

Development and Construct Validation of MMPI-2-RF Indices of Global Psychopathy, Fearless-Dominance, and Impulsive-Antisociality

Martin Sellbom
The University of Alabama

Yossef S. Ben-Porath
Kent State University

Christopher J. Patrick
Florida State University

Dustin B. Wygant
Eastern Kentucky University

Diane M. Gartland
Michigan Department of Corrections, Lansing,
Michigan

Kathleen P. Stafford
Kent State University

This paper reports on three psychopathy indices derived from scores on the MMPI-2 Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008). In Study 1, we describe the development of such indices referenced to the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996) and its two distinguishable facets, Fearless-Dominance and Impulsive-Antisociality. We estimated psychopathy scores by regressing PPI scores onto conceptually selected MMPI-2-RF scales in a combined sample of 825 college students and correctional inmates. In Study 2, we explored the construct validity of these psychopathy measures in college student and correctional samples. The measures demonstrated conceptually expected patterns of associations with other established psychopathy inventories, and with psychopathy-related traits including narcissism, sensation seeking, antisociality, and impulsivity as well as broad personality and temperament factors. In Study 3, we used data from a large sample of outpatient mental health clients to establish the validity of the MMPI-2-RF psychopathy measures in relation to legal and mental health variables and therapist ratings of antisociality, narcissism, aggression, and internalizing problems. Theoretical implications of findings from these three studies for the psychopathy construct (including for DSM-5) are discussed.

Keywords: psychopathy, MMPI-2-RF, psychopathic personality inventory, construct validity

Present conceptualizations of the psychopathic personality as a clinical construct can be traced back to Cleckley's book *The Mask of Sanity* (1941). Cleckley's conceptualization em-

phasized charm, lack of remorse, emotional insensitivity, failure to learn from experience, egocentricity, untruthfulness, and absence of anxiety or fear. This conceptualization was first

This article was published Online First July 4, 2011.

Martin Sellbom, Department of Psychology, University of Alabama; Yossef S. Ben-Porath and Kathleen P. Stafford, Department of Psychology, Kent State University; Christopher J. Patrick, Department of Psychology, Florida State University; Dustin B. Wygant, Department of Psychology, Eastern Kentucky University; Diane M. Gartland, Michigan Department of Corrections, Lansing, Michigan.

Diane M. Gartland is now in Independent Practice, Ann Arbor, Michigan.

The authors are grateful to the Michigan Department of Corrections for facilitating the collection of the cor-

rectional sample, which was funded by a grant from the MMPI-2-RF publisher, the University of Minnesota Press. Martin Sellbom and Yossef S. Ben-Porath receive continuous research funding from the University of Minnesota Press. Yossef S. Ben-Porath is also a paid consultant to the MMPI-2-RF publisher and test distributor, Pearson Assessments. He receives royalties on sales of MMPI-2-RF materials.

Correspondence concerning this article should be addressed to Martin Sellbom, Department of Psychology, 348 Gordon Palmer Hall, The University of Alabama, Tuscaloosa, AL 35487-0348. E-mail: msellbom@ua.edu

indexed in a standardized manner by the Psychopathy Checklist (PCL; Hare, 1980), which is currently the most widely used and extensively validated psychopathy measure. Nonetheless, significant debate continues regarding how psychopathy should be conceptualized, including the number of latent factors underlying the construct (e.g., 2, 3, or 4; Cooke & Michie, 2001; Hare & Neumann, 2008) and whether antisociality and/or criminal behavior is a structural component of the disorder (e.g., Skeem & Cooke, 2010; Hare & Neumann, 2010).

Psychopathy is effectively captured in the self-report domain by the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996; Lilienfeld & Widows, 2005). The goal of the current investigation was to develop and elaborate on the construct validity of the distinct Fearless-Dominance and Impulsive-Antisociality facets of psychopathy indexed by the PPI using an assessment inventory that is widely used in community, clinical, and correctional settings—the Minnesota Multiphasic Personality Inventory – 2– Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008).

Psychopathy, Personality, and Nonincarcerated Samples

Different researchers (e.g., Lilienfeld, 1998; Lynam & Derefinko, 2006) have argued that psychopathy can be understood in terms of extreme positions on personality trait dimensions. Along these lines, Lilienfeld (1998) suggested that personality-oriented approaches to defining psychopathy are useful because psychopathy is likely to be multiply determined and thus measurable as a multifaceted dimensional trait construct—a conceptualization that has been supported by numerous studies (e.g., Edens, Marcus, Lilienfeld, & Poythress, 2006; Marcus, John, & Edens, 2004). Such conceptualizations also allow for studying psychopathy in both incarcerated and nonincarcerated settings, as they do not rely on the presence or absence of criminality. Moreover, studying psychopathy in nonforensic samples allows one to rule out the effects on dependent measures of such potentially confounding factors as long-term drug use, acute effects of incarceration, and recurrent institutionalization (Lilienfeld, 1996).

Psychopathic Personality Inventory

The PPI (Lilienfeld & Andrews, 1996) is a self-report inventory developed specifically to assess psychopathic traits in community and nonincarcerated samples in terms of the personality features (via eight distinct subscales) of psychopathy reflected in Cleckley's and other subsequent researchers' (e.g., Hare, 1991; Lykken, 1957; McCord & McCord, 1964; Quay, 1965) descriptions of the disorder. Using exploratory factor analysis, Benning, Patrick, Hicks, Blonigen, & Krueger (2003) identified two largely orthogonal factors underlying the subscales of the PPI, with seven of eight subscales loading preferentially on one or the other. Specifically, the Stress Immunity, Social Potency, and Fearlessness subscales loaded on the first factor (Fearless-Dominance, or PPI-I), and the Machiavellian Egocentricity, Carefree Nonplanfulness, Rebellious Nonconformity, and Blame Externalization subscales loaded on the second (Impulsive-Antisociality, or PPI-II).¹ The remaining subscale, Coldheartedness, did not load appreciably on either factor, indicating that it taps a separate construct.

This two-factor exploratory structure has subsequently been replicated in other samples (e.g., Benning, Patrick, Salekin, & Leistico, 2005c; Edens & McDermott, 2010; Patrick, Edens, Poythress, Lilienfeld, & Benning, 2006; Ross, Benning, Patrick, Thompson, & Thurston, 2009), although evidence exists (as with factorial models of other personality instruments; e.g., McCrae, Zonderman, Costa, Bond, & Paunonen, 1996) that the PPI two-factor structure may not meet strict confirmatory fit criteria (Neumann, Malterer, & Newman, 2008). Nonetheless, extensive evidence exists for the construct validity of the two distinct facets of the PPI in relation to a wide array of psychometric and diagnostic criteria (e.g., Benning, Patrick, Blonigen, Hicks, & Iacono, 2005a; Berardino, Meloy, Sherman, & Jacobs, 2005; Patrick et al., 2006; Poythress et al., 2010), aggression and violence (Edens, Poythress, Lilienfeld, Patrick, & Test, 2008), as well as criteria in the physi-

¹ Lilienfeld and Widows (2005) proposed the alternative label "Self-Centered Impulsivity" for the second factor of the Psychopathic Personality Inventory – Revised (PPI-R) to better reflect the content of subscales associated with this factor.

ological (e.g., Benning, Patrick, & Iacono, 2005b; Dvorak-Bertsch, Curtin, Rubinstein, & Newman, 2009; Gordon, Baird, & End, 2004) and neurocognitive (e.g., Sellbom & Verona, 2007) response domains. The implication is that while efforts to refine the measurement of Fearless-Dominance and Impulsive-Antisociality constructs are warranted (e.g., Edens & McDermott, 2010), these constructs as operationalized by the PPI nonetheless have nomological/predictive meaning (cf. Hopwood & Donnellan, in press).

Some research has examined PPI scores in relation to scores on Hare's (1991, 2003) interview-based Psychopathy Checklist-Revised (PCL-R). Like the PPI, the PCL-R has two broad factors (Factor 1 = affective-interpersonal; Factor 2 = social deviance), which can be further partitioned into lower-order facets (Hare, 2003). Although the PPI and PCL-R correlate only at moderate levels (e.g., Poythress et al., 2010), as would be expected of constructs in differing measurement domains (self-report vs. clinical interview; cf. Blonigen et al., 2010), available data nonetheless indicate that the overall constructs indexed by the PPI and the PCL-R have similar nomological networks (i.e., the two instruments show similar *patterns* of associations with relevant criterion measures; Poythress et al., 2010). Regarding the broad factors of each, recent research (Blonigen et al., 2010) indicates that—accounting for differences in measurement domain—the constructs underlying PPI-II (Impulsive-Antisociality) and PCL-R Factor 2 appear to be highly similar, whereas those associated with PPI-I (Fearless-Dominance) and PCL-R Factor 1 appear more distinct. In their integrative, Triarchic model of psychopathy, Patrick, Fowles, and Krueger (2009) theorized that PPI Fearless-Dominance predominantly reflects the “boldness” (i.e., social dominance; thrill seeking; low stress-reactivity) domain of psychopathy, whereas Factor 1 of the PCL-R is more indicative of the “meanness” (i.e., callous-unemotionality; relational and instrumental aggression) domain. As a result, scores on PPI Fearless-Dominance relate more strongly to measures of social efficacy and emotional stability than scores on PCL-R Factor 1. Nonetheless, scores on PPI-I also correlate in expected directions with psychopathy-related criterion variables including narcissism (+),

thrill/adventure seeking (+), and empathy (–), and contribute substantially over scores on PPI-II to prediction of FFM-based psychopathy prototype (Miller, Lynam, Widiger, & Leukefeld 2001) scores (Ross et al., 2009).

Assessment of Psychopathy With the MMPI-2-RF

The current study sought to extend the measurement of the Fearless-Dominance and Impulsive-Antisociality constructs using the MMPI-2-RF, a 338-item self-report measure linked conceptually and empirically to modern theories and models of psychopathology and personality. The MMPI-2-RF comprises six sets of scales: Validity, Higher-Order (H-O), Restructured Clinical (RC), Specific Problems (SP), Interest, and Personality Psychopathology Five (PSY-5). The current study focused in particular on the RC and SP scales (see Table 1). The RC scales were developed by removing (to the extent possible and conceptually indicated) the broad factor common to the original MMPI-2 (Butcher et al., 2001) clinical scales and identifying the remaining distinctive core constructs measured by each (Tellegen et al., 2003). This procedure resulted in a Demoralization scale (RCd) measuring the common distress factor, and eight additional RC scales corresponding to the original eight clinical scales of the instrument. The SP scales were primarily developed to assess narrow and distinct constructs that either could clarify RC scale elevations or capture constructs not assessed by the RC scales. Two of the SP scales measure fearfulness [Behavior Restricting Fears (BRF) and Multiple Specific Fears (MSF)] and four are specific measures of interpersonal functioning – Interpersonal Passivity (IPP), Social Avoidance (SAV), Shyness (SHY), and Disaffiliativeness (DSF).

There are several potential advantages to using selected MMPI-2-RF scales as a basis for estimating PPI psychopathy in terms of its distinctive facets. First, the original MMPI-2 (from which MMPI-2-RF scales can be scored) is unrivaled in its extent of use in clinical and forensic/correctional settings (Archer, Buffington-Vollum, Stredney, & Handel, 2006; Camara, Nathan, & Puente, 2000), which provides for the opportunity to measure psychopathy and particularly the Fearless-Dominance and Impulsive-Antisociality constructs in settings where instruments such as the

Table 1
MMPI-2-RF Scale Names, Abbreviations, Number of Items, Reliability, and Brief Description

Scale name	Abbreviation	Items	α	Brief description
Demoralization	RC dem	24	.91/.91	General unhappiness; Dissatisfaction; Hopelessness; Self-doubt; Inefficacy
Somatic complaints	RC1 som	27	.82/.93	Pre-occupation with bodily concerns; Diffuse somatic complaints
Low positive emotions	RC2 lpe	17	.72/.73	Lack of hedonic capacity; Increased risk for depression; Passive social withdrawal; Insecurity
Cynicism	RC3 cyn	15	.79/.83	Other-referential belief about malevolence and untrustworthiness
Antisocial behavior	RC4 asb	22	.80/.82	Externalizing proclivities; Disinhibitory style; Nonconformity
Ideas of persecution	RC6 per	17	.73/.75	Self-referential paranoid ideation; Persecutory delusions
Dysfunctional negative emotions	RC7 dne	24	.87/.87	Negative emotions including fear, anxiety, and anger
Aberrant experiences	RC8 abx	18	.79/.76	Bizarre perceptual experiences/hallucinations and nonpersecutory delusional beliefs
Hypomanic activation	RC9 hpm	28	.83/.82	Grandiose self-view; General excitation; Aggression, Sensation-seeking; Risk Taking; Extreme scores indicate hypomania
Behavior-restricting fears	BRF	9	.60/.61	Fears that significantly inhibit normal behavior
Multiple specific fears	MSF	9	.65/.67	Fearfulness; Various specific fears involving blood, fire, thunder, etc.
Interpersonal passivity	IPP	10	.63/.66	Unassertive; Submissive
Social avoidance	SAV	10	.76/.74	Low gregariousness; Does not enjoy and avoid social events
Shyness	SHY	7	.80/.78	Feeling uncomfortable and anxious around others
Disaffiliativeness	DSF	6	.58/.54	Disliking people; Prefers not to affiliate with others

Note. Internal consistencies (Cronbach's alpha) are based on the college (left of slash) and correctional (right of slash) samples from Study 1.

PPI itself, NEO-PI-R, or the MPQ are unlikely to be (or are infrequently) used. As a function of this, the utility of MMPI-RF-based psychopathy measures would extend to both clinical and research contexts. Second, research has shown that the MMPI-2-RF scales used in the current study map meaningfully onto a set of dimensional personality traits assessed by the Multidimensional Personality Questionnaire (MPQ) and the Five Factor Model (FFM) of personality (Sellbom & Ben-Porath, 2005; Sellbom, Ben-Porath, & Bagby, 2008; Tellegen & Ben-Porath, 2008)—both which have been used to index psychopathy. These personality traits are relevant to assessment of Fearless-Dominance (e.g., fearlessness, interpersonal assertiveness, grandiosity) and Impulsive-Antisociality (i.e., disinhibition, aggression, nonconformity).

In support of this perspective, recent research has demonstrated validity for the RC scales as a basis for assessing psychopathy in differing samples. Using a college student sample, Sellbom,

Ben-Porath, Lilienfeld, Patrick, and Graham (2005) demonstrated that Restructured Clinical scales RC4 (Antisocial Behavior) and RC9 (Hypomanic Activation) performed better than their original MMPI-2 Clinical Scale counterparts in predicting overall scores on the PPI and its two broad factors, with the addition of measures of negative emotionality contributing to enhanced prediction of Fearless-Dominance. Subsequently, in a forensic sample, Sellbom, Ben-Porath, and Stafford (2007) showed that RC4 outperformed all other MMPI-2 scales in predicting scores on the Screening Version of the PCL-R (PCL:SV; Hart, Cox, & Hare, 1995). However, while the RC scales accounted for a substantial amount of variance in psychopathy scores in these studies, they did not fully capture the fearlessness and interpersonal dysfunction aspects of the construct. The current study addressed this issue by augmenting the RC scales with SP scales reflecting such traits to improve assessment of psychopathy using the MMPI-2-RF.

The Current Investigation

The current investigation comprised three studies. The first sought to develop MMPI-2-RF–based indices estimating global PPI psychopathy along with distinctive Fearless-Dominance and Impulsive-Antisociality facets.² The second study was designed to elaborate on the construct validity of the MMPI-2-RF–based indices of PPI constructs—focusing on their associations with other psychopathy measures and psychopathy-relevant personality characteristics. The third study further elaborated on the construct validity of these indices in a community mental health setting and employed an infrequently (in psychopathy research) used criterion modality consisting of therapist ratings based on extensive interactions with clients.

Study 1

The goal of this study was to develop an MMPI-2-RF model for indexing global psychopathy as assessed by the PPI, as well as indices of the two broad PPI facets of Fearless-Dominance and Impulsive-Antisociality. Specifically, we conceptualized the *Fearless-Dominance* psychopathy facet as a constellation of well-being (low RC2), stress immunity (low RC7), and fearlessness (low BRP and MSF) with a grandiose and aggressive (RC9), assertive/domineering, glib, and gregarious interpersonal style (low SHY, SAV, and IPP) (Benning et al., 2003, 2005a; Harpur, Hare, & Hakstian, 1989; Patrick, 1994; Patrick, Fowles, & Krueger, 2009; Verona, Patrick, & Joiner, 2001).³ We conceptualized the *Impulsive-Antisociality* psychopathy facet as a constellation of externalizing/disinhibitory style (RC4), excitement seeking, and aggressiveness (RC9) combined with a misanthropic, mistrustful, and socially disconnected interpersonal style (RC3, RC6, DSF) (Benning et al., 2003, 2005a; Harpur, Hare, & Hakstian, 1989; Patrick, Fowles, & Krueger, 2009; Verona, Patrick, & Joiner, 2001). Overall, our global psychopathy measure was conceptualized as a constellation of these affective, interpersonal, and disinhibitory characteristics.

The psychopathy indices were developed using a combination of two samples representing incarcerated as well as nonincarcerated participants to ensure that a broad range of the psy-

chopathy continuum was represented (see Krueger, Markon, Patrick, Benning, & Kramer, 2007, for using similar sampling method to develop a broadband measure of externalizing psychopathology). This procedure also allowed for scores on these psychopathy indices to be applicable across both correctional and community settings. Two thirds of this combined sample was used for derivation of the psychopathy indices, with the other third utilized for cross-validation analyses.

Method

Participants and Procedures

College sample. Potential participants were 724 undergraduate students enrolled in General Psychology courses at a Midwestern university, who were administered the MMPI-2 and PPI in counterbalanced order. To eliminate invalid test protocols based on unscorable or inconsistent responding, the following exclusionary criteria for the MMPI-2-RF were used: Cannot Say scale raw score ≥ 18 , VRIN-r or TRIN-r scale T score ≥ 80 , or Infrequent Psychopathology Responses (Fp-r) T score ≥ 100 (Ben-Porath & Tellegen, 2008). In addition, participants who met the following PPI score criteria were excluded: PPI Cannot Say scale score ≥ 10 , or PPI VRIN score 3 SDs from the sample mean. These procedures resulted in exclusion of 126 (17%) participants, leaving 321

² Although Coldheartedness loaded on a third factor in Benning et al. (2003) and is scored as a third factor on the revised version of the PPI (Lilienfeld & Widows, 2005), we decided not to develop separate estimation of this construct. In terms of construct validity, relatively little is known about the construct underlying PPI coldheartedness as compared to FD and IA. Benning et al. (2005a) suggested that it may capture low sentimentality rather than callous affect. There is also little evidence that separate assessment of this domain adds to our understanding of psychopathy from the PPI perspective. Furthermore, the major aim of this project was to index the FD and IA constructs in addition to psychopathy more broadly. Coldheartedness is part of the total PPI score; thus, the MMPI-2-RF measures would still capture this variance via the assessment of global psychopathy.

³ Although most of these MMPI-2-RF measures are predicted to be negatively associated with Fearless-Dominance, these scales have received considerable support as bipolar indicators of these personality constructs (e.g., Sellbom & Ben-Porath, 2005; Sellbom et al., 2008), and the test publisher currently recommends the interpretation of low scores on these scales (Ben-Porath & Tellegen, 2008).

male (53.7%) and 277 female (46.3%) student participants. This final sample ranged in age from 18 to 55 years ($M = 19.72$, $SD = 2.85$), with approximately 83% of participants under 21 years old. Most students (95%) were single or had never been married. Ethnic background information was acquired from a subsample of participants. Most were Caucasian (90%), with about 5% African American and 3% Asian American.

Correctional sample. The correctional sample consisted of 703 male prison inmates undergoing assessment at a reception center for the Michigan Department of Corrections. Each inmate was administered the audiotape version of the MMPI-2 as part of standard intake procedures. The PPI and other self-report measures (see Study 2) were administered in randomized order one to five days later with a modal lag of one day. The participants received cookies and juice after their participation. We applied the same MMPI-2-RF and PPI exclusionary criteria as for the college sample, which excluded 48 (6.8%) participants, leaving 655 male inmates. The final sample ranged in age from 18 to 66 years ($M = 32.31$, $SD = 9.65$). In terms of ethnic background, most were Caucasian (51%), African American (31%), and Hispanic (4%) with the remaining 14% of other or mixed ethnic backgrounds. There were no statistically significant differences on demographic variables between those included and excluded.

Measures

MMPI-2-RF. The MMPI-2 Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008) scale scores were derived from MMPI-2 administrations. The MMPI-2-RF and the scales used in the current study were described earlier. Internal consistencies derived from the overall college and correctional samples are listed in Table 1.

Psychopathic personality inventory. The PPI (Lilienfeld & Andrews, 1996), described in detail earlier, is a 187-item self-report inventory of psychopathy. Following Benning et al. (2003), scores on the two PPI factors were calculated by standardizing, and then averaging, scores for the PPI subscales that loaded differentially on each factor. Internal consistencies (Cronbach's alpha) in the present study were .90 (college) and .91 (correctional) for the PPI

Total Score, .87 and .87 for PPI-I, and .91 and .92 for PPI-II, whereas subscales ranged from .75 (Coldheartedness) to .84 (Social Potency) in the college sample and .74 (Rebellious Nonconformity) to .88 (Machiavellian Egocentricity) in the correctional sample.

Data Analyses

First, we combined the college and correctional samples and then randomly divided this overall sample into two subgroups consisting of 66% ($n = 825$; derivation sample) and 34% ($n = 428$; cross-validation sample) of the participants, respectively. The proportions of correctional men (51.5% vs. 53.7%), college men (26.3% vs. 24.3%), and college women (22.2% vs. 22.0%) were almost identical across the two random subgroups.

Next, we used the derivation sample to develop the psychopathy indices to estimate total psychopathy and the Fearless-Dominance and Impulsive-Antisociality facets of the construct. Multiple regression analyses, modeled after Benning et al.'s (2005a) double cross-validation procedure, were used to test the hypotheses concerning the selected MMPI-2-RF scales' conceptual links to psychopathy as indexed by the PPI. Beta weights indicate the extent to which each scale uniquely predicts the criterion compared to the other scales, including which scales contribute at a statistically significant level (set to .01 in this study). However, regression equations that are conducted in only one sample carry the risk of generating unstable multiple correlations; therefore, cross-validation across two samples is necessary (see Browne, 2000; Copas, 1983); as such, we employed Mosier's (1951) double cross-validation procedure for this purpose. The derivation sample was divided into two random halves ($ns = 413$ and 412), and an initial regression analysis was conducted using data from the first random subgroup. Beta weights from that regression equation were used to generate a cross-validated multiple correlation in the second group. Next, a regression analysis was run in the second group, and the beta weights generated from this analysis were used to calculate a cross-validated multiple correlation with data from the first group. Finally, an average (across the two groups) cross-validated multiple correlation

was calculated for each PPI measure. We also tested the regression weights for equivalence across the three groups of correctional men, college men, and college women by calculating separate regression equations for each group and then correlating the resulting scores for each in the overall derivation sample. Saucier (1998) recommends that such coefficients of congruence should be at least .90.

We used the cross-validation sample to independently examine the associations between the MMPI-2-RF estimated PPI scores and actual PPI scores. Zero-order correlation analyses were conducted in three separate groups, correctional men ($n = 230$), college men ($n = 104$), and college women ($n = 94$), to determine whether there were any substantial differences across the samples.

Results and Discussion

Derivation Analyses

Zero-order correlations. We first examined zero-order associations between the selected MMPI-2-RF scales and PPI Total and factor scores. Table 2 shows these results. As expected, PPI Fearless-Dominance was corre-

lated negatively with RC1, RC2, and RC7, BRF, MSF, IPP, SHY, and SAV, and positively with RC9. PPI Impulsive-Antisociality was positively correlated with RC3, RC4, RC6, and RC9. Unexpectedly, PPI Impulsive-Antisociality was also weakly correlated with RC1 and RC2 and moderately correlated with RC7 and RC8.

Multiple regression analyses. We examined the multiple R s and cross-validated multiple R s for the MMPI-2-RF predicting PPI Total, Fearless-Dominance, and Impulsive-Antisociality scores in the two random halves of the derivation sample. In the first random half, the multiple R s for predicting PPI Total, Fearless-Dominance, and Impulsive-Antisociality scores were .72, .70, .72, respectively; in the second random half, these values were .67, .64, and .65, respectively. The average cross-validated multiple R s across the two random groups (R s = .68, .66, .69, respectively) showed minimal shrinkage in validity. Furthermore, the corresponding PPI-estimated scores generated by the alternate regression equations in each random half correlated .99 (PPI Total), .97 (Fearless-Dominance), and .99 (Impulsive-Antisociality) with each other, indicating that they measure virtually identical constructs.

Table 2

Zero-Order Correlations and Standardized Beta Weights for Predicting PPI Total, PPI-I, and PPI-II Scores in the Overall Derivation Sample ($n = 825$)

	PPI Total ($R = .68$)		PPI-I ($R = .67$)		PPI-II ($R = .67$)	
	r	β	r	β	r	β
RCd	.09	-.07	-.34	-.12	.39	.09
RC1	-.02	-.09	-.25	.01	.18	-.11*
RC2	.03	.19**	-.36	-.01	.28	.20**
RC3	.24	.03	-.08	-.04	.33	.03
RC4	.48	.34**	.02	.01	.53	.37**
RC6	.25	.11*	-.13	-.03	.39	.12*
RC7	.07	-.26**	-.34	-.32**	.34	-.01
RC8	.23	.06	-.04	.16**	.35	.02
RC9	.44	.41**	.20	.32**	.46	.28**
BRF	-.06	-.02	-.23	-.03	.11	-.01
MSF	-.19	-.17**	-.31	-.21**	-.02	-.07
IPP	-.22	-.07	-.32	-.10*	-.04	.01
SAV	-.15	-.15**	-.40	-.21**	.04	-.08
SHY	-.07	-.06	-.42	-.16**	.20	.02
DSF	.16	.15**	-.09	.12**	.24	.08*

Note. PPI = Psychopathic Personality Inventory; PPI-I = Fearless-Dominance; PPI-II = Impulsive-Antisociality; RC = Restructured Clinical scale; RCd = Demoralization; BRF = Behavior-Restricting Fears; MSF = Multiple Specific Fears; IPP = Interpersonal Passivity; SAV = Social Avoidance; SHY = Shyness; and DSF = Disaffiliativeness.

* $p < .01$. ** $p < .001$.

In the next step, we tested the equivalence of the regression equations using the overall sample (i.e., combining the two random halves) across the three participant groups (correctional men, college men, and college women). Regression equations were highly correlated for the prediction of all three PPI scores, ranging from .90 (for PPI-I score in college and correctional men) to 1.00 (for PPI-II scores in correctional men and college women). These results indicate high equivalence for regression equations across the three groups, providing support for generating regression equations based on the overall derivation sample. Thus, the beta weights from the overall sample were used to generate the final regression equations in estimating PPI scores.

Table 2 presents the beta weights derived from analysis of the overall sample. We had hypothesized that RC1 (–), RC2 (–), RC7 (–), RC9 (+), BRF (–), MSF (–), IPP (–), SAV (–), and SHY (–) would contribute significantly to the prediction of Fearless-Dominance scores. Although the pattern of zero-order correlations was as expected, this hypothesis was partially supported in that some (i.e., RC7, RC9, MSF, IPP, SAV, and SHY) but not all scales contributed distinctively to prediction of Fearless-Dominance scores in the regression model, indicating stress immunity, fearlessness, grandiosity, and proactive aggression. Interestingly, DSF, which was uncorrelated with PPI Fearless-Dominance at the zero-order level, also showed a positive and significant beta weight in the regression model, possibly indicating the presence of a cooperative suppressor effect. Unexpectedly, RC8 also contributed significantly to the prediction of PPI Fearless-Dominance scores, although the magnitude of prediction for this scale was substantially smaller than for other major scale indicators (e.g., RC7 and RC9). This finding suggests that high-scorers may exhibit some unusual or deviant thinking, or possibly heightened levels of openness (cf. Ross et al., 2009).

Furthermore, RC1 and RC2 did not contribute significantly to the prediction of PPI Fearless-Dominance scores in the regression model. Although evidence exists in the literature for reduced emotional reactivity in psychopaths who score high on the affective-interpersonal factor, much of this research has been conducted in fear-based paradigms (e.g., Lykken,

1957; Patrick, Bradley, & Lang, 1993; Patrick, 1994). Thus, it stands to reason that the deficiencies in emotional responsiveness associated with PPI Fearless-Dominance would be better captured by scale measures of general negative emotionality (i.e., RC7) and fearfulness (i.e., MSF) than by measures of somatic concerns (i.e., RC1) or reduced capacity for positive affect (i.e., RC2).

Our hypothesis that RC3, RC4, RC6, RC9, and DSF scales would each contribute to the prediction of PPI Impulsive-Antisociality scores was supported in the zero-order correlation analyses, but in the regression model only RC2, RC4, RC6, RC9, and DSF scales contributed significantly to prediction. Thus, individuals who score high on this factor are characterized by above-average levels of disinhibition, nonconformity, social disengagement and lack of affiliation, excitement seeking, activation, reactive aggression, alienation, and interpersonal mistrust. These characteristics are consistent with various descriptions of psychopathy Factor 2 (e.g., Benning et al., 2005a; Harpur, Hare, & Hakstian, 1989; Patrick et al., 2006). Finally, the model for the global PPI psychopathy construct included primary loadings on RC2, RC4, RC6, RC7 (–), RC9, MSF (–), SAV (–), and DSF, which essentially captures the core characteristics of Fearless-Dominance and Impulsive-Antisociality.

To approximate the constructs underlying the PPI total and factor scores with the MMPI-2-RF, we calculated scores for each participant on each of these three construct (i.e., global psychopathy, Fearless-Dominance, and Impulsive-Antisociality) by generating a sum of the products of the standardized beta weight associated with each MMPI-2-RF scale entered into the equation with an individual's score on each scale. These MMPI-2-RF-based indices, labeled Psychopathy Total (Py-T), Fearless-Dominance (Py-FD), and Impulsive-Antisociality (Py-IA), were subsequently examined in analyses conducted with the cross-validation sample.

Cross-Validation Sample Analyses

We next examined correlations between the Py-T, Py-FD, and Py-IA indices and scores on the PPI Total, facet, and subscales in the Cross-Validation Sample. We examined these correlations separately for three distinct subgroups of participants in this sample (correctional men, col-

lege men, and college women) to allow for comparison of the correlation patterns. Table 3 displays these results. As expected, Py-T, Py-FD, and Py-IA showed significant and large correlations with PPI Total, PPI Fearless-Dominance, and PPI Impulsive-Antisociality, respectively. The pattern of correlations was quite similar across the three groups. Py-FD and Py-IA correlated with respective subscales for Fearless-Dominance and Impulsive-Antisociality in the expected direction. For instance, Py-FD was positively correlated to either a moderate or high degree with Social Potency, Fearlessness, and Stress Immunity, but not Machiavellian Egocentricity, Carefree Nonplanfulness, Rebellious Nonconformity, and Blame Externalization, whereas Py-IA showed the reverse pattern. Only Py-FD was significantly correlated with Coldheartedness in the Correctional men group, but this effect size was small. Although the correlation patterns were quite similar across the three groups, magnitudes of correlations were somewhat larger for the female college student subgroup compared with the other subgroups. In particular, magnitudes of association for Py-T and PPI Total score were significantly higher for the college women than either the college men (Fisher's $z = 1.96, p < .05$) or the correctional men ($z = 2.16, p < .05$).

Study 2

The goal of the second study was to elaborate on the nomological networks associated with the

MMPI-2-RF-based estimates of PPI scores derived in Study 1. Specifically, we examined associations between the Py-T, Py-FD, and Py-IA indices and various measures of (1) psychopathy, (2) narrow-band personality traits conceptually relevant to psychopathy (e.g., narcissism, sensation seeking, empathy), and (3) broad-band personality domains (e.g., FFM factors). We hypothesized that Py-FD would be positively associated with psychopathy measures (in particular, measures reflecting PCL Factor 1), narcissistic personality features, thrill and adventure seeking, and extraversion/sociability, and negatively with fear, distress, empathy, and neuroticism (cf. Benning et al., 2005a; Patrick et al., 2006). Py-IA was hypothesized to be positively correlated with psychopathy measures (in particular, measures indicative of PCL Factor 2), self-reported antisocial behavior, sensation seeking (facets other than thrill and adventure seeking), and impulsivity, and negatively correlated with agreeableness and conscientiousness. The Py-T score was expected to show similar but more modest relations with many of these variables, except measures of internalizing psychopathology, for which null associations were predicted (e.g., Blonigen et al., 2010).

Method

Participants and Procedures

Forensic sample. This sample consisted of 85 individuals undergoing criminal court-

Table 3
Correlations Between Py-T, Py-FD, and Py-IA and Psychopathic Personality Inventory in the Cross-Validation Sample

PPI scales	Correctional men (<i>n</i> = 230)			College men (<i>n</i> = 104)			College women (<i>n</i> = 94)		
	Py-T	Py-FD	Py-IA	Py-T	Py-FD	Py-IA	Py-T	Py-FD	Py-IA
PPI total score	.55*	.28*	.47*	.54*	.36*	.45*	.70*	.41*	.70*
PPI factor 1	.24*	.62*	-.10	.35*	.62*	.03	.50*	.71*	.15
Social potency	.21*	.58*	-.11	.44*	.60*	.15	.50*	.67*	.18
Fearlessness	.34*	.28*	.24*	.36*	.39*	.23	.44*	.36*	.26
Stress immunity	-.02	.46*	-.33*	-.05	.36*	-.35*	.13	.45*	-.21
PPI factor 2	.48*	-.09	.63*	.36*	-.05	.53*	.54*	.06	.77*
Machiavellian egocentricity	.49*	.06	.55*	.42*	.14	.44*	.53*	.08	.72*
Carefree nonplanfulness	.33*	-.11	.46*	.14	-.06	.23	.38*	-.01	.60*
Blame externalization	.25*	-.30*	.48*	.18	-.22	.43*	.28	-.16	.55*
Rebellious nonconformity	.39*	.07	.43*	.24	.00	.35*	.49*	.28	.50*
PPI coldheartedness	.05	.22*	-.11	.01	.12	-.12	.13	.06	.10

Note. PPI = Psychopathic Personality Inventory; Py-T = Psychopathy Total score; Py-FD = Fearless-Dominance; and Py-IA = Impulsive-Antisociality.

* $p < .005$.

ordered forensic psychological evaluations at a court clinic in Northeastern Ohio, who had been rated on the *Psychopathy Checklist: Screening Version* (PCL:SV; Hart, Cox, & Hare, 1995). Use of the same MMPI-2-RF exclusionary criteria as in Study 1 resulted in the exclusion of 7 (8.2%) participants. The final sample comprised 59 men and 19 women with a mean age of 32.1 ($SD = 12.2$) and an average education level of 12.2 years ($SD = 2.2$). In terms of ethnicity, 72% were Caucasian, 26% African American, and 2% were of other or mixed ethnicities. The participants were evaluated for either Drug Intervention in lieu of Conviction (82%), Risk Assessment issues (15%), or Competency to Stand Trial/Criminal Responsibility (3%).

Correctional sample. We used the same sample as reported in Study 1. These individuals had been administered an independent set of criterion measures (see Measures) in addition to the MMPI-2 and PPI.

College sample. This sample consisted of 482 undergraduate students who were administered the MMPI-2 and other self-report inventories in randomized order. This sample was completely separate from that of Study 1. Using the same MMPI-2-RF exclusionary criteria as in Study 1, 65 (13.5%) participants were excluded, leaving 210 (50.6%) men and 205 (49.4%) women. The final sample ranged in age from 18 to 56 years ($M = 19.39$, $SD = 3.37$), with approximately 88% being under 21 years old. In terms of ethnic background, most were Caucasian (89%), with approximately 6% African American and the remaining 5% of other ethnic backgrounds.

Measures – All Samples

MMPI-2. The MMPI-2 was administered in all samples. We computed Py-T, Py-FD, and Py-IA indices for each sample using the beta weights reported above.

Measures – Forensic Sample

Psychopathy Checklist: Screening Version (PCL:SV). The PCL:SV (Hart, Cox, & Hare, 1995) is a 12-item version of the longer 20-item PCL-R. It consists of two rationally derived, six-item parts. Part 1 corresponds to Factor 1 of the PCL-R (Affective-Interpersonal features),

and Part 2 corresponds to Factor 2 of the PCL-R (Social Deviance). Raters consisted of two licensed doctoral-level psychologists and four advanced doctoral students in clinical psychology. The doctoral students continued training until they achieved an average of 90% interrater agreement on each PCL:SV item. Because of practical limitations in this setting, which included the PCL:SV being administered as part of a psychological evaluation with no opportunity for videotaping or otherwise directly observing the participants, we were unable to calculate interrater reliability. However, we were able to calculate internal consistencies (Cronbach's alpha) for the PCL:SV Total and Factor scores. Alpha values were commensurate with those listed the PCL:SV manual (Hart, Cox, & Hare, 1995): .86 for PCL:SV Total, .77 for Part 1, and .77 for Part 2.

Measures – College and Correctional Samples

Antisocial behavior questionnaire. This measure was administered only in the college student sample. The ABQ is a modified 16-item version of a self-report delinquency questionnaire (Hirschi, Hindelang, & Weis, 1980; Lynam, Whiteside, & Jones, 1999) developed for the current study that sampled a variety of criminal and reckless behaviors, including stealing, assault, vandalism, drunk-driving, fraud, drug-related offenses, and intimate partner violence. Internal consistency for the ABQ (Cronbach's alpha) was .81 in the present study.

Levenson's self-report psychopathy scale. The LSRP (Levenson, Kiehl, & Fitzpatrick, 1995) consists of 26 items, answered on a scale from 1 (*strongly disagree*) to 4 (*strongly agree*), designed to assess similar domains as the PCL-R. A number of studies have examined the validity of the LSRP (Brinkley, Schmitt, Smith, & Newman, 2001; Brinkley, Diamond, Magalatta, & Heigel, 2008; Levenson, Kiehl, & Fitzpatrick, 1995; Lynam, Whiteside, & Jones, 1999; Sellbom, in press).

Emotional empathy scale. The 33-item EES (Mehrabian & Epstein, 1972) was designed to measure a person's reaction to and ability to vicariously experience the emotional states of others.

Narcissistic personality inventory. The NPI (Raskin & Terry, 1988) consists of 40 items designed to measure the construct of Narcissistic Personality Disorder (APA, 1987). Raskin and Terry (1988) provided data suggesting that NPI scores are related strongly to measures of interpersonal dominance and observer ratings of narcissism, self-confidence, and self-centeredness.

Sensation-seeking scale. The SSS (Zuckerman, 1979) is a 40-item measure of a person's level of behavioral disinhibition and tendency to engage in thrilling, novel, or dangerous activities. The SSS yields a total score and four subscale scores: Disinhibition, Boredom Susceptibility, Thrill and Adventure Seeking, and Experience Seeking.

Machiavellianism inventory-IV. The MACH-IV (Christie & Geis, 1970) is a 20-item measure that measures attitudes and behaviors associated with the Machiavellian personality construct. This measure was administered in the correctional sample only.

Emotionality-activity-sociability-impulsivity temperament survey. The EASI is a 25-item inventory developed by Buss and Plomin (1984) to operationalize their model of temperament traits. Emotionality refers to a person's sensitivity to negative emotions and affective intensity and is composed of three subscales: Fearfulness, Anger, and Distress.

Big Five inventory. The BFI (John, Donahue, & Kentle, 1991) is a 44-item measure that provides a brief and valid assessment of the domains of the Five Factor Model of personality (John & Srivastava, 1999). The domains include Extraversion, Neuroticism, Openness to Experience, Agreeableness, and Conscientiousness. The domain scores of the BFI showed adequate internal consistency in the present samples, with alpha coefficients ranging from .71 for Openness to Experience (correctional sample) to .88 for Extraversion (college sample).

Results and Discussion

Zero-order correlations between Py-T, Py-FD, and Py-IA indices and criterion measures are reported in Tables 4 and 5. To control for family-wise error, we adopted conservative alpha levels of .01 for the PCL:SV analyses and .001 for the self-report measures. However, in

the college and correctional samples, even statistically significant correlations might not be clinically meaningful due to inflation of coefficients as a result of shared method variance. We therefore focused our interpretations mainly on correlations that achieved at least a medium effect size (i.e., $r \geq .30$; Cohen, 1988).⁴ Steiger's (1980) *t* test for dependent correlations was used to test for statistical differences between corresponding correlations for Py-FD and Py-IA. This formula takes into account the correlations between the scales being compared (i.e., Py-FD and Py-IA), which were .16 ($p = .16$; forensic), .22 ($p < .001$; college), and .03 ($p = .52$; correctional).

Psychopathy Measures

We first examined correlations between the Py indices and external measures of psychopathy (see Table 4). As hypothesized, the Py-T score showed robust positive correlations with PCL:SV Total and PCL:SV Part 2 scores and a somewhat lower correlation with PCL:SV Part 1. Py-FD was preferentially associated with PCL:SV Part 1, whereas Py-IA was preferentially associated with Part 2. To further clarify the relative unique contribution of Py-FD and Py-IA in the prediction of PCL:SV scores, we regressed the PCL:SV Total and Factor scores onto these indices. Each model was statistically significant [$R_s = .54$ (PCL:SV Total), .47 (PCL:SV Part 1), and .58 (PCL:SV Part 2), all $p_s < .001$]. The standardized beta weights are included in Table 4. As expected, both Py-FD and Py-IA contributed uniquely to the prediction of PCL:SV Total scores. Py-FD was the only significant predictor of PCL:SV Part 1 scores, whereas Py-IA was the only significant predictor of PCL:SV Part 2 scores.

We also examined correlations of the Py indices with Primary and Secondary subscales of the self-report based LSRP, which were administered in both college and correctional samples (see Table 5). Here, the pattern was somewhat unexpected: Whereas both LSRP subscales exhibited large positive correlations

⁴ In certain cases we interpreted lower correlations as meaningful, particularly when the observed correlation in one sample met our criterion of .30 and was close in the other sample.

Table 4
Correlations Between Py-Total, Py-FD, and Py-IA Scores and the Psychopathy Checklist – Screening Version in Forensic Sample ($n = 78$)

	Py-T, r	Py-FD		Py-IA		t
		r	β	r	β	
PCL:SV total score	.55**	.37**	.30**	.45**	.40**	0.67
PCL:SV part 1	.45**	.45**	.40**	.25	.18	1.50
PCL:SV part 2	.53**	.21	.12	.57**	.55**	2.71*

Note. Py-T = Psychopathy Total; Py-FD = Fearless-Dominance; and Py-IA = Impulsive-Antisociality. t = Steiger's (1980) t test for dependent correlations testing statistical significance between the two Py factor scores' zero-order correlations with criterion variables.

* $p < .01$. ** $p < .001$.

with Py-T and Py-IA, neither evidenced a significant association with Py-FD. These results are, however, consistent with previous research using the actual PPI (e.g., Poythress et al., 2010) that have led researchers to question the validity of the LSRP for indexing affective-interpersonal aspects of psychopathy (e.g., Lilienfeld & Fowler, 2006; Poythress et al., 2010).

Narrowband Personality Measures

To further elaborate on the MMPI-2 Py indices' construct validity, we next examined the associations between scores on these indices and narrowband personality constructs conceptually relevant to psychopathy, including antisociality, narcissism, empathy, Machiavellianism, and sensation seeking. Table 5 presents correlations between the Py indices and these personality constructs. As expected, the Py-T index was associated with personality dimensions that are directly related to the construct of psychopathy as described by Cleckley (1941), providing evidence for its construct validity. In particular, narcissism, lack of empathy, sensation seeking, and a manipulative, ruthless, and dominant interpersonal style (i.e., Machiavellianism) were found to be associated with this index.

The differential pattern of associations for Py-FD and Py-IA were generally consistent across the two samples. Py-IA was more strongly associated with antisociality, Machiavellianism, and sensation seeking, whereas Py-FD showed a larger association with narcissism. Notably, consistent with previously reported findings for the two factors of the PPI

(Benning et al., 2005a), scores on the Py-FD and Py-IA indices evidenced associations with differing aspects of sensation seeking, particularly in the college student sample. More specifically, Py-IA showed stronger correlations than Py-FD with three of four subscale facets of sensation seeking (Disinhibition, Boredom Susceptibility, and Experience Seeking), whereas the Thrill and Adventure Seeking facet of sensation seeking (which indexes enjoyment of exciting activities entailing elements of danger; Zuckerman, 1979), was more strongly correlated with Py-FD than Py-IA. This finding coincides with theories emphasizing dispositional fearlessness as a substrate for affective-interpersonal traits of psychopathy (Fowles & Dindo, 2006; Patrick & Bernat, 2009), insofar as fearless individuals who are underresponsive to aversive consequences are more prone to seek out dangerous situations (e.g., bungee jumping, mountain climbing).

The lack of fear reactivity in psychopathy has also been theorized to contribute to an inability to experience empathy for others (e.g., Blair, 2003). However, in the current study, the negative relationship with empathy as indexed by the EES scale was not significantly stronger for Py-FD than for Py-IA. A possible explanation is that PPI Impulsive-Antisociality (the referent for Py-IA) is defined in part by Machiavellian Egocentricity, which indexes both self-centeredness and a proclivity toward ruthless use of other people (Lilienfeld & Andrews, 1996). This selfish, exploitative style appears to reflect low empathy in ways distinct from fearlessness. Furthermore, the Py-T score evidenced the strongest association with low empathy, perhaps because of its incorporation of variance

Table 5
Correlations Between Py-T, Py-FD, and Py-IA Scores and Criterion Measures in the College and Correctional Sample

	<i>n</i>	Py-T	Py-FD	Py-IA	<i>t</i> ₁	<i>t</i> ₂
Psychopathy						
LSRP total score	403/521	.51/.45	.13/.01	.62/.51	9.74**	9.31**
LSRP primary scale	403/521	.51/.39	.23/.13	.52/.36	5.37**	4.00*
LSRP secondary scale	403/521	.34/.37	-.09/-.17	.57/.55	13.23**	14.28**
Narrowband personality constructs						
Antisocial behavior questionnaire ^a	409	.63	.24	.69	9.62**	N/A
Emotional empathy scale	403/651	-.33/-.18	-.28/-.17	-.21/-.07	1.18	1.85
Machiavellianism scale ^b	520	.33	.05	.34	N/A	4.99**
NPI total score	403/651	.53/.27	.54/.38	.31/.09	4.39**	5.67**
Sensation seeking scale - total	405/652	.63/.46	.39/.24	.58/.40	3.79**	3.20**
SSS disinhibition	405/652	.53/.46	.28/.20	.52/.42	4.48**	4.41**
SSS boredom susceptibility	405/652	.48/.31	.21/.09	.51/.31	5.52**	4.21**
SSS thrill and adventure seeking	405/652	.35/.22	.36/.20	.21/.15	2.58*	0.94
SSS experience seeking	405/652	.33/.26	.17/.14	.33/.23	2.72*	1.69
Broadband personality constructs						
EASI emotionality: fear	410/653	-.39/-.03	-.60/-.37	-.04/.20	11.11**	11.51**
EASI emotionality: distress	410/653	-.24/.10	-.54/-.32	.13/.35	13.33**	13.99**
EASI emotionality: anger	410/653	.22/.34	-.09/.04	.39/.38	8.52**	6.65**
EASI activity	410/653	.09/.20	.09/.10	.06/.18	0.48	1.49
EASI sociability	410/653	.15/.06	.34/.33	.05/-.11	4.93**	8.57**
EASI impulsivity	410/653	.34/.31	.12/.02	.42/.38	5.26**	7.05**
BFI neuroticism	406/653	-.21/.07	-.56/-.42	.18/.37	15.38**	17.57**
BFI extroversion	406/653	.23/.12	.49/.42	-.05/-.10	10.05**	6.37**
BFI openness to experience	406/653	.04/.11	.12/.25	-.03/.00	2.43	4.71**
BFI agreeableness	406/653	-.38/-.36	-.02/-.04	-.51/-.38	9.11**	6.65**
BFI conscientiousness	406/653	-.29/-.28	.08/.12	-.50/-.43	10.97**	11.20**

Note. Correlations left of the slash is from the college sample, and correlations right of the slash are from the correctional sample. An absolute $r = .13$ and $r = .17$ is statistically significant at an alpha of .001 in the college and correctional samples, respectively. Py-T = Psychopathy Total; Py-FD = Fearless-Dominance; Py-IA = Impulsive-Antisociality; EASI = Emotionality-Activity-Sociability-Impulsivity Temperament Survey; NPI = Narcissistic Personality Inventory; SSS = Sensation Seeking Scale; BFI = Big Five Inventory. t_1 = Steiger's (1980) t test for dependent correlations testing statistical significance between the two Py factor scores' correlations with criterion variables in the college sample, t_2 = Steiger's (1980) t test for dependent correlations testing statistical significance between the two Py factor scores' correlations with criterion variables in the correctional sample. Numbers differ because some participants did not fully complete all measures.

^a Only available in the college sample. ^b Only available in the correctional sample.

* $p < .01$. ** $p < .001$.

reflecting coldheartedness—a construct most directly tied to callousness in the PPI model (Lilienfeld & Andrews, 1996).

Broadband Personality Measures

Finally, we examined associations between Py-T, Py-FD, and Py-IA and broadband measures of personality and temperament. These results are also shown in Table 5. As expected, across both samples, the Py-T score was associated most robustly with low FFM Agreeableness and Conscientiousness, but also evidenced associations with low Neuroticism and heightened Extraversion. These

findings are quite consistent with Widiger and Lynam's (1998) translation of individual PCL-R items into the language of the FFM. For the EASI temperament scales, the Py-T score was associated with low fear and high impulsivity, and to a lesser degree with low distress and high anger, in the college sample specifically. However, in the correctional sample, associations for Py-T were restricted to anger and impulsivity (both positive). These somewhat discrepant patterns for the two samples appear to result from diverging associations for the two Py factors (see discussion below).

Study 3

As an extension of Study 2, which focused largely on other self-report questionnaires as criterion variables, Study 3 explored the utility of the MMPI-2-RF psychopathy indices in applied assessments by examining their associations with a unique set of criteria not typically employed, but potentially useful, in psychopathy research. Specifically, in addition to historical information gathered during intake proceedings, criterion measures included clinician ratings on a variety of personality characteristics made after three therapy sessions, which afforded therapists time to observe and collect this information. Very few, if any, psychopathy measures have previously been evaluated in terms of association with therapy-related criteria of this sort. We hypothesized that Py-FD would be positively correlated with clinician ratings of narcissism and negatively associated with variables indicative of internalizing problems (e.g., sad or anxious mood, current medication use), whereas Py-IA would be associated both with historical variables and clinician ratings indicative of externalizing problems, including history of criminal charges, violent behaviors, and higher ratings of anger, aggression, antisocial personality, and family problems.

Method

Participants and Procedures

The sample consisted of 410 male and 610 female outpatient therapy clients from a community mental health center. This sample has been described in extensive detail elsewhere (Graham, Ben-Porath, & McNulty, 1999). Participants were administered the MMPI-2 after extensive intake procedures, which included an interview and in some cases additional diagnostic testing. Clinicians completed the Intake Form after the intake interview and were blind to MMPI-2 results at that time. Clients were subsequently referred to therapists for services. Application of the same exclusionary criteria as in Studies 1 and 2 resulted in a final sample of 336 men and 533 women (14.8% excluded). The participants were 33.06 ($SD = 10.32$) years old on average, primarily Caucasian (81.2%) or African American (17.4%), with an average of 12.26 ($SD = 2.03$) years of education.

Most had never been married (41.0%), approximately 25% were divorced, and 19% were married. The remainder were either separated or widowed. Approximately half of the participants had previous outpatient treatment, and the most common Axis I diagnoses were Adjustment disorders (32%), Depression (24%), and Anxiety disorders (17%).

Measures

MMPI-2. MMPI-2-RF scores were derived from the MMPI-2 administrations as indicated earlier. Py-T, Py-FD, and Py-IA indices were computed for each sample using the beta weights reported in Study 1.

Intake form. The intake form was designed to be completed by a trained clinician after an extensive clinical interview with the client. The form includes demographics, mental health history, substance abuse history, diagnostic impression, and ratings on a variety of mental status variables, such as orientation, memory, mood, and anxiety. For purposes of the present study, we selected variables with conceptual relevance to psychopathy (see Table 6).

Patient description form (PDF). After the third therapy session had been completed, and before reviewing the MMPI-2 results, the therapist completed the PDF (Graham, Ben-Porath, & McNulty, 1999), a 188-item rating form composed of personality and symptomatic characteristics culled from the MMPI-2 interpretative literature. The median time between MMPI-2 administration and third session ratings was 38 days. The items of the PDF are grouped into 25 scales established through factor analysis. For the current study, 10 scales were deemed conceptually relevant to the construct of psychopathy and are listed in Table 6. Therapists rated participants on each of these items using a five-point scale (*not at all*, *slight*, *moderate*, *high*, and *very high*). Because of practical limitations in this setting, including the fact that therapists rated their individual clients after three sessions with no opportunity for videotaping or otherwise observing the participant, we were unable to calculate interrater reliability. However, Graham, Ben-Porath, & McNulty (1999) reported internal consistencies for these scales ranging from .69 to .92 ($mdn. = .87$) for men and .72 to .93 ($mdn. = .87$) for women.

Table 6
Correlations Between Py-Total, Py-FD, and Py-IA Scores and Criterion Variables in the Community Mental Health Center Sample

	<i>n</i>	Py-T	Py-FD	Py-IA	<i>r</i> ^a
Intake variables					
Number of arrests	728	.25**	.17**	.20**	0.63
Number of misdemeanor convictions	668	.21**	.13**	.17**	0.80
Number of felony convictions	660	.24**	.12**	.20**	1.59
History of committing domestic violence	769	.21**	.10	.19**	1.92
History of being physically abusive	769	.21**	.08	.22**	3.00*
History of being sexually abusive	769	.09	.07	.05	0.42
Current medication – antidepressant	760	-.15**	-.20**	-.03	3.61**
Current medication – anxiolytic	760	-.20**	-.22**	-.08	2.99*
Prevailing mood during interview – happy	763	.09	.14**	.00	2.95*
Prevailing mood during interview – sad	763	-.19**	-.27**	.01	6.07**
Patient anxiety during interview	758	-.08	-.11	.01	2.56*
Patient depression during interview	757	-.14**	-.24**	.07	6.70**
Patient description form					
Angry/resentment	489	.17**	-.03	.27**	5.21**
Narcissistic	495	.35**	.24**	.27**	0.53
Aggressive	441	.39**	.20**	.35**	2.59*
Antisocial	464	.36**	.20**	.31**	1.89
Family problems	498	.09	-.08	.22**	5.22**
Insecure	505	-.11	-.30**	.15**	8.17**
Anxious	503	-.19**	-.32**	.06	6.83**
Depressed	503	-.19**	-.38**	.13	9.52**
Passive-submissive	508	-.29**	-.33**	-.10	7.81**
Introverted	530	-.14**	-.28**	.04	5.80**
Suspicious	528	.15**	-.06	.26**	5.72**

Note. An absolute $r = .12$ (intake variables) or $.14$ (PDF scales) is statistically significant at an alpha of $.001$. Py-T = Psychopathy Total; Py-FD = Fearless-Dominance; and Py-IA = Impulsive-Antisociality. Numbers differ for criterion variables as not all participants could be rated on each variable.

^a Steiger's (1980) t test for dependent correlations testing statistical significance between the two Py factor scores' correlations with criterion variables.

* $p < .01$. ** $p < .001$.

Results and Discussion

Table 6 displays the correlations between the Py-T, Py-FD, and Py-IA indices and the variables derived from the intake form. To control for family wise error, we used a conservative alpha of $.001$ for zero-order correlations. Steiger's (1980) t test for dependent correlations was used to test for significant differences in associations for the two psychopathy facets, which were correlated to a minor but statistically significant degree in the current sample, $r = .13$, $p < .001$. Py-T was associated with several criminal history variables, including number of arrests, misdemeanor convictions, felony convictions, and a history of domestic violence. This index was also associated with physical abusiveness toward others. As expected, Py-T was negatively correlated with rat-

ings of prevailing sadness during the interview as well as with reported use of prescribed antidepressant and anxiolytic medications. Py-T was not associated with interview-based ratings of anxiety.

The Py-FD and Py-IA facets showed conceptually expected patterns of associations with criterion variables. Unexpectedly, the two indices did not differ significantly in their relative associations with number of arrests, misdemeanor convictions, felony convictions, and prior history of domestic violence. Moreover, although correlations with crime data and Py-IA were smaller than those reported for PPI-IA in other studies (e.g., Benning et al., 2003, 2005a) and for other psychopathy measures such as the PCL-R, they are still within the range of correlations reported in previous psychopathy research (see, e.g.,

Walters, 2003, for a meta-analysis). Conversely, as expected, Py-FD was negatively associated with being prescribed antidepressant and anxiolytic medications, displaying predominantly sad mood during the interview, and being rated as depressed during the interview. These associations for Py-FD differed significantly from those for Py-IA.

Table 6 also shows correlations between the Py indices and the conceptually relevant PDF scales. The Py-T index was positively associated with clinician ratings of antisociality, aggression, suspiciousness, narcissism, and assertiveness, and negatively with ratings of anxiety and depression. The Py-FD and Py-IA indices showed expected differential associations with particular criterion measures. Py-FD showed moderate negative associations with ratings of insecurity, anxiety, depression, passive-submissiveness, and introversion, whereas Py-IA evidenced selective positive associations with therapist ratings of suspiciousness, anger/resentment, aggression, and family problems. These differential associations were statistically significant. However, contrary to our hypothesis that Py-FD would be more strongly associated with ratings of narcissism whereas Py-IA would be more strongly correlated with ratings of antisocial personality, neither difference emerged as statistically significant.

General Discussion

The current work provides evidence that the MMPI-2-RF can provide effective estimates of psychopathy and its distinctive factors as indexed by the PPI. More specifically, the multifaceted structure of the MMPI-2-RF scales provides for a layered description of clinical personality that can be used to index distinctive constructs of Fearless-Dominance and Impulsive-Antisociality. The present findings indicate that the MMPI-2-RF psychopathy indices established by the current work fall within a nomological network similar to other psychopathy measures, including the PCL-R, but with some important exceptions. The remainder of the Discussion focuses on the implications these findings have for furthering psychopathy theory, including for the DSM-5 proposal.

Implications for Psychopathy Theory and Measurement

The current investigation lends further support to the broader construct validity of psychopathy operationalized as a maladaptive constellation of personality traits through the PPI. Psychopathy as a whole was associated with many of the conceptually expected characteristics, including narcissism, antagonism, Machiavellianism, and assertiveness, fearlessness, thrill and adventure seeking, low empathy, impulsivity, sensation seeking, low conscientiousness, antisociality, aggression/violence, and a history of criminal conduct. These findings mirror the psychopathy literature overall across measurement domains of this construct (e.g., Brinkley et al., 2008; Poythress et al., 2010; Hare & Neumann, 2009; Harpur, Hare, & Hakstian, 1989; Patrick et al., 2006), further indicating that psychopathy as indexed by the PPI is associated with a nomological network similar to that of psychopathy as assessed through other measurement modalities.

The findings for the two distinctive facets of Fearless-Dominance and Impulsive-Antisociality are particularly informative. The former construct, operationalized here by Py-FD, was associated with a combination of both deviant/maladaptive and psychological adjustment (or adaptive) characteristics, including a grandiose interpersonal style reflective in dominance, assertiveness, and manipulation of others. In other words, individuals who score high on this psychopathy facet are socially potent and gregarious in light of no deep affiliation with others and low empathy. Fearless-Dominance is also associated with thrill and adventure seeking, indicating the engagement in dangerous behaviors with little anticipatory fear. Lykken (1995) proposed that fearlessness could explain many of the characteristics associated with psychopathy. While perhaps overstated, this position nonetheless draws support from evidence linking amygdala functioning to both fear conditioning and empathy (e.g., Blair, 2008; Lamprecht, Dracheva, Assoun, & LeDoux, 2009) – two processes that when deficient can contribute to interpersonal self-centeredness, exploitativeness, and reckless behavior. In addition, findings from the current investigation also indicate positive associations for Fearless-Dominance with some indicators of adaptive psychological functioning—

including higher well-being, emotional stability, social comfort, and reduced experience of symptoms of distress, anxiety, and depression. These findings are also consistent with research on neuropsychological referents of Fearless-Dominance. Sellbom and Verona (2007), for instance, found that this psychopathy facet was positively associated with both intelligence and executive functioning.

On the other hand, Impulsive-Antisociality as indexed by Py-IA was associated more uniformly with deviancy and maladjustment in the current investigation, including externalizing proclivities in the form of self-reported antisocial behavior, impulsivity, sensation seeking, low trait agreeableness, low trait conscientiousness, history of criminality and violence, and therapists' ratings of antisociality, aggression, anger, suspiciousness, and family problems. These results mirror those from prior investigations of Impulsive-Antisociality (e.g., Benning et al., 2005a; Patrick et al., 2006; Poythress et al., 2010), indicating a phenotype that appears to be well rooted in temperamental disinhibition (see, e.g., Krueger et al., 2002).

In combination, the phenotypic manifestations of Fearless-Dominance and Impulsive-Antisociality (or Py-FD and Py-IA) appear quite consistent with Cleckley's (1976) account of psychopathy as a "mask of sanity," in that it entails the presence of severe underlying pathology masked by an outward appearance of robust mental health. As discussed by Patrick (2006), Cleckley's criteria for psychopathy can be organized into three conceptual categories, reflecting positive psychological adjustment (i.e., good intelligence and social adeptness, absence of delusions or irrationality, absence of nervousness, and low incidence of suicide; predominantly Fearless-Dominance), behavioral deviance (e.g., irresponsibility, impulsivity, nonplanfulness; predominantly Impulsive-Antisociality), and emotional unresponsiveness/social detachment (e.g., lack of remorse or shame, poverty in affective reactions, egocentricity, deceitfulness, inability to form close attachments; aspects of both Fearless-Dominance and Impulsive-Antisociality, along with coldheartedness). These criteria can be linked in turn to the three domains of phenotypic variation described in the triarchic model of psychopathy (i.e., boldness, disinhibition, and meanness; Patrick, Fowles, & Krueger, 2009).

The correlates of Py-FD are consistent with the idea that this PPI factor reflects predominantly boldness, whereas the correlates of Py-IA indicate that this index predominantly reflects disinhibition. In addition, the current results suggest that both the Fearless-Dominance and Impulsive-Antisociality facets as indexed by the MMPI-2-RF also index *meanness* to some degree. Higher Py-IA scores were associated with higher Machiavellianism and aggressiveness, and both Py-FD and (to a lesser degree) Py-IA were associated with higher narcissism. Furthermore, Py-T can be viewed as indexing the meanness component of psychopathy most effectively, given its even higher associations with these meanness-related criterion variables, as well as with low empathy—likely owing to its inclusion of variance reflecting Coldheartedness.

There are notable ways in which the current findings converge with, as well as depart from, those for the PCL-R. In the current investigation, significant associations were evident between the Py indices and the PCL:SV scales, with observed patterns of convergent and discriminant relations generally consistent with our hypotheses. In the current investigation, the observation that Py-IA was associated with a range of measures reflecting disinhibitory tendencies is consistent with the extant literature on the PPI Impulsive-Antisociality factor (e.g., Benning et al., 2005a; Poythress et al., 2010; Ross et al., 2009) and with previous reported associations for PCL-R Factor 2 (Hare, 2003). These correlates in turn suggest a link with the broader externalizing factor of psychopathology (cf. Blonigen et al., 2005; Patrick et al., 2006), which has been posited to reflect a general underlying impairment in fronto-cortical brain systems that mediate anticipation, planfulness, and affective-behavioral control (Patrick & Bernat, 2009). Indeed, such neurobiological systems have been linked to both PCL-R (e.g., Blair, 2008) and PPI (e.g., Sellbom & Verona, 2007) measurement of psychopathy. From this standpoint, Py-IA and PCL-R Factor 2 can be viewed as indexing a common dispositional dimension of externalizing proneness through differing domains of measurement (Blonigen et al., 2010).

In contrast, constructs underlying Py-FD and PCL-R Factor 1 can be viewed as somewhat overlapping, but more distinctive. As an indication of this, the association between PCL:SV

Part 1 and Py-FD was lower than that observed between PCL:SV Part 2 and Py-IA (see also Benning et al., 2005a; Malterer, Lilienfeld, Neumann, & Newman, 2010). This lesser degree of convergence can be attributed to differing emphases of the two measures on meanness versus boldness. PCL-R Factor 1 can be viewed as more strongly indicative of callous-exploitativeness (meanness), with only a secondary emphasis on boldness (Patrick, Fowles, & Krueger, 2009), whereas Py-FD is more strongly and directly indicative of boldness. Consistent with this, Py-FD in the current study showed more robust correlations with certain self-report-based indicators of boldness (i.e., low anxiousness, fearlessness, thrill and adventure seeking, and extraversion) than have been reported for PCL-R Factor 1 (Hare, 2003; Harpur, Hare, & Hakstian, 1989). Furthermore, Py-FD was uncorrelated with aggressiveness in the current study and correlated to only a modest negative degree with empathy in the college sample only (cf. Benning et al., 2005a), whereas scores on PCL-R Factor 1 show robust relations with instrumental/relational aggression and deficient empathy (e.g., Glenn & Raine, 2009; Woodworth & Porter, 2002).

Although scores on the MMPI-2-RF Py-FD and Py-IA indices generally displayed strong evidence of convergent and discriminant validity, there were some inconsistent findings that warrant discussion. Py-FD was more strongly associated with self-reported narcissism relative to Py-IA in both college and correctional samples, but no differences in relative magnitude were evident when the criterion modality was therapist ratings. Moreover, Py-IA was also moderately correlated with narcissism in the college sample. A potential explanation for this result is that the Machiavellian Egocentricity subscale of the PPI, which is indicative of a ruthless and self-centered interpersonal style, loads on the Impulsive-Antisociality factor (Benning et al., 2003). The finding that narcissism was associated with both Py-FD and Py-IA probably reflects the fact that grandiosity, an aspect of narcissism that is prominent in psychopathy, contains elements of boldness (surgency and self-assurance) as well as meanness (exploitativeness and superiority).

Finally, it is important to highlight some potential implications for the proposed conceptualization of psychopathy in DSM-5 (American Psychi-

atric Association DSM-5 Task Force, 2011). The DSM-5 Work Group has proposed that personality disorders be conceptualized and assessed in the context of six personality domains comprising four to 10 facets each—Negative Emotionality, Detachment, Antagonism, Disinhibition, Schizotypy, and Compulsivity—with an Antisocial/Psychopathic prototype characterized as entailing a combination of high levels of Antagonism and Disinhibition. Given findings of the current study, which indicate that Fearless-Dominance (aka boldness; Patrick et al., 2009) is not likely to be captured adequately in this configuration, consideration should also be given to incorporation of low scores on certain facets of negative emotionality (e.g., guilt/shame, anxiousness) into the Antisocial/Psychopathic prototype to provide for representation of this psychopathy facet.

Limitations and Future Directions

The findings of this study should be interpreted in light of a few limitations. One concerns the absence of female correctional inmates for the development of the psychopathy scales. This could potentially skew or otherwise affect the resulting indices, especially when used with such samples. This concern is offset by the pattern of virtually identical correlations between the MMPI-2-RF indices and the PPI scores in the three Study 1 groups (correctional men, college men, and college women). Nevertheless, replication with a correctional female sample is needed. Another limitation concerns the lack of interrater reliability data for the PCL:SV in Study 2 and for the PDF in Study 3, which were precluded by practical constraints on data collection in samples for these studies. However, the obtained pattern of validity coefficients indicates good convergence between these criterion scores and MMPI-2-RF psychopathy indices, suggesting that unreliability of the criterion measure was not a major problem in the present investigation.

Despite these limitations, the present findings suggest that the MMPI-2-RF indices can be used to effectively index constructs associated with the PPI. Along these lines, prior research (Benning et al., 2005a; Witt et al., 2010) has demonstrated that large-scale screening for psychopathy can be performed (either a priori or a posteriori) in samples for which broadband measures of normal personality are available.

The MMPI-2-RF can be used similarly, and the widespread use of the MMPI instruments in clinical and correctional settings makes this information more widely accessible. Furthermore, as Benning et al. (2005a) noted, the estimation of psychopathy in existing datasets in which broadband personality measures are available may provide valuable means to further study the developmental pathways of psychopathy across time. Of course, the MMPI-2-RF might be somewhat limited in this regard, as it is only useful with adult populations. Nevertheless, it can be used to trace psychopathic characteristics over time as well as consequences of such traits in large scale clinical samples where this measure is frequently used.⁵ Future studies could also explore development of juvenile psychopathy scales for the MMPI-A, the adolescent version of the MMPI.

The present results are limited in that they lack important physiological and neuropsychological correlates that could inform more directly about the etiological mechanisms and underpinnings of psychopathy from this personality-based perspective. Future investigations should study these constructs using experimental paradigms, such as the fear-potentiated startle (Patrick, Bradley, & Lang, 1993) or passive-avoidance learning paradigm (Newman & Kosson, 1986). This research could follow up on recent efforts to separate the psychopathy factors and not just examine psychopathy as a whole. For example, Benning et al. (2005b) and Sellbom and Verona (2007) have reported promising results with the PPI identifying both emotional and cognitive mechanisms underlying the Fearless-Dominance and Impulsive-Antisociality factors respectively.

Finally, the clinical utility of this psychopathy measurement model in terms of risk assessment needs to be further explored. The popularity of the PCL rating scales stems from the ability to predict institutional maladjustment, violence and sexual deviance, and poor treatment response. Systematic studies could be designed in correctional settings in which inmates tested with the MMPI-2 or MMPI-2-RF at intake are followed through incarceration and postrelease to determine institutional adjustment in terms of disciplinary infractions, seeking treatment, treatment response, and later general as well as violent recidivism rates postrelease.

⁵ The MMPI-2-RF, and thus the psychopathy scores from the present study, can be derived from any MMPI-2 administration, as its items are completely embedded within the MMPI-2 item pool.

References

- American Psychiatric Association. (2011). *Proposed draft revisions to DSM disorder and criteria*. Arlington, VA: American Psychiatric Association. Available from: <http://www.dsm5.org/Pages/Default.aspx>. Accessed 5 February 2011.
- Archer, R. P., Buffington-Vollum, J. K., Stredny, R. V., & Handel, R. W. (2006). A survey of psychological test use patterns among forensic psychologists. *Journal of Personality Assessment, 87*, 84–94.
- Benning, S. D., Patrick, C. J., Blonigen, D. M., Hicks, B. M., & Iacono, W. G. (2005a). Estimating facets of psychopathy from normal personality traits: A step toward community epidemiological investigations. *Assessment, 12*, 3–18.
- Benning, S. D., Patrick, C. J., Hicks, B. M., Blonigen, D. M., & Krueger, R. F. (2003). Factor structure of the Psychopathic Personality Inventory: Validity and implications for clinical assessment. *Psychological Assessment, 15*, 340–350.
- Benning, S. D., Patrick, C. J., & Iacono, W. G. (2005b). Psychopathy, startle blink modulation, and electrodermal reactivity in twin men. *Psychophysiology, 42*, 753–762.
- Benning, S. D., Patrick, C. J., Salekin, R. T., & Leistico, A. R. (2005c). Convergent and discriminant validity of psychopathy factors assessed via self-report: A comparison of three instruments. *Assessment, 12*, 270–289.
- Ben-Porath, Y. S., & Tellegen, A. (2008). *Minnesota Multiphasic Personality Inventory – 2 – restructured form: Manual for administration, scoring, and interpretation*. Minneapolis, MN: University of Minnesota Press.
- Berardino, S. D., Meloy, J. R., Sherman, M., & Jacobs, D. (2005). Validation of the Psychopathic Personality Inventory on a female inmate sample. *Behavioral Sciences & the Law, 23*, 819–836.
- Blair, R. J. R. (2003). Neurobiological basis for psychopathy. *British Journal of Psychiatry, 182*, 5–7.
- Blair, R. J. R. (2008). Fine cuts of empathy and the amygdale: Dissociable deficits in psychopathy and autism. *The Quarterly Journal of Experimental Psychology, 61*, 157–170.
- Blonigen, D. M., Hicks, B. M., Krueger, R. F., Patrick, C. J., & Iacono, W. G. (2005). Psychopathic personality traits: Heritability and genetic overlap with internalizing and externalizing psychopathology. *Psychological Medicine, 35*, 637–648.

- Blonigen, D. M., Patrick, C. J., Douglas, K. S., Poythress, N. G., Skeem, J. L., Lilienfeld, S. O., . . . Krueger, R. F. (2010). 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, 22*, 96–107.
- Brinkley, C. A., Diamond, P. M., Magaletta, P. R., & Heigel, C. P. (2008). Cross-validation of Levenson's psychopathy scale in a sample of federal female inmates. *Assessment, 15*, 464–482.
- Brinkley, C. A., Schmitt, W. A., Smith, S. S., & Newman, J. P. (2001). Construct validation of a self-report psychopathy scale: Does Levenson's self-report psychopathy scale measure the same constructs as Hare's psychopathy checklist-revised? *Personality and Individual Differences, 31*, 1021–1038.
- Browne, M. (2000). Cross validation methods. *Journal of Mathematical Psychology, 44*, 108–132.
- Buss, A. H., & Plomin, R. (1984). *Temperament: Early developing personality traits* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Butcher, J. N., Graham, J. R., Ben-Porath, Y. S., Tellegen, A., Dahlstrom, W. G., & Kaemmer, B. (2001). *Minnesota Multiphasic Personality Inventory-2: Manual for administration and scoring* (2nd ed.). Minneapolis: University of Minnesota Press.
- Camara, W. J., Nathan, J. S., & Puente, A. E. (2000). Psychological test usage: Implications in professional psychology. *Professional Psychology: Research and Practice, 31*, 141–154.
- Christie, R., & Geis, F. L. (1970). *Studies in Machiavellianism*. New York: Academic Press.
- Cleckley, H. (1941). *The mask of sanity*. St. Louis, MO: C. V. Mosby.
- Cleckley, H. (1976). *The mask of sanity* (5th ed.). St. Louis, MO: C. V. Mosby.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd Ed.). Hillsdale, NJ: Lawrence Erlbaum.
- Cooke, D. J., & Michie, C. (2001). Refining the construct of psychopath: Towards a hierarchical model. *Psychological Assessment, 13*, 171–188.
- Copas, J. B. (1983). Regression, prediction, and shrinkage. *Journal of the Royal Statistical Society. Series B (Methodological), 45*, 311–345.
- Dvorak-Bertsch, J. D., Curtin, J. J., Rubinstein, T. J., & Newman, J. P. (2009). Psychopathic traits moderate the interaction between cognitive and affective processing. *Psychophysiology, 46*, 913–921.
- Edens, J. F., Marcus, D. K., Lilienfeld, S. O., & Poythress, N. G. (2006). Psychopathic, not psychopath: Taxometric evidence for the dimensional structure of psychopathy. *Journal of Abnormal Psychology, 115*, 131–144.
- Edens, J. F., & McDermott, B. E. (2010). Examining the construct validity of the Psychopathic Personality Inventory – Revised: Preferential correlates of fearless dominance and self-centered impulsivity. *Psychological Assessment, 22*, 32–42.
- Edens, J. F., Poythress, N. G., Lilienfeld, S. O., Patrick, C. J., & Test, A. (2008). Further evidence of the divergent correlates of the Psychopathic Personality Inventory factors: Prediction of institutional misconduct among male prisoners. *Psychological Assessment, 20*, 86–91.
- Fowles, D. C., & Dindo, L. (2006). A dual-deficit model of psychopathy. In C. J. Patrick (Ed.), *Handbook of Psychopathy* (pp. 14–34). New York: Guilford Press.
- Glenn, A. L., & Raine, A. (2009). Psychopathy and instrumental aggression: Evolutionary, neurobiological, and legal perspectives. *International Journal of Law and Psychiatry, 32*, 253–258.
- Gordon, H. L., Baird, A. A., & End, A. (2004). Functional differences among those high and low on a trait measure of psychopathy. *Biological Psychiatry, 56*, 516–521.
- Graham, J. R., Ben-Porath, Y. S., & McNulty, J. L. (1999). *MMPI-2 correlates for outpatient community mental health settings*. Minneapolis: University of Minnesota Press.
- Hare, R. D. (1980). A research scale for the assessment of psychopathy in criminal populations. *Personality and Individual Differences, 1*, 111–119.
- Hare, R. D. (1991). *The Hare Psychopathy Checklist – Revised*. Toronto, Ontario: Multi-Health Systems.
- Hare, R. D. (2003). *The Hare Psychopathy Checklist – Revised* (2nd ed.). Toronto, Ontario: Multi-Health Systems.
- Hare, R. D., & Neumann, C. S. (2008). Psychopathy as a clinical and empirical construct. *Annual Review of Clinical Psychology, 4*, 217–246.
- Hare, R. D., & Neumann, C. S. (2009). Psychopathy: Assessment and forensic implications. *The Canadian Psychiatric Association Journal, 54*, 791–802.
- Hare, R. D., & Neumann, C. S. (2010). The role of antisociality in the psychopathy construct: Comment on Skeem and Cooke (2010). *Psychological Assessment, 22*, 446–454.
- Harpur, T. J., Hare, R. D., & Hakstian, A. R. (1989). Two-factor conceptualization of psychopathy: Construct validity and assessment implications. *Psychological Assessment, 1*, 6–17.
- Hart, S. D., Cox, D. N., & Hare, R. D. (1995). *Manual for the Psychopathy Checklist*. Toronto, ON, Canada: Multi-Health Systems.
- Hirschi, T., Hindelang, M. J., & Weis, J. G. (1980). The status of self-report measures. In M. W. Klein & K. S. Teilman (Eds.), *Handbook of criminal justice evaluation* (pp. 473–488). Beverly Hills, CA: Sage.

- Hopwood, C., & Donnellan. (in press). How should the internal structure of personality inventories be evaluated? *Personality and Social Psychology Review*.
- John, O. P., Donahue, E. M., & Kentle, R. L. (1991). *The Big Five Inventory – Versions 4a and 54*. Berkeley, CA: University of California, Berkeley, Institute of Personality and Social Research.
- Krueger, R. F., Hicks, B. M., Patrick, C. J., Carlson, S. R., Iacono, W. G., & McGue, M. (2002). Etiologic connections among substance dependence, antisocial behavior and personality: Modeling the externalizing spectrum. *Journal of Abnormal Psychology, 111*, 411–424.
- Krueger, R. F., Markon, K. E., Patrick, C. J., Benning, S. D., & Kramer, M. D. (2007). Linking antisocial behavior, substance use, and personality: An integrative quantitative model of the adult externalizing spectrum. *Journal of Abnormal Psychology, 116*, 645–666.
- Lamprecht, R., Dracheva, S., Assoun, S., & LeDoux, J. E. (2009). Fear conditioning induces distinct patterns of gene expression in lateral amygdale. *Genes, Brain & Behavior, 8*, 735–743.
- Levenson, M. R., Kiehl, K. A., & Fitzpatrick, C. M. (1995). Assessing psychopathic attributes in a non-institutionalized population. *Journal of Personality and Social Psychology, 68*, 151–158.
- Lilienfeld, S. O. (1996). The MMPI—2 Antisocial Practices Content Scale: Construct validity and comparison with the Psychopathic Deviate Scale. *Psychological Assessment, 8*, 281–293.
- Lilienfeld, S. O. (1998). Methodological advances and developments in the assessment of psychopathy. *Behaviour Research & Therapy, 36*, 99–125.
- Lilienfeld, S. O., & Andrews, B. P. (1996). Development and preliminary validation of a self report measure of psychopathic personality traits in non-criminal populations. *Journal of Personality Assessment, 66*, 488–524.
- Lilienfeld, S. O., & Fowler, K. A. (2006). The self-report assessment of psychopathy: Problems, pitfalls, and promises. In C. J. Patrick (Ed.), *Handbook of Psychopathy* (pp. 107–132). New York: Guilford Press.
- Lilienfeld, S. O., & Widows, M. (2005). *Professional Manual for the Psychopathic Personality Inventory-Revised (PPI-R)*. Lutz, FL: Psychological Assessment Resources.
- Lykken, D. T. (1957). A study of anxiety in the sociopathic personality. *Journal of Abnormal and Social Psychology, 55*, 6–10.
- Lykken, D. T. (1995). *The antisocial personalities*. Mahwah, NJ: Erlbaum.
- Lynam, D. R., & Derefinko, K. J. (2006). Psychopathy and personality. In C. J. Patrick (Ed.), *Handbook of psychopathy* (pp. 133–155). New York: Guilford Press.
- Lynam, D. R., Whiteside, S., & Jones, S. (1999). Self-reported psychopathy: A validation study. *Journal of Personality Assessment, 73*, 110–132.
- Malterer, M. B., Lilienfeld, S. O., Neumann, C. S., & Newman, J. P. (2010). Concurrent validity of the Psychopathic Personality Inventory with offender and community samples. *Assessment, 17*, 3–15.
- Marcus, D. K., John, S. L., & Edens, J. F. (2004). A taxometric analysis of psychopathic personality. *Journal of Abnormal Psychology, 113*, 626–635.
- McCord, W., & McCord, J. (1964). *The Psychopathy: An essay of the criminal mind*. New York: Van Nostrand Reinhold.
- McCrae, R. R., Zonderman, A., Costa, P. T., Jr., Bond, M. H., & Paunonen, S. V. (1996). Evaluating replicability of factors in the Revised NEO Personality Inventory: Confirmatory factor analyses versus Procrustes rotation. *Journal of Personality and Social Psychology, 70*, 552–556.
- Mehrabian, A., & Epstein, N. (1972). A measure of emotional empathy. *Journal of Personality, 40*, 525–543.
- Miller, J. D., Lynam, D. R., Widiger, T. A., & Leukefeld, C. (2001). Personality disorders as extreme variants of common personality dimensions: Can the Five-Factor Model adequately represent psychopathy? *Journal of Personality, 69*, 253–276.
- Mosier, C. I. (1951). Symposium: The need and means of cross-validation, I. Problems and designs of cross validation. *Educational and Psychological Measurement, 11*, 5–11.
- Neumann, C. S., Malterer, M. B., & Newman, J. P. (2008). Factor structure of the Psychopathic Personality Inventory (PPI): Findings from a large incarcerated sample. *Psychological Assessment, 20*, 169–174.
- Newman, J. P., & Kosson, S. (1986). Passive avoidance learning in psychopathic and nonpsychopathic offenders. *Journal of Abnormal Psychology, 95*, 252–256.
- Patrick, C. J. (1994). Emotion and psychopathy: Startling new insights. *Psychophysiology, 31*, 319–330.
- Patrick, C. J. (2006). Back to the future: Cleckley as a guide to the next generation of psychopathy research. In C. J. Patrick, (Ed.), *Handbook of psychopathy* (pp. 605–617). New York: Guilford Press.
- Patrick, C. J., & Bernat, E. M. (2009). Neurobiology of psychopathy: A two-process theory. In: G. G. Berntson & J. T. Cacioppo (Eds.), *Handbook of neuroscience for the behavioral sciences* (pp. 1110–1131). New York: Wiley.
- Patrick, C. J., Bradley, M. M., & Lang, P. J. (1993). Emotion in the criminal psychopath: Startle reflex modulation. *Journal of Abnormal Psychology, 102*, 82–92.

- Patrick, C. J., Edens, J. F., Poythress, N. G., Lilienfeld, S. O., & Benning, S. D. (2006). Construct validity of the Psychopathic Personality Inventory two-factor model with offenders. *Psychological Assessment, 18*, 204–208.
- Patrick, C. J., Fowles, D. C., & Krueger, R. F. (2009). Triarchic conceptualization of psychopathy: Developmental origins of disinhibition, boldness, and meanness. *Development and Psychopathology, 21*, 913–938.
- Poythress, N. G., Lilienfeld, S. O., Skeem, J. L., Douglas, K. S., Edens, J. F., Epstein, M., & Patrick, C. J. (2010). Using the PCL-R to help estimate the validity of two self-report measures of psychopathy with offenders. *Assessment, 17*, 206–219.
- Quay, H. C. (1965). Psychopathic personality as pathological stimulation-seeking. *The American Journal of Psychiatry, 122*, 180–183.
- Raskin, R., & Terry, H. (1988). A principal-components analysis of the Narcissistic Personality Inventory and further evidence of its construct validity. *Journal of Personality and Social Psychology, 54*, 890–902.
- Ross, S. R., Benning, S. D., Patrick, C. J., Thompson, A., & Thurston, A. (2009). Factors of the Psychopathic Personality Inventory: Criterion-related validity and relationship to the BIS/BAS and Five-Factor models of personality. *Assessment, 16*, 71–87.
- Saucier, G. (1998). Replicable item-cluster subcomponents in the NEO Five-Factor Inventory. *Journal of Personality Assessment, 70*, 263–276.
- Sellbom, M. (in press). Elaborating on the construct validity of the Levenson Self-Report Psychopathy Scale in incarcerated and non-incarcerated samples. *Law and Human Behavior*.
- Sellbom, M., & Ben-Porath, Y. S. (2005). Mapping the MMPI-2 Restructured Clinical (RC) Scales onto normal personality traits: Evidence for construct validity. *Journal of Personality Assessment, 85*, 169–178.
- Sellbom, M., Ben-Porath, Y. S., & Bagby, R. M. (2008). Personality and psychopathology: Mapping the MMPI-2 Restructured Clinical (RC) Scales onto the Five Factor Model of Personality. *Journal of Personality Disorders, 22*, 291–312.
- Sellbom, M., Ben-Porath, Y. S., Lilienfeld, S. O., Patrick, C. J., & Graham, J. R. (2005). Assessing psychopathic personality traits with the MMPI-2. *Journal of Personality Assessment, 85*, 334–343.
- Sellbom, M., Ben-Porath, Y. S., & Stafford, K. S. (2007). A comparison of MMPI-2 measures of psychopathic deviance in a forensic setting. *Psychological Assessment, 19*, 430–436.
- Sellbom, M., & Verona, E. (2007). Neuropsychological correlates of psychopathic traits in a non-incarcerated sample. *Journal of Research in Personality, 41*, 276–294.
- Skeem, J. L., & Cooke, D. J. (2010). Is criminal behavior a central component of psychopathy? Conceptual directions for resolving the debate. *Psychological Assessment, 22*, 433–445.
- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin, 87*, 245–251.
- Tellegen, A., & Ben-Porath, Y. S. (2008). *The Minnesota Multiphasic Personality Inventory-2 Restructured Form: Technical Manual*. Minneapolis: University of Minnesota Press.
- Tellegen, A., Ben-Porath, Y. S., McNulty, J. L., Arbisi, P. A., Graham, J. R., & Kaemmer, B. (2003). *MMPI-2 Restructured Clinical (RC) scales: Development, Validation, and Interpretation. Form: Technical Manual*. Minneapolis, MN: University of Minnesota Press.
- Verona, E., Patrick, C. J., & Joiner, T. E. (2001). Psychopathy, antisocial personality, and suicide risk. *Journal of Abnormal Psychology, 110*, 462–470.
- Walters, G. D. (2003). Predicting institutional adjustment and recidivism with the psychopathy checklist factor scores: A meta-analysis. *Law and Human Behavior, 27*, 541–558.
- Widiger, T. A., & Lynam, D. R. (1998). Psychopathy and the Five-Factor Model of Personality. In T. Millon et al. (Eds.), *Psychopathy: Antisocial, criminal, and violent behavior* (pp. 171–187). New York: Guilford Press.
- Witt, E. A., Hopwood, C. J., Morey, L. C., Markowitz, J. C., McGlashan, T. H., Grilo, C. M., . . . Donnellan, M. (2010). Psychometric characteristics and clinical correlates of NEO-PI-R fearless dominance and impulsive antisociality in the Collaborative Longitudinal Personality Disorders Study. *Psychological Assessment, 22*, 559–568.
- Woodworth, M., & Porter, S. (2002). In cold blood: Characteristics of criminal homicides as a function of psychopathy. *Journal of Abnormal Psychology, 111*, 436–445.
- Zuckerman, M. (1979). *Sensation seeking: Beyond the optimal level of arousal*. Hillsdale, NJ: Erlbaum.