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Development and Examination of the Five-Factor Obsessive-Compulsive Inventory–Short Form

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Abstract

The Five-Factor Obsessive-Compulsive Inventory (FFOCI) is an assessment of obsessive-compulsive personality disorder (OCPD) that is based on the conceptual framework of the five-factor model (FFM) of personality. The FFOCI has 12 subscales that assess those five-factor model facets relevant to the description of OCPD. Research has suggested that the FFOCI scores relate robustly to existing measures of OCPD and relevant scales from general personality inventories. Nonetheless, the FFOCI's length—120 items—may limit its clinical utility. This study derived a 48-item FFOCI–Short Form (FFOCI-SF) from the original measure using item response theory methods. The FFOCI-SF scales successfully recreated the nomological network of the original measure and improved discriminant validity relative to the long form. These results support the use of the FFOCI-SF as a briefer measure of the lower-order traits associated with OCPD.

Keywords

obsessive-compulsive personality disorder, five-factor model, perfectionism, workaholism, rigidity

Obsessive-compulsive personality disorder (OCPD) is 1 of 10 personality disorders (PDs) specified in the *Diagnostic and Statistical Manual of Mental Disorders, 5th edition* (*DSM-5*; American Psychiatric Association, 2013). The features of OCPD have a long history within the psychiatric nomenclature and include tendencies such as perfectionism, rigidity, withholding warmth or affection, devotion to work, and preoccupation with details, order, and organization. The features of OCPD are prevalent in community samples (Grant et al., 2004) and have a relatively high economic burden, in terms of direct medical costs and impact on productivity (Skodol et al., 2005; Torgersen, 2009). Furthermore, the features of OCPD are broadly relevant to psychopathology. For example, a core feature of OCPD is perfectionism, which is linked to variety of other problems such as eating disorders (Watson, Raykos, Street, Fursland, & Nathan, 2011), depression and anxiety (Moser, Slane, Burt, & Klump, 2012), and has been offered as a transdiagnostic process (Egan, Wade, & Shafran, 2011). Thus, the availability of relatively brief, faceted measures of the specific aspects of OCPD, potentially with unique connections to relevant outcomes, would be quite valuable to research and clinical practice.

The *DSM-5* conceptualizes OCPD (and all PDs) as a categorical diagnostic construct, which impedes its clinical utility. This categorical definition has been criticized for a variety of weaknesses, including excessive diagnostic comorbidity and arbitrary criteria thresholds (Clark, 2007; Trull & Durrett, 2005). A chief concern for all the PDs, and particularly salient for OCPD, is problematic heterogeneity within the diagnostic construct. In order to qualify for a diagnosis of OCPD the *DSM-5* requires the endorsement of four out of eight criteria (American Psychiatric Association, 2013), but research has demonstrated that these criteria do not cohere into a meaningful whole. Measures of OCPD have routinely evinced particularly low internal consistency (Samuel & Widiger, 2010). Thus, it is hardly surprising that researchers regularly report that OCPD represents a complex, heterogeneous construct (Ansell et al., 2010; Grilo et al., 2001; Samuel & Gore, 2012). This again emphasizes the importance of generating a measure of OCPD-relevant constructs that assesses the lower order components. Take the example of perfectionism, which has a considerable body of social and clinical implications (Stoeber, 2014). Given the heterogeneity within OCPD, some clients would meet criteria for OCPD yet not have this particular trait,

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while others might have an extreme elevation on perfectionism but no other OCPD criteria. Thus, a lower order measure that assesses perfectionism, as well as other aspects relevant to OCPD, would be helpful for clinicians and researchers.

Dimensional models of PD that dismantle these categories into their component traits have the potential to improve on many of the issues with the categorical diagnostic system, including the diagnostic heterogeneity seen with OCPD (Markon, Chmielewski, & Miller, 2011). Widiger and Simonsen (2005) summarized 18 alternative PD models and noted that many included a list of dimensional traits, which could be reasonably organized into five common, higher order domains that largely corresponded to the five domains of the five-factor model (FFM) of general personality. The FFM has a broad base of empirical support and is the most commonly used model of general personality (John, Naumann, & Soto, 2008). A sizable amount of research has been conducted over recent decades indicating that the *DSM-5* PDs can be conceptualized in terms of maladaptive variants of the FFM (Krueger & Markon, 2014; Lynam & Widiger, 2001; Markon, Krueger, & Watson, 2005; Samuel & Widiger, 2008). In this way, the FFM is a logical starting point for generating the lower order facets that would comprise a measure of OCPD (Samuel, Riddell, Lynam, Miller, & Widiger, 2012).

Many measures assessing the FFM-based approach to the conceptualization and diagnosis of PDs have been developed. These measures frame PDs in terms of maladaptive variants of the domains and facets of the FFM. Some measures, like the *Personality Inventory for DSM-5* (PID-5; Krueger, Derringer, Markon, Watson, & Skodol, 2012) and the *Computer-Adaptive Test for Personality Disorder* (CAT-PD; Simms et al., 2011), aim to comprehensively assess the universe of traits relevant to describing all personality pathology. There is also a rich history of instruments that take a more focal approach and delineate only those features relevant to a single, traditional PD construct. For example, a variety of measures have been developed to articulate the specific components of PD constructs such as narcissism (e.g., Pincus et al., 2009) and psychopathy (e.g., Lilienfeld & Widows, 2005). Recently, a group of measures has been developed that delineate and assess those traits that are most relevant to each traditional PD construct from the perspective of the FFM. A number of these measures were first presented in a recent special issue of the *Journal of Personality Assessment* (Widiger, Lynam, Miller, & Oltmanns, 2012), including the Five-Factor Obsessive-Compulsive Inventory (FFOCI; Samuel et al., 2012).

The FFOCI S(amuel et al., 2012) is a measure of OCPD based on the 30-faceted conceptualization of the FFM presented by Costa and McCrae (1992) in their NEO Personality Inventory–Revised (NEO PI-R). Although these facets have been criticized by some for their conceptual, rather than empirical, origins and other lower order models of the FFM exist (e.g., DeYoung, Quilty, & Peterson, 2007; Goldberg, 1999), the 30 NEO PI-R facets have been studied extensively and have succeeded reasonably well in capturing the range of variation in normative (Costa & McCrae, 2010) and pathological (Samuel & Widiger, 2008) personality functioning.

In developing the FFOCI, Samuel et al. (2012) conceptually selected the 12 facets of the NEO-based instantiation of the FFM that were most relevant to OCPD. They then created scales to operationalize the maladaptive extremes of those facets. These facets are Excessive Worry (N1: Anxiety), Detached Coldness (E1: Warmth), Risk-Aversion (E5: Excitement-seeking), Constricted (O3: Openness to Feelings), Inflexibility (O4: Openness to Actions), Dogmatism (O6: Openness to Values), Perfectionism (C1: Competence), Fastidiousness (C2: Order), Punctiliousness (C3: Dutifulness), Workaholism (C4: Achievement Striving), Doggedness (C5: Self-discipline), and Ruminative Deliberation (C6: Deliberation). It is worth noting that the domain of conscientiousness bears important theoretical and conceptual relevance to the construct of OCPD (Samuel & Widiger, 2011), which is why all six facets of conscientiousness are represented by individual scales in the FFOCI. Nonetheless, specific traits from other domains are also included, such as the emotional constriction and behavioral inflexibility from openness and the social coldness from extraversion.

The initial development and preliminary validation of the FFOCI was conducted in a sample of undergraduates, with approximately 20% oversampled for elevated OCPD symptoms. Samuel et al. (2012) administered initial item pools for the 12 FFOCI scales along with a variety of measures assessing OCPD and conscientiousness. Using empirical keying, they used half the sample to refine the FFOCI scales to 10 items each (120 items total). They then investigated the psychometric properties of the scales using the other half of the sample. Analyses indicated that the FFOCI scales evinced reasonable internal consistency and large correlations with the respective facets from the NEO PI-R suggesting that they were faithful representations of the general personality traits. Finally, the FFOCI scales manifested large correlations with, and incremental validity beyond, existing measures of OCPD suggesting that the FFOCI captured pathological variants of the traits.

This effort was further extended to examine the convergent and discriminant correlations of the FFOCI with additional measures of OCPD and conscientiousness (Crego, Samuel, & Widiger, 2015). Particularly relevant was the inclusion of the scales from the PID-5 and other dimensional trait measures assessing traits relevant to OCPD, such as Propriety from the SNAP-2 (Clark, Simms, Wu, & Casillas, 2014) and Compulsivity from the Dimensional

Assessment of Personality Pathology–Basic Questionnaire (DAPP-BQ; Livesley & Jackson, 2009). For example, the FFOCI scales obtained strong relations with similar traits from those measures (e.g., PID-5 Rigid Perfectionism–FFOCI Perfectionism: $r = .57$; PID-5 Restricted Affectivity–FFOCI Constricted: $r = .73$; SNAP-2 Workaholism–FFOCI Workaholism: $r = .64$). The FFOCI scales again obtained strong specificity in relating to the IPIP-NEO at the domain level. For instance, the FFOCI scales that are conceptually linked to facets of conscientiousness did not correlate appreciably with any IPIP-NEO facets from domains outside conscientiousness (*Mdn* $r = .15$).

In short, the existing literature suggests that FFOCI scores demonstrate good reliability and validity. Unfortunately, the FFOCI's length may be an impediment to its use in clinical and research settings. Thus, one of the primary goals of the present study was to develop a short form of the FFOCI. The abbreviated version of the FFOCI should reduce administration time, facilitating its use within clinical settings, while also maximizing the retention of valid information from the long-form (Smith, McCarthy, & Anderson, 2000). The present article details the creation of the FFOCI-SF using item response theory (IRT) analyses. In line with prior short forms of this nature (DeShong, Mullins-Sweatt, Miller, Widiger, & Lynam, 2015; Lynam et al., 2013; Sherman et al., 2015), we also delineate the scales' relations with external criteria and compare the external correlates of the abbreviated scales to determine if the shorter scales maintain the same nomological network as the full scales.

Study 1: Short-Form Derivation

Participants and Procedures

The data set used for shortening the FFOCI scales was originally presented in Crego et al. (2015). The data were collected from 380 undergraduate psychology students including 146 who were oversampled for OCPD symptomatology (endorsing at least 4 of 8 diagnostic criteria) as assessed by the Personality Diagnostic Questionnaire-4 (PDQ-4; Bagby & Farvolden, 2004). Participants were predominantly female (74%), white/Caucasian (80.8%), and single (95.5%). Thirteen percent of participants indicated that they currently were receiving or previously had received mental health treatment. Participants completed the FFOCI along with a wide variety of other measures relevant to personality and OCPD within a 3-hour long battery. The details of the full battery and procedures are available elsewhere (Crego et al., 2015), but only the FFOCI was used for the purposes of deriving the abbreviated scales. All data were collected through an online platform and all procedures were approved by the relevant human subjects protection board.

Measures

Five-Factor Obsessive-Compulsive Inventory. The FFOCI (Samuel et al., 2012) is a 120-item self-report questionnaire assessing 12 OCPD-relevant maladaptive variants of FFM facets. Each subscale consists of 10 items scored on a 5-point Likert-type scale with response options ranging from *strongly disagree* to *strongly agree*. Cronbach's alpha values ranged from .73 (Inflexibility) to .86 (Perfectionism, Orderliness) in the present sample.

Analyses and Item-Selection Procedures

An a priori decision was made to shorten the scales from 10 to 4 items. The rationale was to balance brevity with fidelity to the larger scale. A minimum length for a short-form scale would be three items, as this allows for the use of the scales in structural models, and the inclusion of a fourth item allowed for additional content to avoid artificial narrowing. A prerequisite for IRT analyses is that the scale must demonstrate essential unidimensionality (Stout, 1990). For the present purposes this entailed subjecting the 10 items of each FFOCI scale to a single factor model in Mplus 7.3 (Muthén & Muthén, 1998-2014) and examining the comparative fit index (CFI) and Tucker–Lewis Index (TLI). When either of these indices fell below .90, items were iteratively removed until those thresholds were achieved. Three scales required no modification, three required the removal of a single item, and five required the removal of two items. The final FFOCI scale Punctiliousness (C3) required the removal of four items to achieve essential unidimensionality for IRT purposes. The remaining items of each scale were run in separate IRT analyses, which were conducted using Samejima's graded response model. All models were implemented in a confirmatory framework with WLSMV estimation and all variables treated as categorical. We then visually compared the resulting item information curves to determine the items that provided the most psychometric information across the range of theta. This resulted in a set of a dozen 4-item scales, for a 48-item FFOCI-SF that were then tested with additional samples. The specific items (from the original FFOCI) included in each abbreviated scale and abbreviated scales' internal consistency coefficients are listed in Table 1.

Table 2 presents a summary of IRT analyses of the original scales (after reaching unidimensionality) and final four-item SF scales. The second column gives the percentage of total psychometric information across the full scale that is captured by the four items on the SF scales. These percentages range from a low of 46 for Excessive Worry (N1) to a high of 79 for Risk Aversion (E5). On average, these short form scales captured 63% of the psychometric information of the full scales. Results are similar for the psychometric information available at higher levels of theta, which are

Table 1. FFOCI–Short Form Scales and Items.

Excessive Worry (N1)	61: I often worry about the future.	α = .85
	85: I ruminate and worry over lots of different things.	
	97: I am a worrier.	
	109: I am often concerned, even nervous, about things going wrong.	
Detached Coldness (E1)	2R: I am a warm and engaging person.	α = .78
	14R: I enjoy getting to know people on a personal level.	
	62: I must admit that I am not a particularly warm person.	
	74: Warmth and intimacy are not my strengths.	
Risk Aversion (E5)	15R: I love the excitement of making risky decisions.	α = .76
	39: I much prefer playing it safe, even if miss out on something.	
	51: I believe that safe and predictable beats exciting and dangerous every time.	
	99: My way of life might be dull to others, but at least it is safe and secure.	
Constricted (O3)	28: I find it difficult to feel what other people are feeling.	α = .74
	52: I am not a person who is into how people feel about things.	
	100: Strong emotions are not that important in my life.	
	112: I don't experience a particularly wide range of emotions or feelings.	
Inflexibility (O4)	53: My life is on such a schedule that others do find me a bit dull at times.	α = .73
	65: I like to keep to the "tried and true" rather than try new things.	
	77: My life is pretty much the same every week, and that's how I like it.	
	101: I much prefer predictability than exploring the unknown.	
Dogmatism (O6)	66: There is never an excuse for deviating from a moral code.	α = .77
	78: Permissiveness is essentially a break down in morality.	
	90: I live my life by a set of tough, unyielding moral principles.	
	102: I don't believe in excuses for violating an ethical, moral code.	
Perfectionism (C1)	67: I take great pride in the quality of my work.	α = .73
	79: I'm something of a perfectionist.	
	91: I take great pride in being efficient and effective.	
	103: I like my work to be flawless and unblemished.	
Fastidiousness (C2)	56: Other people have said that I'm extremely detail oriented, almost to a fault.	α = .75
	92: I need to consider every little detail.	
	104: I probably spend more time than is needed organizing and ordering things.	
	116: I always make sure that my work is very well planned and organized.	
Punctiliousness (C3)	33: Following the rules is always important, even if I'm playing a game by myself.	α = .71
	69: People often suggest I take my responsibilities too seriously.	
	93: I firmly believe that you should always play strictly by the rules.	
	117: Some persons suggest I can be excessive in my emphasis on being proper and moral.	
Workaholism (C4)	82: I am known as something of a "workaholic."	α = .76
	94: I get so caught up in my work that I lose time for other things.	
	106: I don't regret working real hard because, for me, work is my pleasure.	
	118: While others are playing, I'm getting ahead.	
Doggedness (C5)	35: I'm fanatical about getting things done when they need to be.	α = .74
	47: If I start something I work until it is complete.	
	95: I have an extremely strong sense of self-discipline.	
	119: I am to the maximum dogged, determined, and disciplined.	
Ruminative Deliberation (C6)	36: I examine every detail of an issue before coming to a decision.	α = .83
	72: No decision is too small for me not to think through all the consequences.	
	96: I like to be really sure about things before I act.	
	108: I think things over and over and over before I make a decision.	

Note. FFOCI = Five-Factor Obsessive-Compulsive Inventory; R after a number indicates that the item is reverse-scored.

presumably most relevant for assessments of psychopathology. Considering only the psychometric information above positive values of theta, the four items selected for the short forms retained between 40% and 82% (average = 63%) of the information provided by the full-scale versions. The final column gives the percentage increase in the average item information for the four items relative to the original items. For example, the average amount of psychometric

Table 2. Percentage of Psychometric Information Retained by the FFOCI–Short Form Scales.

	Percent info total	Percent info Θ > 0	Percent increase of average item info
Excessive Worry (N1)	46	40	15
Detached Coldness (E1)	62	64	24
Risk-Aversion (E5)	79	82	18
Constricted (O3)	63	68	42
Inflexible (O4)	64	62	27
Dogmatism (O6)	70	67	57
Perfectionism (C1)	69	70	39
Fastidiousness (C2)	57	58	28
Punctiliousness (C3)	58	53	44
Workaholism (C4)	58	60	16
Doggedness (C5)	63	62	26
Ruminative Deliberation (C6)	66	66	66
Mean	63	63	34

Note. FFOCI = Five-Factor Obsessive-Compulsive Inventory; percent info total = the percentage of the FFOCI 10-item scale information retained by the shortened 4-item scale across the entire range of theta (i.e., from −6 to +6); percent info Θ > 0 = the percentage of the FFOCI 10-item scale information retained by the shortened 4-item scale at positive values of theta; percent increase average item info = the percentage increase in the average information provided by each from the 10-item scale to the shortened 4-item scale.

information, per item, provided by the four short form items for Perfectionism (C1) was 39% greater than the average psychometric information provided by the 10 items on the full scale.

Study 2: FFOCI-SF Nomological Network

Participants and Procedures

Having generated the FFOCI-SF in Study 1, we then sought to examine its psychometric properties in a different sample. For this purpose, we used the validation half of the sample described in Samuel et al. (2012). This included 203 undergraduates (44 of whom were selected for endorsing at least four OCPD criteria on the PDQ-4). The sample was primarily White (87%), female (65%), and had a mean age of 19 years. The participants completed a battery of self-report instruments including the FFOCI as well as additional measures of OCPD and conscientiousness-related traits. Described below are the measures specifically used to validate the FFOCI-SF.

Measures

Revised NEO Personality Inventory. The NEO PI–R (Costa & McCrae, 1992) is a 240-item self-report inventory designed to assess general personality domains according to the FFM. It uses a 5-point Likert-type scale (ranging from *strongly disagree* to *strongly agree*). Alpha coefficients for the facets ranged from .47 (E4, Activity) to .87 (E1, Warmth) in this sample.

HEXACO Personality Inventory–Revised. The HEXACO-PI-R (Ashton & Lee, 2008) is a 200-item self-report inventory designed to assess six domains of normal personality functioning using a 5-point Likert-type scale (ranging from *strongly disagree* to *strongly agree*). Only the 32 items from the HEXACO-PI-R Conscientiousness scale were included in this study and the alpha value was .89.

Millon Clinical Multiaxial Inventory–III. Only the 17 items from the MCMI-III (Millon, Millon, Davis, & Grossman, 2009) OCPD scale were administered and the alpha for this scale was .75.

Personality Diagnostic Questionnaire–4. The PDQ-4 (Bagby & Farvolden, 2004) is a 99-item true–false self-report inventory measuring the *DSM-5* PDs. This study included only the eight items pertaining to OCPD. The alpha for this scale was .61 in the present sample.

Wisconsin Personality Disorder Inventory (WISPI-IV). The WISPI-IV (Klein et al., 1993) is a 204-item questionnaire designed to measure the *DSM-IV* PDs. Using a 10-point Likert-type scale (ranging from *not at all*; *never applies to me to extremely*; *always applies to me*), participants rate how often statements have applied to them in the past 5 years. This study included only the 20 WISPI-IV items pertaining to OCPD. The alpha for the WISPI-IV was .92.

Dimensional Assessment of Personality Pathology–Basic Questionnaire (DAPP-BQ). The DAPP-BQ (Livesley & Jackson, 2009) is a 290-item self-report inventory consisting of 18 scales designed to measure aspects of personality pathology. This study included only the 16-item DAPP-BQ Compulsivity scale, which obtained an alpha value of .93 in this study.

Schedule for Nonadaptive and Adaptive Personality–2. Only the 25 items from the SNAP-2 (Clark et al., 2014) OCPD

scale and the 35 items from the Constraint scale were administered in this study. The alpha values were .78 and .84 for the OCPD and Constraint scales, respectively.

Convergent and Discriminant Validity of FFOCI-SF Scales With Personality Measures

The FFOCI-SF scales were correlated with the NEO PI-R facet scales from all domains to determine the patterns of convergent and discriminant validity. Table 3 shows correlations between FFOCI-SF scales and NEO-PI-R facet scales, along with summary discriminant correlation values. Convergent correlation values between the full FFOCI facet scales and corresponding NEO-PI-R facets, as reported in Samuel et al. (2012), are included for reference. Convergent correlation values ranged from a .40 (Punctiliousness, C3) to .81 (Excessive Worry, N1), with an overall median of .68, whereas equivalent values for the full FFOCI scales as reported in Samuel et al. (2012) ranged from .45 (Perfectionism, C1) to .82 (Excessive Worry, N1), with a median of .72. To determine the consistency between the full FFOCI and the FFOCI-SF with external correlates, we followed the procedure outlined in Schoenleber, Roche, Wetzel, Pincus, and Roberts (2015). Correlation coefficients for the full FFOCI and FFOCI-SF with each criterion scale were compared by examining the 99% confidence interval (CI) surrounding the FFOCI-SF coefficient. This was accomplished by converting the FFOCI-SF *r* values to Fisher's *z′*, calculating the CI around *z′*, and converting back to *r* values. Full FFOCI coefficients that fall outside the CI range are significantly different from the corresponding FFOCI-SF coefficient. Of the 12 convergent correlations between the FFOCI-SF and the NEO-PI-R scales, two coefficients were outside the CIs from the equivalent full FFOCI coefficient. Specifically, the convergence between FFOCI SF Fastidiousness (C2; $r = .62$) and Ruminative Deliberation (C6; $r = .64$) and their NEO-PI-R counterparts was lower than that between the full FFOCI scales and the NEO-PI-R ($r = .74$ and .76, respectively).

As conscientiousness is central to the conceptualization of OCPD, the convergent validity of the FFOCI-SF scales from that domain were also examined through correlations with the HEXACO-PI-R Conscientiousness and the SNAP Constraint scales. Convergent correlations of those six FFOCI-SF scales with HEXACO-PI-R Conscientiousness ranged from .60 to .69, with a median of .63. Equivalent values for the full FFOCI scales were .66 to .75, with a median of .69. Of the six comparisons, only FFOCI-SF Punctiliousness (C3; $r = .52$) fell outside the CI of the relationship between full FFOCI Punctiliousness and HEXACO-PI-R Conscientiousness. Convergent values with SNAP-2 Constraint ranged from .34 to .52, with a median of .47. Equivalent values for the full scales ranged from .41 to .60, with a median of .53. All the full-form correlation coefficients fell within the CIs of the short-form coefficients in regard to SNAP-2 Constraint.

Discriminant values, the correlation of the FFOCI-SF scales with noncorresponding NEO PI-R facets, are also summarized in Table 3. These are divided into two types. The first reflects the correlation of the FFOCI-SF scale with NEO PI-R facets for nontarget scales from the same domain. For example, for FFOCI-SF Excessive Worry (N1), this value was .50, which represents the median correlation of that scale with the NEO PI-R facets of N2, N3, N4, N5, and N6. These within-domain discriminant correlations obtained an overall median of .37 and were nearly always lower than the convergent correlation for a given scale. The median within-domain discriminant value for the full scales as reported in Samuel et al. (2012) was .46. There were four exceptions (out of 60 discriminant values; 6.7%) where an FFOCI-SF scale correlated more highly with a nontarget NEO PI-R facet and each occurred within the domain of conscientiousness. The FFOCI-SF Punctiliousness Scale (C3) correlated more highly with NEO PI-R Deliberation (C6; $r = .43$) than with Dutifulness (C3; $r = .40$). Furthermore, the FFOCI-SF Perfectionism Scale (C1) correlated more highly with NEO PI-R scales of Order (C2; $r = .50$), Achievement Striving (C4; $r = .58$), and Self-Discipline (C5; $r = .47$), than with NEO PI-R Competence (C1; $r = .45$). That being said, none of these correlations were statistically significantly different from each other ($p > .05$).

Discriminant values were also examined by correlating FFOCI-SF scales with NEO PI-R facets from other domains. For example, the median discriminant value for FFOCI-SF Excessive Worry (N1) with NEO PI-R facets from all domains other than neuroticism was −.04. These discriminant values obtained an overall median of −.07 across the FFOCI-SF scales and there were only three instances (of 288 discriminant values; 1%) where a FFOCI-SF scale correlated more highly with an NEO PI-R facet outside its home domain than with the convergent facet. Although, these dependent correlations were not significantly different ($p > .05$), the FFOCI-SF Inflexibility scale (O4) correlated more highly with NEO PI-R Gregariousness (E2; $r = -.57$) and Excitement-Seeking (E5; $r = -.56$), than with NEO PI-R Openness Actions (O4; $r = .50$) and FFOCI-SF Punctiliousness (C3) correlated more highly with NEO PI-R Openness to Values (O6; $r = -.43$), than with NEO PI-R Dutifulness (C3; $r = .40$).

Convergent Correlations of FFOCI-SF With Measures of OCPD

Table 4 presents the correlations of the FFOCI-SF scales with measures of OCPD and relevant traits. Specifically, Table 4 indicates a general pattern of medium to large correlations between most FFOCI-SF scales and markers of OCPD. The FFOCI-SF scales obtained a median correlation

Table 3. Convergent and Discriminant Validity of FFOCI and FFOCI-SF Subscales With Measures of General Personality.

	FFOCI-SF subscales (Full FFOCI Subscales)											
Other measures	C1	C2	C3	C4	C5	C6	E1	E5	N1	O3	O4	O6
NEO C1	**.45** (.45)	.36	.32	.46	.55	.44	−.10	.26	−.07	.13	.20	.31
NEO C2	.51	**.62** (.74)[a]	.36	.41	.49	.45	.07	.36	.21	.05	.39	.31
NEO C3	.44	.32	**.41** (.51)	.41	.61	.35	−.07	.23	.04	.05	.28	.43
NEO C4	.58	.44	.39	**.63** (.69)	.65	.47	−.04	.29	.12	.08	.27	.37
NEO C5	*.48*	.34	.39	.50	**.71** (.77)	.41	−.03	.27	−.06	.12	.26	.38
NEO C6	.37	.47	*.43*	.48	.50	**.64** (.76)[a]	.12	.60	.21	.15	.47	.41
NEO E1	.06	−.13	−.12	−.18	−.09	−.09	**−.74** (−.74)	−.33	−.25	−.53	−.40	−.08
NEO E2	−.11	−.31	−.30	−.28	−.19	−.31	−.50	−.52	−.39	−.24	−.57	−.21
NEO E3	.17	.01	.02	.12	.19	−.02	−.14	−.24	−.25	.00	−.17	.02
NEO E4	.12	−.03	−.11	.06	.15	−.10	−.25	−.34	−.15	−.11	−.20	−.09
NEO E5	−.08	−.28	−.39	−.36	−.25	−.29	−.35	**−.63** (−.68)	−.28	−.23	−.56	−.33
NEO E6	.00	−.16	−.14	−.25	−.17	−.12	−.60	−.33	−.23	−.44	−.41	−.18
NEO N1	.14	.28	.18	.11	.07	.23	.07	.24	**.81** (.82)	−.19	.29	.05
NEO N2	.04	.13	.03	.04	−.02	−.01	.19	−.04	.43	.04	.09	−.02
NEO N3	.04	.21	.15	.13	−.06	.07	.07	.11	.62	−.17	.21	.04
NEO N4	.13	.27	.15	.07	−.03	.13	.00	.24	.58	−.17	.29	.02
NEO N5	−.09	−.10	−.22	−.31	−.36	−.29	−.16	−.34	.17	−.33	−.24	−.26
NEO N6	−.14	.09	.01	−.17	−.19	−.02	.05	.09	.49	−.13	.10	−.11
NEO O1	−.15	−.19	−.29	−.27	−.26	−.24	−.22	−.27	−.05	−.39	−.27	−.37
NEO O2	.01	.03	−.18	−.04	−.15	−.02	−.20	−.15	.04	−.41	−.21	−.25
NEO O3	.05	−.07	−.10	−.22	−.14	−.09	−.54	−.22	.14	**−.79** (−.78)	−.23	−.20
NEO O4	−.14	−.25	−.32	−.20	−.26	−.23	−.21	−.48	−.34	−.20	**−.49** (−.53)	−.33
NEO O5	.11	.08	−.01	.18	.04	.14	.01	−.05	.00	−.13	−.11	−.11
NEO O6	−.10	−.24	−.43	−.20	−.31	−.23	−.15	−.22	−.04	−.22	−.27	**−.50** (−.62)
NEO A1	−.02	−.07	.02	−.08	−.02	−.05	−.42	−.02	−.26	−.34	−.16	.01
NEO A2	.08	.06	.20	.12	.14	.18	−.20	.21	.07	−.26	.16	.14
NEO A3	.07	.00	.03	−.09	.03	.06	−.64	−.08	−.05	−.51	−.18	.01
NEO A4	.03	.12	.11	.03	.05	.18	−.19	.20	−.02	−.16	.10	.00
NEO A5	−.13	−.06	−.02	−.12	−.10	−.02	−.06	.10	.18	−.22	.02	−.04
NEO A6	.12	.15	.11	−.02	−.01	.16	−.39	.09	.00	−.33	−.08	.04
Disc. Same[b]	.47 (.49)	.37 (.46)	.37 (.49)	.45 (.51)	.54 (.59)	.44 (.45)	−.35 (−.46)	−.33 (−.36)	.50 (.49)	−.22 (−.26)	−.23 (−.22)	−.25 (−.31)
Disc. Other[c]	.03 (−.01)	−.02 (−.04)	−.02 (−.06)	−.09 (−.05)	−.08 (.11)	−.03 (−.08)	−.17 (−.07)	.10 (.06)	−.04 (−.06)	−.17 (−.15)	.09 (.01)	−.01 (.01)
HEXACO-PI-R C[d]	.60 (.66)	.66 (.75)	.52 (.66)[a]	.62 (.69)	.69 (.72)	.63 (.69)						
SNAP-2 Constraint	.34 (.41)	.42 (.50)	.46 (.55)	.47 (.56)	.49 (.51)	.52 (.60)						

Note. $N = 203$. CI = confidence interval; SNAP-2 = Schedule for Nonadaptive and Adaptive Personality-2 (Clark et al., 2014); FFOCI-SF = Five-Factor Obsessive-Compulsive Inventory–Short Form. Full FFOCI correlations reported in Samuel, Riddell, Lynam, Miller, and Widiger (2012). FFOCI subscales are denoted as follows: C1 = Perfectionism; C2 = Fastidiousness; C3 = Punctiliousness; C4 = Workaholism; C5 = Doggedness; C6 = Ruminative Deliberation; E1 = Detached Coldness; E5 = Risk-Aversion; N1 = Excessive Worry; O3 = Constricted; O4 = Inflexibility; O6 = Dogmatism. CIs were found by transforming *rs* to Fisher's *z*′, determining the CI around *z*′, and then transforming back to *rs*. Any full FFOCI coefficients outside the CI are statistically different from the FFOCI-SF coefficient. Convergent correlations are in bold.

[a]Full FFOCI correlation falls outside 99% CI of FFOCI-SF correlation. [b]Discriminant validity between FFOCI and the median correlation of noncorresponding Revised NEO Personality Inventory (NEO PI-R; Costa & McCrae, 1992) facets within the same domain. [c]Discriminant validity between FFOCI and the median correlation of noncorresponding NEO PI-R facets outside each subscale's domain. [d]Total HEXACO-PI-R Conscientiousness Scale (Ashton & Lee, 2008).

Table 4. Convergent Validity of FFOCI-SF Subscales With OCPD and Related Measures.

	FFOCI-SF (Full FFOCI) Subscales					
	MCMI-III	PDQ-4	SNAP-2	WISPI-IV	DAPP-BQ	Profile similarity
Perfectionism (C1)	.37** (.43)	.43** (.48)	.57** (.64)	.57** (.62)	.66** (.70)	.99
Fastidiousness (C2)	.40** (.50)	.50** (.44)	.57** (.56)	.69** (.63)	.72** (.77)	.88
Punctiliousness (C3)	.43** (.53)	.40** (.38)	.48** (.52)	.58** (.58)	.56** (.59)	.83
Workaholism (C4)	.45** (.52)	.44** (.39)	.55** (.54)	.61** (.59)	.56** (.61)	.81
Doggedness (C5)	.57** (.62)	.24** (.22)	.48** (.49)	.49** (.49)	.61** (.60)	.99
Ruminative Deliberation (C6)	.51** (.60)	.32** (.35)	.45** (.49)	.56** (.60)	.58** (.60)	.96
Detached Coldness (E1)	.06 (.26)[a]	.08 (.26)	.17* (.33)	.11 (.33)[a]	.01 (.21)[a]	.92
Risk-Aversion (E5)	.54** (.59)	.21** (.23)	.40** (.41)	.44** (.46)	.40** (.43)	.99
Excessive Worry (N1)	.13 (.09)	.44** (.48)	.37** (.41)	.38** (.42)	.29** (.29)	.99
Constricted (O3)	.07 (.07)	.10 (.14)	.18** (.23)	.11 (.14)	.00 (.02)	.99
Inflexible (O4)	.38** (.35)	.33** (.39)	.48** (.51)	.57** (.57)	.39** (.38)	.93
Dogmatism (O6)	.41** (.36)	.35** (.40)	.42** (.47)	.53** (.53)	.45** (.41)	.75

Note. $N = 203$. CI = confidence interval; FFOCI-SF = Five-Factor Obsessive–Compulsive Inventory–Short Form; MCMI-III = Million Clinical Multiaxial Inventory–III (Millon, Millon, Davis, & Grossman, 2009); PDQ-4 = Personality Diagnostic Questionnaire (Bagby & Farvolden, 2004); SNAP-2 = Schedule for Nonadaptive and Adaptive Personality–2 (Clark et al., 2014); WISPI-IV = Wisconsin Personality Inventory (Klein et al., 1993); DAPP-BQ = Dimensional Assessment of Personality Pathology–Basic Questionnaire Compulsivity scale (Livesley & Jackson, 2009). CIs were found by transforming *r*s to Fisher's *z*′, determining the CI around *z*′, and then transforming back to *r*s. Any full FFOCI coefficients outside the CI are statistically different from the FFOCI-SF coefficient.
[a]Full FFOCI correlation falls outside 99% CI of FFOCI-SF correlation.
*$p = .05$. **$p = .01$.

of .55 with WISPI-IV OCPD; .51 with DAPP-BQ Compulsivity; .47 with SNAP-2 OCPD; .42 with MCMI-III; and .34 with PDQ-4 OCPD. These values were quite comparable with the medians reported by Samuel et al. (2012) for the full FFOCI scales (WISPI-IV = .55; DAPP-BQ = .51; SNAP-2 = .49; MCMI-III = .47; PDQ-4 = .39). There was some variability across the scales in terms of the magnitude of the associations with the OCPD markers. Ten of the 12 FFOCI-SF scales obtained appreciable correlations, with median values ranging from .37 (Excessive Worry, N1) to .57 (Perfectionism, C1). The remaining scales, Detached Coldness (E1) and Constricted (O3) did not achieve strong relations with OCPD. At this sample size, all correlations .14 or larger are significant at $p \leq .05$, but a more meaningful interpretation is likely gained by examining those values > .20. Those two FFOCI-SF scales did not achieve such a correlation with any of the OCPD markers. Although the equivalent correlations for the full FFOCI were also low, they did surpass this threshold. The full-form Constricted (O3) Scale obtained only one correlation >.20, with the SNAP-2; however, full-form Detached Coldness (E1) obtained correlations of such magnitude with all five criterion scales. FFOCI-SF Detached Coldness (E1) obtained relations with the MCMI-III, WISPI-IV, and DAPP-BQ that were outside the lower end of the CI from the full-form scale. These were the only the coefficients of the FFOCI-SF with OCPD indicators departed from the full-form coefficients.

The last row on Table 4 presents an explicit comparison of the similarity of the correlational profiles for the short form scales and their long-form counterparts. These rows present the profile similarity correlation values that serve to index the similarity between two columns of data and serve as an empirical approach to construct validation (e.g., Westen & Rosenthal, 2003). For example, the value for Perfectionism (C1) of .99 reflects the similarity of the profile of correlations in that column, with the profile of correlations for the full-scale version of that scale presented in Samuel et al. (2012). These similarity coefficients were quite high across the board, with all $r_{alerting}$ values greater than .75 and an overall median of .95.

Discussion

Given its long history within the clinical literature, the components of OCPD represent important constructs to be assessed in clinical and research settings. The FFOCI is a useful measure for doing so as it is directly tied to the historical literature on OCPD and linked to the organizing framework of the FFM; serving as a link between the traditional categorical and the modern trait-based approach. Existing research has demonstrated that the FFOCI scales have good psychometric properties such as internal consistency as well as sizable correlations with measures of the relevant NEO PI-R facets, the OCPD syndrome as a whole, and the more specific components of OCPD (Crego et al., 2015; Samuel et al., 2012). Nonetheless, its overall length of 120 items for assessing the traits relevant to a single PD may impede its utility in some settings. Thus, the purpose of the present report was to develop a short form of each FFOCI scale and then determine the degree to which it assessed the same content as the full measure.

Using IRT analyses, we identified the four items from each FFOCI scale that provided the greatest amount of psychometric information about the latent trait. These resulting four-item scales produced the FFOCI-SF, which retained, on average, 63% of the information from 10-item full scales. This suggests that most of the variance in the longer version of each scale is retained by the short form. Importantly, the FFOCI-SF also well approximated the nomological network of the longer measure. The FFOCI-SF scales obtained strong correlations with the respective NEO PI-R facet scales, with an overall median of .68. This value was quite comparable to the overall median of .72 obtained for the full scales (Samuel et al., 2012). The FFOCI-SF scales also obtained similar discriminant values to the full FFOCI scales. If anything, the discrimination was sharpened in the abbreviation as the overall median within-domain discriminant value was .37 for the FFOCI-SF, versus .46 for the full scales—a decrease that was larger than the respective drop in convergent values.

The correlation between the FFOCI-SF scales and measures of OCPD also appeared to be little affected by abbreviation. The overall pattern of correlations of each short-form scale was highly similar to the long form, with $r_{alerting}$ profile similarity correlations that were routinely higher than .90. More specifically, the magnitude of the correlations between the scores on the FFOCI-SF scales and the OCPD scales were routinely greater than .40 and most were greater than .50 or even higher. As with the full scales, the exception to this rule was for the FFOCI-SF scales of Detached Coldness (E1) and Constricted (O3), which were mostly unrelated to other measures of OCPD with correlations hovering around .10. Indeed, these two scales correlated significantly only with the SNAP-2 OCPD scale and even those relations were .17 and .18.

As was noted in the original development of the measure, these two scales were included primarily due to their historical connection to prior versions of OCPD—as well as their nomination as relevant by a group of OCPD scholars (Lynam & Widiger, 2001)—that emphasized emotional constriction and coldness. Thus, the lack of an appreciable correlation with *DSM-IV* (and *DSM-5*) measures of OCPD is not surprising. In this way, one might question the inclusion, or retention, of these scales in the FFOCI-SF. Indeed, if the sole intention of the FFOCI-SF was to recreate a measure of *DSM-5* OCPD, this aim would be improved by their removal. While the *DSM-5* does not incorporate emotional

constriction in its criteria for OCPD, these traits are held to be important representatives of the interpersonal and emotional functioning of individuals with OCPD (Cain, Ansell, Simpson, & Pinto, 2015; Steenkamp, Suvak, Dickstein, Shea, & Litz, 2015). Past work on the *DSM-IV* (and *DSM-5*) conceptualization of OCPD has actually suggested revision to the formal criteria to include emotional and interpersonal presentation for clinical utility (Hummelen, Wilberg, Pedersen, & Karterud, 2008). Likely for those reasons, clinicians preferred using and found more clinical utility in models of OCPD that included emotional restriction traits over ones that did not (Crego, Sleep, & Widiger, 2016). This suggests that these two scales likely increase the value of the FFOCI-SF by virtue of incremental utility beyond existing OCPD measures. In this regard, though, there are two pressing questions with regard to the performance of these two scales on the FFOCI. First, future research on these scales should focus not on whether they correlate with existing measures of OCPD specifically, or even related constructs such as compulsivity. Instead, the ultimate value of these scales should be determined by their validity and utility for capturing important variation in personality pathology. Thus, a more valuable test would be to determine how they compare with conceptually related scales, such as PID-5 Detachment, for predicting relevant outcomes such as the number and strength of significant relationships. Second, even if that research shows a value to these scales, an additionally important question for the FFOCI-SF is whether the two scales, which show a great deal of overlap with each other, are both necessary or if they include mostly redundant information.

It is also worth noting that the correlations of Detached Coldness (E1) from the short form with the measures of OCPD were also outside the lower bound of the CI from the long form. This suggests that the short-form version of this scale is not only weakly related to OCPD, but is even less related to OCPD than was the full version. As our item selection was based on unidimensionality and IRT parameters, we interpret this as the result of natural drift from the long-form scales, although it is somewhat puzzling that this only occurred for this single scale while the correlation of the short form with the NEO PI-R convergent facet remained identical. Otherwise, the remaining FFOCI-SF scales all achieved strong correlations with OCPD scores from the various measures with an overall median of .49 and predominantly matched the full form of the FFOCI in terms of these relationships. This suggests that the FFOCI-SF is quite successful in capturing much of the same variance in OCPD that is tapped by the longer scale. That said, as with the full FFOCI, there were specific FFOCI-SF scales that obtained convergent correlations with the NEO PI-R that were lower than others. Specifically, the Perfectionism (C1) and Punctiliousness (C3) scales had the lowest convergence with their NEO PI-R counterparts and in a few instances even correlated more highly with another facet from the same domain. Although these represent important areas for future investigation, the strong correlations of FFOCI-SF Perfectionism and Punctiliousness with other markers of conscientiousness (e.g., .60 and .52 with the HEXACO-PI-R scale), as well as the markers of OCPD, suggest that the scales function well in many respects and at least as well as the long-form scales, which were shown to perform essentially equivalently. These were also consistent with the prior full-form FFOCI results and likely reflect inherent limitations in the NEO PI-R's operationalization of those scales (Samuel & Widiger, 2011).

Clinical Implications

The creation of this short form of the FFOCI that retains a majority of the variance and largely recreates the nomological network of the long form with only 48 items is an important step toward the increased utility of this measure in clinical practice. OCPD-relevant traits are commonly seen in a variety of settings and the availability of this nuanced and relatively brief measure holds the promise of providing valuable information to clinicians about these clients. At this point, there may be two particular ways in which these scales might be used. First, clinicians might administer the FFOCI-SF to a client whom they suspect of being high in OCPD-relevant traits in order to gain a deeper understanding of the specific aspects that may be problematic. It is worth noting that future research that provides normative data would be highly valuable for such a use as it would provide context for those scales that are outside the normative range as well as for comparisons of relative elevation across scales. A second use of these abbreviated scales would for use in an omnibus battery assessing maladaptive personality traits more broadly (Crego & Widiger, 2016). The FFOCI is just one of eight measures that have been developed to assess traits relevant to personality pathology using the facets of Costa and McCrae's FFM (Widiger et al., 2012). The ultimate utility for dimensional trait approaches to personality pathology is not to simply recreate the extant categories, but to provide a valid and comprehensive assessment of the full universe of personality pathology. Thus, future research may use these scales along with those from other measures to create an omnibus measure of maladaptive traits that can be compared with other alternative models, such as the PID-5 and CAT-PD.

Limitations

There were, of course, limitations to the present effort. Subjects were administered the full form of the FFOCI; therefore, we cannot be certain of the potential impact of nonretained FFOCI items on their responding. Future studies should investigate the FFOCI-SF as a stand-alone measure.

The measures used to support the validity of the FFOCI-SF were within the same method and source (self-report questionnaires) and this shared variance surely produces higher correlations across instruments. It would be particularly useful to explore the use of reports from other methods, such as semistructured interviews of OCPD (Ganellen, 2007), and different sources, such as spousal informants (South, Oltmanns, Johnson, & Turkheimer, 2011) or treating clinicians (Samuel, 2015), to determine how the FFOCI-SF compares with those assessments. A further limitation of the present effort is that, although OCPD is more commonly found among college graduates than nongraduates (Grant et al., 2004) and the samples used here were oversampled for increased symptom endorsement, it is unknown how many of the current respondents were engaged in psychotherapy or had clinically significant levels of OCPD pathology. Future research that examines the properties of the FFOCI-SF in samples of individuals being treated for OCPD would be highly informative. Similarly, as it was a student sample, it will be important to examine the psychometrics of the FFOCI-SF within a sample with broader range of age, ethnicity, and socioeconomic status to ensure its generalized utility.

Conclusions and Future Directions

Building on existing support for the FFOCI, the present study details the development of an abbreviated measure, the FFOCI-SF, which reproduces the nomological network of the full form, but with 60% fewer items. An important test for any short-form measure is reliability and so it will be important to determine the test–retest dependability of the FFOCI-SF scales over brief intervals. Moreover, the FFOCI-SF's brevity will allow it to be implemented more readily in research settings. It will be of interest to determine how the individual scales correspond to other measures of clinical constructs such as perfectionism, workaholism, and alexithymia, and expanding to include measures outside the scope of existing validation studies. Finally, an important feature of the FFOCI and the FFOCI-SF is the presence of individual traits that may better contextualize findings for the construct of OCPD. For example, OCPD has achieved inconsistent relations with measures of psychosocial functioning, with some studies even showing a positive association with aspects of functioning (Torgersen, Kringlen, & Cramer, 2001). Using the FFOCI-SF in future research may be helpful for clarifying the potentially complex relations between OCPD constructs and psychosocial functioning. This is particularly true for these traits, such as perfectionism, that may be helpful in small doses, but more problematic as they become extreme or pervasive (Carter, Guan, Maples, Williamson, & Miller, 2015).

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References

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders*(5th ed.). Washington, DC: Author.

Ansell, E. B., Pinto, A., Crosby, R. D., Becker, D. F., Anez, L. M., Paris, M., & Grilo, C. M. (2010). The prevalence and structure of obsessive-compulsive personality disorder in Hispanic psychiatric outpatients. *Journal of Behavior Therapy and Experimental Psychiatry*, *41*, 275-281. doi:10.1016/j.jbtep.2010.02.005

Ashton, M. C., & Lee, K. (2008). The prediction of honesty-humility-related criteria by the HEXACO and five-factor models of personality. *Journal of Research in Personality*, *42*, 1216-1228. doi:10.1016/j.jrp.2008.03.006

Bagby, R. M., & Farvolden, P. (2004). The Personality Diagnostic Questionnaire–4 (PDQ-4). In M. J. Hilsenroth, D. L. Segal & M. Hersen (Eds.), *Comprehensive handbook of psychological assessment: Personality assessment* (Vol. 2, pp. 122-133). New York, NY: Wiley.

Cain, N. M., Ansell, E. B., Simpson, H. B., & Pinto, A. (2015). Interpersonal functioning in obsessive-compulsive personality disorder. *Journal of Personality Assessment*, *97*, 90-99.

Carter, N. T., Guan, L., Maples, J. L., Williamson, R. L., & Miller, J. D. (2015). The downsides of extreme conscientiousness for psychological well-being: The role of obsessive compulsive tendencies. *Journal of Personality*. Advance online publication. doi:10.1111/jopy.12177

Clark, L. A. (2007). Assessment and diagnosis of personality disorder: Perennial issues and an emerging reconceptualization. *Annual Review of Psychology*, *58*, 227-257. doi:10.1146/annurev.psych.57.102904.190200

Clark, L. A., Simms, L. J., Wu, K. D., & Casillas, A. (2014). *Manual for the Schedule for Nonadaptive and Adaptive Personality (SNAP-2)*. Minneapolis: University of Minnesota Press.

Costa, P. T., Jr., & McCrae, R. R. (1992). *Professional manual: Revised NEO Personality Inventory and NEO Five-Factor Inventory*. Odessa, FL: PAR.

Costa, P. T., Jr., & McCrae, R. R. (2010). *NEO Inventories Professional Manual: NEO PI-3, NEO-FFI-3, NEO PI-R*. Lutz, FL: PAR.

Crego, C., Samuel, D. B., & Widiger, T. A. (2015). The FFOCI and other measures and models of OCPD. *Assessment*, *22*, 135-151. doi:10.1177/1073191114539382

Crego, C., Sleep, C. E., & Widiger, T. A. (2016). Clinicians' judgments of the clinical utility of personality disorder trait descriptions. *Journal of Nervous and Mental Disease*, *204*, 49-56.

Crego, C., & Widiger, T. A. (2016). Convergent and discriminant validity of alternative measures of maladaptive personality

traits. *Psychological Assessment*. Advance online publication. doi:10.1037/pas0000282

DeShong, H. L., Mullins-Sweatt, S. N., Miller, J. D., Widiger, T. A., & Lynam, D. R. (2015). Development of a short form of the Five-Factor Borderline Inventory. *Assessment*. Advance online publication. doi:10.1177/1073191115581475

DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between facets and domains: 10 aspects of the big five. *Journal of Personality and Social Psychology*, *93*, 880-896. doi:10.1037/0022-3514.93.5.880

Egan, S. J., Wade, T. D., & Shafran, R. (2011). Perfectionism as a transdiagnostic process: A clinical review. *Clinical Psychology Review*, *31*, 203-212. doi:10.1016/j.cpr.2010.04.009

Ganellen, R. J. (2007). Assessing normal and abnormality personality functioning: Strengths and weaknesses of self-report, observer, and performance-based methods. *Journal of Personality Assessment*, *89*, 30-40.

Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I. Deary, F. De Fruyt & F. Ostendorf (Eds.), *Personality psychology in Europe* (Vol. 7, pp. 7-28). Tilburg, Netherlands: Tilburg University Press.

Grant, B. F., Hasin, D. S., Stinson, F. S., Dawson, D. A., Chou, S. P., Ruan, W. J., & Pickering, R. P. (2004). Prevalence, correlates, and disability of personality disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Clinical Psychiatry*, *65*, 948-958.

Grilo, C. M., McGlashan, T. H., Morey, L. C., Gunderson, J. G., Skodol, A. E., Shea, M. T., . . .Stout, R. L. (2001). Internal consistency, intercriterion overlap and diagnostic efficiency of criteria sets for DSM-IV schizotypal, borderline, avoidant and obsessive-compulsive personality disorders. *Acta Psychiatrica Scandinavica*, *104*, 264-272. doi:10.1034/j.1600-0447.2001.00436.x

Hummelen, B., Wilberg, T., Pedersen, G., & Karterud, S. (2008). The quality of the DSM-IV obsessive-compulsive personality disorder construct as a prototype category. *Journal of Nervous and Mental Disease*, *196*, 446-455.

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five trait taxonomy. In O. P. John, R. W. Robins & L. A. Pervin (Eds.), *Handbook of personality* (3rd ed., pp. 114-158). New York, NY: Guilford Press.

Klein, M. H., Benjamin, L. S., Rosenfeld, R., Treece, C., Husted, J., & Greist, J. H. (1993). The Wisconsin Personality Disorders Inventory: Development, reliability, and validity. *Journal of Personality Disorders*, *7*, 285-303.

Krueger, R. F., Derringer, J., Markon, K. E., Watson, D., & Skodol, A. E. (2012). Initial construction of a maladaptive personality trait model and inventory for DSM-5. *Psychological Medicine*, *42*, 1879-1890. doi:10.1017/S0033291711002674

Krueger, R. F., & Markon, K. E. (2014). The role of the DSM-5 personality trait model in moving toward a quantitative and empirically based approach to classifying personality and psychopathology. *Annual Review of Clinical Psychology*, *10*, 477-501. doi:10.1146/annurev-clinpsy-032813-153732

Lilienfeld, S. O., & Widows, M. (2005). *Professional manual for the Psychopathic Personality Inventory–Revised (PPI-R)*. Lutz, FL: PAR.

Livesley, W. J., & Jackson, D. N. (2009). *Dimensional Assessment of Personality Pathology–Basic Questionnaire*. Port Huron, MI: Sigma Assessment Systems.

Lynam, D. R., Sherman, E. D., Samuel, D., Miller, J. D., Few, L. R., & Widiger, T. A. (2013). Development of a short form of the Elemental Psychopathy Assessment. *Assessment*, *20*, 659-669. doi:10.1177/1073191113502072

Lynam, D. R., & Widiger, T. A. (2001). Using the five-factor model to represent the DSM-IV personality disorders: An expert consensus approach. *Journal of Abnormal Psychology*, *110*, 401-412. doi:10.1037//0021-843x.110.3.401

Markon, K. E., Chmielewski, M., & Miller, C. J. (2011). The reliability and validity of discrete and continuous measures of psychopathology: A quantitative review. *Psychological Bulletin*, *137*, 1093-1093. doi:10.1037/A0025727

Markon, K. E., Krueger, R. F., & Watson, D. (2005). Delineating the structure of normal and abnormal personality: An integrative hierarchical approach. *Journal of Personality and Social Psychology*, *88*, 139-157. doi:10.1037/0022-3514.88.1.139

Millon, T., Millon, C., Davis, R., & Grossman, S. (2009). *MCMI-III Manual* (4th ed.). Minneapolis, MN: Pearson Education.

Moser, J. S., Slane, J. D., Burt, S. A., & Klump, K. L. (2012). Etiologic relationships between anxiety and dimensions of maladaptive perfectionism in young adult female twins. *Depression and Anxiety*, *29*, 47-53. doi:10.1002/Da.20890

Muthén, L. K., & Muthén, B. O. (1998-2014). *Mplus user's guide* (7th ed.). Los Angeles, CA: Muthén & Muthén.

Pincus, A. L., Ansell, E. B., Pimentel, C. A., Cain, N. M., Wright, A. G. C., & Levy, K. N. (2009). Initial construction and validation of the Pathological Narcissism Inventory. *Psychological Assessment*, *21*, 365-379. doi:10.1037/A0016530

Samuel, D. B. (2015). A review of the agreement between clinicians' personality disorder diagnoses and those from other methods and sources. *Clinical Psychology—Science and Practice*, *22*, 1-19. doi:10.1111/Cpsp.12088

Samuel, D. B., & Gore, W. L. (2012). Maladaptive variants of conscientiousness and agreeableness. *Journal of Personality*, *80*, 1669-1696. doi:10.1111/j.1467-6494.2012.00770.x

Samuel, D. B., Riddell, A. D. B., Lynam, D. R., Miller, J. D., & Widiger, T. A. (2012). A five-factor measure of obsessive-compulsive personality traits. *Journal of Personality Assessment*, *94*, 456-465. doi:10.1080/00223891.2012.677885

Samuel, D. B., & Widiger, T. A. (2008). A meta-analytic review of the relationships between the five-factor model and DSM-IV-TR personality disorders: A facet level analysis. *Clinical Psychology Review*, *28*, 1326-1342. doi:10.1016/j.cpr.2008.07.002

Samuel, D. B., & Widiger, T. A. (2010). A comparison of obsessive-compulsive personality disorder scales. *Journal of Personality Assessment*, *92*, 232-240. doi:10.1080/00223891003670182

Samuel, D. B., & Widiger, T. A. (2011). Conscientiousness and obsessive-compulsive personality disorder. *Personality Disorders: Theory Research and Treatment*, *2*, 161-174. doi:10.1037/A0021216

Schoenleber, M., Roche, M. J., Wetzel, E., Pincus, A. L., & Roberts, B. W. (2015). Development of a brief version of the Pathological Narcissism Inventory. *Psychological Assessment*, *27*, 1520.

Sherman, E. D., Miller, J. D., Few, L. R., Campbell, W. K., Widiger, T. A., Crego, C., & Lynam, D. R. (2015). Development of a short form of the Five-Factor Narcissism Inventory: The FFNI-SF. *Psychological Assessment*. Advance online publication. doi:10.1037/pas0000100

Simms, L. J., Goldberg, L. R., Roberts, J. E., Watson, D., Welte, J., & Rotterman, J. H. (2011). Computerized adaptive assessment of personality disorder: Introducing the CAT-PD project. *Journal of Personality Assessment*, *93*, 380-389. doi:10.1080/00223891.2011.577475

Skodol, A. E., Pagano, M. E., Bender, D. S., Shea, M. T., Gunderson, J. G., Yen, S., . . .McGlashan, T. H. (2005). Stability of functional impairment in patients with schizotypal, borderline, avoidant, or obsessive-compulsive personality disorder over two years. *Psychological Medicine*, *35*, 443-451. doi:10.1017/S003329170400354x

Smith, G. T., McCarthy, D. M., & Anderson, K. G. (2000). On the sins of short-form development. *Psychological Assessment*, *12*, 102-111. doi:10.1037//1040-3590.12.1.102

South, S. C., Oltmanns, T. F., Johnson, J., & Turkheimer, E. (2011). Level of agreement between self and spouse in the assessment of personality pathology. *Assessment*, *18*, 217-226. doi:10.1177/1073191110394772

Steenkamp, M. M., Suvak, M. K., Dickstein, B. D., Shea, M. T., & Litz, B. T. (2015). Emotional functioning in obsessive-compulsive personality disorder: Comparison to borderline personality disorder and healthy controls. *Journal of Personality Disorders*, *29*, 794-808.

Stoeber, J. (2014). Multidimensional perfectionism and the DSM-5 personality traits. *Personality and Individual Differences*, *64*, 115-120. doi:10.1016/j.paid.2014.02.031

Stout, W. F. (1990). A new item response theory modeling approach with applications to unidimensionality assessment and ability estimation. *Psychometrika*, *55*, 293-325.

Torgersen, S. (2009). The nature (and nurture) of personality disorders. *Scandinavian Journal of Psychology*, *50*, 624-632. doi:10.1111/j.1467-9450.2009.00788.x

Torgersen, S., Kringlen, E., & Cramer, V. (2001). The prevalence of personality disorders in a community sample. *Archives of General Psychiatry*, *58*, 590-596. doi:10.1001/archpsyc.58.6.590

Trull, T. J., & Durrett, C. A. (2005). Categorical and dimensional models of personality disorder. *Annual Review of Clinical Psychology*, *1*, 355-380. doi:10.1146/annurev.clinpsy.1.102803.144009

Watson, H. J., Raykos, B. C., Street, H., Fursland, A., & Nathan, P. R. (2011). Mediators between perfectionism and eating disorder psychopathology: Shape and weight overvaluation and conditional goal-setting. *International Journal of Eating Disorders*, *44*, 142-149. doi:10.1002/Eat.20788

Westen, D., & Rosenthal, R. (2003). Quantifying construct validity: Two simple measures. *Journal of Personality and Social Psychology*, *84*, 608-618. doi:10.1037/0022-3514.84.3.608

Widiger, T. A., Lynam, D. R., Miller, J. D., & Oltmanns, T. F. (2012). Measures to assess maladaptive variants of the Five-Factor Model. *Journal of Personality Assessment*, *94*, 450-455. doi:10.1080/00223891.2012.677887

Widiger, T. A., & Simonsen, E. (2005). Alternative dimensional models of personality disorder: Finding a common ground. *Journal of Personality Disorders*, *19*, 110-130.