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Using MMPI–2–RF Correlates to Elucidate the PCL–R and Its Four Facets in a Sample of Male Forensic Psychiatric Patients

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ABSTRACT

This study documents the associations between the MMPI–2–RF (Ben-Porath & Tellegen, 2008) scale scores and the Psychopathy Checklist Revised (PCL–R; Hare, 2003) facet scores in a forensic psychiatric sample. Objectives were to determine how the MMPI–2–RF scales might enhance substantive understanding of the nature of the 4 PCL–R facets and to discern possible implications for the treatment of psychopathic patients. A sample of 127 male forensic psychiatric offenders admitted to a Dutch forensic psychiatric hospital completed the PCL–R and the MMPI–2. Exploratory stepwise regression analyses assessed the prediction of the PCL–R total and its facet scores from MMPI–2–RF scales at its 3 hierarchical levels. Conceptually meaningful results emerged at each level of the MMPI–2–RF hierarchy, including several consistent differences between predictor sets across the facets. Interestingly, ideas of persecution (RC6) was a specific predictor of PCL–R Facet 2, a facet noted for its association with treatment failure. Results are compared and contrasted to the extant body of empirical work to date, and some tentative clinical implications are offered.

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In best practice forensic settings, psychopathy is frequently assessed by administration of the Hare Psychopathy Checklist–Revised (PCL–R; Hare, 1991, 2003). Currently, the PCL–R operationalizes the construct of psychopathy via four specific, correlated facets. In the field of psychopathy this is a leading contemporary model, albeit not the only one. The Minnesota Multiphasic Personality Inventory (MMPI) family of instruments operationalizes a predominant model of psychopathology and personality. Its most recent version, the Minnesota Multiphasic Personality Inventory–2–Restructured Form (MMPI–2–RF; Ben-Porath & Tellegen, 2008), holds particular heuristic promise, as it boasts a multilevel, hierarchical setup that is more in line with modern theorizing about the nature of psychopathology. We held that the MMPI–2–RF and PCL–R models might amplify and inform each other, especially when the PCL–R is examined from a more fine-grained perspective distinguishing four facets, rather than the traditional two factors. This study aims to map the MMPI–2–RF onto the four-facet model of the PCL–R.

The PCL–R (Hare, 1991, 2003) was designed to reliably measure the clinical construct of psychopathy. Its maximum score (40) is considered to represent the "prototypical psychopath." Using exploratory factor analysis with the data set in the first edition of the PCL–R (Hare, 1991), 17 of the 20 items were originally divided into two factors, with 3 items loading on neither factor. This two-factor model was replicated several times using confirmatory factor analysis (Hare & Neumann, 2008). Factor 1 contained the personality traits typically associated with psychopathy; these reflect shallow affect and a manipulative, remorseless, and arrogant interpersonal style. Factor 2 reflected a chronically unstable, aggressive, and antisocial lifestyle. Cooke and Michie (2001) were unable to replicate the two-factor model in their study, using confirmatory factor analysis, and developed and cross-validated a hierarchical three-factor model. In this model, the concept of psychopathy is underpinned by the following three factors: an arrogant and deceitful interpersonal style, deficient affective experience, and impulsive and irresponsible behavioral style. Their model implies that criminality is not a core feature of psychopathy but rather the consequence of the three core factors. More recently, and largely in response to Cooke and Michie's three-factor model, Hare revised his original model (Hare, 2003) to include four facets (called *facets* to distinguish them from the original two factors in name as well as in number). This new four-facet model augments Cooke and Michie's three-factor model with a fourth, so-called antisocial facet, using the remaining items from the two-factor model that Cooke and Michie had excluded. The resulting four facets were labeled interpersonal (Facet 1), affective (Facet 2), lifestyle (Facet 3), and antisocial (Facet 4). Facet 1 describes a glib, arrogant, and deceptive interpersonal style; Facet 2 refers to shallow emotions and lack of empathy; Facet 3 refers to an impulsive and irresponsible lifestyle; and Facet 4 indicates a tendency to violate rules and social norms with aggressive and antisocial behavior (Hare & Neumann, 2008; Neumann, Hare, & Pardini, 2014). These four facets have been replicated in several international samples (Hare, Neumann, & Mokros, 2015).

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There is ongoing debate whether these four facets should be seen as first-order factors that together form the superordinate factor of psychopathy (Hare et al., 2015) or whether the first three facets define the core psychopathy, with the antisocial facet reflecting merely the behavioral consequences of psychopathy (Cooke & Michie, 2001; Skeem & Cooke, 2010). Framed differently, the debate centers on the question of whether antisociality is an essential feature of psychopathy or not. In a recent special issue of the *Journal of Personality*, Miller and Lynam (2015) argued that regardless of whether antisocial behavior should be explicitly part of the assessment of psychopathy, virtually all authors appear to agree that it is at least intimately related to psychopathy. Moreover, from a developmental perspective, it has been shown that early antisocial features predict the development of other features of psychopathy at a later stage (Forsman, Lichtenstein, Andershed, & Larsson, 2010). Recent psychophysiological research showed that baseline oxytocin levels in high-risk offenders were strongly and specifically related to Facet 4 of the PCL–R, and in particular to the items early behavioral problems and juvenile delinquency (Mitchell et al., 2013). These studies provide suggestive evidence that antisocial behavior is more than a mere readout of core personality features. In this article we therefore refer to the four-facet model.

We see (at least) two principal reasons for selecting the MMPI–2–RF to inform psychopathy. First, in contrast to the PCL–R, which demands the availability and expert evaluation of extensive file information, the instrument can easily be administered. Perhaps as a result, as noted by Archer, Buffington-Vollum, Stredny, and Handel (2006), the MMPI–2 (from which the MMPI–2–RF can be derived) is widely used in clinical and forensic settings. Second, juxtaposing the PCL–R facets with a more encompassing model of personality and psychopathology (i.e., the MMPI–2–RF) could help elucidate how the facets are linked to external correlates. For example, early authors on psychopathy (e.g., Karpman, 1946) have speculated that certain subtypes might be more amenable to treatment than others. Only very recently have attempts been made to examine this hypothesis empirically. An important finding was that Facet 2 was associated with treatment dropout (Olver & Wong, 2011), and uniquely predicted less favorable therapeutic outcomes (Olver, Lewis, & Wong, 2013). The mechanisms underlying these associations remain unclear and juxtaposing MMPI–2–RF psychopathology indicators with Facet 2 could yield valuable hypotheses. More generally, research has shown that the psychopathy facets are differentially related to external correlates (Neumann & Pardini, 2014), and that individuals with the same PCL–R total score could have distinctive constellations of facet scores. Accordingly, it seems plausible that individuals with psychopathic traits form a heterogeneous group with varying clinical needs, which might be illuminated by the distinctive patterns of MMPI–2–RF scale elevations.

The MMPI–2–RF (Ben-Porath & Tellegen, 2008; Tellegen & Ben-Porath, 2008) constitutes a logical extension of the development of the MMPI–2 Restructured Clinical (RC) scales (Tellegen et al., 2003). The MMPI–2–RF is comprised of a hierarchical set of scale sets, including the higher order, Restructured Clinical, and specific problems and interest scales. In general, the MMPI–2–RF is designed to provide a range of interpretative possibilities, from a rather broad-band approach to personality assessment (i.e., the higher order scales) to a more focused, narrow-band level (i.e., the specific problems scales).

To date, eight previous studies provide evidence on (expected) associations between the MMPI–2–RF and psychopathy (Anderson et al., 2015; Phillips, Sellbom, Ben-Porath, & Patrick, 2013; Sellbom, 2011; Sellbom, Ben-Porath, Lilienfeld, Patrick, & Graham, 2005; Sellbom et al., 2012; Sellbom, Ben-Porath, & Stafford, 2007; Sellbom et al., 2015; Wygant & Sellbom, 2012). The majority of these studies report on associations between the MMPI–2 or the MMPI–2–RF and other self-report measures, predominantly the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996). The PPI is comprised of two subscales (PPI–I Fearless-Dominance and PPI–II Impulsive-Antisociality), which are conceptually similar to the Facets 1 and 2, and Facets 3 and 4 of the PCL–R, respectively (e.g., Benning, Patrick, Hicks, Blonigen, & Krueger, 2003; Patrick, Edens, Poythress, Lilienfeld, & Benning 2006). Two studies examined associations between the Psychopathy Checklist–Screening Version (PCL–SV; Hart, Cox, & Hare, 1995) and a selection of scales from the MMPI–2 (Sellbom et al., 2007) and the MMPI–2–RF (Wygant & Sellbom, 2012), especially the Personality Psychopathology Five scales (PSY–5), and a priori conceptually related scales. To the best of our knowledge, no studies used the full PCL–R, nor its four-facet representation. Nevertheless, some tentative conclusions can be gleaned from an inspection of the currently available findings. First, robust (positive) associations have been found across studies between Antisocial Behavior (RC4), Hypomanic Activation (RC9), and the various indexes of psychopathy. Mixed evidence has been observed for negative associations with Dysfunctional Negative Emotions (RC7) and Low Positive Emotions (RC2); these associations appeared to be more pronounced when using self-report criteria of psychopathy (e.g., Phillips et al., 2013) than with the PCL–SV (Sellbom et al., 2012). Second, from the perspective of a model of personality disorder (PD)-related psychopathology (i.e., PSY–5 scales), robust associations were found for positive associations between lack of inhibition and disconstraint (Disconstraint–revised [DISC-r]) and (instrumental) aggressiveness (as measured by Aggressiveness–revised [AGGR-r]) and psychopathy indexes. Again, mixed evidence was found for the more internalizing personality psychopathology PSY–5 scales (i.e., Negative Emotionality [NEGE-r] and Introversion/Low Positive Emotionality [INTR-r]). With regard to the MMPI–2–RF specific problem scales, the general pattern was that the scales that measure vulnerability, internalizing problems, or inhibitory interpersonal dimensions (including Anxiety [ANX], Multiple Specific Fears [MSF], Shyness [SHY], and Social Avoidance [SAV]), correlated negatively with personality characteristics related to psychopathy (especially the fearless-dominance factor of the PPI). MMPI–2–RF specific problems scales that assess externalizing problems (like Juvenile Conduct Problems [JCP], Aggression [AGG], and Substance Abuse [SUB]) were generally positively correlated with impulsive and antisocial behaviors related to psychopathy. However, it should be noted that the eight studies are quite heterogeneous in terms of sample size (*N* ranging from 78 to well over 40,000), composition (i.e., women or men only vs. both

genders; prison inmates, psychiatric patients, college students, or combinations thereof), and analytic procedures, and differ in their selection of potential MMPI–2 or MMPI–2–RF predictors as well as outcome measures.

Given this observed heterogeneity in studies and findings, as well as the consideration that this study is the first to test the predictive potency of the MMPI–2–RF sets of scales with the full, four-facet representation of the PCL–R in a sample of all male forensic psychiatric patients, we opted for an exploratory analytic strategy testing each full set of MMPI–2–RF scales. However, based on the literature just reviewed, we formulated the following tentative hypotheses. At the RC scale level, we expected, on the one hand, positive associations between RC4/RC9 and the PCL–R total score and its lifestyle and antisocial facets (i.e., Facets 3 and 4); and, on the other hand, negative associations between RC7 and the interpersonal and affective facets (i.e., Facets 1 and 2). With respect to the MMPI–2–RF specific problems scales, we expected positive associations between scales that assess externalizing problems (JCP, AGG, and SUB) and the impulsive and antisocial psychopathy facets. Negative associations were expected between one or more of the MMPI–2–RF specific problem scales involving fear and anxiety (STW, AXY, BRF, MSF) and the affective features of psychopathy; and between shyness (indexed by SHY) and the interpersonal PCL–R facet. Finally, with regard to the PSY–5 scales, we expected positive associations between DISC-r/AGGR-r and the PCL–R lifestyle and antisocial facets, as well as negative associations between NEGE-r and the PCL–R affective and interpersonal facets, respectively.

Method

Participants and procedure

For this study, participants included a total of 139 male patients admitted to a forensic psychiatric hospital in the Netherlands between 1997 and 2009 with a TBS order. TBS (*ter beschikking stelling*) is mandatory intensive inpatient treatment for high-risk offenders that can be ordered by the Dutch courts as part of a sentence for violent or sexual offenses (i.e., assault, manslaughter, murder, rape, child molestation, etc.). All included patients were convicted of a violent offense: 80 (57.6%) committed a life offense (i.e., attempted murder or manslaughter), 28 (20.1%) committed violent assault, and 31 (22.3%) committed rape or sexual assault against an adult. The goal of treatment is to minimize the risk of reoffending while working toward gradual rehabilitation. Patients are admitted immediately after completing a prison sentence and, as a standard procedure, participate in extensive psychological assessment during the first 3 months of treatment. This includes, among other instruments, the MMPI–2, the PCL–R, and the Structured Interview for DSM–IV Personality (SIDP–IV; Pfohl, Blum, & Zimmerman, 1997).

Participants completed the Dutch paper-and-pencil version of the MMPI–2, from which the MMPI–2–RF scores were derived, and scored according to Dutch norms. As the items contained within the MMPI–2–RF are represented in the larger MMPI–2 item pool, it is possible to extract and score MMPI–2–RF scales from MMPI–2 protocols. According to Tellegen and Ben-Porath (2008), scoring the MMPI–2–RF from the MMPI–2 should not affect the reliability of scale scores or relations with criterion measures. This was confirmed for the Dutch version by Van der Heijden, Egger, and Derksen (2010).

Participants' MMPI–2–RF results were excluded from analysis if they produced an invalid profile. For this study, an invalid MMPI–2–RF was defined as having either a Cannot Say (?) raw score greater than or equal to 18, a True Response Inconsistency (TRIN-r) or Variable Response Inconsistency (VRIN-r) T score greater than or equal to 80, an Infrequent Responses (F-r) T score greater than or equal to 120, an Infrequent Psychopathology Responses (Fp-r) T score greater than or equal to 100, an Uncommon Virtues (L-r) T score greater than or equal to 80, or an Adjustment Validity (K-r) T score greater than or equal to 70. These cutoffs were derived from recommendations by the authors of the MMPI–2–RF for use with clinical populations (Ben-Porath & Tellegen, 2008), as well as from an examination of the current data. Using these criteria, a total of 12 (8.6%) participants were excluded for producing invalid MMPI–2–RF profiles. Two specifically trained and licensed psychologists independently assessed PCL–R scores, and subsequently met to decide on consensus scoring.

The final group consisted of 127 men. Participants' ages ranged from 19 to 58 ($M = 32.40$, $SD = 8.49$). Ethnic constellation was 70.1% Dutch, 17.2% Afro-Caribbean, 5.6% Moroccan, 4.7% Turkish, and 2.4% other. Of all participants, 4.8% had no education, 49.6% completed primary school but did not finish secondary school or high school, 26.4% completed vocational training, 10.4% completed secondary school or high school, 4.0% had higher degrees, and for 4.8% information about education was missing. Table 1 shows the distribution of PDs among the participants with a valid MMPI–2–RF profile. As can be seen, the most prevalent PD was antisocial PD (56.7%), followed by narcissistic PD (42.5%); more than half of the sample met criteria for more than one PD (55.1%).

Instruments

MMPI–2–RF

The Dutch version of the MMPI–2 was administered (Derksen, de Mey, Sloore, & Hellenbosch, 1993), from which the MMPI–2–RF scales were derived. As described previously, the MMPI–2–RF

Table 1. Axis II diagnosis for violent offenders.

Axis II diagnosis	Violent offenders
Cluster A	
Paranoid	25 (19.7%)
Schizoid	5 (3.9%)
Schizotypal	7 (5.5%)
Cluster B	
Antisocial	72 (56.7%)
Borderline	33 (26.0%)
Histrionic	5 (3.9%)
Narcissistic	54 (42.5%)
Cluster C	
Avoidant	12 (9.4%)
Dependent	5 (3.9%)
Obsessive–compulsive	13 (10.2%)
More than one Axis II	70 (55.1%)
No Axis II	13 (10.2%)

Note. $N = 127$.

is a 338 true–false item self-report inventory that assesses an individual's characteristics across multiple domains (e.g., personality, psychopathology, and social and behavioral functioning) and has a number of scales designed to detect potential invalid styles of responding (i.e., noncontent or content-based responding). The MMPI–2–RF is composed of a hierarchical set of scale sets, including the higher order, Restructured Clinical, and specific problems scales and interest scales. The higher order scales are designed to reflect the structural dimensions underlying the nine Restructured Clinical scales, and factor-analytic techniques yielded three distinct dimensions: Emotional/Internalizing Dysfunction (EID), Thought Dysfunction (THD), and Behavioral/Externalizing Dysfunction (BXD). An additional set of 25 scales, the specific problems and interest scales were derived from the full item pool of the original MMPI–2, and are intended to facilitate as well as augment interpretation of both the higher order and Restructured Clinical scales. The specific problems scales are arranged into four sets—Somatic/Cognitive, Internalizing, Externalizing, and Interpersonal Problems—each of which contains multiple substantive scales. Finally, the MMPI–2–RF also includes the PSY–5. Extensive psychometric properties have been documented in the original RF manual (Tellegen & Ben-Porath, 2008). Van der Heijden, Egger, and Derksen (2008, 2010) have evaluated the Dutch counterpart scales, and found results that were overall quite similar. Internal consistency estimates (Cronbach's alpha) for this sample ranged from .72 to .87 for the higher order scales, from .64 to .89 for the RC scales, from .45 to .81 for the specific problem scales, and from .61 to .78 for the PSY–5 scales. See Table 2 for Cronbach's alpha values for all scales.

PCL–R

The PCL–R (Hare, 1991, 2003) consists of 20 items, which can be scored on a scale of 0 (*definitely does not apply*), 1 (*may apply or partly applies*), or 2 (*definitely applies*), leading to a possible maximum score of 40. The PCL–R is usually scored on the basis of a combination of file information and an extensive interview. It is not a risk assessment instrument per se, but research shows psychopathy levels to be strongly associated with past and future antisocial and violent behavior (Hare et al., 2015), specifically the impulsive and antisocial facets (e.g., Leistico, Salekin, DeCoster, & Rogers, 2008). Extensive psychometric properties have been documented in the manual (Hare, 2003).

No complete formal interrater reliability estimates are available for the full present sample. However, interrater reliability for a partially (26.7%, or 34 cases) overlapping sample (Hildebrand, de Ruiter, de Vogel and van der Wolf, 2002) based on the same pairs of raters has been estimated previously. The single measure intraclass correlation (ICC) was .88 for the PCL–R total score. In general, ICCs were good to excellent at the individual item level ($Mdn = .67$, range = .46–.80). Internal consistency estimates were similar to those reported by Hildebrand et al. (2002), with a Cronbach's alpha of .86 for the PCL–R total score, and a mean interitem correlation of .24 (ranging from –.07–.66). Internal consistency estimates for the separate facets were lower but still acceptable, with Cronbach's alpha's ranging from .68 to .81 and all interitem correlations positive (mean interitem correlations ranging from .14–.60).

SIDP–IV

The SIDP–IV (Pfohl et al., 1997; Dutch translation by De Jong, Derks, Oel, & Rinne, 1996) was administered to assess *DSM–IV* PD symptoms. The SIDP–IV follows a topically arranged format (work, interpersonal relations, impulse control, etc.), yielding symptom scores on a 0 (*absent*) to 3 (*strong presence*) scale that are combined into the 10 *DSM–IV* dimensional counts of PD symptoms. Its general psychometric properties are well established (Widiger, 2002). Interrater reliability was assessed in a Dutch psychiatric (opiate-dependent) sample ($n = 50$) and showed reasonable to good average criterion reliability with kappa coefficients ranging between .76 for schizotypal PD and .93 for avoidant PD (Damen, De Jong, & Van der Kroft, 2005). Raters in this study were extensively trained mental health professionals. Internal consistency estimates in this sample were adequate, with Cronbach's alpha values ranging from .55 to .77 and the majority of estimates falling in the range of .65 to .75.

Results

Table 2 reports zero-order correlations between MMPI–2–RF substantive (i.e., all scales except validity) raw scale scores and PCL–R total and facet scores.

The PCL–R total score was highly correlated with higher order scale BXD. For the RC scales, PCL–R total score was highly correlated with RC4 and modestly with RC9. At the level of the specific problems scales, PCL–R total score was modestly correlated with internalizing scale Anger Proneness (ANP), highly correlated with externalizing scales JCP and SUB, and modestly correlated with externalizing scale AGG. PCL–R total score was also negatively correlated with two of the interpersonal scales: highly with Interpersonal Passivity (IPP) and moderately with SHY. With regard to the PSY–5 scales, PCL–R total score was highly correlated with AGGR-r and DISC-r.

PCL–R Facet 1 (interpersonal) was not correlated with any of the higher order scales, and moderately correlated with RC4. There was a modest correlation with externalizing specific problems scale JCP, and high negative correlations with interpersonal scales IPP and SHY. With regard to the PSY–5 scales, PCL–R Facet 1 was highly correlated with AGGR-r.

PCL–R Facet 2 (affective) was modestly correlated with higher order scale BXD. At the level of the RC scales, there was a modest correlation with RC4, as well as a modest negative correlation with RC7. Facet 2 was modestly correlated with externalizing specific problems scale JCP. Furthermore, there were moderate negative correlations with interpersonal scales IPP and SHY. Finally, Facet 2 was moderately correlated with PSY–5 scale AGGR-r and modestly with DISC-r.

PCL–R Facet 3 (lifestyle) was highly correlated with higher order scale BXD. With regard to the RC scales, there was a high correlation with RC4 and a modest correlation with RC9. At the level of the specific problems scales there was a moderate correlation with internalizing scale ANP, high correlations with externalizing scales JCP and SUB, and a moderate negative correlation with interpersonal scale IPP. Finally, Facet 3 was highly correlated with PSY–5 scale DISC-r and moderately with AGGR-r.

Table 2. Minnesota Multiphasic Personality Inventory–2–Restructured Form (MMPI–2–RF) correlates with the Psychopathy Checklist–Revised (PCL–R) total score and facet scores.

MMPI–2–RF scales	α	PCL–R total score	PCL–R Facet 1	PCL–R Facet 2	PCL–R Facet 3	PCL–R Facet 4
Higher order scales						
EID	.87	.025	−.092	−.076	.104	.043
THD	.72	.062	−.044	.063	.087	.115
BXD	.74	.449***	.167	.190*	.520***	.447***
Restructured Clinical scales						
RCd	.89	−.007	−.088	−.076	.042	.030
RC1	.81	−.035	−.162	−.132	.075	.030
RC2	.64	−.048	−.102	−.089	.011	−.037
RC3	.80	.103	−.072	.101	.119	.144
RC4	.69	.509***	.229**	.209*	.524***	.539***
RC6	.70	.138	.012	.133	.120	.160
RC7	.81	−.076	−.165	−.184*	.003	.007
RC8	.64	.051	−.058	−.009	.097	.094
RC9	.74	.213*	.098	.080	.202*	.165
Specific problems somatic/cognitive						
MLS	.68	−.046	−.140	−.126	.068	−.012
GIC	.81	.026	−.040	−.111	.117	.084
HPC	.71	−.086	−.154	−.106	−.012	−.061
NUC	.68	.018	−.107	−.024	.102	.050
COG	.73	.027	−.093	−.022	.109	.053
Specific problems internalizing scales						
SUI	.48	.082	−.049	.064	.119	.107
HLP	.64	.065	−.036	.099	.108	.017
SFD	.70	.020	−.041	−.040	.064	.036
NFC	.70	.059	−.057	.004	.133	.040
STW	.65	.014	−.047	−.082	.039	.069
AXY	.57	−.118	−.165	−.154	−.024	−.042
ANP	.74	.202*	.104	.109	.234**	.126
BRF	.45	−.093	−.141	−.153	−.006	−.002
MSF	.68	−.007	.023	−.084	.024	.024
Specific problems externalizing scales						
JCP	.74	.458***	.187*	.213*	.511***	.495***
SUB	.47	.323***	.084	.071	.387***	.355***
AGG	.66	.202*	.135	.087	.162	.191*
ACT	.60	.075	−.036	.001	.111	.068
Specific problems interpersonal scales						
FML	.76	−.008	−.050	−.048	−.011	.025
IPP	.69	−.302***	−.299***	−.276**	−.229**	−.163
SAV	.72	−.084	−.143	−.052	−.034	−.044
SHY	.76	−.239**	−.318***	−.228**	−.112	−.165
DSF	.66	−.130	−.174	−.096	−.116	−.071
Interest scales						
AES	.56	.091	.194*	.082	.037	−.005
MEC	.46	−.049	.000	.072	−.072	−.032
Personality Psychopathology Five						
AGGR-r	.69	.348***	.333***	.275**	.237**	.230**
PSYC-r	.71	.046	−.084	.020	.095	.096
DISC-r	.61	.378***	.118	.201*	.457***	.359***
NEGE-r	.78	.086	.008	−.066	.114	.097
INTR-r	.72	−.075	−.061	−.033	−.068	−.064

Note. $N = 127$. EID = Emotional/Internalizing Dysfunction; THD = Thought Dysfunction; BXD = Behavioral/Externalizing Dysfunction; RCD = Demoralization; RC1 = Somatic Complaints; RC2 = Low Positive Emotions; RC3 = Cynicism; RC4 = Antisocial Behavior; RC6 = Ideas of Persecution; RC7 = Dysfunctional Negative Emotions; RC8 = Aberrant Experiences; RC9 = Hypomanic Activation; MLS = Malaise; GIC = Gastrointestinal Complaints; HPC = Head Pain Complaints; NUC = Neurological Complaints; COG = Cognitive Complaints; SUI = Suicidal/Death Ideation; HLP = Helplessness/Hopelessness; SFD = Self-Doubt; NFC = Inefficacy; STW = Stress/Worry; AXY = Anxiety; ANP = Anger Proneness; BRF = Behavior-Restricting Fears; MSF = Multiple Specific Fears; JCP = Juvenile Conduct Problems; SUB = Substance Abuse; AGG = Aggression; ACT = Activation; FML = Family Problems; IPP = Interpersonal Passivity; SAV = Social Avoidance; SHY = Shyness; DSF = Disaffiliativeness; AES = Aesthetic-Literary Interests; MEC = Mechanical-Physical Interests; AGGR-r = Aggressiveness–Revised; PSYC-r = Psychoticism–Revised; DISC-r = Disconstraint–Revised; NEGE-r = Negative Emotionality/Neuroticism–Revised; INTR-r = Introversion/Low Positive Emotionality–Revised.
*$p < .05$. **$p < .01$. ***$p < .001$.

PCL–R Facet 4 (antisocial) was highly correlated with higher order scale BXD, and with RC4. With regard to the specific problems scales, there were high correlations with externalizing scales JCP and SUB, as well as a modest correlation with AGG. Furthermore, Facet 4 was highly correlated with PSY–5 scale DISC-r and moderately with AGGR-r.

None of the PCL–R scores was correlated with any of the somatic/cognitive or interest scales, except for a very small correlation between PCL–R Facet 1 and Aesthetic-Literary Interests (AES).

Based on the correlations just reported, exploratory stepwise regression (criteria: entry $p < .05$, removal $p > .10$) analyses were conducted by scale set (higher order scales, RC scales, specific problems scales, and PSY–5 scales) to determine which of the scales from each of these four scale sets would provide the most information in relation to predicting PCL–R total scores

Table 3. Regressions for Psychopathy Checklist–Revised (PCL–R) total score.

							F test			F_{chg} analysis	
Scale set/block	MMPI–2–RF scale	Standardized β	*R*	R^2	R^2_{adj}	R^2_{chg}	*F*	*df*	*p*	F_{chg}	*p*
Higher order											
1	BXD		.449	.202	.195		31.553	1, 125			
Restructured Clinical											
1	RC4		.509	.259	.253		43.720	1, 125			
2	RC4	.569	.554	.307	.296	.048	27.480	2, 124	<.001	8.587	.004
	RC7	−.227									
Specific problems											
1	JCP		.458	.209	.203		33.119	1, 125			
2	JCP	.453	.512	.263	.251	.053	22.073	2, 124	<.001	8.927	.003
	SHY	−.230									
3	JCP	.373	.566	.320	.304	.058	19.302	3, 123	<.001	10.409	.002
	SHY	−.278									
	SUB	.257									
Personality Psychopathology Five											
1	DISC-r		.378	.143	.136		20.801	1, 125			
2	DISC-r	.307	.456	.208	.195	.066	16.306	2, 124	<.001	10.268	.002
	AGGR-r	.266									

Note. $N = 127$. MMPI–2–RF = Minnesota Multiphasic Personality Inventory–2–Restructured Form; BXD = Behavioral/Externalizing Dysfunction; RC4 = Antisocial Behavior; RC7 = Dysfunctional Negative Emotions; JCP = Juvenile Conduct Problems; SHY = Shyness; SUB = Substance Abuse; DISC-r = Disconstraint–Revised; AGGR-r = Aggressiveness–Revised.

and facet scores. Tables 3 through 7 present the results of these analyses. Results are discussed by PCL–R score and MMPI–2–RF scale set.

For the PCL–R total score (Table 3), higher order scale BXD accounted for 20.2% of the variance, RC scales RC4 and (low) RC7 combined to account for 30.7% of the variance, specific problems scales JCP, IPP (negatively), and SUB accounted for 32.0% of the variance, and PSY–5 scales DISC-r and AGGR-r combined to account for 20.8% of the variance.

For Facet 1 (Table 4), no higher order scales emerged as significant predictors (although a trend was notable), RC scales RC4 and (low) RC7 combined to account for 10.7% of the variance, specific problems scales (low) SHY and JCP combined to account for 13.4% of the variance, and PSY–5 scale AGGR-r accounted for 11.1% of the variance.

For Facet 2 (Table 5), higher order scale BXD accounted for 3.6% of the variance, RC scales RC6, (low) RC7, and RC4 combined to account for 14.8% of the variance, specific problems scales IPP (negatively) and ANP accounted for 10.5% of the variance, and PSY–5 scale AGGR-r accounted for 7.6% of the variance.

For Facet 3 (Table 6), higher order scale BXD accounted for 27.0% of the variance, RC scale RC4 accounted for 27.4% of the variance, specific problems scales JCP, SUB, and IPP (negatively) accounted for 35.2% of the variance, and PSY–5 scale DISC-r accounted for 20.9% of the variance.

Finally, for Facet 4 (Table 7), higher order scale BXD accounted for 19.9% of the variance, RC scale RC4 accounted for 29.0% of the variance, specific problems scales JCP and SUB accounted for 33.0% of the variance, and PSY–5 scale DISC-r combined to account for 12.9% of the variance.

Discussion

This investigation had two specific aims: (a) juxtaposing the full MMPI–2–RF psychopathology and personality models with the four-facet PCL–R model, and in so doing, (b) elucidate the

Table 4. Regressions for Psychopathy Checklist–Revised (PCL–R) Facet 1.

							F test			F_{chg} analysis	
Scale set/block	MMPI–2–RF scale	Standardized β	*R*	R^2	R^2_{adj}	R^2_{chg}	*F*	*df*	*p*	F_{chg}	*p*
Higher order											
1	—										
Restructured Clinical											
1	RC4		.229	.052	.045		6.896	1, 125			
2	RC4	.293	.328	.107	.093	.055	7.449	2, 124	<.001	7.636	.007
	RC7	−.243									
Specific problems											
1	SHY		.318	.101	.094		14.080	1, 125			
2	SHY	−.315	.366	.134	.120	.033	9.587	2, 124	<.001	4.679	.032
	JCP	.181									
Personality Psychopathology Five											
1	AGGR-r		.333	.111	.104		15.580	1, 125			

Note. $N = 127$. MMPI–2–RF = Minnesota Multiphasic Personality Inventory–2–Restructured Form; RC4 = Antisocial Behavior; RC7 = Dysfunctional Negative Emotions; SHY = Shyness; JCP = Juvenile Conduct Problems; AGGR-r = Aggressiveness–Revised.

Table 5. Regressions for Psychopathy Checklist–Revised (PCL–R) Facet 2.

							F test			F_{chg} analysis	
Scale set/block	MMPI–2–RF scale	Standardized β	R	R^2	R^2_{adj}	R^2_{chg}	F	df	p	F_{chg}	p
Higher order											
1	BXD		.190	.036	.028		4.688	1, 125			
Restructured Clinical											
1	RC4		.209	.044	.036		5.720	1, 125			
2	RC4	.277	.324	.105	.091	.062	7.294	2, 124	<.001	8.524	.004
	RC7	–.257									
3	RC4	.248	.385	.148	.127	.043	7.126	3, 123	<.001	6.180	.014
	RC7	–.354									
	RC6	.234									
Specific problems											
1	IPP		.276	.076	.069		10.340	1, 125			
2	IPP	–.248	.324	.105	.091	.029	7.282	2, 124	<.001	3.978	.048
	JCP	.172									
Personality Psychopathology Five											
1	AGGR-r		.275	.076	.068		10.241	1, 125			

Note. $N = 127$. MMPI–2–RF = Minnesota Multiphasic Personality Inventory–2–Restructured Form; BXD = Behavioral/Externalizing Dysfunction; RC4 = Antisocial Behavior; RC7 = Dysfunctional Negative Emotions; RC6 = Ideas of Persecution; IPP = Interpersonal Passivity; JCP = Juvenile Conduct Problems; AGGR-r = Aggressiveness–Revised.

nature of the comprising facets of psychopathy. To our knowledge, this is the first study to test these associations in a group of male forensic psychiatric patients.

Overall, zero-order correlations were largely in line with previous research (Anderson et al., 2015; Phillips et al., 2013; Sellbom, 2011; Sellbom et al., 2005; Sellbom et al., 2012; Sellbom et al., 2007; Sellbom et al., 2015; Wygant & Sellbom, 2012). Furthermore, our sets of exploratory regression analyses predicting psychopathy as measured by the PCL–R yield a consistent picture at each level of the MMPI–2–RF hierarchy (see Table 8 for a summary of these findings). In male forensic psychiatric patients, BXD robustly predicted psychopathy and its facets. An interesting pattern of results emerged at the RC level. Antisocial behavior as measured by RC4 was consistently predictive of (global) psychopathy and its comprising facets. Dysfunctional negative emotions (low RC7) was also predictive of PCL–R total score, but only of its interpersonal and affective facets, not behavioral Facets 3 and 4. In a similar vein, the PSY–5 indexes of abnormal personality displayed a conceptually meaningful pattern. Specifically, disinhibition and instrumental aggression (as measured by DISC-r and AGGR-r) were jointly predictive of the PCL–R total score, but only DISC-r predicted the behavioral and lifestyle facets, whereas AGGR-r predicted the affective and interpersonal facets. The specific problems scales display a very interesting pattern of correlates and predictors with the PCL–R. No Somatic/Cognitive scales were related to the PCL–R (or added to the prediction of its scores), and several conceptually relevant associations and predictors were found in Externalizing and Interpersonal domains. JCP was predictive of the PCL–R total score and each of its facets, whereas SUB only added to the prediction of the behavioral facets. Low scores on IPP were associated with the PCL–R total score and added uniquely to the prediction of its affective and impulsive facets. Low SHY added to the prediction of PCL–R total score, as well the interpersonal and antisocial facets.

Although these findings are overall largely consistent with the extant body of evidence, it deserves mention that previous studies found stronger relationships between low scores on the internalizing MMPI–2–RF scales and (components of)

Table 6. Regressions for Psychopathy Checklist–Revised (PCL–R) Facet 3.

							F test			F_{chg} analysis	
Scale set/block	MMPI–2–RF scale	Standardized β	R	R^2	R^2_{adj}	R^2_{chg}	F	df	p	F_{chg}	p
Higher order											
1	BXD		.520	.270	.264		46.269	1, 125			
Restructured Clinical											
1	RC4		.524	.274	.268		47.206	1, 125			
Specific problems											
1	JCP		.511	.261	.256		44.254	1, 125			
2	JCP	.433	.565	.320	.309	.058	29.125	2, 124	<.001	10.598	<.001
	SUB	.253									
3	JCP	.395	.593	.352	.336	.032	22.239	3, 123	<.001	6.081	.015
	SUB	.278									
	IPP	–.183									
Personality Psychopathology Five											
1	DISC-r		.457	.209	.203		33.009	1, 125			

Note. $N = 127$. MMPI–2–RF = Minnesota Multiphasic Personality Inventory–2–Restructured Form; BXD = Behavioral/Externalizing Dysfunction; RC4 = Antisocial Behavior; JCP = Juvenile Conduct Problems; SUB = Substance Abuse; IPP = Interpersonal Passivity; DISC-r = Disconstraint–Revised.

Table 7. Regressions for Psychopathy Checklist–Revised (PCL–R) Facet 4.

Scale set/block	MMPI–2–RF scale	Standardized β	R	R^2	R^2_{adj}	R^2_{chg}	F test			F_{chg} analysis	
							F	df		F_{chg}	$p \leq$
Higher order											
1	BXD		.447	.199	.193		31.129	1, 125			
Restructured Clinical											
1	RC4		.539	.290	.285		51.114	1, 125			
Specific problems											
1	JCP		.495	.245	.239		40.531	1, 125			
2	JCP	.426	.539	.290	.279	.045	25.355	2, 124	<.001	7.931	.006
	SUB	.224									
3	JCP	.409	.575	.330	.314	.040	20.224	3, 123	<.001	7.360	.008
	SUB	.265									
	SHY	−.204									
Personality Psychopathology Five											
1	DISC-r		.359	.129	.122		18.485	1, 125			

Note. $N = 127$. MMPI–2–RF = Minnesota Multiphasic Personality Inventory–2–Restructured Form; BXD = Behavioral/Externalizing Dysfunction; RC4 = Antisocial Behavior; JCP = Juvenile Conduct Problems; SUB = Substance Abuse; SHY = Shyness; DISC-r = Disconstraint–Revised.

psychopathy. More specifically, apart from RC7, SHY, and IPP, we did not find any other negative associations with internalizing scales, including NEGE-r, INTR-r, EID, Demoralization (RCd), and several of the specific problems scales, as was observed in some of the previous studies. Several factors might account for these differential findings, and we offer some speculation. First, there is great diversity in sample composition, with some studies including students (together with forensic participants), all studies included female participants, and one study included females only. Moreover, these studies differed in terms of their operationalization of psychopathy, with most studies relying on self-report indexes (mostly PPI; Phillips et al., 2013; Sellbom et al., 2005; Sellbom et al., 2012; Sellbom et al., 2015). Of course, these studies are vulnerable to inflated correlations due to shared method variance. Finally, our all-male sample was in mandatory treatment for various forms of externalizing behavior, which sets them apart from participants in some of the other studies.

It is instructive to compare and contrast our results using the PCL–R psychopathy as a dependent measure, with those observed in a different sample from the same Dutch clinic, predicting *DSM*-defined antisocial PD (Anderson et al., 2015). Across studies, a robust association between RC4 and both antisocial PD and psychopathy was observed. However, whereas ASPD was predicted by antisocial behavior and impulsivity (RC4 and RC9), psychopathy as measured by the PCL–R was best predicted by antisocial behavior and a lack of negative emotionality (RC4 and RC7), which is much in line with early theorizing by Cleckley (1941). In clinical practice, this could be a useful distinction. For example, clinicians encountering patients with a high score on RC4 might inspect scores on RC7 and RC9 to aid in the differentiation between antisocial PD and psychopathy.

Another notable finding was the specific predictive contribution of RC6 to the affective facet of the PCL–R (Facet 2). Previous research has demonstrated that Facet 2 is associated with less therapeutic change and more dropout in forensic treatment settings (Olver et al., 2013; Olver & Wong, 2011), although not a strong predictor of recidivism (Yang, Wong, & Coid, 2010). Interestingly, Rock, Sellbom, Ben-Porath, and Salekin (2013) reported a comparable finding using MMPI–2–RF estimates of psychopathy, calculated from the conceptual perspective of the PPI. In their sample of 483 convicted male batterers undergoing treatment, fearless dominance was not related to recidivism but did add to the prediction of treatment failure. Apparently, Facet 2 complicates treatment, and the association with RC6 yields a new hypothesis regarding possible mechanisms. Earlier theorizing from Olver and Wong (2011) hypothesized that affective and empathy deficits possibly undermine the development of insight and the willingness to truly engage in treatment. Hence, it might be the callous and unemotional traits that cause difficulty in establishing an effective therapeutic alliance, and the clinician is advised to focus on working collaboratively toward well-defined goals using a cognitive-behavioral approach, avoiding too much focus on the therapeutic bond. The finding here that RC6 is related to Facet 2 suggests that

Table 8. Summary of results of stepwise regression analyses predicting Psychopathy Checklist–Revised (PCL–R) total and facet scores.

	MMPI–2–RF			
PCL–R	Higher order scales	Restructured Clinical scales	Specific problems scales	Psychology Personality Five
Total score	BXD	RC4, RC7(−)	JCP, SHY(−), SUB	DISC-r, AGGR-r
Facet 1 (interpersonal)	—	RC4, RC7(−)	SHY(−), JCP	AGGR-r
Facet 2 (affective)	BXD	RC4, RC7(−), RC6	IPP(−), JCP	AGGR-r
Facet 3 (impulsive)	BXD	RC4	JCP, SUB, IPP(−)	DISC-r
Facet 4 (antisocial)	BXD	RC4	JCP, SUB, SHY(−)	DISC-r

Note. MMPI–2–RF = Minnesota Multiphasic Personality Inventory–2–Restructured Form; BXD = Behavioral/Externalizing Dysfunction; RC4 = Antisocial Behavior; RC7 = Dysfunctional Negative Emotions; RC6 = Ideas of Persecution; JCP = Juvenile Conduct Problems; SHY = Shyness; SUB = Substance Abuse; IPP = Interpersonal Passivity; DISC-r = Disconstraint–Revised; AGGR-r = Aggressiveness–Revised.

interpersonal alienation, suspiciousness, and the belief that others seek to harm one might also play a role in not engaging in treatment. RC6 is also related to lack of insight and the tendency to blame others, and is associated with interpersonal difficulties (Ben-Porath, 2012). Alienation and suspiciousness are not explicitly assessed by the PCL–R. However, other authors have noted indications that distrust plays a role in psychopathy (Cooke, Hart, Logan, & Michie, 2012; Hildebrand & de Ruiter, 2004). If indeed interpersonal alienation and suspiciousness are part of the problem in the treatment of psychopathic patients with high scores on Facet 2, this would call for certain adaptations of the treatment program. To minimize the treatment interfering effect of distrust, for example, treatment providers would need to pay special attention to transparency about treatment methods and goals, accountability during the treatment process, and clarity about other rules and expectations.

There are a number of limitations to this study that warrant consideration. First and foremost, we used a naturalistic sample of all male forensic psychiatric patients. Cross-validation of several key findings in different samples is indicated. For example, future research could examine whether RC4, RC7, and RC9 might be useful to differentiate antisocial PD and psychopathy in incarcerated offenders, or among general offenders under supervision in the community. Furthermore, this study needs replication in similar high-risk samples, as well as in female offenders. Finally, our exploratory analytic strategy using stepwise regression analyses amplifies the need for cross-validation of the emergent predictors. The general consistency of findings across facets however, mitigates this concern.

In conclusion, this investigation demonstrated both discriminant and convergent validity across MMPI–2–RF scale sets and the four-facets representation of the PCL–R. Additionally, this study provides suggestive evidence of how the MMPI–2–RF (i.e., RC6 elevations) could aid in the identification of a specific subgroup of psychopathic offenders who have been shown to be at higher risk for treatment failure and dropout. If this is replicated, the combination of the MMPI–2–RF and the PCL–R could prove very valuable in identifying these particularly challenging patients, allowing clinicians to adapt treatment more effectively.

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