On the Convergence Between PSY-5 Domains and PID-5 Domains and Facets: Implications for Assessment of *DSM-5* Personality Traits

Jaime L. Anderson[1], Martin Sellbom[1], R. Michael Bagby[2], Lena C. Quilty[3], Carlo O. C. Veltri[4], Kristian E. Markon[5], and Robert F. Krueger[6]

Abstract

The *DSM-5* Personality and Personality Disorders workgroup and their consultants have developed the 220-item, self-report Personality Inventory for the *DSM-5* (PID-5) for direct assessment of the proposed personality trait system for *DSM-5*; however, most practicing clinical psychologists will likely continue to rely on separate omnibus measures to index symptoms and traits associated with psychopathology. The Minnesota Multiphasic Personality Inventory-2 Restructured Form (MMPI-2-RF) is one such measure and assesses the Personality Psychopathology Five (PSY-5) domains, which are conceptual cognates of the *DSM-5* trait domains. The current study examined the associations between the MMPI-2-RF PSY-5 scales and the *DSM-5* trait domains and facets indexed by the PID-5. A clear pattern of convergence was found indicating that each of the PSY-5 scales was most highly correlated with its conceptually expected PID-5 counterpart (rs = .44-.67; *Mdn r* = .53) and facet correlations generally showed the same pattern. Similarly, when each of the PSY-5 scales was regressed onto the PID-5 domains, the conceptually expected pattern of associations emerged even more clearly. Finally, a joint exploratory factor analysis with the PSY-5 and PID-5 trait facet scales indicated a five-factor solution that clearly resembled both of the PSY-5/*DSM-5* trait domains. These results show clear evidence that the MMPI-2-RF has utility in the assessment of dimensional personality traits proposed for the upcoming *DSM-5*.

It has long been recognized that the current model for personality disorders in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-IV-TR*; American Psychiatric Association [APA], 2000) is problematic (e.g., Clark, 2007; Livesley, 2001; Watson, Clark, & Chmielewski, 2008; Widiger & Mullins-Sweatt, 2010). Since the advent of the *DSM-III*, researchers have noted that the APA has not fully considered empirical work conducted by clinical and personality researchers regarding dimensional models of personality, and have instead continued to use a model guided by clinical impressions and categorizations (Schroeder, Wormworth, & Livesley, 1992). The limitations of this model include (but are not limited to) inadequate coverage of personality psychopathology variance, excessive diagnostic comorbidity, excessive within-diagnosis heterogeneity, diagnostic rubrics that do not resemble empirically driven factor structures, marked temporal instability, a lack of clear boundary between normal and pathological personality, and poor convergent and discriminant validity across

diagnostic categories (see, e.g., Clark, 2007; Skodol et al., 2011; Widiger & Trull, 2007, for reviews). For this reason, many investigators have developed alternative models and approaches to assessing personality psychopathology that circumvent many of the above-referenced limitations (see, e.g., Oldham & Skodol, 2000; Trull & Durrett, 2005; Tyrer & Johnson, 1996; Westen & Shedler, 2000; Widiger, Livesley, & Clark, 2009).

[1]University of Alabama, Tuscaloosa, AL, USA
[2]University of Toronto, Toronto, Ontario, Canada
[3]Center for Addiction and Mental Health, Toronto, Ontario, Canada
[4]Kent State University, Kent, OH, USA
[5]University of Iowa, Iowa City, IA, USA
[6]University of Minnesota, Minneapolis, MN, USA

Corresponding Author:
Martin Sellbom, The University of Alabama, 348 Gordon Palmer, Tuscaloosa, AL 35487-0348, USA.
Email: msellbom@gmail.com

Bernstein et al. (2007) observed that a mixed categorical and dimensional system was the most frequently supported alternative system for personality disorders among personality disorder experts. There have been several dimensional models that have been proposed for use in assessing personality psychopathology (e.g., Widiger & Simonsen, 2005), including the Five-Factor Model (FFM) of personality, which the APA *DSM-5* Personality and Personality Disorders (P&PD) workgroup has acknowledged played a significant role in the development of the proposed *DSM-5* model (APA, 2011). Indeed, the FFM has demonstrated the ability to characterize psychopathological personality (Lynam & Widiger, 2001; Schroeder et al., 1992; Widiger & Mullins-Sweatt, 2010; Widiger & Trull, 2007), and a number of studies have shown some utility for the FFM to describe *DSM-IV-TR* personality disorders through survey, self-report inventory, third-person informants, and semi-structured interview studies (Lynam & Widiger, 2001; Samuel & Widiger, 2004, 2008; Saulsman & Page, 2004). Subsequent research relevant to the *DSM-5* has also identified a psychoticism domain in addition to the other FFM domains (Tackett, Silberschmidt, Krueger, & Sponheim, 2008; Watson et al., 2008; see also Harkness & McNulty, 1994), which indicates promise in capturing the full spectrum of dimensional personality pathology.

The *DSM-5* P&PD workgroup has proposed a substantially revised system for the diagnosis of personality disorders. This model moves away from the exclusively categorical, criterion-based classification of personality disorders and instead proposes a hybrid model that emphasizes dimensional personality traits. This hybrid model proposes two broad criteria that must be met for a personality disorder diagnosis. Criterion A requires that an individual have impairments in both self (identity or self-direction) and interpersonal (empathy or intimacy) functioning (APA, 2011). Criterion B proposes a set of pathological personality traits, which are combined into sets that define each of six personality disorder types. The five trait domains include Antagonism, Psychoticism, Disinhibition, Negative Affectivity, and Detachment (APA, 2011; Skodol et al., 2011). Each trait domain is subsumed by a set of three to seven facets, which allows for more detailed descriptions of more specific personality trait elements. To not only aid in diagnostic clarity, but also to maintain continuity with the *DSM-IV*, these traits are then combined to define six specific personality disorder types—Antisocial, Avoidant, Borderline, Narcissistic, Obsessive-Compulsive, and Schizotypal. There is also the option of diagnosing an additional PD—Personality Disorder: Trait Specified. This disorder considers all possible configurations that do not match one of the six specific personality disorder types and makes full use of the facet traits. Some research has found initial support for this new model of personality disorders. Wright et al. (2012) found support for the factor structure of the personality trait

model proposed for *DSM-5*, and Hopwood, Thomas, Markon, Wright, and Krueger (2012) demonstrated concurrent validity by showing the *DSM-5* model's ability to predict *DSM-IV* personality disorders.

To assess the five proposed trait domains and respective facets, members of the *DSM-5* P&PD workgroup and their consultants developed the 220-item *Personality Inventory for the DSM-5* (PID-5; Krueger, Derringer, Markon, Watson, & Skodol, 2012). The goal of developing this inventory was to draw from personality models that have previously been shown to have utility in assessing for personality disorders and apply those principles to the proposed domains and facets for the *DSM-5*. Currently, however, clinicians frequently rely, and will likely continue to rely, on omnibus measures for the assessment of personality and psychopathology, and the utility of these measures for the purpose of assessing traits associated with the new *DSM-5* trait model must be evaluated. The Minnesota Multiphasic Personality Inventory-2 Restructured Form (MMPI-2-RF; Ben-Porath & Tellegen, 2008) is a widely used personality measure, which includes a set of scales designed to measure the Personality Psychopathology Five (PSY-5; Harkness & McNulty, 1994) model of personality. Given its frequent use across many evaluation contexts, it is particularly important to assess its utility in indexing the *DSM-5* domains.

The PSY-5 model characterizes normal and abnormal personality traits according to five broad dimensions, including Negative Emotionality/Neuroticism (NEGE), Introversion/Low Positive Emotionality (INTR), Aggressiveness (AGGR), Disconstraint (DISC), and Psychoticism (PSYC) (Harkness & McNulty, 1994, 2007). These constructs have been independently replicated using different measures (Tackett et al., 2008; Watson et al., 2008; see also Krueger, Eaton, et al., 2011). Moreover, the *DSM-5* P&PD workgroup explicitly indicates that the proposed *DSM-5* personality trait model "at the domain-level, bears a strong resemblance to Dr. Allan Harkness' Personality Psychopathology Five (PSY-5) model of clinically relevant personality variants" (APA, 2011).

Aggressiveness, which is akin to *DSM-5* Antagonism, measures interpersonal dominance, callousness, grandiosity, and proclivity toward using instrumental aggression. Psychoticism captures one's proneness to disconnection from reality and is conceptually similar to *DSM-5* Psychoticism. Disconstraint measures behavioral disinhibition, impulsivity, and sensation seeking similar to the *DSM-5* domain of Disinhibition. Neuroticism/Negative Emotionality captures one's disposition to experience a broad range of negative emotional experiences similar to the *DSM-5* domain of Negative Affectivity. Finally, Introversion/Low Positive Emotionality, which is akin to the *DSM-5* domain of Detachment, captures introverted social detachment and low hedonic capacity.

The MMPI-2 and the MMPI-2-RF include scales designed to measure the PSY-5 domains (Harkness & McNulty, 2007; Harkness, McNulty, & Ben-Porath, 1995) that have shown utility in the assessment of personality disorders in past research (see Harkness, Finn, McNulty, & Shields, 2012, for a detailed review). Convergent and discriminant validity has been found between scores on the PSY-5 scales and personality disorder symptoms (Trull, Useda, Costa, & McCrae, 1995). In addition, it has been shown in a study examining the association between the PSY-5 and self-report personality disorder criteria, that the PSY-5 generally captured a substantial amount of variance in all the personality disorders (Wygant, Sellbom, Graham, & Schenk, 2006). Finally, when compared with the NEO Personality Inventory–Revised (NEO PI-R; Costa & McCrae, 1992), the PSY-5 scales were found to improve on NEO PI-R predictions in the assessment of Antisocial, Narcissistic, Paranoid, and Schizotypal personality characteristics (Bagby, Sellbom, Costa, & Widiger, 2008), which is most likely attributable to better coverage of personality-based dysfunction associated with Psychoticism, Aggressiveness, and Disconstraint domains (Bagby et al., 2008).

The Current Study

In the current study, we sought to examine the associations between the PSY-5 domains and the *DSM-5* trait domains and facets, as operationalized via the PID-5. We also aimed to determine the degree to which each PSY-5 domain captured variance in each of the *DSM-5* trait facets for which there was content-based similarity or relevance (convergent validity). Given the conceptual links of the respective PSY-5 and *DSM-5* domains, we hypothesized substantial convergence between the comparable domains across the two models. The discriminant validity, or the degree of divergence across domains, was also examined. We hypothesized that the PSY-5 scales would demonstrate discriminant validity in differentiating the proposed *DSM-5* domains. Specifically, we expected that the PSY-5 scales would be most highly correlated with their *DSM-5* counterparts and less so with unrelated domains. Finally, we analyzed the joint factor structure of the PID-5 facets and PSY-5 scales using exploratory factor analysis to determine the degree to which the PSY-5 domains map onto the PID-5 structure in multivariate latent space.

Method

Participants and Procedures

The sample comprised 463 undergraduate students from a large Southern United States university who participated in the study for course credit in an Introductory Psychology courses. They completed the study measures in groups of up to 10 under the supervision of a trained research assistant.

Participants had a mean age of 19.54 years ($SD = 1.67$) and a mean education of 13.4 years. The sample was approximately 52% male, and primarily Caucasian (76%), with the largest ethnic minority being African American (15%) with "other" racial/ethnic groups accounting for the remaining 9%. Of these, 66 participants were removed from analysis due to invalid MMPI-2-RF protocols (here defined as exhibiting any of the following: Cannot Say Scale > 18, Variable Response Inconsistency > 75T, True Response Inconsistency > 75T, Infrequent Responses > 100T, and Infrequency Psychopathology Responses > 90T). This left a total of 397 participants for analyses. There were no significant differences between included and excluded participants on any demographic characteristic.

Measures

MMPI-2 Restructured Form. The MMPI-2-RF (Ben-Porath & Tellegen, 2008) is a revised version of the MMPI-2 consisting of 338 true or false items. This measure includes 9 validity scales, 3 higher order scales, 9 restructured clinical scales, 23 specific problems scales, 2 interest scales, and 5 Psychopathology Five scales (restructured from their original versions on the MMPI-2). The PSY-5 scales were used in this particular study and were described in detail earlier. The internal consistencies of each of the PSY-5 scales in the current sample were acceptable, with Cronbach's αs .72 (AGGR-r), .75 (NEGE-r), .76 (DISC-r), .80 (INTR-r), and .81 (PSYC-r).

Personality Inventory for DSM-5. The *PID-5* (Krueger et al., 2012) is a 220-item self-report inventory developed to index the five proposed *DSM-5* personality domains and their respective facets. Item responses are based on a Likert-type scale ranging from 0 to 3. A complete list of facets for each domain can be found in Table 1. Internal consistencies (Cronbach's alpha) in the current sample for the PID-5 domain scale scores were .89 (Disinhibition), .93 (Detachment and Negative Affectivity), and .94 (Antagonism and Psychoticism). At the facet level, Cronbach's alphas were also acceptable, with 24 of the 25 scale scores ranging from .70 (Irresponsibility) to .94 (Eccentricity), with Suspiciousness (α =.58) being the only facet to fall below the conventional cutoff of .70. However, the average interitem correlation for this facet was .18, which is acceptable.

Results

Correlation Analyses

We first conducted zero-order correlation analyses to evaluate the convergent and discriminant associations between the PSY-5 scale scores and the PID-5 domain and facet scores. To account for the likelihood of inflated Type I error rates, we used a conservative alpha of .001 to determine

Table 1. Correlations Between PSY-5 and PID-5 Domains and Facets Scale Scores.

	AGGR-r	PSYC-r	DISC-r	NEGE-r	INTR-r
Antagonism Domain	**.44**	**.32**	**.44**	.24	−.23
Manipulativeness	**.37**	.22	**.34**	.16	−.20
Deceitfulness	**.30**	.29	**.45**	.29	−.10
Callousness	**.42**	**.32**	**.44**	.16	.02
Grandiosity	**.34**	.25	.21	.13	−.17
Attention Seeking	**.31**	.24	**.34**	.20	−**.34**
Psychoticism Domain	.21	**.53**	**.38**	**.35**	−.01
Perceptual Dysregulation	.18	**.55**	**.34**	**.41**	−.01
Eccentricity	.12	**.34**	**.32**	.28	.02
Unusual Thoughts or Beliefs	.27	**.56**	**.34**	.24	−.04
Disinhibition Domain	.18	.26	**.57**	.20	−.14
(Lack of) Rigid Perfectionism	−.10	−.15	.13	−.26	.05
Impulsivity	**.30**	**.32**	**.49**	.24	−.26
Irresponsibility	.09	.24	**.39**	.27	.03
Distractibility	.00	.29	.21	**.43**	.02
Risk Taking	**.33**	.12	**.58**	−.08	−.27
Negative Affectivity Domain	.06	**.33**	.14	**.66**	.06
Emotional Lability	.03	**.31**	.05	**.56**	−.06
Perseveration	.08	**.38**	.13	**.54**	.03
Anxiousness	−.03	.28	−.03	**.70**	.12
Separation Insecurity	.03	.20	.11	**.44**	−.05
Hostility	**.34**	.29	.23	**.54**	−.01
Submissiveness	−.16	.04	.01	**.32**	.05
Suspiciousness	.24	**.41**	.29	**.40**	.02
Detachment Domain	−.06	.28	.11	.37	**.44**
Restricted Affectivity	.04	.06	.18	−.01	.23
Anhedonia	−.10	.14	.05	.31	**.50**
Depressivity	−.08	.17	.10	.29	**.30**
Withdrawal	−.12	.18	.03	.28	**.50**
Intimacy Avoidance	−.15	.10	−.03	.08	.20

Note. PSY-5= Personality Psychopathology Five; PID-5= Personality Inventory for the *DSM-5*; AGGR-r = Aggressiveness; PSYC-r = Psychoticism; DISC-r = Disconstraint; NEGE-r = Negative Emotionality/Neuroticism; INTR-r = Introversion/Low Positive Emotionality. Correlations > |.15| are statistically significant at $p < .001$. Coefficients in bold are $r \geq |.30|$. All underlined coefficients are conceptually expected results.

statistical significance for these correlations. Correlations ≥ .30 were interpreted as meaningful, as it corresponds to a medium effect size (Cohen, 1988) and decreases the likelihood of interpreting correlations that are primarily significant as a result of shared method variance. These results are shown in Table 1.

Four of the five PID-5 domain scores were most highly correlated with their conceptually similar PSY-5 counterpart (rs = .44-.67; *Mdn r* = .53), and less so with conceptually non-relevant domains (rs = .06-.44; *Mdn r* = .22). However, unexpected results were found with regard to the Antagonism domain, as these scores were associated with equally high correlations with both AGGR-r and DISC-r (r = .44). When examining the correlations at the facet level, the Psychoticism and Detachment facet scores were each most highly correlated with PSYC-r and INTR-r scale scores, respectively. The

facets of Disinhibition were most highly correlated with DISC-r scores, with the exception of Lack of Rigid Perfectionism and Distractibility, which were more strongly correlated with NEGE-r. The facets of Negative Affectivity were most highly correlated with NEGE-r scores, with Suspiciousness being the exception, which had a slightly higher correlation with PSYC-r scores. Finally, Antagonism facet scores, much like the domain-level correlations, were split between exhibiting the highest correlations with AGGR-r scores (Manipulativeness and Grandiosity) or DISC-r scores (Deceitfulness, Callousness, and Attention Seeking), though it is noteworthy that AGGR-r scores (relative to the other PSY-5 domain scales) clearly displayed larger correlations with Antagonism than Disinhibition facet scores. Thus, it appears as if the variance in PID-5 Antagonism is distributed across both the AGGR-r and DISC-r domains in the PSY-5 model.

Table 2. PSY-5 and PID-5 Domain Scale Intercorrelations.

Domain	Ant/AGGR	Psych/PSYC	Dis/DISC	NAff/NEGE	Det/INTR
Antagonism/AGGR-r	—	.36	.45	.19	−.38
Psychoticism/PSYC-r	.57	—	.36	.49	−.08
Disinhibition/DISC-r	.44	.52	—	.18	−.14
Negative Affectivity/NEGE-r	.57	.63	.38	—	.04
Detachment/INTR-r	.32	.60	.32	.56	—

Note. PSY-5= Personality Psychopathology Five; PID-5= Personality Inventory for the *DSM-5*; AGGR-r = Aggressiveness; PSYC-r = Psychoticism; DISC-r = Disconstraint; NEGE-r = Negative Emotionality/Neuroticism; INTR-r = Introversion/Low Positive Emotionality; Ant = Antagonism; Psych = Psychoticism; Dis = Disinhibition; NAff = Negative Affectivity; Det = Detachment. The below diagonal portion of the matrix shows the intercorrelations of the PID-5 domain scales, whereas the above diagonal portion of the matrix displays intercorrelations of the PSY-5 scales. Correlations greater than |.15| are statistically significant at $p < .001$.

Table 3. PID-5 Domain Scores Regressed Onto PSY-5 Scores (Standardized Beta Weights Reported).

	AGGR-r	PSYC-r	DISC-r	NEGE-r	INTR-r	R^2
Antagonism	.24**	.09	.27**	.15**	−.07	.31
Psychoticism	−.02	.41**	.28**	.16**	.10	.37
Disinhibition	−.13	.08	.58**	.14*	−.06	.36
Negative Affectivity	−.08	.10	.09	.62**	.04	.45
Detachment	−.01	.24**	.13*	.24**	.49**	.38

Note. PSY-5= Personality Psychopathology Five; PID-5= Personality Inventory for the *DSM-5*; AGGR-r = Aggressiveness; PSYC-r = Psychoticism; DISC-r = Disconstraint; NEGE-r = Negative Emotionality/Neuroticism; INTR-r = Introversion/Low Positive Emotionality.
*$p < .01$. **$p < .001$.

To show overlap of the PSY-5 and PID-5 domain scales within the respective models, as well as to help explain unexpected associations across the domains, we calculated the intercorrelations within each model. Overall, intercorrelations for each model were small to moderate, though the PID-5 domains were generally more highly intercorrelated (rs = .32-.63, *Mdn* = .54) relative to the PSY-5 domains (rs = .04-.49, *Mdn* = .28). These results are displayed in Table 2, and indicate that the unexpected PSYC-r findings may be due to the psychoticism domain also being associated with all other domains within the PID-5 model—and to a greater extent than observed for PSYC-r within the PSY-5 model.

Regression Analyses

To examine the degree to which the PSY-5 scales were uniquely associated with each PID-5 domain, which has direct implications for assessment of *DSM-5* constructs, we regressed each of the PID-5 domain scores onto the PSY-5 scale scores (see Table 3). In most cases, the conceptually expected PSY-5 scale was associated with the largest amount of unique PID-5 domain variance. Antagonism was the one exception to this, where DISC-r and AGGR-r accounted for similar amounts of unique variance. In other predictions (except for Negative Affectivity), other PSY-5

domain scores contributed uniquely and incrementally to the prediction of PID-5 domain scores beyond the conceptually expected ones, but the standardized beta weights associated with these significant predictors were generally of substantially smaller magnitude. For instance, in addition to PSYC-r, both DISC-r and NEGE-r also contributed uniquely to the prediction of Psychoticism, but with substantially smaller beta weights. A similar pattern was observed for each of the domains, again with the exception of Negative Affectivity, which was only uniquely associated with the NEGE-r scale.

Exploratory Factor Analysis

We used a joint exploratory factor analysis (EFA) to provide a multivariate analysis to show how the PSY-5 and PID-5 facets converge in multivariate space. Maximum likelihood estimation was used to extract factors and showed decreasing eigenvalues of 9.16, 3.64, 2.51, 1.70, 1.48, 1.22, and .87. We used Horn's (1965) parallel analysis as an empirical method to determine the optimal number of factors to extract, and these randomly generated eigenvalues were 1.55, 1.47, 1.42, 1.37, 1.33, and 1.28. These results indicated that the eigenvalue associated with the sixth observed factor was lower than that of the sixth random factor, thus supporting the five-factor structure as the optimal model. This five-factor model was rotated to simple structure via an oblique (promax) method; this rotated solution is shown in Table 4. A cutoff of |.40| was used for each factor loading to determine if the variance associated with a scale score was meaningfully captured by a factor. An examination of the pattern of factor loadings indicate that Factor 1 is consistent with Negative Affectivity, Factor 2 with Disinhibition, Factor 3 with Detachment, Factor 4 with Antagonism, and Factor 5 with Psychoticism. Factor intercorrelations ranged from $r = −.04$ (Antagonism and Detachment) to .37 (Antagonism and Psychoticism).

The results of the EFA were consistent with theoretical expectations and aligned well with the current *DSM-5* proposal. The resulting rotated solution revealed that each of

Table 4. Joint Exploratory Factor Analysis (EFA) with PSY-5 Domains and PID-5 Facets.

	Factor				
	1	2	3	4	5
Anxiousness	**.77**	.14	.10	.03	−.13
Emotional Lability	**.70**	.06	−.13	.05	−.28
NEGE-r	**.70**	.03	.02	.05	−.14
Separation Insecurity	**.66**	−.01	−.09	−.17	.06
Perseveration	**.57**	.01	.16	−.10	−.33
Distractibility	**.55**	−.32	.15	.09	−.14
Submissiveness	**.52**	−.01	.11	−.13	.16
Hostility	**.41**	.01	.06	−.38	−.12
Suspiciousness	.27	−.09	.23	−.13	−.26
Impulsivity	.25	**−.64**	−.13	−.01	−.19
Risk taking	−.17	**−.59**	−.17	−.10	−.18
DISC-r	−.12	**−.59**	−.04	−.21	−.19
Irresponsibility	.27	**−.48**	.31	−.19	.07
(Lack of) Rigid Perfectionism	−.29	**−.46**	.03	.31	.18
Anhedonia	.19	−.04	**.75**	−.01	.04
Withdrawal	.08	.16	**.73**	−.08	−.19
INTR-r	−.02	.18	**.71**	.14	.18
Restricted Affectivity	−.21	−.08	**.51**	−.33	−.05
Depressivity	.30	−.12	**.46**	.10	−.02
Intimacy Avoidance	−.04	.01	**.43**	.09	−.20
Manipulativeness	.13	−.10	−.03	**−.73**	.01
Grandiosity	−.01	.20	−.03	**−.70**	−.16
Deceitfulness	.23	−.34	.11	**−.65**	.10
Attention Seeking	.28	−.17	−.27	**−.56**	.01
Callousness	−.10	−.22	.34	**−.55**	−.12
AGGR-r	−.17	−.14	−.26	**−.40**	−.28
Unusual Thoughts or Beliefs	.01	−.04	.16	−.13	**−.71**
PSYC-r	.11	−.07	−.04	−.01	**−.61**
Perceptual Dysregulation	.29	−.18	.18	−.09	**−.55**
Eccentricity	.17	−.22	.21	−.03	**−.47**

Note. Loadings |.40| or higher are in bold. PSY-5= Personality Psychopathology Five; PID-5= Personality Inventory for the *DSM-5*; NEGE-r = Negative Emotionality; DISC-r = Disconstraint; INTR-r = Introversion/Low Positive Emotionality; AGGR-r = Aggressiveness; PSYC-r = Psychoticism.

the PSY-5 scales loaded onto the conceptually expected factors. In addition, the facets of each PID-5 domain were found to load onto the appropriate factors, with the exceptions of Distractibility, which loaded onto the Negative Affectivity factor rather than Disinhibition; and Suspiciousness, which did not load meaningfully on any factor. Furthermore, none of the facets cross-loaded meaningfully onto any other factors in these analyses.

Discussion

The current study examined the relationship between the MMPI-2-RF PSY-5 scales and the trait model proposed for use in diagnosing *DSM-5* personality disorders. In general, results from these analyses showed that there is convergence between the two personality psychopathology models. This pattern was expected given that both models were designed

to capture personality pathology. Zero-order correlations showed that the PID-5 domains were each highly correlated with their conceptually similar PSY-5 counterparts.

The joint factor model that emerged through the EFA resembled that which has been found in research produced thus far on the overall *DSM-5* model (Krueger, Derringer, et al., 2012; Wright et al., 2012), providing further support for the proposed *DSM-5* personality disorder model. Much like several studies have previously demonstrated (Tackett et al., 2008; Watson et al., 2008), an FFM converged, supporting the fifth domain as representing psychoticism. In addition, the factor structure on the EFA provided additional support for the congruence between the PID-5 model and the PSY-5 model, thus demonstrating that these domains converge appropriately with *DSM-5* trait facets in latent multivariate space.

Antagonism was a domain for which the results were not straightforward. This domain and its facets were meaningfully correlated with both PSY-5 Aggressiveness and Disconstraint, which indicates that the PSY-5 parses the variance in the *DSM-5* Antagonism domain in a different manner. Therefore, the construct of Antagonism proposed for the *DSM-5* differs from Aggressiveness, and may be better conceptualized, from the PSY-5 perspective, as a combination of traits subsumed within Aggressiveness and Disconstraint. These results suggest that the *DSM-5* and PSY-5 models may relate best to one another at a general disinhibition level at the higher order (e.g., three-factor level) than the proposed five-factor level both models employ (Markon, Krueger, & Watson, 2005; Wright et al., 2012). In their examination of the hierarchical structure of personality, Markon et al. (2005) elaborated on how various trait facets converge at multiple levels of the hierarchy; in this model, the general disinhibition factor (which does not bifurcate into Antagonism and Disinhibition until the fourth level; see also Wright et al.'s [in press] analysis with the PID-5) is indicated by a range of traits, including lack of agreeableness, excitement seeking, aggression, and lack of control. This also bears similarity to Siever and Davis's (1991) proposed Impulsivity/Aggression dimension, which includes traits characteristic of borderline and antisocial personality disorders. Of course, one potential explanatory factor in the current investigation is that we used a college sample with likely restricted range on these domains. It is therefore important that future research on the association between the PID-5 and PSY-5 further examine the Antagonism/Aggressiveness and Disinhibition/Disconstraint associations consider samples with greater variability on such traits at the dysfunctional end, such as a forensic or correctional sample.

It should be noted, however, that there were also some unexpected results found in the correlation analyses, including PSYC-r being highly correlated with Antagonism and Negative Affectivity and DISC-r being highly correlated with

Psychoticism. As demonstrated in the model intercorrelations, the psychoticism domain (especially within the PID-5 model) was strongly associated with all other domains, which is likely due to saturation with negative emotionality (see, e.g., Harkness et al., 2012). It is noteworthy that these associations for psychoticism mostly disappear in the regression models in which the unique contribution of each PSY-5 domain was considered. Thus, the zero-order associations were most likely due to overlapping variance with other domains.

In general, support for the facet structure of the PID-5 was found, again, with a few exceptions. In the EFA, Distractibility loaded onto the Negative Affectivity factor, and had a much higher correlation with Negative Emotionality/Neuroticism than Disconstraint, indicating incongruence with expected results across both models given the *DSM-5* proposal. Conceptually, individuals who experience a large range of negative emotions are likely to have problems with attention and concentration, which is not restricted to disinhibition. Indeed, cognitive models of anxiety assert that individuals exhibit a great amount of distractibility due to an attention bias toward threat (Rinck, Becker, Kellermann, & Roth, 2003), suggesting that PID-5 Distractibility may require more research to elaborate on the underlying construct before appropriate domain designation is determined. Suspiciousness, on the other hand, which did not load meaningfully on any factor in the EFA, was more strongly associated with Psychoticism than either Detachment or Negative Affectivity (where it is proposed to be included for the *DSM-5* trait model). These results are also not surprising conceptually, in that paranoid ideation often loads with psychoticism measures (e.g., Tackett et al., 2008). Future research should determine whether this facet is a better indicator of alienation (a negative emotionality facet; Tellegen & Waller, 2008), paranoid ideation and mistrust, or both.

In addition, correlation analyses indicated that three of the facets (Lack of Rigid Perfectionism, Restricted Affectivity, and Intimacy Avoidance) were not significantly correlated with any PSY-5 scale. Counter to expectations, the PSY-5 Introversion/Low Positive Emotionality did not seem to capture Restricted Affectivity and Intimacy Avoidance, which suggests that this PSY-5 domain (or at least its MMPI-2-RF measurement) may be narrower in scope relative to the *DSM-5* Detachment domain. Furthermore, the low correlation with Lack of Rigid Perfectionism raises the possibility that the PSY-5 scales are not useful in capturing the low end of disinhibition, which should reflect compulsivity. This finding is similar to that found by Trull et al. (1995), who also showed that the PSY-5 Disconstraint scale was not an effective measure of constraint. Further research in clinical samples is needed to determine the degree to which these low facet correlations represent sample-dependent findings.

These findings also have significant applied implications. Results of this research show preliminary evidence of the utility of the PID-5 and PSY-5 in assessing for pathological personality. Much like previous research on the PSY-5 scales' validity in detecting personality disorder traits (Harkness et al., 2012; Trull et al., 1995; Wygant et al., 2006), the PSY-5 demonstrate utility in the assessment of psychopathological personality characteristics. Although these results show general support for the use of the PSY-5 scales in the measurement of the proposed *DSM-5* personality domains, the measurement of the proposed facets via the PSY-5 was not as clearly supported. Specific personality disorder diagnoses in the proposed model are characterized by a configuration of facet-level traits. Therefore, lack of facet measurement in the PSY-5 scales makes it difficult for specific personality disorders to be identified solely using these scales. The PSY-5 scales can, however, likely be used as a screening device for general personality pathology. Since the MMPI-2 (which also includes measurement of the PSY-5 domain) and MMPI-2-RF are frequently administered to measure general personality and psychopathology in many different assessment contexts (Archer, Buffington-Vollum, Stredny, & Handel, 2006; Camara, Nathan, & Puente, 2000), the PSY-5 scales could be used to identify the presence of personality pathology (especially when coupled with assessment of the proposed *DSM-5* impairment criteria) characterized at the domain level. For instance, an individual with elevations on both Aggressiveness and Disconstraint, but no other domains, should be evaluated further for Antisocial Personality Disorder, whereas an individual with elevations on Psychoticism and Negative Emotionality might qualify for a Schizotypal Personality Disorder diagnosis on further assessment.

There are two significant limitations to the current study. The most substantial limitation concerns the use of an undergraduate sample, which carries the possibility for range restriction at the pathological ends of these trait dimensions. Indeed, our sample was found to have less variability than the clinical normative sample of the MMPI-2-RF.[1] Although the general structure of the personality model should remain intact across samples (cf. Krueger, Derringer, et al., 2012), as this model measures dimensional psychopathological traits, these findings need to be replicated in clinical samples with greater range and variability. A second limitation concerns the use of two self-report measures, which introduces shared method variance that can inflate effect size magnitudes. We attempted to compensate for this effect by only interpreting medium effect sizes. Moreover, at the time of data collection, the PID-5 represented the only method available to index the proposed *DSM-5* trait dimensions, but there is now a Clinician's rating form and other rating forms and structured interviews are being developed. Thus, such measurement modalities need to be incorporated into future research.

Even in light of these limitations, the current study is innovative in its attempt to link a widely used clinical assessment instrument to the proposed *DSM-5* personality trait model, and the findings are very promising. Future research should evaluate the ways in which the MMPI-2-RF can identify the *DSM-5* trait facets beyond the use of the PSY-5 scales. Although the focus of this study was to elaborate on the convergence and divergence between the two, conceptually overlapping five-factor models of personality, future research will benefit from focusing on the utility of the entire MMPI-2-RF. For instance, other, more narrowly focused MMPI-2-RF scales may show some utility in the identification of specific PID-5 facets not captured by the PSY-5 domains. These findings could supplement the results of the current study by expanding the utility of the MMPI-2-RF from the PSY-5 scales in the measurement of the proposed *DSM-5* personality domains and facets.

Declaration of Conflicting Interests

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Note

1. For instance, the variances for PSY-5 scales in our sample ranged from 85.38 to 133.40 (*Mdn* = 109.20), whereas variances for these scales in mental health samples reported in the MMPI-2-RF Technical Manual (Tellegen & Ben-Porath, 2008) ranged from 91.82 to 261.46 (*Mdn* = 196.00).

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