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FFMPD Scales: Comparisons to the FFM, PID-5 and CAT-PD-SF

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Abstract

A series of eight Five Factor Model Personality Disorder (FFMPD) scales have been developed to assess, from the perspective of the Five Factor Model (FFM), the maladaptive traits included within DSM-5 Section II personality disorders. An extensive body of FFMPD research has accumulated. However, for the most part, each study has been confined to the scales within one particular FFMPD inventory. The current study considered 36 FFMPD scales, at least one from each of the eight FFMPD inventories, including eight scales considered to be from neuroticism, eight from extraversion, five from openness, eight from agreeableness, and seven from conscientiousness. Their convergent, discriminant, and structural relationship with the FFM was considered, and compared to the structural relationship with the FFM obtained by the Personality Inventory for DSM-5 and the Computerized Adaptive Test-Personality Disorder-Static Form. Support for an FFM structure was obtained (albeit with agreeableness defining one factor and antagonism a separate factor). Similarities and differences across the FFMPD, PID-5, and CAT-PD-SF scales were highlighted.

Keywords

Five factor model; personality disorders; personality; PID-5; CAT-PD-SF; assessment

A series of Five Factor Model Personality Disorder (FFMPD) scales have been developed to assess, from the perspective of the Five Factor Model (FFM), the maladaptive traits included within the DSM-5 Section II personality disorders (Widiger, Lynam, Miller, & Oltmanns, 2012). As indicated in the introduction to this special section of *Psychological Assessment*, many studies have now been conducted on these scales (Bagby & Widiger, this issue). However, with few exceptions, this research has been confined to the scales for just one respective personality disorder, such as the 12 scales within the Five Factor Dependency Inventory (FFDI; Gore et al., 2012) or the 9 scales within the Five Factor Schizotypal Inventory (FFSI; Edmundson et al., 2011). This is not the only manner though in which the scales can be used. One can also select from the total set of 99 scales within the eight inventories, any particular subset that is of potential interest to a respective researcher. “A researcher might be concerned specifically with maladaptive variants of extraversion, including, for instance, the Elemental Psychopathy Assessment [EPA] Dominance and Thrill Seeking scales (Lynam et al., 2011), the Five Factor Narcissism Inventory [FFNI] Exhibitionism and Authoritativeness scales (Glover et al., 2012), and the Five Factor

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Histrionic Inventory [FFHI] Attention-Seeking, Social Butterfly, and Flirtatiousness scales (Tomiatti et al., 2012)" (Widiger et al., 2012, pp. 454–455). Indeed, Crego and Widiger (2016) selected 36 scales from the eight FFMPD inventories, largely on the basis of a likely correspondence with respective scales from the Personality Inventory for DSM-5 (PID-5; Krueger et al., 2012) and the Computerized Adaptive Test-Personality Disorder-Static Form (CAT-PD-SF; Simms et al., 2011; Wright & Simms, 2014), along with a few additional scales that were considered to be unique to the FFMPD. Crego and Widiger explored the convergent and discriminant validity among the FFMPD, PID-5, and CAT-PD-SF scales, demonstrating in part that one can create an FFMPD measure that is comparable to both the PID-5 and the CAT-PD-SF. Crego and Widiger, however, did not explore the relationship of the FFMPD scales with any external validator. The current study extends this research by considering the convergent, discriminant, and structural relationship of the 36 FFMPD scales with the FFM, as well as comparing these results with the structural relationship of the PID-5 and CAT-PD-SF scales with the FFM.

There have been many studies on the convergent and discriminant relationship of FFMPD scales with the FFM. However, there has been little attention with respect to their structural relationship with the FFM. For example, FFMPD Despondence has been shown to converge with neuroticism (Mullins-Sweatt et al., 2012), Interpersonal Suspiciousness with antagonism (Edmundson et al., 2011; Crego & Widiger, 2016), Detached Coldness with introversion (Crego et al., 2015; Samuel et al., 2012), Physical Anhedonia with introversion (Edmundson et al., 2011), and Subservience with agreeableness (Gore et al., 2012; Gore & Widiger, 2015). However, there have been only a few studies that have examined the structural (factor analytic) relationship of FFMPD scales. Each has again been confined to just the scales from one of the inventories for one personality disorder, limiting substantially the ability to consider all five FFM domains. For example, Few, Miller, and Lynam (2013) reported the factor structure for the 18 scales of the Elemental Psychopathy Assessment (Lynam et al., 2011) and identified three factors as being aligned with just three FFM domains (i.e., antagonism, emotional stability, and disinhibition) and they did not include a measure of the FFM to verify this alignment. Miller et al. (2016) examined the factor structure of the 15 scales of the FFNI (Glover et al., 2012) and identified three factors that would again align with the FFM (i.e., antagonism, neuroticism, and agentic extraversion) but, again, no measure of the FFM was included (albeit they did subsequently correlate the FFNI factor scores with an FFM measure). Crego and Widiger (in press) conducted a factor analysis of the 9 FFSI scales, but included only FFM scales from the domain of openness. Lynam et al. (2011, 2012) conducted joint factor analyses of the EPA and FFAvA scales with a measure of the FFM, but was again limited by the fact the analyses were confined to just one FFMPD inventory, thereby excluding the ability to consider all five domains. The current study considers the structural relationship of 36 FFMPD scales with a measure of the FFM, including eight scales considered to be from neuroticism, eight from extraversion, five from openness, eight from agreeableness, and seven from conscientiousness. Table 1 provides a complete list of the 22 prior FFMPD validation studies, including the scales that were administered, the population that was sampled, and the focus of the investigation (additional studies have also included FFMPD scales, but not for the purpose of their validation; see Bagby & Widiger, this issue).

The current study also compares this structural relationship of the FFMPD scales with the FFM, to the structural relationships with the FFM obtained by two other measures of maladaptive personality traits that have also been aligned with the FFM, the PID-5 (Krueger et al., 2012) and the CAT-PD-SF (Simms et al., 2011). The PID-5 is the official self-report measure of the dimensional trait model included in Section III of DSM-5 for emerging measures and models (APA, 2013). There has long been the suggestion for a five-factor model of personality disorder (Widiger & Costa, 1994). A significant achievement of DSM-5 was the inclusion of a 5-domain, 25-trait model that is indeed aligned with the FFM (Krueger & Markon, 2014). This dimensional trait model consists of the five broad domains of negative affectivity, detachment, antagonism, disinhibition, and psychoticism. As stated in DSM-5, “these five broad domains are maladaptive variants of the five domains of the extensively validated and replicated personality model known as the ‘Big Five,’ or the Five Factor Model of personality” (APA, 2013, p. 773).

A considerable body of research has rapidly accumulated concerning the PID-5 (Bagby, 2013; Krueger & Markon, 2014). Joint factor analyses of the PID-5 with measures of the FFM have suggested a reasonable alignment, albeit the results are not as strong for psychoticism aligning with openness (e.g., De Fruyt et al., 2013; Gore & Widiger, 2013; Thomas et al., 2012; Wright & Simms, 2014). In addition, some of the PID-5 scale locations have been inconsistent with the findings obtained by FFMPD scales, such as Depressivity within detachment (rather than neuroticism), Suspiciousness within detachment and/or negative affectivity (rather than antagonism), and Restricted Affectivity within negative affectivity (rather than detachment).

Closely comparable to the PID-5 is another recently developed measure, the CAT-PD-Static Form (CAT-PD-SF; Wright & Simms, 2014), consisting of 212 items assessing 33 traits organized into five domains of negative emotionality, detachment, antagonism, disconstraint, and psychoticism. Wright and Simms (2014) indicated that the CAT-PD-SF scales were selected to represent the domains of the Personality Psychopathology-5 (PSY-5; Harkness, McNulty, & Ben-Porath, 1995); more specifically, negative emotionality, positive emotionality, aggression, constraint, and psychoticism. “The CAT-PD model contains 33 lower-order scales that are hypothesized to load on five higher-order factors consistent with the PSY-5 model” (p. 45). There was no explicit intention for the instrument to be aligned or coordinated with the FFM. Simms et al. (2011) had referred to the five domains identified by Widiger and Simonsen (2005); more specifically, emotional dysregulation, extraversion versus introversion, antagonism, constraint, and unconventionality. However, Wright and Simms (2014) indicated that the “project set out to independently develop a comprehensive model and efficient measure of PD traits, organized a priori within a PSY-5 framework” (Wright & Simms, 2014, p. 45).

Nevertheless, Wright and Simms (2014) did explore the relationship of the CAT-PD-SF with the FFM, along with the PID-5. “A five-factor solution provided conceptually coherent alignment among the CAT-PD-SF, PID-5, and NEO-PI-3FH scales” (p. 43). They did acknowledge some potential anomalies. For example, inconsistent with findings obtained with comparable FFMPD scales, CAT-PD-SF and PID-5 Risk Taking loaded on antagonism rather than extraversion; CAT-PD-SF and PID-5 Anhedonia loaded on disinhibition and

negative affectivity rather than detachment; and CAT-PD-SF and PID-5 Submissiveness loaded on Disinhibition rather than loading negatively on antagonism or positively on negative affectivity. There were also a few instances in which comparable CAT-PD-SF and PID-5 scales loaded primarily on different factors. For example, PID-5 Rigid Perfectionism loaded specifically on negative affectivity whereas CAT-PD-SF Perfectionism loaded equally on disinhibition (negatively) and negative affectivity (positively). CAT-PD-SF Depressiveness loaded primarily on negative affectivity, whereas PID-5 Depressivity loaded primarily on disinhibition (albeit both obtained secondary loadings on the other respective scale).

Crego and Widiger (2016) considered the convergent, discriminant, and structural relationship of the 36 FFMPD scales with the 25 scales from the PID-5 (in one sample) and the 33 scales from the CAT-PD-SF (in another sample). As noted earlier, the FFMPD scales (at least one from each of the eight FFMPD inventories) were selected on the basis of an expected convergence with a corresponding PID-5 and/or CAT-PD-SF scale, hypotheses that were largely supported. However, there were instances of relatively weak convergent validity. For example, FFMPD Aberrant Ideas failed to even correlate significantly with CAT-PD-SF Unusual Beliefs. Crego and Widiger, though, did not include external validators with which to compare these alternative assessments of schizotypal thinking. In the current study, the 36 FFMPD, the 33 CAT-PD-SF, and the 25 PID-5 scales are compared with respect to their joint factor structures with a measure of the FFM.

Method

This study provides results that combined data from three independent data collections included within Crego and Widiger (2016). As indicated in the prior publication, all three data collections received Institutional Review Board approval.

Sample 1

Procedure—The self-report measures were administered on MTurk, an online service where requesters recruit persons to complete tasks for financial compensation (Shapiro, Chandler, & Mueller, 2013). Research has indicated that MTurk provides more demographically diverse samples than is obtained through traditional college samples. Studies have also found that the data quality is equal to (if not more valid) than the data obtained through traditional methods (Shapiro et al., 2013). The integrity of findings is due in part to the fact that one can confine data collection to persons who have previously received high scores for quality of participation, as was the case in the current study.

Potential participants were informed that this study was seeking persons who were “currently or have been in some form of mental health treatment” in order to obtain a clinically relevant sample. Participants did not need to complete the entire set of measures at one time, but it was estimated that study completion took about an hour and a half. Consistent with other studies on MTurk, participants received $1.50 for their time.

Participants were first deleted (N=69) if they had not completed at least 80% of each of the administered questionnaires. A conservative threshold for subject participation was used to

err in the direction of eliminating any potentially invalid protocols; 62 participants were therefore excluded on the basis of the careless responding scale. After these deletions, Sample 1 consisted of 286 community adults with 190 females and 94 males.

A few participants failed to respond to a small number of items (i.e., at most, 1–2% of the items for any scale). These missing data were imputed using the expectation maximization procedure, which has been shown to produce more accurate estimates of population parameters than other methods, such as deletion of missing cases or mean substitution (Enders, 2006).

Participants—Mean age was 37.5 (*SD* =12.02). For ethnicity, 85% were white/Caucasian, 5.9% were Hispanic/Latino, 4.2% black/African American, 2.8% Asian, 0.3% American Indian or Alaskan Native, and 0.7% were other. For marital status, 36.4% were single, 32.5% married, 14.3% cohabitating, 15.4% divorced, and 1.4% widowed.

All of the participants were either currently in treatment or had previously received treatment. Thirty-eight percent were currently in treatment, 7% within the past year, 26% within the past 5 years, 16% within the past 10 years, and 12 percent sometime beyond 10 years (3 participants did not respond). Eighty-one percent reported being in treatment for depression, 69% for anxiety, 11% for substance abuse, 11% for a personality disorder, 7% for alcohol dependence, 7% for psychosis, and 18% specified other reasons (e.g., ADHD, PTSD, bipolar mood, OCD, divorce/family issues, insomnia, or grief). Fifty percent of the sample was currently receiving some form of psychotropic medication; 86% at some point in their lifetime.

Materials—The participants in Sample 1 completed the CAT-PD-SF (Wright & Simms, 2014), the PID-5 (Krueger et al., 2012), the Five Factor Form (Rojas & Widiger, 2014), and a careless responding scale. Cronbach alpha values for all FFMPD and CAT-PD-SF scales are provided in Crego and Widiger (2016).

The CAT-PD-SF (Wright & Simms, 2014) contains 216 items assessing 33 maladaptive personality traits organized within five domains of negative emotionality, detachment, antagonism, disconstraint, and psychoticism. Participants rate how well the statements describe themselves using a 5-point Likert-type scale ranging from 1 for *very untrue of me* to 5 for *very true of me*.

The PID-5 (Krueger et al., 2012) is a 220-item questionnaire designed to assess the 25 maladaptive personality traits of the DSM-5 Section III dimensional trait model organized into the five domains of negative affectivity, detachment, antagonism, disinhibition, and psychoticism. Using a 4-point Likert-type scale (from *very false or often false* to *very true or often true*) participants rate how well the statements describe them.

The Five Factor Form (FFF; Rojas & Widiger, 2014) is a one-page rating form, consisting of 30 items, with six items for each of the five domains of the FFM: neuroticism, extraversion, agreeableness, conscientiousness, and openness. Items are coded on a 1–5 point scale, where scores of 1 and 5 indicate a maladaptively extreme variant of each respective pole, scores of 2 and 4 are within the more normal range (albeit in some cases still problematic), and a

score 3 indicates that the person is “neutral”. Scores of 1, 2, 4, and 5 are provided explicit anchors for each facet. For example, for the facet of trust, 1 = *cynical, suspicious*, 2 = *cautious, skeptical*, 3= *neutral*, 4 = *trusting*, and 5 = *gullible*. For the facet of competence, 1 = *disinclined, lax*, 2 = *casual*, 3 = *neutral*, 4 = *efficient, resourceful*, and 5 = *perfectionistic*. Cronbach alpha values for the FFF domain scales were .71 (Neuroticism), .77 (Extraversion), .66 (Openness), .66 (Agreeableness), and .75 (Conscientiousness).

Finally, a five-item careless responding scale was also administered. Each item describes a behavior that was very unlikely to be true (e.g., “I am currently in the Guinness Book of World Records,” [reverse coded] “I have used a computer in the past 2 years,” “I am president of the United States,” “I was born on the moon,” and [reverse coded] “Select strongly agree for this item”), thus an endorsement suggests the individual is not attending to the item’s content. The items are rated on a five-point Likert scale whose values range from *strongly disagree* to *strongly agree*. These items were dispersed among the items within the other measures.

Sample 2

Procedure—The procedure for Sample 2 was the same as for Sample 1. Participants were again first deleted (N=82) if they had not completed at least 80% of each questionnaire. An additional 64 participants were deleted on the basis of the carless responding scale. After these deletions, Sample 2 consisted of 262 community adults with 201 females and 60 males (1 person did not respond). A few participants failed to respond to a small number of items (i.e., at most, 1–3% of the items for any scale). These missing data were again imputed using the expectation maximization procedure (Enders, 2006).

Participants—Participants in Sample 2 had a mean age of 35.4 (SD=11.8). For ethnicity, 88.5% were white/Caucasian, 3.5% black/African American, 3.4% Hispanic/Latino, 1.1% Asian, 0.4% American Indian or Alaskan Native, and 1.9% were other (2 participants did not respond). For marital status, 32.4% were single, 35.5% married, 16% cohabitating, 14.5% divorced, and less than 1% were widowed (2 participants did not respond).

Forty-two percent were currently in treatment, 7% within the past year, 27% within the past 5 years, 10% within the past 10 years, and 12% sometime beyond 10 years (4 participants did not respond). Eighty-two percent reported being in treatment for depression, 74% for anxiety, 12% for substance abuse, 13% for a personality disorder, 11% for alcohol dependence, 6% for psychosis, and 17% for other. Fifty-five percent of the sample was currently receiving some form of psychotropic medication; 90% in their lifetime.

Materials—The participants in Sample 2 completed the CAT-PD-SF (Wright & Simms, 2014), the FFF (Rojas & Widiger, 2014), and the careless responding scale that were also administered to the participants of Sample 1. Sample 2 participants though also completed the 36 Five Factor Model of Personality Disorder scales (FFMPD; Widiger et al., 2012). The 36 FFMPD scales were selected from a series of self-report inventories developed to assess respective personality disorders from the perspective of the FFM. Each item uses a 5-point Likert scale (ranging from *strongly disagree* to *strongly agree*). The 36 scales were from the Elemental Psychopathy Assessment (Lynam et al., 2011), the Five Factor Borderline

Inventory (Mullins-Sweatt et al., 2012), the Five Factor Obsessive-Compulsive Inventory (Samuel et al., (2012), the Five Factor Schizotypal Inventory (Edmundson et al., 2011), the Five Factor Dependency Inventory (Gore et al., 2012), the Five Factor Narcissism Inventory (Glover et al., 2012), the Five Factor Histrionic Inventory (Tomiatti et al., 2012), and the Five Factor Avoidant Assessment (Lynam et al., 2012). The scales were selected on the basis of most likely corresponding to respective scales from the PID-5 and CAT-PD-SF. Crego and Widiger (2016) provide the Cronbach alpha for all FFMPD and CAT-PD-SF scales. Cronbach alpha values for the FFF domain scales for Sample 2 were .75 (Neuroticism), .75 (Extraversion), .72 (Openness), .66 (Agreeableness), and .81 (Conscientiousness).

Sample 3

Procedure—The MTurk procedure was the same as for Samples 1 and 2. Participants were again first deleted (*N*=86) if they had not completed at least 80% of each questionnaire. An additional 61 participants were deleted on the basis of the careless responding scale. After these deletions, Sample 3 consisted of 266 community adults with 192 females and 73 males (1 person did not respond). A few participants failed to respond to a small number of items (i.e., at most, 1–2% of the items for any scale). These missing data were imputed using the expectation maximization procedure (Enders, 2006).

Participants—Participants had a mean age of 35.6 (*SD*=12). For ethnicity, 88% were white/Caucasian, 3.8% were black/African American, 2.6% Hispanic/Latino, 2.3% Asian, 1.5% American Indian or Alaskan Native, less than 1% were Native Hawaiian or Pacific Islander, and 1.1% were other. For marital status, 36.1% were single, 37.6% married, 15.4% cohabitating, 9% divorced, and 1.5% widowed (1 individual did not respond).

Forty-eight percent of the participants were currently in treatment, 8% within the past year, 20% within the past 5 years, 15% within the past 10 years, and 8% beyond 10 years (4 participants did not respond). Eighty-six percent reported being in treatment for depression, 71% for anxiety, 7% for substance abuse, 9% for a personality disorder, 8% for alcohol dependence, 3% for psychosis, and 20% for other (e.g., eating disorder, ADHD, OCD, insomnia, or family issues). A total of 59% were currently receiving a psychotropic medication (3 participants did not respond); 89% in their lifetime.

Materials—The participants of Sample 3 completed the PID-5 (Krueger et al., 2012), the 36 FFMPD scales (Widiger et al., 2012), the FFF (Rojas & Widiger, 2014), and the careless responding scale. Cronbach alpha values for the FFF domain scales for Sample 3 were .72 (Neuroticism), .74 (Extraversion), .71 (Openness), .63 (Agreeableness), and .79 (Conscientiousness).

Results

FFMPD Scales and the FFM

Correlations—Table 2 provides the correlations of the FFMPD scales with the five domain scales of the FFF, combining the results from Samples 2 and 3 (N=528). It is evident from Table 2 that all of the FFMPD neuroticism scales obtained medium to large effect size

relationships with FFF Neuroticism (FFMPD Invincibility correlated negatively). In addition, all but two of the FFMPD neuroticism scales correlated weakly or not all with the other four FFM domains. The two exceptions were FFMPD Dysregulated Anger, which correlated weakly with Antagonism and FFMPD Despondency, which correlated weakly with Introversion.

Seven of the eight FFMPD extraversion scales obtained their highest correlations with FFF Extraversion (four correlating positively, three negatively). The one exception was FFMPD Thrill-Seeking, which correlated weakly with all of the FFF scales. Six of the eight FFMPD extraversion scales also demonstrated good to excellent discriminant validity, correlating weakly or not at all with any one of the other four FFM domains. One exception was FFMPD Dominance correlating as highly with FFF Antagonism as it did with FFF Extraversion.

Three of the five FFMPD openness scales correlated significantly with FFF Openness, including Aberrant Ideas and Odd & Eccentric, as well as Dogmatism correlating negatively. These three FFMPD scales correlated weakly with the other three FFF domain scales. FFMPD Aberrant Perceptions and Romantic Fantasies, however, failed to correlate well with any FFF scale.

All eight of the FFMPD agreeableness scales obtained their highest correlations with FFF Agreeableness, including three correlating positively (i.e., Timorousness, Gullibility, and Subservience) and five correlating negatively (e.g., Callousness and Oppositional). Seven of the eight FFMPD Agreeableness scales correlated weakly or not all with the other four FFM domains. The one exception was FFMPD Interpersonal Suspiciousness correlated as highly as if not higher with FFF Neuroticism and Introversion.

Six of the seven FFMPD conscientiousness scales converged well with FFF Conscientiousness, including Workaholism, Perfectionism, and Ruminative Deliberation correlating positively and Negligence, Rash, Impersistence, and Ineptitude correlating negatively. Good discriminant validity was obtained for six of the seven FFMPD conscientiousness scales. The one exception was Ineptitude, which correlated as highly if not higher with FFF Neuroticism and Introversion.

Factor analysis—An exploratory structural equation model was conducted using Mplus 6.12 with oblique geomin rotation. Three fit indices were examined: Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR). There is a range of values for what could be considered to represent good fit: CFI values above .90 or .95, SRMR values of less than .05 or .08, and RMSEA values lower than .06 (Browne & Cudek, 1993; Hu & Bentler, 1999; Kline, 2015). Good to adequate fit was obtained for all three indices with a 6-factor solution for which four correlations were allowed between theoretically related scales (e.g., Attention-Seeking with Exhibitionism): CFI = .889, SRMR = .032, and RMSEA = .071, (90% CI = .068, .074).

Factor 1 was defined negatively by FFF Extraversion, FFMPD Exhibitionism, Attention-Seeking, and Flirtatiousness, and positively by FFMPD Detached Coldness, Social Isolation

and Withdrawal, and Physical Anhedonia. This factor is evidently a detachment factor, albeit it is notable that there were additional loadings as well by some agreeableness-antagonism scales, including FFMPD Callousness and Interpersonal Suspiciousness, and negatively by FFMPD Gullibility and FFF Agreeableness.

Factor 2 was defined by FFF Openness, along with FFMPD, Aberrant Ideas, Odd & Eccentric, and Aberrant Perceptions. No other FFF or FFMPD scales loaded on this factor.

Factor 3 was defined negatively by FFF Agreeableness and FFMPD Timorousness, and positively by FFMPD Arrogance, Dominance, Manipulativeness, Oppositional, and Callousness. This factor is evidently an antagonism factor, albeit it is notable that there were additional loadings as well by some extraversion-introversion scales, including FFMPD Attention-Seeking, Thrill-Seeking, Exhibitionism, and Flirtatiousness, and FFF Extraversion.

Factor 4 was defined positively by FFF Neuroticism, along with FFMPD Anxious Uncertainty, Excessive Worry, Separation Insecurity, Fragility, Rapidly Shifting Emotions, Despondency, and Dysregulated Anger. Loading negatively on this factor was FFMPD Invulnerabililty.

Factor 5 was defined by FFF Conscientiousness, along with FFMPD Workaholism, Perfectionism, and Ruminative Deliberation. It was defined negatively by FFMPD Impersistence and Negligence. The sixth and final factor was defined by FFF Agreeableness, along with FFMPD Subservience and Gullibility. There was also a marginal negatively loading for FFMPD Dominance.

PID-5 and the FFM

An ESEM analysis of the PID-5 and FFF scales, combining the data from Sample 1 and Sample 3 (N=552), again yielded good to adequate fit on all three indices for a six factor solution (with 2 modifications): CFI = .922, SRMR = .027, and RMSE = .074 (90% CI = .070, .079). Factor 1 is defined by FFF Neuroticism, along with PID-5 Anxiousness, Emotional Lability, and Separation Insecurity. Depressivity was originally placed within detachment, but consistent with its shift in DSM-5 it loaded specifically within this neuroticism domain. Submissiveness, Perseveration, and Suspiciousness also loaded on this domain, consistent with their original placements (Krueger et al., 2012), although the primary loading for Submissiveness was within the sixth factor. Inconsistent with expectations, PID-5 Anhedonia and Distractibility also loaded primarily within this domain.

The second factor was defined (negatively) by FFF Agreeableness, along with PID-5 Callousness, Deceitfulness, Grandiosity, Manipulativeness, Hostility, and Attention-Seeking. PID-5 Hostility is placed within antagonism in DSM-5 (APA, 2013) albeit originally within negative affectivity, consistent with the additional loading within neuroticism obtained in the current study.

The third factor was defined by FFF Extraversion and PID-5 Attention-Seeking, along with negative loadings by PID-5 Restricted Affectivity, Withdrawal, Intimacy Avoidance, and a secondary loading by Anhedonia. It should perhaps be noted that PID-5 Restricted

Affectivity was originally placed within negative affectivity (Krueger et al., 2012) but in the current study loaded primarily within introversion (and secondarily within antagonism).

The fourth factor was defined by FFF Openness, along with PID-5 Perceptual Dysregulation, Unusual Beliefs and Experiences, and Eccentricity. The fifth factor was defined (negatively) by FFF Conscientiousness, along with negative loadings by PID-5 Rigid Perfectionism and positive loadings by PID-5 Irresponsibility, Impulsivity, Risk Taking, and Distractibility. The sixth and final factor was quite similar to the sixth factor obtained with the FFMPD scales. This factor was defined by FFF Agreeableness, along with PID-5 Submissiveness.

CAT-PD-SF and the FFM

An ESEM analysis of the CAT-PD-SF and FFF scales, combining the data from Sample 1 and Sample 3 (N=548), again yielded good to adequate fit on all three indices for a six factor solution (with 1 modification): CFI = .891, SRMR = .030, and RMSEA = .077 (90% CI = .074, .081). It is evident from Table 5 that the first factor is defined by FFF Neuroticism, along with CAT-PD-SF Anxiousness, Affectivity Lability, Depressiveness, Relationship Insecurity, Anger, Health Anxiety, Self-Harm, Cognitive Problems, and Submissiveness. However, also loading primarily on this factor were Non-Perseverance (albeit this scale also loaded comparably on conscientiousness) and Anhedonia (albeit obtaining a secondary loading on introversion).

Factor 2 was defined (negatively) by FFF Agreeableness, along with CAT-PD-SF Domineering, Grandiosity, Hostile Aggression, Manipulativeness, Callousness, Rudeness, and Norm Violations. However, also loading highly on this factor was Rigidity, along with Risk Taking, Unusual Perceptions, and Unusual Beliefs.

Factor 3 was defined (negatively) by FFF Conscientiousness, CAT-PD-SF Perfectionism and CAT-PD-SF Workaholism, Positive loadings were provided by CAT-PD-SF Irresponsibility, Non-Planfulness, and a secondary loading by Non-Perseverance. Factor 4 was defined (negatively) by FFF Extraversion and CAT-PD-SF Exhibitionism, along with positive loadings by CAT-PD-SF Social Withdrawal, Emotional Detachment, and Romantic Disinterest. However, also loading on this factor was FFF Openness.

The fifth factor was defined by FFF Openness, along with CAT-PD-SF Fantasy Proneness and CAT-PD-SF Peculiarity. Not loading on this factor were CAT-PD-SF Unusual Experiences or Unusual Beliefs.

The sixth and final factor was similar to the sixth factors obtained with the FFMPD and PID-5 scales, including FFF Agreeableness and CAT-PD-SF Submissiveness. However, in this case also loading on this factor were CAT-PD-SF Unusual Experiences and CAT-PD-SF Unusual Beliefs (which had also loaded comparably on the second, antagonism factor).

Discussion

There is a considerable body of research concerning the construct validity of the eight FFMPD inventories (Bagby & Widiger, in press). This research has documented convergent

and discriminant validity with respective domains of the FFM (e.g., Edmundson et al., 2011; Glover et al., 2012; Lynam et al., 2011; Mullins-Sweatt et al., 2012). The current study likewise supported the convergent and discriminant validity of FFMPD scales with respect to all five domains of the FFM. All but a few of the scales obtained their highest correlations with their respective domain, including all of the scales from neuroticism and agreeableness. The exceptions were one scale from extraversion (i.e., Thrill-Seeking), one scale from openness (Romantic Fantasies), and one scale from conscientiousness (Ineptitude).

A limitation of existing FFMPD research has been their confinement to the scales included within one particular inventory, thereby hindering the potential coverage or consideration of the entire FFM structure. In addition, there have been very few FFMPD factor analytic studies exploring whether the scales obtain a structure consistent with the FFM. There have been no factor analytic studies concerning any scales from the FFOCI (Samuel et al., 2012), the FFDI (Glover et al., 2012), the FFHI (Tomiatti et al., 2011), or the FFBI (Mullins-Sweatt et al., 2012). The current study considered the structural relationship of 36 FFMPD scales with a measure of the FFM, including eight scales considered to be from neuroticism, eight from extraversion, five from openness, eight from agreeableness, and seven from conscientiousness

The joint factor analysis of the FFMPD and FFF scales did yield evident neuroticism, antagonism, introversion, and conscientiousness factors, each defined by respective FFMPD and FFF scales. There was even a clear openness factor, defined in part by FFF Openness, along with FFMPD Aberrant Ideas, Odd & Eccentric, and Aberrant Perceptions. An alignment of schizotypal thinking and perceiving with the FFM has been a point of controversy and inconsistent findings (Watson, Clark, & Chmielewski, 2008), but the current study did yield an openness-schizotypal factor, consistent with previous factor analytic research by De Fruyt et al. (2013), Gore and Widiger (2013), and Thomas et al. (2012).

It is also noteworthy that most of the FFMPD factors included both positive and negative loadings. Loading negatively on the neuroticism factor was FFMPD Invulnerability, loading negatively on antagonism was FFMPD Timorousness, loading negatively on introversion (or detachment) was FFMPD Exhibitionism, loading positively on conscientiousness was FFMPD Workaholism and Ruminative Deliberation. These findings are consistent with the hypothesized locations for these scales (Edmundson et al., 2011; Lynam et al., 2011, 2012; Samuel et al., 2012; Tomiatti et al., 2012) and with the hypothesis that there are maladaptive variants of extraversion, conscientiousness, agreeableness, and even low neuroticism (Widiger et al., 2017). It is also no coincidence that many of these scales are unique to the FFMPD (e.g., Invulnerability, Timorousness, and Ruminative Deliberation).

An additional finding of note was the obtainment of a sixth factor defined in each case by FFF Agreeableness, along with submissiveness and/or dependency scales from the FFMPD, PID-5, and CAT-PD-SF. FFMPD Gullibility, Subservience, and Timorousness are conceptualized as maladaptive variants of agreeableness (Gore et al., 2012; Lynam et al., 2012). There is a considerable body of research to support this understanding (Gore & Pincus, 2013; Gore & Widiger, 2015). However, the assessment of dependent personality traits (such as subservience, gullibility, and ineptitude) will often be infused with feelings of

insecurity, inadequacy, despondency, and vulnerability that will also contribute to their placement with neuroticism. Just as antagonistic behavior will often be accompanied by feelings of angry hostility (from neuroticism), submissive and dependent behavior will often be accompanied by feelings of anxiousness and self-doubt. Indeed, CAT-PD-SF and PID-5 Submissiveness are both placed with their negative affectivity domains (neither measure includes any maladaptive variants of agreeableness). The current study supported the conceptualization of these CAT-PD-SF and PID-5 (as well as the FFMPD) scales as representing maladaptive variants of agreeableness.

Some findings though were inconsistent with FFM expectations. There was a good deal of cross-loading for the FFMPD antagonism and extraversion scales (as well as for the CAT-PD-SF and PID-5), including the FFF Agreeableness and Extraversion scales. This may reflect a degree of interstitial scale occupation (Wright & Simms, 2014). It should perhaps not be surprising that as one identifies maladaptive variants of respective domains that there occurs a degree of slippage into the space in between respective FFM domains. An analogy for the Big Five trait term lexicon is that they are comparable to galaxies of stars. However, inconsistent with this analogy is that galaxies are separated by empty space, whereas the galaxies of trait terms shade into one another. This is perhaps best recognized for the domains of agreeableness and extraversion. FFM agreeableness and extraversion are readily understood as approximately 45 degree rotations of the IPC dimensions of agency and communion (Gore & Pincus, 2013), and the IPC recognizes the placement of interpersonal traits every location around the circular structure.

The current results are indeed consistent with existing research on maladaptive variants of extraversion and antagonism. For example, the histrionic traits of attention-seeking and flirtatiousness have typically been understood to reflect extraversion, expressing an interest in the engagement, connection, and involvement with others. Millon et al. (1996) indeed referred to the histrionic personality disorder as “the gregarious pattern” (p. xiii), as histrionic persons tend to be “popular, extroverted… and sociable” (p. 366). However, attention-seeking is placed in the DSM-5 dimensional trait model within antagonism (Krueger et al., 2012). Attention-seeking (and flirtatiousness) may indeed reflect not simply an aberrant gregariousness, but also a manipulative self-centeredness (Gore, Tomiatti, & Widiger, 2011).

The current results may also illustrate the phenomenon of bloated specific factors, wherein facets of a domain tightly bind together and thereby split off from other facets to form their own factor (Oltmanns & Widiger, 2016; Wright, 2017). In all three factor analyses subservient, submissive, and/or gullibility scales bound together (along with agreeableness) to form their own factor, separate from the antagonism factor, which included arrogant, manipulative, oppositional, and other antagonism scales. All of these scales obtained their highest correlations with the agreeableness-antagonism scale (see Table 2) but the respective maladaptive agreeable and maladaptive antagonism scales were more highly positively correlated with one another than they were negatively correlated with the opposite poles, thereby separating from one another. This finding may also reflect in part a contribution from the commonly discussed general (and/or demoralization) factor of dysfunction (Wright, 2017). The maladaptive agreeableness and maladaptive antagonism scales

correlated positively and negatively (respectively) with FFM agreeableness-antagonism (see Table 1) but not strongly negatively with one another (Crego & Widiger, 2016), contributing to the tendency to bind together at opposite poles of the same domain, but not appearing at opposite poles of the same factor.

The structural relationship of the 36 FFMPD scales within the FFM was paralleled for the most part by the relationship of the 25 PID-5 and 33 CAT-PD-SF scales with the FFM. For the PID-5 and CAT-PD-SF, there were again clear neuroticism, agreeableness, extraversion, and conscientiousness factors, with scale loadings consistent with those obtained with the FFMPD scales. There was even support for the openness factor, defined by FFF Openness, along with Perceptual Dysregulation, Unusual Beliefs and Experiences, and Eccentricity for the PID-5, and Eccentricity and Fantasy Proneness for the CAT-PD-SF. CAT-PD-SF Unusual Beliefs and Unusual Experiences though did not load on this factor, a finding discussed further below.

Four of the DSM-5 traits are cross-listed in DSM-5 (APA, 2013). Hostility is cross-listed within negative affectivity and antagonism, and the current study supported this for both PID-5 Hostility and FFMPD Dysregulated Anger. DSM-5 Depressivity, restricted affectivity, and suspiciousness are listed principally within detachment in DSM-5, but also secondarily within negative affectivity. However, in the current study, PID-5 Restricted Affectivity loaded strongly within introversion (consistent with FFMPD Detached Coldness), and PID-5 Depressivity loaded solely within neuroticism (consistent with FFMPD Despondency). PID-5 Suspiciousness did not load on extraversion, loading solely within neuroticism. Suspiciousness has traditionally been considered to be opposite to the facet of trust within agreeableness (Edmundson et al., 2012). Nevertheless, the current study obtained support for the alternative DSM-5 placement within neuroticism.

The current study also did not obtain loadings for PID-5 Anhedonia and Distractibility that were consistent with their location within the DSM-5 trait model. Distractibility loaded primarily within neuroticism (albeit secondarily within low conscientiousness), whereas FFMPD Impersistence loaded within low conscientiousness (albeit did have a weak loading on neuroticism). PID-5 Anhedonia loaded primarily within neuroticism (albeit secondarily with detachment), whereas FFMPD Physical Anhedonia loaded solely within introversion. However, it should be noted that Wright and Simms (2014) also failed to get clear or supportive results for PID-5 (and CAT-PD-SF) Anhedonia. In their study, PID-5 and CAT-PD-SF Anhedonia loaded equally on disinhibition, negative affectivity, and detachment.

The results for the CAT-PD-SF were somewhat different from the results obtained for the PID-5 or the FFMPD scales. There was an emergence of neuroticism, extraversion, agreeableness, and conscientiousness factors. The extraversion factor contrasted (for instance) CAT-PD-SF Emotional Detachment and Social Withdrawal with Exhibitionism, and the conscientiousness factor contrasted CAT-PD-SF Perfectionism and Workaholism with Irresponsibility and Non-planfulness, consistent with the hypothesized bipolar FFM maladaptive personality structure (Widiger et al., 2017). In sum, the FFM factor structure for the CAT-PD-SF is largely consistent with the results obtained for the FFMPD and PID-5 scales, underlining the convergence of these three measures with respect to content and

structure. Nevertheless, the inconsistent results that was obtained for two of the CAT-PD-SF Psychoticism scales warrants further consideration as they bear on an ongoing issue within the personality disorder field, the relationship of psychoticism with FFM openness (Ashton & Lee, 2012; Chmielewski, Bagby, Markon, Ring, & Ryder, 2014; Crego & Widiger, in press; Gore & Widiger, 2013; Watson et al., 2008).

The inconsistent results obtained for the relationship of FFM openness with measures of schizotypal thinking and perception is often attributed to differences in how openness is conceptualized and/or assessed (Ashton & Lee, 2012; Chmielewski et al., 2014; Crego & Widiger, in press; Gore & Widiger, 2013). The results of the current study though suggest that comparable consideration should be given to how schizotypal thinking and perception are assessed. Most of the corresponding scales from the CAT-PD-SF, PID-5, and FFMPD obtain quite substantial convergent validity coefficients, often above .80 (Crego & Widiger, 2016). For example, CAT-PD-SF Peculiarity correlated .85 with both PID-5 Eccentricity and FFMPD Odd and Eccentric (Crego & Widiger, 2016). However, the convergence of CAT-PD-SF Unusual Experiences was notably weaker with both PID-5 Perceptual Dysregulation and FFMPD Aberrant Perception, as was the convergence for CAT-PD-SF Unusual Beliefs with both PID-5 Unusual Beliefs and Experiences and FFMPD Aberrant Ideas. This may reflect that the construction of the PID-5 and FFMPD scales were more explicitly intended to be aligned with the general personality traits of the FFM (Krueger & Markon, 2014; Widiger et al., 2012) whereas the CAT-PD-SF has been said to be aligned with the PSY-5 (Wright & Simms, 2014).

PSY-5 Psychoticism concerns not only the magical ideation and peculiar reasoning of schizotypal thinking, but also ventures into more overt delusional thoughts (e.g., “I often feel I can read other people’s minds,” “Evil spirits possess me at times,” and “Someone has control over my mind”) and even hallucinations (e.g. “I often hear voices without knowing where they come from,” “I see things or animals or people around me that others do not see,” and “I sometimes seem to hear my thoughts being spoken out loud;” Harkness, McNulty, & Ben-Porath, 1965). The seven CAT-PD-SF Unusual Beliefs items (e.g., “Am able to read the minds of others,” “Have the power to cast spells on others,” and “Can control objects with my mind”) likewise concern overt psychotic beliefs rather than just the odd, strange, and/or peculiar ideation that is described within FFMPD Aberrant Ideas (e.g., “I have some beliefs that other people think are strange” and “I believe in a lot of things that are pretty unusual”) and PID-5 Unusual Beliefs and Experiences (e.g., I often see unusual connections between things that most people miss” and “I’ve had some really weird experiences that are very difficult to explain”).

Crego and Widiger (2016) expressed a similar concern with respect to PID-5 Perceptual Dysregulation, but the respective scales from the PID-5 do not appear to be as predominated by psychotic content as the CAT-PD-SF. It would in any case be of interest for future research to compare the convergent and discriminant validity of these respective schizotypal scales from the FFMPD, PID-5, and CAT-PD-SF with other comparable scales, such as Eccentric Perceptions from the SNAP-2 (Clark, Simms, Wu, & Casillas, 2014) and Cognitive Distortion from the Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ; Livesley & Jackson, 2009).

Limitations and Future Directions

A potential limitation of the current study was that the FFMPD, PID-5, CAT-PD-SF, and FFF measures were not all administered to the same persons. Each analysis concerned data collapsed across two samples, but it would have been preferable to have all of the same participants complete all of the measures. It would perhaps be difficult though for respondents to complete 99 scales, but the three samples did prohibit the implementation of one joint factor analysis.

A potential strength of the current study was that the sample of adults had all been in mental health treatment. Information was obtained as to why they were seeking treatment (up to 13% self-identified being in treatment for a personality disorder), but no information was obtained as to the extent of DSM-IV personality syndromes that were present. In addition, a potential limitation was sampling from MTurk. Internet data collection has less control over research participation than would be available in face-to-face test administration. It was in part for this reason that a conservative threshold was used for the careless-responding scale. On the other hand, research has found that MTurk data quality is at least equal to findings obtained through traditional methods (Chandler & Shapiro, 2016; Shapiro et al., 2013). For example, Buhrmester et al. (2011) reported consistent psychometric properties with the general population on a variety of self-report inventories. Gore and Widiger (2015) reported a close replication of FFMPD findings across MTurk and student samples.

Conclusions

In sum, the current study considered scales across FFMPD instruments to yield a set that is largely consistent with the PID-5 and CAT-PD-SF albeit with a few unique scales as well. The results of the study supported their understanding within the structural model of the FFM, the first study indeed to consider the joint factor structure of FFMPD scales from all five domains with a measure of the FFM. Some findings though were inconsistent with expectations (e.g., Interpersonal Suspiciousness and Attention-Seeking not obtaining their primary loading on antagonism or extraversion, respectively), but comparably inconsistent results also occurred for the PID-5 (e.g., Depressiveness and Restricted Affectivity loading on neuroticism and introversion, respectively) and the CAT-PD-SF (e.g., Unusual Experiences and Unusual Beliefs separating from FFM openness and other psychoticism scales).

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Public significance

The Five Factor Model (FFM) is the predominant model of general personality structure in psychology. However, limiting its clinical relevance is the absence of scales to assess for its maladaptive variants. The current study provided empirical support for the assessment of maladaptive variants of the FFM.

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Table 1

FFMPD Validation Studies

	FFMPD Scales	Participants	Focus
Crego & Widiger (2014)	4 EPA factor scales	2 samples: 199 and 280 MTurk who had broken the law	Relationship of 4 EPA factor scores with other measures of psychopathy and antisocial personality disorder, the FFM, as well as effect of reverse keying
Crego et al. (2015)	12 FFOCI	380 college students, oversampled for OCPD	Relationship of FFOCI and PID-5 with alternative measures of OCPD, compulsivity, and conscientiousness
Crego & Widiger (2016)	36 FFMPD scales from 8 measures	3 samples: 286, 262, and 266 Mturk with mental health treatment	Convergent and discriminant validity of 36 FFMPD, 25 PID-5, and 33 CAT-PD-SF individual scales; including joint factor structure (e.g., FFMPD with PID-5)
Crego & Widiger (in press)	9 FFSI	2 samples: 346 MTurk with mental health treatment, and 259 students, oversampled for STPD	Relationship of FFSI and PID-5 scales with alternative measures of general personality, openness, and schizotypal cognition and perception; including factor analysis.
DeShong et al. (2015)	12 FFBI	2 samples: 85 and 86 students who self-injure	Relationship of FFBI with FFM, borderline personality, impulsivity, and emotional dysregulation
Edmundson et al. (2011)	9 FFSI	143 college students	Convergent, discriminant, and incremental validity with respect to measures of schizotypy and FFM
Few et al. (2013)	18 EPA	2 samples: 907 & 787 college students	Factor structure of EPA and validation of factor scores with respect to FFM and psychopathy
Glover et al. (2012)	15 FFNI	2 samples: 166 and 167 college students	Convergent, discriminant, and incremental validity with respect to measures of narcissism and FFM
Gore et al. (2012)	12 FFDI	2 samples: 221 and 221 students, oversampled for DPD	Convergent, discriminant, and incremental validity with respect to measures of dependency and FFM
Gore & Widiger (2015)	12 FFDI	2 samples: 108 students oversampled for DPD, & 184 MTurk	Comparison to multiple measures of dependency, adaptive agreeableness, and maladaptive agreeableness
Lynam et al. (2011)	18 EPA	2 samples: 907 students; and 77 male inmates	Convergent, discriminant, and incremental validity with respect to measures of psychopathy, FFM, and criminal behavior; joint factor analysis of EPA with FFM
Lynam et al. (2012)	10 FFAvA	291 college students	Convergent, discriminant, and incremental validity with respect to measures of avoidant personality, FFM, and criminal behavior; joint factor analysis of FFAvA with FFM
Miller et al. (2011)	18 EPA	227 college students	EPA construct validity, as compared to measures of personality, personality disorders, social cognition, and love styles
Miller, Few et al. (2013)	15 FFNI	2 samples: 287 MTurk, and 110 patients	Convergent, discriminant, and incremental validity with respect to grandiose and vulnerable narcissism
Miller, Gentile, et al. (2013)	15 FFNI	283 college students	FFNI construct validity, with self and informant reports of FFM, grandiose and vulnerable narcissism, Dark Triad, and attachment
Miller, Hyatt et al. (2014)	18 EPA	104 community, oversampled for psychopathy	EPA construct validity, with self and informant reports of FFM, psychopathy, narcissism, Machiavellianism, and externalizing behaviors
Miller, McCain et al. (2014)	15 FFNI	2 samples: 274 students, and 98 patients	Comparison of FFNI Grandiose and Vulnerable scales with other narcissism measures, with expert ratings as criterion

	FFMPD Scales	Participants	Focus
Miller et al. (2016)	15 FFNI	Sample 1: 98 patients & 453 students; Sample 2: 276 students	Factor structure of NPI, and then validation of these factors with respect to FFM personality, grandiose and vulnerable narcissism, and self-esteem
Mullins-Sweatt et al. (2012)	12 FFBI	2 samples: 225 students and 94 female substance abuse patients	Convergent, discriminant, and incremental validity with respect to measures of borderline personality and FFM
Samuel et al. (2012)	12 FFOCI	2 samples, 203 and 204 students, oversampled for OCPD	Convergent, discriminant, and incremental validity with respect to measures of obsessive-compulsive personality and FFM
Tomiatti et al. (2012)	13 FFHI	2 samples: 101 and 101 college students	Convergent, discriminant, and incremental validity with respect to measures of histrionic personality and FFM
Wilson et al. (2011)	18 EPA	116 college students	Comparison of EPA scales with other psychopathy measures, and measures of aggression, substance use, and antisocial behavior

Note. FFMPD = Five Factor Model Personality Disorder (Widiger et al., 2012); FFM = five factor model; EPA = Elemental Psychopathy Assessment (Lynam et al., 2011); MTurk = Mechanical Turk; FFOCI = Five Factor Obsessive-Compulsive Inventory (Samuel et al., 2012); OCPD = Obsessive-compulsive personality disorder; PID-5 = Personality Inventory for DSM-5 (Krueger et al., 2012); FFSI = Five Factor Schizotypal Inventory (Edmundson et al., 2011); STPD = schizotypal personality disorder; CAT-PD-SF = Computerized Adaptive Test-Personality Disorder-Static Form (Simms et al., 2011); FFBI = Five Factor Borderline Inventory (Mullins-Sweatt et al., 2012); FFNI = Five Factor Narcissism Inventory (Glover et al,. 2012); FFDI = Five Factor Dependency Inventory (Gore et al., 2012); DPD = dependent personality disorder; FFAvA = Five Factor Avoidant Assessment (Lynam et al., 2012); FFHI = Five Factor Histrionic Inventory (Tomiatti et al., 2012).

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Table 2

Correlations of FFMPD Scales with FFF

FFMPD Traits	FFF Domains				
	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Neuroticism					
Anxious Uncertainty	**.59**	−.26	.01	.07	−.20
Rapidly Shifting Emotions	**.57**	−.17	.11	−.08	−.26
Dysregulated Anger	**.49**	−.10	.07	**−.33**	−.21
Separation Insecurity	**.48**	−.16	.03	.05	−.14
Despondency	**.63**	**−.34**	.04	−.04	−.29
Excessive Worry	**.57**	−.22	.07	.07	−.14
Fragility	**.57**	−.24	.10	−.03	−.27
Invulnerability	**−.48**	.22	−.01	−.10	.25
Extraversion					
Physical Anhedonia	.29	**−.51**	−.24	−.15	−.17
Social Iso. & Withdrawal	**.30**	**−.54**	−.12	−.23	−.12
Detached Coldness	.12	**−.50**	−.27	**−.38**	−.06
Exhibitionism	−.19	**.49**	.28	−.07	−.05
Attention Seeking	−.13	**.46**	.26	−.19	−.05
Flirtatiousness	.03	**.35**	.29	−.19	−.08
Dominance	−.21	**.34**	.12	**−.32**	.14
Thrill Seeking	.06	.26	**.30**	−.27	−.24
Openness					
Odd & Eccentric	.21	−.04	**.36**	−.28	−.22
Aberrant Perceptions	.26	−.04	.23	−.16	−.13
Aberrant Ideas	.23	−.04	**.41**	−.23	−.19
Dogmatism	.03	.04	**−.34**	−.05	.12
Romantic Fantasies	.26	−.05	.21	−.04	−.22
Agreeableness					
Callousness	.02	−.18	−.13	**−.56**	−.09
Arrogance	−.14	.18	.06	**−.36**	.03

FFMPD Traits	FFF Domains				
	Neuroticism	**Extraversion**	**Openness**	**Agreeableness**	**Conscientiousness**
Manipulativeness	−.01	.11	.17	**−.44**	−.05
Oppositional	.25	−.04	.08	**−.51**	−.21
Interpersonal Suspicious	**.40**	**−.30**	−.03	**−.36**	−.13
Subservience	.24	−.24	−.17	**.32**	−.07
Gullibility	.09	.12	.01	**.34**	−.15
Timorousness	.10	−.17	−.18	**.40**	.10
Conscientiousness					
Perfectionism	.01	.08	.02	.12	**.40**
Negligence	**.37**	−.21	.08	−.08	**−.55**
Rash	.25	.11	.18	−.21	**−.46**
Impersistence	**.38**	−.28	.01	−.13	**−.61**
Workaholism	−.15	.15	−.09	.10	**.52**
Ineptitude	**.52**	**−.33**	.03	.02	**−.37**
Ruminative Deliberation	−.03	−.23	−.18	.10	**.36**

Note. *N*=528; Bold and Underline=large effect size; Bold=medium effect size; FFMPD= Five Factor Model of Personality Disorder scales (Widiger et al.,, 2012); FFF=Five Factor Form (Rojas & Widiger, 2014).

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Table 3

FFMPD and FFF Exploratory Structural Equation Modeling

	Factor					
Scale	**1**	**2**	**3**	**4**	**5**	**6**
FFMPD Detached Coldness	**.80**	.05	.06	−.11	.03	.06
FFMPD Social Isolation and Withdrawal	**.70**	.21	−.29	.07	−.08	−.09
FFF Extraversion	**−.63**	.02	**.34**	−.08	.13	−.06
FFMPD Physical Anhedonia	**.58**	−.07	−.04	.11	−.14	.21
FFMPD Callousness	**.56**	−.07	**.50**	−.18	−.04	.00
FFMPD Exhibitionism	**−.56**	−.02	**.53**	.00	−.03	−.03
FFMPD Interpersonal Suspiciousness	**.52**	.17	.17	**.34**	.14	.00
FFMPD Aberrant Ideas	.02	**.93**	−.02	.03	.05	.01
FFMPD Odd & Eccentric	.08	**.88**	.03	−.04	.01	.00
FFMPD Aberrant Perceptions	.03	**.62**	.14	.17	.11	.09
FFF Openness	**−.43**	**.51**	.02	.03	−.13	−.20
FFMPD Arrogance	.05	.02	**.66**	−.14	.16	.09
FFMPD Attention Seeking	**−.43**	−.04	**.66**	.03	−.04	−.01
FFMPD Dominance	−.05	−.09	**.66**	.02	**.32**	**−.32**
FFMPD Manipulativeness	.16	.04	**.64**	.04	.09	−.09
FFMPD Timorousness	.00	−.03	**−.61**	.10	.07	.09
FFMPD Flirtatious	**−.33**	.11	**.60**	.08	−.02	.08
FFMPD Oppositional	**.30**	.08	**.58**	.23	−.01	−.16
FFMPD Thrill Seeking	−.16	.27	**.54**	−.03	−.10	.04
FFF Agreeableness	**−.47**	−.02	**−.49**	.03	.10	**.35**
FFMPD Rashness	−.06	.09	**.42**	.06	**−.35**	.13
FFMPD Dogmatism	.19	−.26	**.34**	.00	.27	.28
FFMPD Anxious Uncertainty	−.03	−.10	−.04	**.95**	.06	−.01
FFMPD Excessive Worry	−.08	.03	−.13	**.88**	.11	−.08
FFMPD Invulnerability	.07	.15	.18	**−.68**	.21	.03
FFMPD Separation Insecurity	.00	−.05	.11	**.68**	.12	.27
FFF Neuroticism	.05	−.02	.00	**.67**	−.11	.03

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	Factor					
Scale	**1**	**2**	**3**	**4**	**5**	**6**
FFMPD Fragility	.05	.09	.12	**.67**	−.07	.24
FFMPD Rapidly Shifting Emotions	.05	.11	.12	**.64**	−.07	.06
FFMPD Despondency	.17	.14	−.07	**.61**	−.07	.08
FFMPD Dysregulated Anger	.21	.08	**.37**	**.46**	−.03	−.03
FFMPD Ineptitude	.07	.06	−.05	**.45**	**−.31**	**.37**
FFMPD Workaholism	−.02	.04	.12	.00	**.80**	.19
FFMPD Impersistence	.10	−.06	.03	.25	**−.71**	.07
FFF Conscientiousness	.01	−.06	−.06	−.12	**.70**	.07
FFMPD Perfectionism	−.06	.10	−.04	.19	**.68**	−.03
FFMPD Negligence	.00	.00	.11	.29	**−.57**	.22
FFMPD Ruminative Deliberation	.17	−.07	−.26	.25	**.48**	.00
FFMPD Subservience	−.02	−.03	−.23	.15	−.02	**.72**
FFMPD Gullibility	**−.41**	.03	−.02	−.04	−.13	**.58**
FFMPD Romantic Fantasies	−.06	.20	.20	.24	−.05	.26

Note. Loadings .30 or above in bold. N= 528; FFMPD= Five Factor Model of Personality Disorder scales (Lynam, 2012); FFF= Five Factor Form (Rojas & Widiger, 2014).

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Table 4

PID-5 and FFF Exploratory Structural Equation Modeling

	Factor					
Scale	**1**	**2**	**3**	**4**	**5**	**6**
PID-5 Anxiousness	**.86**	−.14	.05	−.05	−.04	−.02
PID-5 Emotional Lability	**.81**	.01	.29	.09	.05	−.05
PID-5 Depressivity	**.68**	−.08	−.14	.01	.24	.08
FFF Neuroticism	**.67**	.04	.16	−.06	.12	−.07
PID-5 Perseveration	**.63**	.03	−.05	.06	.02	**.37**
PID-5 Hostility	**.59**	**.55**	.00	−.02	−.06	−.23
PID-5 Suspiciousness	**.58**	.20	−.16	.14	−.03	−.09
PID-5 Rigid Perfectionism	**.57**	.08	−.01	.08	**−.51**	**.32**
PID-5 Anhedonia	**.56**	−.03	**−.38**	−.15	.19	.02
PID-5 Separation Insecurity	**.55**	.14	.23	−.20	−.02	.20
PID-5 Distractibility	**.45**	.04	.00	.05	**.42**	.23
PID-5 Callousness	.00	**.86**	−.28	−.03	.04	−.02
PID-5 Deceitfulness	.13	**.70**	.02	−.05	.12	−.02
PID-5 Grandiosity	−.05	**.68**	.03	.05	−.13	.12
FFF Agreeableness	−.03	**−.67**	.23	−.06	−.05	**.40**
PID-5 Manipulativeness	.03	**.64**	.11	.06	.01	.06
PID-5 Attention Seeking	−.01	**.56**	**.46**	−.02	.01	.10
PID-5 Restricted Affectivity	−.09	**.36**	**−.65**	.05	.00	**.30**
PID-5 Withdrawal	**.44**	.02	**−.62**	.15	−.03	−.01
FFF Extraversion	−.26	.10	**.62**	.15	−.07	.04
PID-5 Intimacy Avoidance	.07	.08	**−.50**	.01	.07	.20
PID-5 Unusual Beliefs and Experiences	.23	.01	.03	**.67**	−.07	.19
PID-5 Eccentricity	**.35**	.04	−.02	**.58**	.05	.08
FFF Openness	.01	−.17	**.42**	**.49**	.13	−.03
PID-5 Perceptual Dysregulation	**.36**	.06	−.05	**.48**	.06	**.31**
FFF Conscientiousness	.02	−.06	.04	.02	**−.81**	.17
PID-5 Irresponsibility	.14	**.35**	−.06	.05	**.54**	.13

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	Factor					
Scale	**1**	**2**	**3**	**4**	**5**	**6**
PID-5 Impulsivity	.12	**.34**	.21	.07	**.47**	.06
PID-5 Risk Taking	−.20	**.32**	.26	.28	**.37**	−.01
PID-5 Submissiveness	**.34**	−.05	.02	**−.39**	.03	**.50**

Note. Loadings .30 or above in bold. N=552; PID-5= Personality Inventory for DSM-5 (Krueger et al., 2012); FFF= Five Factor Form (Rojas & Widiger, 2014)

Table 5

CAT-PD-SF and FFF Exploratory Structural Equation Modeling

	Factor					
Scale	**1**	**2**	**3**	**4**	**5**	**6**
CAT-PD-SF Anxiousness	**.85**	−.17	−.07	.00	.11	.00
CAT-PD-SF Affective Lability	**.82**	.07	.12	−.08	.06	−.06
FFF Neuroticism	**.76**	−.12	.07	−.09	−.03	−.09
CAT-PD-SF Depressiveness	**.74**	−.09	.06	.18	.02	.00
CAT-PD-SF Relationship Insecurity	**.67**	.18	−.04	.10	−.02	.07
CAT-PD-SF Anger	**.61**	**.38**	−.08	.03	−.02	−.15
CAT-PD-SF Mistrust	**.53**	**.30**	−.13	.25	.09	−.05
CAT-PD-SF Health Anxiety	**.52**	.05	.00	.02	.05	.11
CAT-PD-SF Cognitive Problems	**.51**	−.01	.19	.06	**.37**	.18
CAT-PD-SF Submissiveness	**.50**	−.10	.16	−.05	−.09	**.42**
CAT-PD-SF Anhedonia	**.48**	.02	.18	**.40**	−.10	.10
CAT-PD-SF Self-Harm	**.35**	.03	.18	−.02	.20	.22
CAT-PD-SF Domineering	.17	**.87**	−.22	−.11	−.02	−.04
CAT_PD-SF Hostile Aggression	.06	**.77**	.00	.02	−.03	.16
CAT-PD-SF Grandiosity	.03	**.77**	−.01	−.03	−.07	.18
CAT-PD-SF Manipulativeness	.12	**.76**	.12	.05	−.02	.00
FFF Agreeableness	.05	**−.71**	−.05	**−.36**	−.07	**.41**
CAT-PD-SF Callousness	−.09	**.68**	.08	**.42**	.00	.04
CAT-PD-SF Rigidity	**.30**	**.68**	−.07	.07	−.16	.01
CAT-PD-SF Exhibitionism	−.02	**.56**	.07	**−.49**	.01	.04
CAT-PD-SF Rudeness	.23	**.55**	.08	−.10	.26	−.06
CAT-PD-SF Norm Violation	−.04	**.46**	.29	−.15	.28	−.02
CAT-PD-SF Risk Taking	−.06	**.41**	.21	−.23	.20	.25
FFF Conscientiousness	−.08	−.02	**−.77**	−.10	−.02	.12
CAT-PD-SF Irresponsibility	.26	.16	**.64**	.10	.00	.02
CAT-PD-SF Perfectionism	**.30**	**.38**	**−.60**	−.04	.00	.11
CAT-PD-SF Non-Planfulness	.21	.19	**.55**	−.22	.09	.10

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	Factor					
Scale	**1**	**2**	**3**	**4**	**5**	**6**
CAT-PD-SF Workaholism	.00	.20	**−.53**	.04	.13	**.38**
CAT-PD-SF Non-Perseverance	**.50**	.05	**.50**	.03	.02	.08
FFF Extraversion	−.21	.11	−.05	**−.68**	.04	.06
CAT-PD-SF Social Withdrawal	**.40**	−.02	−.02	**.65**	.08	−.02
CAT-PD-SF Emotional Detachment	.18	.07	.00	**.54**	.09	.19
CAT-PD-SF Romantic Disinterest	.05	.00	.07	**.44**	−.20	.21
CAT-PD-SF Peculiarity	**.36**	.02	−.04	.08	**.62**	.02
CAT-PD-SF Fantasy Proneness	**.33**	.08	.01	−.01	**.61**	.08
FFF Openness	.05	−.09	.00	**−.40**	**.52**	−.09
CAT-PD-SF Unusual Beliefs	−.17	**.46**	−.03	.03	.08	**.54**
CAT-PD-SF Unusual Experiences	.07	**.35**	.02	.04	**.31**	**.41**

Note. Loadings .30 or above in bold. N= 548; CAT-PD-SF= Computerized Adaptive Test-Personality Disorder Static Form (Wright & Simms, 2014); FFF= Five Factor Form (Rojas & Widiger, 2014).