Antagonism domain scores, and its overlap with Boldness and Disinhibition was seen to reflect shared elements of Antagonism (i.e., low Modesty and Straightforwardness for Boldness; low Compliance and Straightforwardness for Disinhibition).

Notably, the magnitude of associations between Boldness factor scores and criterion psychopathy measures was lower than for Meanness or Disinhibition. This likely reflects the conceptual frameworks underlying these measures, which were designed to index psychopathy as defined by the PCL-R (SRP-III, LSRP, APSD-SR), which reflects boldness only to a limited degree in its Interpersonal facet (Patrick et al., 2009; Venables et al., 2014)—or, in the case of the ICU, specific symptomatic features of psychopathy related to meanness. As such, the observed correlations are lower than would be expected for instruments that contain greater representation of boldness (Driscoll et al., 2014). An examination of associations of the Boldness factor of the current model with other broad-based instruments, such as the Comprehensive Assessment of Psychopathic Personality (CAPP; Cooke, Hart, Logan, & Michie, 2004), may shed further light on the role of this triarchic dimension in the broader psychopathy construct.

#### GENDER DIFFERENCES IN THE TRIARCHIC MODEL OF PSYCHOPATHY

Results of multiple-group CFAs indicated equivalence of factor loadings and indicator intercepts for male and female participants, and correlations of the latent factors with external criterion measures were highly similar across gender subgroups. The implication is that TriPM, PPI-Tri, YPI-Tri, and MPQ-FD operationalizations capture the triarchic model constructs similarly in men and women. Nonetheless, a few notable gender differences were observed. Specifically, male participants had higher mean-level scores on the Boldness and Meanness factors. Somewhat surprisingly, male and female participants did not differ in mean levels of Disinhibition. This could reflect the fact that manifest indicators of disinhibition in the model index impulse-unrestrained tendencies in primarily trait-dispositional terms, rather than by reference to specific aberrant behaviors. By contrast, previous studies that have reported

gender differences in externalizing proneness have relied on indicators consisting mostly (e.g., Krueger et al., 2002) or entirely (e.g., Hicks et al., 2007) of symptoms of antisocial and substance-related conditions that occur more frequently in men. Alternatively, the lack of a significant gender difference in Disinhibition could perhaps be due to the relatively young age of the sample, at which fronto-regulatory systems of the brain may not be fully developed in all participants (Nelson & Luciana, 2008). Gender differences were also found in levels of association among factors of the model, with Meanness covarying more with both Disinhibition and Boldness in men as compared to women, indicating that concurrent elevations on differing facets of the triarchic model are more common among men.

### LIMITATIONS

Results of the present study must be interpreted with certain limitations in mind. Most notably, this study used an undergraduate sample. It is certainly possible that the structure of the triarchic model facets will differ in samples where levels of psychopathic traits are higher, for example, correctional or clinical-forensic samples. Additionally, all manifest indicators used in modeling analyses were derived from self-report inventories. As such, the triarchic factors extracted in this study likely reflect method variance associated with self-report along with construct variance. To address the role of method versus construct variance in the reported model, it will be important in future research to evaluate the structure of psychopathy using indicators from different measurement domains (e.g., interview, observer ratings, behavioral, physiological). Patrick and Drislane (2015) described such an approach—focused on modeling the triarchic psychopathy constructs as “meta-factors” using indicators from multiple assessment domains, while also delineating “method subfactors” accounting for domain-specific variance. This multi-method/multi-indicator approach acknowledges that the triarchic model facets are “open constructs” (Meehl, 1986) that can be operationalized in a variety of ways. Incorporating information from multiple domains will serve to enhance our understanding of these constructs (including their etiology) and how best to conceptualize and measure them, while also establishing an empirical associative network that can help to optimize cross-domain prediction. Likewise, concerns have been raised about the validity of self-report assessment of psychopathy, in general, as well as the application of male models of psychopathy to female participants; however, many of these concerns have not been borne out by empirical data (Lilienfeld, Fowler, & Patrick, 2006).

In addition, the manifest indicators of boldness were somewhat problematic. The YPI boldness scale was not used due to its stronger-than-expected overlap with YPI-Disinhibition (Drislane et al., 2015); MPQ-FD was used instead as a third boldness indicator. However, the loading of MPQ-FD on the latent Boldness factor was lower than the loadings for other indicators. This may be because FD scores were estimated from a very short, 35-item version of the MPQ. FD or boldness measures derived from longer-form versions of the MPQ (e.g., Benning et al., 2005; Brislin, Drislane, Smith, Edens,

& Patrick, 2015) could prove more effective as indicators in future modeling studies.

#### IMPLICATIONS FOR FUTURE RESEARCH: TOWARD A METASTRUCTURE OF PSYCHOPATHY

Despite these limitations, the current work serves to highlight possibilities for advancing toward a latent variable framework for psychopathy based around the triarchic model constructs. Latent variable frameworks have a number of advantages. First, latent variable modeling capitalizes on variance in common among indicators presumed to reflect variability in the construct, thus reducing measurement-specific error variance. This results in “purer” indices of target constructs that can be used for differing purposes, such as modeling relations between psychopathy facets and other individual difference constructs. A latent variable approach is also useful for clarifying points of contact between conceptual-thematic facets of psychopathy as specified by the triarchic model and particular manifest measures of psychopathy. As an example of this, the data in Table 4 help to clarify the relative coverage provided by differing established psychopathy inventories, relative to latent factor representations of the triarchic constructs. For example, the SRP-III provides strong coverage of meanness and disinhibition, and some coverage of boldness—but through scales that contain differing blends of each, rather than scales selectively indicative of one or another. By contrast, the ICU, the LSRP Primary subscale, and the APSD Callous-Unemotionality subscale provide no coverage of boldness beyond elements in common with meanness or disinhibition, but each indexes meanness in a manner compatible with the latent variable model—that is, with disinhibition-related variance mostly accounted for by the systematic overlap between meanness and disinhibition factors, as reflected by their intercorrelation within the model.

Along with helping to clarify the relative coverage of the triarchic model constructs in differing inventories, a latent variable model can also be useful for clarifying the nature of systematic variance in other psychopathy measures that *is not accounted for* by the triarchic constructs. For example, it seems likely that residual variance in some instruments (certain subscales, in particular) reflects criminal or antisocial behavior. The question of how differing inventories compare in coverage of criminal or antisocial behavior, and how content of this nature fits with the triarchic model, will be important to address in further ongoing research.

Finally, another important advantage of a latent variable framework is that the factors of the model can serve as referents for evaluating alternative manifest measures, as opposed to relying on specific operationalizations as benchmarks (“gold standards”). For example, future studies aimed at developing optimal scale operationalizations of the triarchic constructs can evaluate their fit within a structural model instead of comparing scores with a particular measure such as the TriPM. This approach is consistent with the idea of constructs as “open”—that is, amenable to revision based on empirical observations and comparisons (Meehl, 1986). Beyond the domain of self-report assessment, latent variable representations of the triarchic constructs

can also serve as referents for identifying indicators of psychopathy facets in other measurement domains, including cognitive- or affective-task performance (A. A. Marsh & Blair, 2008; Young et al., 2009) and brain or other physiological responses (Patrick et al., 2013b; Yancey, Venables, & Patrick, 2016). Again, the aim is to understand the biobehavioral nature and causal bases of distinct phenotypic facets of psychopathy, not to identify correlates of some specific operationalization in one particular measurement domain. Treating the triarchic model facets as open constructs will allow us to attain a more comprehensive and nuanced understanding of psychopathy and refine our conception of this crucially important clinical condition as scientific knowledge systematically accrues.

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