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## Using Clinician-Rated Five-Factor Model Data to Score the DSM–IV Personality Disorders

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### Abstract

Proposals suggest that many or all of the *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [*DSM–IV*]; American Psychiatric Association, 1994) personality disorders (PDs) may be omitted from the *DSM* (5th ed.; *DSM–V*) and replaced with a dimensional trait model of personality pathology (Krueger, Skodol, Livesley, Shrout, & Huang, 2007; Skodol, 2009). Several authors have expressed concerns that this may be difficult for clinicians and researchers who are more comfortable with the extant PD diagnoses. In this study, we tested whether clinician ratings of traits from the Five-factor model (FFM; Costa & McCrae, 1990) can be used to recreate *DSM–IV* PDs. Using a sample of 130 clinical outpatients, we tested the convergent and discriminant validity of the FFM PD counts in relation to consensus ratings of the *DSM–IV* PDs. We then examined whether the FFM and *DSM–IV* PD scores correlate in similar ways with self-reported personality traits from the Schedule for Nonadaptive and Adaptive Personality (Clark, 1993). Finally, we tested the clinical utility of the FFM PD counts in relation to functional impairment. Overall, the FFM PD counts, scored using clinician ratings of the FFM traits, appeared to function like the *DSM–IV* PDs, thus suggesting that the use of a dimensional trait model of personality in the *DSM–V* may still allow for an assessment of the *DSM–IV* PD constructs.

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Significant support exists in the field of personality disorder (PD) research for the transition from a categorical model of PDs to a dimensional model (e.g., Clark, 2007; Widiger & Trull, 2007). Criticisms of the categorical model include the excessive diagnostic co-occurrence among the PDs, the lack of empirical support for diagnostic thresholds, and empirical evidence that PDs are more validly conceptualized as dimensional constructs (e.g., Clark, 2007). In response to these criticisms, one working proposal put forth by the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; *DSM–V*) Working Group (Skodol, 2009) involves the utilization of a six-factor dimensional trait model consisting of negative emotionality, introversion, antagonism, disinhibition, compulsivity, and schizotypy to conceptualize personality pathology. Krueger, Skodol, Livesley, Shrout, and Huang (2007) suggested that the traits included in such a revised *Diagnostic and Statistical Manual of Mental Disorders* (*DSM–V*) model of PD might be rated by clinicians on a 4-point scale (i.e., ranging from 1 = *Highly uncharacteristic* to 4 = *Highly characteristic*). Assessing these traits would be part of a broader assessment process that would also include an assessment of the level of functioning, generic criteria, and personality disorder prototypes, all of which would be used to make a PD diagnosis (Skodol, 2009).

Although this transition to a dimensional model would likely be regarded as a breakthrough in the *DSM-V* diagnostic conceptualization of PDs, certain objections can be anticipated. Despite frequent and significant criticisms of the *DSM-IV*'s categorical model of PD, many of the current PD constructs (e.g., borderline PD) have resulted in both significant clinical and empirical interest, and the loss of these constructs could prove troubling to clinicians and researchers alike. Miller, Bagby, Pilkonis, Reynolds, and Lynam (2005); Miller, Reynolds, and Pilkonis (2004); and Krueger et al. (2007) have suggested that dimensional trait data (e.g., scores on lower levels traits such as affective instability, callousness, grandiosity) could be used to recreate these PD constructs to describe an individual's standing on these PD prototypes. This could be done most simply by adding up relevant traits to recreate previous PD constructs (Krueger et al., 2007; Miller, Bagby, Pilkonis, Reynolds, et al., 2005). For example, the traits relevant to each PD would be listed in the *DSM-V*, and the summation of an individual's score on these traits would demonstrate the degree to which he or she resembles a prototype of that PD.<sup>1</sup> One could identify the traits considered most prototypical for each PD by using expert ratings (e.g., Lynam & Widiger, 2001; Samuel & Widiger, 2004) or meta-analytic reviews (e.g., Samuel & Widiger, 2008). The latter methodology, unfortunately, will not be available for the trait model included in the *DSM-V*, as this model is apparently being created for inclusion in the next *DSM* (rather than using an existing model of personality and/or personality pathology). As such, there will not be an existing empirical literature to draw on for this specific model. Ultimately, the personality traits included in the *DSM-V* could link this new dimensional system with the previous *DSM-IV* PD constructs and their corresponding empirical and theoretical literatures.

There are existing data to suggest that such an approach might work. Miller and colleagues (Miller, Reynolds, et al., 2004; Miller, Bagby, Pilkonis, Reynolds, et al., 2005) have demonstrated that Five-factor model (FFM; Costa & McCrae, 1990) data can be used in exactly this manner. The FFM is a widely used model of personality that includes five broad dimensions of personality: Neuroticism, Openness, Extraversion, Agreeableness, and Conscientiousness. Using Costa and McCrae's (1992) variant of the FFM as an example, each broad dimension is thought to comprise six more specific facets. The FFM is most commonly assessed using self-reports or other reports on the Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992). The NEO PI-R is a widely used personality instrument that is well validated (e.g., Costa & McCrae, 1992) and demonstrates strong reliability, with long-term stability coefficients ranging from .63 to .81 for the five broad domain scales (Costa & McCrae, 1988). These traits can also be assessed using the Structured Interview for the Five-factor model (Trull & Widiger, 1997). Although the FFM was designed to capture general (i.e., "normal"; cf. Walton, Roberts, Krueger, Blonigen, & Hicks, 2008) personality constructs, it has proven quite successful at representing both non-*DSM* (i.e., psychopathy; Miller, Lynam, Widiger, & Leukefeld, 2001; Lynam & Widiger, 2007) and *DSM-IV* PD constructs such as borderline PD (Miller, Reynolds, et al., 2004; Trull, Widiger, Lynam, & Costa, 2003).<sup>2</sup>

A number of studies have been conducted using the FFM that are directly relevant to Krueger et al.'s (2007) proposal regarding the use of basic traits to provide estimates of the *DSM-IV* PD constructs. Initially, expert-ratings of the various PD constructs were tested by

<sup>1</sup>The numbers generated by these PD counts will be difficult to interpret without some type of normative database to which these scores can be compared. Miller et al. (2008) took steps to demonstrate how normative databases could be developed and used to provide context for these PD counts.

<sup>2</sup>There have been some attempts to create instruments based on the FFM that might be even more successful at assessing extreme levels of these traits that are associated with personality disorders. For instance, the Structured Interview for the FFM (SIFFM; Trull & Widiger, 1997) explicitly assesses the impairment associated with each trait. In addition, there are ongoing research efforts to create self-report measures that assess more extreme and pathological aspects of the FFM (e.g., Lynam, Gaughan, Miller, & Widiger, 2010).

Miller et al. (2001; *psychopathy*) and Miller, Reynolds, and Pilkonis (2004; *DSM-IV PDs*) to see whether they could be used to score individuals' NEO PI-R data using a prototype matching technique. These prototypes were created by averaging expert ratings of the prototypical individual with each specific PD; the resultant prototypes can then be matched with individual NEO PI-R data using an interclass correlation (i.e., double-entry  $q$  correlation; see McCrae, 2008, for a review). The resultant similarity scores (i.e., the extent to which an individual's NEO PI-R profile was correlated with an FFM PD prototype) could then be used as an indicator of an individual's standing on any given PD. For example, Trull et al. (2003) demonstrated that the FFM borderline PD similarity score manifested correlations with a variety of explicit *DSM-IV* borderline PD scores that were of equal strength to the intercorrelations among these *DSM-IV* borderline PD measures. In addition, the FFM borderline PD score manifested expected correlations with constructs that are considered core components of borderline PD's nomological network (e.g., self-harm, interpersonal dysfunction).

More recently, Miller, Bagby, Pilkonis, Reynolds, et al. (2005) and Miller et al. (2008) have argued for the utilization of a simple additive technique for scoring NEO PI-R data in accord with the expert FFM PD ratings. Miller, Bagby, Pilkonis, Reynolds, et al. (2005) used Lynam and Widiger's (2001) expert ratings of prototypical cases of *DSM-IV* PDs to identify FFM traits that are central to the description of the *DSM-IV* PDs. To do this, Lynam and Widiger (2001) included items that were given either a 4 or higher or 2 or lower (on a scale ranging from 1 to 5, with 1 indicating that *a trait would be particularly low in an individual with a given PD* and 5 indicating that *a trait would be particularly high in an individual with a given PD*). Using these criteria, between 7 (schizotypal) and 17 (antisocial) of the 30 FFM facets are used to cover the 10 *DSM-IV* PDs. For example, to represent borderline PD, the following FFM traits are summed (facets with an "r" require reverse scoring prior to summing): anxiety, angry hostility, depression, impulsiveness, vulnerability, openness to feelings, openness to actions, compliance-r, and deliberation-r. In the first study to test the FFM PD counts, the counts were highly correlated with FFM PD similarity scores generated from the prototype matching technique (i.e., median  $r = .91$ ). More important, the FFM PD counts manifested equal sized correlations (vs. the FFM PD similarity scores) with *DSM-IV* PD scores. Miller, Bagby, Pilkonis, Reynolds, et al. (2005) also used receiver operator characteristic analyses to identify cutoff scores. More recently, Miller et al. (2008) used normative data from several countries to test the idea that extreme scores (e.g.,  $t$  scores of 65 or higher) on the FFM PD counts may be associated with greater levels of *DSM-IV* PDs. Overall, this PD count technique appears to hold substantial promise.

For a trait model of personality pathology to be successfully utilized in the *DSM-V*, there will have to be a way to collect reliable and valid data for these traits. Any model of personality pathology included in the *DSM-V* will likely have a clinician rating form and/or interview so as to not rely exclusively on self-report data for these traits. This is important, as self-reports of personality pathology show only modest convergence with other reports on these same constructs (Clifton, Turkheimer, & Oltmanns, 2005; Klonsky, Oltmanns, & Turkheimer, 2002). Current trait models of personality pathology such as the Dimensional Assessment of Personality Pathology (DAPP; Livesley, 1990) and the Schedule for Nonadaptive and Adaptive Personality (SNAP; Clark, 1993) do not have published clinician rating forms or interviews. Unlike these measures, the FFM has both a semistructured interview (i.e., SIFFM) and a clinician-rating form (FFM Score Sheet [FFMSS]; Widiger & Spitzer, 2002). The clinician rating form consists of 30 items designed to assess the five domains and 30 facets of the FFM, making it a brief yet comprehensive assessment tool for the FFM. The domains and facets assessed by the FFMSS are rated on a scale ranging from 1 to 7, with both extreme scores being explicitly labeled as *problematic*, thus lending itself to the assessment of maladaptive personality.

In a study testing the clinical utility of the FFMSS, clinicians rated patients using the FFMSS; the resultant scores manifested reasonably good interrater reliability and internal consistency (for the domains; Few et al., in press). Additionally, FFMSS domains and facets manifested expected relations with *DSM-IV* PD ratings. Finally, the clinical utility of the FFMSS ratings was demonstrated by examining the relations of the FFMSS domains and traits with several consensus ratings of impairment. The FFMSS domains accounted for approximately 50% of the variance in domains of functioning.

In this study, we tested whether clinician rated personality traits from the FFM can be used to score the current *DSM-IV* PD constructs using the FFM PD count technique (i.e., Miller, Bagby, Pilkonis, Reynolds, et al., 2005) and whether the data scored in this form provides clinically meaningful and relevant data with regard to impairment.<sup>3</sup> We conducted these analyses in a sample of 130 clinical outpatients. We first examined the convergent and discriminant correlations between the FFM PD counts scored using clinician ratings and the *DSM-IV* PDs. Consistent with previous work on the FFM PDs (e.g., Miller, Reynolds, et al., 2004), we expected that the highest convergent correlations would be manifested for avoidant and borderline PDs and the lowest convergence would be found for obsessive-compulsive PD (OCPD), schizotypal PD, and dependent PD. We then examined whether the FFM PD counts and *DSM-IV* PD ratings created similar pathological personality profiles generated by self-reported SNAP data. Again, we expected a range of similarity scores with greater profile similarity generated for PDs such as avoidant and borderline and more divergent profiles generated for OCPD, schizotypal PD, and dependent PDs. Finally, we examined the bivariate and unique relations between the FFM PD counts and *DSM-IV* PD ratings in relation to four forms of impairment: occupational, social, distress to others, and overall impairment. PDs characterized by high neuroticism (e.g., borderline PD) and low agreeableness (e.g., narcissistic) and low conscientiousness (e.g., antisocial) were expected to be significantly related to a variety of forms of impairment (e.g., Hopwood et al., 2009; Miller, Pilkonis, & Clifton, 2005).

## Method

### Participants and Procedure

Participants included 130 outpatients (97 women; 33 men) from Western Psychiatric Institute and Clinic (WPIC) in Pittsburgh, Pennsylvania, between the ages of 21 and 60 years ( $M = 37.9$ ,  $SD = 10.6$ ). Most participants were White (74.6%); of the remaining participants, the largest percentage were African American (23.8%). A total of 92 participants (71%) had a current mood disorder diagnosis, and 71 (55%) had a current anxiety disorder (see Table 1). A total of 102 participants (78%) met criteria for a *DSM-IV* PD; the most prevalent PD diagnoses were borderline (43%) and avoidant (32%).

We recruited participants via study advertisements posted in outpatient and intensive outpatient clinics at WPIC. This study is part of a larger project, the goal of which was to compare the interpersonal functioning of patients with borderline PD with those patients with either avoidant PD and those with Axis I diagnoses but no PD. During the initial recruitment of the sample, it became clear that individuals with many other PDs were responding to the study advertisements; ultimately, a fourth group of patients with other PDs was also included. Therefore, the overall sample includes a substantial degree of heterogeneity with regard to PD symptoms. It is important to note that although there are substantial differences in the number of patients with each *DSM-IV* PD diagnosis, the inclusion of a relatively large and diverse sample resulted in adequate variance for all *DSM-*

<sup>3</sup>The data used in this study are the same data used in the Few et al. (in press) study.

*IVPDs* (although the Cluster A PDs were the least prevalent and have the lowest mean symptom counts).

Interested participants contacted the research staff and were screened via telephone to determine whether they met any of the following exclusion criteria: psychotic disorders, organic mental disorders, mental retardation, and major medical illnesses that influence the central nervous system and might be associated with organic personality disturbance. Eligible participants provided written consent and were assessed by a primary interviewer across a minimum of three sessions (each session lasted between 2–3 hr) that included Axis I (i.e., Structured Clinical Interview for *DSM-IV* Axis I disorders; First, Gibbon, Spitzer, & Williams, 1997) and Axis II (i.e., Structured Clinical Interview for *DSM-IV* Axis II Disorders; First, Gibbon, Spitzer, Williams, & Benjamin, 1997) interviews and a detailed social and developmental history. Participants were paid approximately \$30 to \$40 per assessment session.

Following the assessment sessions, the primary interviewer presented the case at a 3 to 4 hr diagnostic conference with colleagues from the research team.<sup>4</sup> A minimum of three judges participated. All available data were reviewed and discussed at the conference. During the case conference, consensus ratings were derived for Axis I diagnoses, Axis II individual criteria and diagnoses, and impairment domains (e.g., occupational, romantic). The FFMSS ratings were completed by the primary interviewer prior to the case conference, whereas the secondary FFMSS rater (when available) did so following the completion of the case conference (the FFMSS ratings were not discussed during the case conference). When possible (112 of 130), the FFMSS scores used were composites of the two raters' scores.

## Measures

**FFMSS**—The FFMSS (Widiger & Spitzer, 2002) is a one-page rating sheet consisting of 30 items representing each of the facets of the FFM as conceptualized in the NEO PI-R. These facets are organized with respect to the FFM domains such that there are six items beneath a listed domain. Each item includes a list of two to four adjectives describing the trait. Each item is rated on a scale ranging from 1 (*problematic, very low on the trait*) to 7 (*problematic, very high on the trait*). For instance, the FFM trait anxiousness includes adjectives relevant to high (i.e., fearful, apprehensive) and low (i.e., relaxed, unconcerned, cool) levels of this trait. Interrater reliability for the facets ranged from .30 (depressiveness) to .62 (gregariousness, activity, excitement seeking), with a median of .52.

**FFM PD counts**—The FFM PD counts represent a method (see Miller, Bagby, Pilkonis, Reynolds, et al., 2005, for details) for scoring the *DSM-IVPDs* using FFM data on the basis of Lynam and Widiger (2001) prototypes.<sup>5</sup> These prototypes were developed by asking experts to rate a prototypical individual with a specific PD (e.g., borderline) on the 30 facets associated with the FFM. Each trait was rated on a scale ranging from 1 (i.e., *prototypical individual with the given PD is thought to be extremely low on the trait*) to 5 (i.e., *prototypical individual with the given PD is thought to be extremely high on the trait*). For instance, prototypical cases of borderline PD were rated as being particularly high on the trait of angry hostility (*M* rating = 4.75) and particularly low on the trait of deliberation (*M* rating = 1.88). We then averaged these expert ratings to create an overall composite representing the mean scores on all 30 facets. An individual's scores on measures of the FFM such as the NEO PI-R or FFMSS can then be used to score the *DSM-IVPDs* using

<sup>4</sup>Each case conference addressed only one research participant.

<sup>5</sup>Previous research suggests that the FFM dependent PD prototype differs in meaningful ways from empirical results (Miller & Lynam, 2008) and that a revised FFM dependent PD prototype manifests larger correlations with *DSM-IV* dependent PD. As such, we used the Miller and Lynam (2008) revised dependent prototype in this study.

the FFM PD count technique (see Miller, Bagby, Pilkonis, Reynolds, et al., 2005, for details). The FFM count technique simply requires a summation of the scores on FFM facets that were rated as being prototypically high ( $\geq 4$ ) or prototypically low ( $\leq 2$ ) in the Lynam and Widiger (2001) expert prototypes for each PD. Facets that are considered prototypically low in relation to a given PD (e.g., modesty and narcissistic PD) are first reverse scored so that all facets are scored in the direction of maladaptivity for each PD. For example, for avoidant PD, the following facets are summed to create the FFM avoidant PD count (r = indicates a facet that must be reverse scored prior to summation): anxiousness + self-consciousness + impulsiveness (r) + vulnerability + gregariousness (r) + assertiveness (r) + excitement seeking (r) + positive emotions (r) + openness to actions (r) + modesty. See Table 2 for descriptive data on the FFM PD counts.

**Consensus ratings of DSM-IV PD criteria**—We determined these ratings in each participant's case conference. A consensus rating of each *DSM-IV* PD symptom was determined using a scale ranging from 0 to 2, with 0 indicating *absent*, 1 indicating *present*, and 2 indicating *strongly present*. Consensus was based on the collective judgment of the expert raters; when there was disagreement, the preference of most raters was used. Symptom counts for each participant were generated by adding all scores (i.e., 0, 1, 2) for each PD. Alpha coefficients for the PDs were as follows: paranoid (.55), schizoid (.71), schizotypal (.66), antisocial (.78), borderline (.86), histrionic (.75), narcissistic (.81), avoidant (.88), dependent (.53) PDs, and OCPD (.56). See Table 2 for descriptive data on the *DSM-IV* PDs.

**SNAP**—The SNAP (Clark, 1993) is a 375-item, true-false inventory that assesses 15 traits relevant to PD: 12 of these are lower order traits, whereas the remaining three describe broad temperament dimensions—negative temperament, positive temperament, and disinhibition (vs. constraint). Alpha coefficients in this study ranged from .71 (disinhibition) to .91 (aggression). The SNAP traits have demonstrated good internal consistency and interrater reliability (Clark, 1993) and are related to *DSM-IV* PDs in theoretically expected directions (e.g., Reynolds & Clark, 2001).

**Consensus ratings of impairment**—We determined consensus ratings separately for romantic relationships, parenting, other social relationships (e.g., friends, family members), occupational impairment, distress caused to significant others (e.g., friends, children), and overall impairment using a one-item scale ranging from 1 (*exceptionally positive functioning*) to 9 (*difficulties are persistent and pervasive, without clearly identifiable elements of functioning relevant to the domain*), with higher scores indicative of greater impairment. The information used to derive these consensus ratings was gathered across the extensive diagnostic interviewing and during a 2 to 3 hr long interview that gathered information germane to current and lifetime functioning across a variety of domains.

## Results

### Convergent and Discriminant Validity of the FFM PD Counts

The FFM PD counts manifested convergent correlations with the *DSM-IV* PDs that ranged from .23 (schizotypal) to .74 (avoidant), with a mean correlation of .52 (see Table 3). With the exception of three FFM PDs (schizoid, schizotypal, dependent), the FFM PDs manifested their largest correlation with the corresponding *DSM-IV* PD. The mean correlation for Cluster A (i.e., .37) was smaller than those found for Cluster B (i.e., .59) and C (i.e., .55). One possible explanation for the lower convergence found for the FFM Cluster A PDs is that on average, the Cluster A *DSM-IV* PDs had the lowest mean level of symptoms in this sample (i.e., mean symptoms for individual Cluster A PDs = .61; mean

symptoms for individual Cluster B PDs = 2.96; mean symptoms for individual Cluster C PDs = 3.16). To test this hypothesis, we correlated the number of *DSM-IV* PDs symptoms with the convergent correlations from Table 2 (e.g., FFM antisocial PD with *DSM-IV* antisocial PD). The resultant correlation was quite substantial ( $r = .76, p < .05$ ), suggesting that the restriction of range may be partly responsible for the low correlations found for certain *DSM-IV* PDs.<sup>6</sup>

### Similarities of the SNAP Profiles Generated by FFM and *DSM-IV* PD Scores

Next, we examined the correlations between the FFM and *DSM-IV* PDs and the 15 traits from the SNAP (see Table 4). Rather than focusing on individual correlations, we quantified the pattern of similarities between the PD and SNAP correlates that were generated by the *DSM-IV* and FFM PD scores. To do this, we used a double-entry,  $q$  intraclass correlation, which takes into account the absolute (rather than relative) similarity of the correlates. The second order correlations (see last row of Table 3) ranged from .08 (schizotypal) to .94 (borderline PD), with a mean correlation of .72. The reason for the lack of correlation between the correlates of the *DSM-IV* and FFM scores for schizotypal is clear when examining the actual correlations with the SNAP traits. The *DSM-IV* schizotypal PD ratings manifested no correlations with the SNAP traits, positive or negative, that were larger than .16. Unlike schizotypal PD, antisocial, borderline, and avoidant PDs manifested nearly identical patterns of correlations across the *DSM-IV* and FFM PD scoring methodologies.

### *DSM-IV* and FFM PD Scores and Impairment

Finally, we examined the bivariate and unique relations between the *DSM-IV* and FFM PDs in relation to four ratings of impairment: occupational, social, distress caused to others, and overall impairment (see Table 5). The unique relations and overall variance explained were determined by conducting a series of simultaneous regression analyses in which the impairment ratings were regressed on both a *DSM-IV* and FFM PD score (e.g., occupational impairment regressed on both *DSM-IV* and FFM paranoid PD).

**Cluster A**—Both the *DSM-IV* and FFM PD scores for the Cluster A PDs were correlated with eight of 12 impairment ratings. Together, the two sets of PD scores accounted for between 2% and 33% of the total variance in the impairment scores, with a mean of 15%. When examined simultaneously, the *DSM-IV* Cluster A PDs accounted for no unique variance in the 12 impairment ratings, whereas the FFM Cluster A PDs accounted for unique variance in eight of the 12 ratings.

**Cluster B**—The *DSM-IV* Cluster B PDs manifested significant positive correlations with 11 of 16 impairment ratings, whereas the FFM Cluster B PDs manifested 13 of 16 significant positive correlations. Together, the two sets of PD scores accounted for between 5% and 56% of the total variance in the impairment ratings, with a mean of 21%. When examined simultaneously, the *DSM-IV* Cluster B PDs accounted for significant unique variance in four of the 16 impairment ratings, whereas the FFM Cluster B PDs accounted for unique variance (in the correct direction, i.e., positive) in 11 of the 16 ratings.

**Cluster C**—The *DSM-IV* Cluster C PD scores manifested significant positive correlations with the five of the 12 impairment ratings, whereas the FFM Cluster C PDs manifested four of 12 significant positive relations (and five significant negative correlations). Together, the

<sup>6</sup>The lower correlations found between the Cluster A FFM and *DSM-IV* PDs may also be due to the fact that the FFM may not contain content that references oddity and other traits that are germane to these PDs. Watson, Clark, and Chmielewski (2008) argued that such a dimension (i.e., oddity; peculiarity) is both distinct from FFM openness and necessary for capturing disorders such as schizotypal PD.

two sets of PD scores accounted for between 7% and 35% of the total variance in the impairment ratings, with a mean of 22%. When examined simultaneously, the *DSM-IV* Cluster C PDs accounted for significant unique variance in eight of 12 impairment ratings, whereas the FFM Cluster C PDs accounted for significant unique variance (in the expected direction) in four of 12 impairment ratings. It is noteworthy that the FFM Cluster C PDs manifested six significant negative unique relations with the impairment ratings (all for avoidant PD and OCPD). The regression coefficients for avoidant PD and OCPD revealed signs of statistical suppression, as both the *DSM-IV* and FFM scores manifested stronger relations with the impairment indexes when included simultaneously.

## Discussion

### Convergent and Discriminant Validity of the FFMSS PD Counts

In this study, we addressed whether clinician ratings of personality traits can be used to recreate the *DSM-IV* PD constructs by using simple additive counts of the relevant FFM traits for each PD. This is important, as it may be the only way to derive scores on many (e.g., five of 10), if not all, of the *DSM-IV* PD constructs once the *DSM-V* is released. Using expert-rated prototypes of the *DSM-IV* PDs (i.e., Lynam & Widiger, 2001), which correlate, on average, with meta-analytically derived prototypes at .76 (Samuel & Widiger, 2008), the FFMSS PD counts manifested a mean convergent validity correlation of .52 with the *DSM-IV* PD symptom counts. This level of agreement is relatively consistent with that found using measures that were explicitly designed to assess the *DSM-IV* PD criteria (see Widiger & Coker, 2001, for a review). As expected, certain FFM PDs manifested stronger convergent validity than others; more specifically, FFM avoidant and borderline PDs manifested quite strong correlations with their *DSM-IV* counterparts, whereas FFM schizotypal, schizoid, and dependent PDs manifested the weakest. Contrary to previous research, the FFM OCPD count manifested moderate convergent validity, which is most likely attributable to the FFMSS's ability to capture maladaptivity at the high end of the Conscientiousness domain. In general, these findings are rather congruent with previous research that has used the NEO PI-R and SIFFM.

### Trait Profile Similarities Among the *DSM-IV* and FFMSS PDs

From a trait perspective, the FFM and *DSM-IV* PD methods generated trait profiles that were, for the most part, quite similar, with intraclass correlations ranging from .08 to .94. In the case of several PDs, the profiles were nearly identical (i.e., borderline, antisocial, avoidant). For example, antisocial PD, from both perspectives, was substantially related to SNAP traits such as disinhibition, mistrust, manipulativeness, aggression, and impulsivity. In other cases, there was some divergence between the two assessment methods. For example, the SNAP trait profiles for Narcissistic PD were correlated at .51; the two manifested statistically significantly different ( $p < .01$ ) correlations for the SNAP traits of disinhibition and aggression, with stronger correlations generated by the FFM narcissistic PD count. Similarly, the two dependent PD scores manifested statistically significant differences with regard to their correlations with SNAP traits of negative and positive temperament, dependency, exhibition, and detachment. The benefit of this statistical approach (i.e., comparing trait profiles of various PD indexes) is that researchers and theorists can debate which patterns of correlates more closely approximates the nomological network of a given PD. For instance, whereas *DSM-IV* dependent PD manifested a stronger correlation with SNAP dependency, the FFM dependent PD score manifested a stronger negative correlation with positive temperament and positive correlation with negative temperament, both of which may be important aspects of dependent PD (e.g., Samuel & Widiger, 2004), particularly negative temperament/neuroticism (e.g., Samuel & Widiger, 2008; Saulsman & Page, 2004).



### Clinical Utility of the FFMSS PD Counts

Our final set of analyses addressed the comparative clinical utility of the two PD assessment strategies in relation to occupational, social (including causing distress to significant others), and overall impairment. In general, both sets of PD scores manifested significant, positive, bivariate correlations with the four impairment ratings (*DSM-IV* PDs and impairment: 24 of 40 correlations were significantly positive; FFM PDs and impairment: 25 of 40 were significantly positive). As expected (Hopwood et al., 2009; Miller, Plickonis, & Clifton, 2005), the FFM PDs that are composed of high neuroticism (e.g., borderline; dependent), low agreeableness (e.g., antisocial; narcissistic), and/or low conscientiousness (e.g., antisocial) were positively related to the impairment domains. When examined simultaneously to measure the unique variance accounted for by each PD assessment, the *DSM-IV* PDs manifested 12 significant positive relations, whereas the FFM PD counts manifested 23 significant positive relations. The FFM PD consistently explained a greater unique portion of the total variance in the four impairment scores. It is noteworthy, however, that two of the FFM PDs—avoidant PD and OCPD—manifested a number of significant negative relations with the impairment scores. This seems to be due to two distinct issues. For avoidant PD, which manifested a strong correlation between the two PD measures ( $r = .74$ ), there is evidence of statistical suppression such that the negative, null, or positive bivariate correlations between FFM avoidant and the impairment scores became more strongly negative in direction once removing the variance accounted for by the *DSM-IV* avoidant PD, which is substantial given their convergent correlation. A second issue appears to be at play in explaining the FFM OCPD impairment findings, which were consistently negative across both the bivariate and semipartial relations. These findings are attributable to the nature of the FFM OCPD count, which is primarily composed of putatively problematically high scores on all six conscientiousness facets. Although the FFMSS was designed to capture maladaptivity at both the low and high pole of each of the traits, these findings suggest that high conscientiousness was negatively related to impairment (Few et al., in press). In fact, if one controls for scores on the FFMSS conscientiousness domain, the FFM OCPD count becomes either nonrelated (occupational, distress to others, overall) or significantly positively related (social) to the impairment scores. Problems such as this may be why the *DSM-V* Working Group has proposed to divide conscientiousness into two separate unipolar domains, one that would measure problems with disinhibition (i.e., low conscientiousness) and one that would measure problems with compulsivity (i.e., high conscientiousness).

Both the FFM and *DSM-IV* PD scores were substantially related to impairment in a number of domains, although the FFM PD scores accounted for more unique impairment-related variance. As one might expect, the borderline PD scores accounted for the largest mean variance across the impairment scores ( $MR^2 = .39$ ). This is consistent with previous work that has documented the significant impairment and dysfunction associated with this PD (e.g., Ansell, Sanislow, McGlashan, & Grilo, 2007; Ryder, Costa, & Bagby, 2007; Skodol et al., 2002). In general, the Cluster B PDs accounted for a substantial portion of the impairment scores, particularly the rating of distress caused to significant others ( $MR^2 = .34$ ).

### Relevance of the FFMSS and FFM PD Count Technique to the DSM-V

As noted earlier, a number of proposals have been put forth as to how the *DSM-V* might represent personality pathology. There has been discussion of replacing all (Krueger et al., 2007) or some (Skodol, 2009) of the current *DSM-IV* personality diagnoses with a dimensional trait model of personality problems. One proposal puts forth a six-factor model comprising negative emotionality, introversion, antagonism, disinhibition, compulsivity, and schizotypy. Each of these domains would encompass some variable number of more specific

traits or facets (e.g., 33; Skodol, 2009). For instance, the introversion domain would be composed of social withdrawal, social detachment, restricted affectivity, anhedonia, and intimacy avoidance.

A number of issues arise when considering a model that calls for replacing current PD constructs with a dimensional trait model of personality pathology. First, the field will have to determine how data will be collected on these pathological traits. Given the general skepticism regarding the validity of self-reported PD data, a clinician rating form like the FFMSS and/or semistructured interview would have to be created that would allow for the assessment of the traits that would correspond with the new *DSM-V* model. Unfortunately, most instruments that are currently used to assess dimensional personality traits of either a pathological (i.e., DAPP; SNAP) or general (i.e., HEXACO PI-R; Lee & Ashton, 2004) type use long self-report (and less commonly, other-report) inventories. Only the NEO PI-R has been modified to assess the FFM traits using both a clinician rating form (Mullins-Sweatt, Jamerson, Samuel, Olson, & Widiger, 2006; Few et al., in press) and a semistructured interview (SIFFM; Trull & Widiger, 1997). Few et al. demonstrated that clinicians could provide relatively reliable and valid data on the 30 facets of the FFM with only a brief amount of training. These clinician ratings of the FFM dimensions were significantly correlated in expected directions with self-reported personality scores from the SNAP, *DSM-IV* PDs, and impairment. Similarly, the SIFFM provides interview-based ratings of the FFM domains and facets that are significantly correlated with self-reported *DSM-IV* PD scores (Bagby, Costa, Widiger, Ryder, & Marshall, 2005). Overall, these results suggest that both clinician ratings and semistructured interviews can be used to collect important data on general personality traits from the FFM. Unfortunately, the trait model that has been proposed for inclusion in the *DSM-V* is not entirely consistent with any extant trait model of personality or personality pathology. As such, it is impossible to say with certainty that these traits (e.g., separation insecurity, submissiveness) would also be equally amenable to such approaches, although one would expect that similar approaches would work successfully.

A second concern with the use of a dimensional trait model of personality pathology in the *DSM-V* is its effect on previous personality disorder constructs (e.g., narcissistic, dependent), some of which have existed informally and formally in the diagnostic nomenclature for quite some time. Krueger et al. (2007) noted that “there are likely to be understandable objections to a *DSM-V* PD section that lacks criteria for PDs that have generated substantial interest and research” (p. 69). Krueger et al. suggested that data from a dimensional model of personality pathology could be reconfigured so as to score an individual on these diagnostic constructs. For example, traits that define a prototypical case of a specific PD could be identified; scores on these specific facets could then be summed to provide a quantitative score on these constructs (e.g., avoidant PD).

The proposal by Krueger et al. (2007) is consistent with a body of empirical work by others in which FFM data have been used to score the *DSM-IV* PDs using either a prototypical matching analysis or a simple count technique. The FFM PD counts manifest correlations with *DSM-IV* PDs that approximate the correlations found between two explicit measures of *DSM-IV* PDs (Miller, Bagby, Pilkonis, Reynolds, et al., 2005; Miller et al., 2008), and there is evidence to suggest that these counts can be scored using self-data, other data, or interview data (Miller, Bagby, & Pilkonis, 2005; Miller, Bagby, Pilkonis, Reynolds, et al., 2005; Miller, Pilkonis, & Morse, 2004). Our results suggest that data collected from a clinician-rated personality form could be used to collect data that could be used to score the *DSM-IV* personality disorders if necessary. The ability to use such a rating form to derive dimensional trait data (e.g., scores on immodesty) as well as “traditional” personality

disorder constructs (e.g., narcissistic PD) will give clinicians maximal flexibility in how such data are used.

## Limitations

This study has a number of limitations that should be noted. First, most of the variables used in this study were generated by the same expert raters; and as such, many of the correlations are likely inflated due to the shared method variance. Second, each PD was not equally well represented in this sample, and this restriction of range may have influenced the results for certain PDs (e.g., Cluster A PDs). Third, the comparison of the *DSM-IV* and FFM PDs in relation to the impairment domains may have been biased against the *DSM-IV* ratings, as there is more limited variability in the *DSM-IV* PD ratings. Fourth, the FFMSS trait ratings may have been influenced by the presence of Axis I psychopathology (e.g., depression, anxiety).

## Conclusions

This research suggests that most of the current *DSM-IV* personality disorder constructs can be recovered using clinicians' ratings of personality traits deemed prototypical of that PD by expert raters. This is important, as clinician ratings, rather than self-report or other-report inventories, will likely be the primary means by which pathological personality traits covered by the *DSM-V* will be assessed. In addition, these configurations of traits (a) create SNAP personality profiles that are largely consistent with those created by the actual *DSM-IV* PD constructs and (b) are significant predictors of a variety of forms of impairment. In sum, we agree entirely with the concerns noted by Krueger et al. (2007) that many clinicians and researchers may be reluctant to abandon diagnostic concepts that they have worked with for more unfamiliar traits models of personality pathology. Miller et al. (2008) argued previously that

The successful application of the FFM PD counts may provide a "bridge over troubled water." That is, the transition to a dimensional trait model for the assessment/conceptualization of PD in the DSM may be difficult for individuals steeped in the extant DSM PD constructs. The FFM PD counts allow and encourage clinicians to use personality data in both ways to best understand their clients' difficulties. In addition, because the process of scoring the FFM PD counts is so transparent, clinicians may develop a better understanding of the latent traits thought to give rise to these multidimensional PD constructs. Thus, the FFM PD counts may be most helpful in serving as this bridge between historical PD constructs and the richer but more complex use of trait models of personality pathology. (p. 446).

We believe that trait models of personality can be successfully scored using relatively easy to complete clinician ratings forms and that these data can be reconfigured to capture many of the *DSM-IV* PD constructs. Although we hope that the basic traits will eventually be used predominantly in both clinical and research work, we believe that it is important to provide an explicit link between the *DSM-IV* PD constructs and whatever trait model may eventually replace it. One important caveat to this research is that the trait model that may be included in the *DSM-V* (e.g., Krueger et al., 2007; Skodol, 2009) does not capture maladaptivity at both poles of these dimensions. For example, Skodol's (2009) six-factor model does not include a means for assessing maladaptively high levels of extraversion, which could have important repercussions for assessing PDs that include traits from this domain such as narcissistic PD (Miller, Gaughan, Pryor, Kamen, & Campbell, 2009). Further research is needed to discern whether these types of omissions (e.g., there will also be no way of capturing maladaptively high agreeableness) will result in important failures that suggest problems with the content validity of the proposed model of PD.

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**Table 1***DSM-IV* diagnoses of study subjects.

	<u>Current Diagnosis</u>	
	<u>Frequency</u>	<u>%</u>
Axis I Diagnosis		
No Axis I disorders	3	2.3
Affective disorders only	19	14.6
Anxiety disorders only	8	6.2
Substance use disorders only	1	0.8
Affective and anxiety disorders	52	40.0
Affective and substance use disorders	10	7.7
Anxiety and substance use disorders	0	0.0
Affective, anxiety, and substance use disorders	11	8.4
Other Axis I disorders	26	20.0
Axis II Disorders		
No Axis II disorders	28	21.5
Paranoid PD	5	3.8
Schizoid PD	2	1.5
Schizotypal PD	1	0.8
Antisocial PD	12	9.2
Borderline PD	56	43.1
Histrionic PD	8	6.2
Narcissistic PD	21	16.2
Avoidant PD	42	32.3
Dependent PD	12	9.2
Obsessive-compulsive PD	15	11.5
Mixed PD	8	6.2

*Note.*  $N = 130$ . PD = personality disorder. Frequencies sum to  $>130$  because many subjects had multiple diagnoses. The “other axis I disorders” category includes diagnoses such as eating disorders, somatoform disorders, and other Axis I disorders not already captured. Unlike Axis I diagnoses, which are presented in mutually exclusive categories, individuals may have more than one PD diagnosis.

**Table 2**Dimensional *DSM-IV* and FFM PD symptom counts.

<i>DSM-IV</i> PD	<u>Dimensional <i>DSM-IV</i> PDs Symptom Count</u>		<u>FFM PD</u>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Paranoid	1.15	1.60	42.11	7.29
Schizoid	0.29	1.06	32.96	7.82
Schizotypal	0.34	0.97	31.62	4.87
Antisocial	1.41	2.41	68.08	13.19
Borderline	5.58	4.85	42.63	5.54
Histrionic	1.95	2.67	47.11	9.64
Narcissistic	2.88	3.57	52.33	9.80
Avoidant	4.05	4.27	44.22	8.45
Dependent	2.85	2.49	29.80	3.95
Obsessive–compulsive	2.57	2.43	51.06	10.62

*Note.*  $N = 130$ . *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); FFM = Five-factor model; PD = personality disorder. The FFM PD counts are composed of substantially differing numbers of facets (range of 7–17); as such, the means are not directly comparable across the PDs.



**Table 3**

Correlations between consensus *DSM-IV* PD ratings and FFM PD count scores.

	<i>DSM-IV</i>									
	FFM	PPD	SPD	STPD	ASPD	BPD	HPD	NPD	AVPD	DPD
PPD	<b>.51*</b>	.22	.20	.25*	.15	-.12	.35*	.22	-.14	.24*
SPD	.09	<b>.36*</b>	.00	-.28*	-.33*	-.46*	-.13	.68*	-.06	.22
STPD	.09	.31*	<b>.23*</b>	-.12	.04	-.27*	-.02	.68*	.07	.10
ASPD	.42*	-.17	.15	<b>.59*</b>	.55*	.37*	.47*	-.49*	-.04	-.16
BPD	.26*	-.09	.26*	.40*	<b>.70*</b>	.38*	.22	-.16	.33*	-.17
HPD	.00	-.34*	.05	.38*	.45*	<b>.52*</b>	.23*	-.65*	.13	-.30*
NPD	.48*	-.04	.21	.51*	.42*	.22	<b>.55*</b>	-.33*	-.16	.04
AVPD	-.14	.32*	-.02	-.44*	-.35*	-.41*	-.33*	<b>.74*</b>	.10	.20
DPDr	.04	.19	.06	-.01	.30*	.05	-.14	.44*	<b>.40*</b>	-.13
OCPD	-.18	.21	-.06	-.51*	-.58*	-.40*	-.16	.35*	-.16	<b>.45*</b>

Note. *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); FFM = Five-factor model; PD = personality disorder; PPD = paranoid; SPD = schizoid; STPD = schizotypal; ASPD = antisocial; BPD = borderline; HPD = histrionic; NPD = narcissistic; AVPD = avoidant; DPD = empirically based FFM conceptualization of dependent PD (Miller & Lynam, 2008); OCPD = obsessive-compulsive. Bolded correlations indicate convergent correlations between FFM PD count scores and consensus PDs.

\*  $p \leq .01$ .

**Table 4**

Correlations between *DSM-IV* and FFM PDs with SNAP traits.

Trait	PPD		SPD		STPD		ASPD		BPD		HPD		NPD		AVPD		DPD		OCPD	
	D	F	D	F	D	F	D	F	D	F	D	F	D	F	D	F	D	F	D	F
NT	.26	.13	.02	.04	.01	.20	.16	.17	.42	.43	.14	.08	-.05	.10	.10	.05	.16	.42	-.14	-.28
PT	-.12	-.36	-.16	-.51	.01	-.56	.06	.12	-.15	-.18	.19	.41	.13	.03	-.42	-.47	-.15	-.50	.01	-.04
Disinhibition	.29	.15	-.08	-.16	-.01	-.06	.51	.41	.44	.31	.20	.30	.08	.33	-.06	-.29	.14	.09	-.22	-.43
Mistrust	.33	.15	-.19	-.11	-.02	-.05	.37	.33	.43	.37	.31	.20	.07	.25	-.09	-.19	.22	.16	-.11	-.30
Manipulate.	.16	.18	-.13	-.13	.09	-.02	.46	.42	.36	.29	.12	.27	.26	.36	-.12	-.28	.10	.07	-.19	-.41
Aggression	.41	.28	-.13	-.18	.03	-.09	.36	.47	.42	.40	.09	.25	.13	.44	-.24	-.31	.00	.07	-.16	-.33
Self-harm	.10	.08	-.07	-.05	.16	.25	.21	.23	.61	.51	.17	.16	.03	.13	.13	-.01	.38	.44	-.18	-.38
Eccen. percep.	.27	-.02	-.26	-.32	.11	-.11	.29	.41	.52	.40	.36	.41	.13	.28	-.25	-.39	-.04	.04	-.12	-.47
Dependency	-.14	-.08	-.02	-.01	.03	.08	.05	-.04	.19	.16	.11	.05	-.07	-.12	.06	.11	.50	.25	-.12	-.10
Exhibition	-.03	-.19	-.20	-.45	-.05	-.48	.16	.24	.09	-.02	.23	.41	.29	.16	-.45	-.46	.00	-.36	-.10	-.13
Entitlement	.19	.11	-.12	-.20	.15	-.22	.27	.37	.11	.09	.20	.28	.35	.34	-.33	-.39	-.10	-.20	.02	-.21
Detachment	.25	.33	.11	.40	.08	.52	.08	-.03	.15	.18	-.13	-.30	-.11	.04	.42	.34	.02	.36	.09	-.03
Impulsivity	.18	.05	-.23	-.19	.04	-.03	.37	.33	.39	.31	.18	.30	.05	.23	-.19	-.27	.08	.06	-.21	-.39
Propriety	.00	-.07	.06	-.05	-.04	-.11	.01	-.08	-.05	-.05	.14	.02	-.09	-.10	-.02	.00	.11	-.01	.08	.10
Workaholism	-.01	-.10	.03	-.09	.16	-.09	-.13	-.12	.02	-.04	.06	.00	.08	-.09	.00	.01	-.03	-.12	.37	.21
Second-order ICC	.68*		.61*		.08		.91*		.94*		.68*		.51*		.90*		.62*		.58*	

Note. *DSM-IV* = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); FFM = Five-factor model; PD = personality disorder; SNAP = Schedule for Nonadaptive and Adaptive Personality; D = *DSM-IV* PD; F = FFM PD; NT = negative temperament; PT = positive temperament; Manipulate = manipulativeness; Eccen. percep. = Eccentric Perceptions; PPD = paranoid; SPD = schizoid, STPD = schizotypal; ASPD = antisocial; BPD = borderline; HPD = histrionic; NPD = narcissistic; AVPD = avoidant; DPD = dependent; OCPD = obsessive-compulsive; ICC = intraclass correlation.

\*  $p \leq .01$ .

**Table 5**

Relations between *DSM-IV* and FFM PDs and ratings of impairment.

	Occupational Impairment			Social Impairment			Distress to others			Overall Impairment		
	<i>r</i>	$\beta$	<i>R</i> <sup>2</sup>	<i>r</i>	$\beta$	<i>R</i> <sup>2</sup>	<i>r</i>	$\beta$	<i>R</i> <sup>2</sup>	<i>r</i>	$\beta$	<i>R</i> <sup>2</sup>
Paranoid			.18*			.25*			.17*			.21*
<i>DSM-IV</i> PPD	.33*	.18		.35*	.14		.38*	.20		.34*	.16	
FFM PPD	.39*	.30*		.49*	.42*		.34*	.28*		.44*	.36*	
Schizoid			.02			.13*			.02			.04
<i>DSM-IV</i> SPD	.14	.14		.24*	.14		.01	.07		.18	.15	
FFM SPD	.07	.02		.34*	.29*		-.14	-.16		.14	.08	
Schizotypal			.14*			.33*			.07*			.24*
<i>DSM-IV</i> STPD	.16	.09		.24*	.11		.41*	.22		.29*	.20	
FFM STPD	.36*	.34*		.57*	.54*		.16	.11		.45*	.41*	
Antisocial			.23*			.06			.34*			.17*
<i>DSM-IV</i> ASPD	.37*	.14		.20	.10		.38*	.05		.33*	.14	
FFM ASPD	.46*	.38*		.23*	.17		.58*	.56*		.40*	.32*	
Borderline			.37*			.23*			.56*			.43*
<i>DSM-IV</i> BPD	.48*	.11		.42*	.21		.65*	.29*		.56*	.22	
FFM BPD	.60*	.52*		.45*	.31*		.72*	.52*		.63*	.48*	
Histrionic			.05			.09*			.19*			.09*
<i>DSM-IV</i> HPD	.21	.17		.14	.30*		.41*	.34*		.28*	.33*	
FFM HPD	.16	.07		-.16	-.32*		.32*	.15		.08	-.09	
Narcissistic			.17*			.08*			.26*			.15*
<i>DSM-IV</i> NPD	.17	-.07		.17	.02		.33*	.07		.26*	.06	
FFM NPD	.41*	.45*		.29*	.28*		.51*	.47*		.39*	.35*	
Avoidant			.11*			.14*			.07*			.10*
<i>DSM-IV</i> AVD	.16	.47*		.36*	.45*		-.09	.19		.24*	.47*	

	Occupational Impairment			Social Impairment			Distress to others			Overall Impairment		
	r	$\beta$	R <sup>2</sup>	r	$\beta$	R <sup>2</sup>	r	$\beta$	R <sup>2</sup>	R	$\beta$	R <sup>2</sup>
FFM AVD	-.07	-.41*		.21	-.13		-.24*	-.38*		.03	-.32	
Dependent			.28*			.28*			.22*			.34*
DSM-IV/DPD	.23*	.02		.21	-.01		.37*	.24*		.31*	.10	
FFM DPDr	.53*	.53*		.53*	.53*		.42*	.32*		.58*	.54*	
OCPD			.34*			.14*			.35*			.28*
DSM-IV/OCPD	-.08	.22*		.12	.30*		.00	.30*		.04	.32*	
FFM OCPD	-.55*	-.65*		-.25*	-.39*		-.53*	-.67*		-.46*	-.60*	

Note. DSM-IV = *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.); FFM = Five-factor model; PD = personality disorder; PPD = paranoid; SPD = schizoid; STPD = schizotypal; ASPD = antisocial; BPD = borderline; HPD = histrionic; NPD = narcissistic; AVPD = avoidant; DPDr = empirically based FFM conceptualization of dependent PD (Miller & Lynam, 2008); OCPD = obsessive-compulsive.

\*  $p \leq .01$ .