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Dr. David T. Berry, Director of Graduate Studies

THE FFOCI, AND OTHER MEASURES AND MODELS OF OCPD

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THESIS

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A thesis submitted in partial fulfillment of the  
requirements for the degree of Master of Science in the  
College of Arts and Sciences  
at the University of Kentucky

By

Cristina Marie Pinsker

Lexington, Kentucky

Director: Dr. Thomas A. Widiger, Professor of Psychology

Lexington, Kentucky

2014

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## ABSTRACT OF THESIS

### THE FFOCI, AND OTHER MEASURES AND MODELS OF OCPD

The Five Factor Obsessive Compulsive Inventory (FFOCI) was developed in part to facilitate a shift from the categorical classification of personality disorder to a dimensional model; more specifically, the five-factor model. Questions though have been raised as to whether obsessive-compulsive personality disorder can be understood as a maladaptive variant of FFM conscientiousness. The purpose of the present study was to provide a further validation of the FFOCI, as well as to compare and contrast alternative measures and models of OCPD. A total of 380 participants, including 146 oversampled for OCPD traits, were recruited from introductory psychology courses at the University of Kentucky. Administered were the FFOCI, measures of general personality (e.g., International Item Pool, 5-Dimensional Personality Test), trait scales associated with OCPD (e.g., workaholism, compulsivity, propriety), and alternative measures of obsessive compulsive personality disorder. All measures were administered via SurveyMonkey, a secure online survey service. Results supported the validity of the FFOCI, but also demonstrated substantive differences among the alternative measures of OCPD, particularly with respect to their relationship with FFM conscientiousness, antagonism, and introversion.

**KEYWORDS:** five-factor model, obsessive-compulsive, personality, personality disorder, DSM-5, validity

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January 29, 2014

THE FFOCI, AND OTHER MEASURES AND MODELS OF OCPD

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## Chapter One: Introduction

Obsessive-compulsive personality disorder (OCPD) is a condition characterized by such features as perfectionism; devotion to work to the exclusion of other important activities; preoccupation with the details, order, and organization of activities and tasks; rigidity; and difficulty expressing warmth or affection. OCPD was one of the six personality disorders proposed for retention in DSM-5 (APA, 2011). Torgersen (2012) reported that OCPD has among the highest prevalence rates of the personality disorders within community samples. Skodol et al. (2011) suggested that it is one of the personality disorders with a relatively high economic burden with respect to direct medical costs and impact on productivity (e.g., Soeteman, Hakkart-van Roijen, Verheul, & Busschbach, 2008).

There has though been considerable criticism of the *DSM-IV-TR* (APA, 2000) because of its assumption that personality disorders are categorically distinct (Clark, 2007; First et al., 2002; Livesley, 2003; Trull & Durrett, 2005; Widiger & Trull, 2007). These criticisms include an excessive diagnostic co-occurrence, arbitrary and inconsistent diagnostic boundaries, insufficient coverage, and the use of a single diagnostic term to describe syndromes characterized by a heterogeneous constellation of maladaptive personality traits. For instance, in the *DSM-IV-TR* (APA, 2000) and now retained for DSM-5 (APA, 2013), any four of eight criteria are required for the diagnosis of OCPD. Therefore, there are 163 different combinations of criteria that yield an OCPD diagnosis. Further, because only half of the criteria are required, it is possible that two individuals could be provided with the diagnosis, yet not share a single criterion. Consistent with this possibility, researchers have consistently reported that OCPD is a heterogeneous



construct with multiple factors (e.g., Baer, 1994; Grilo, 2004; Hummelen, Wilberg, Pedersen, & Karterud, 2008; Pinto, Ansell, Grilo, & Shea, 2007).

In light of the limitations of the categorical diagnostic system of DSM-IV-TR and DSM-5, several alternative dimensional models have been proposed (Widiger & Simonsen, 2005). One such proposal is to consider the *DSM-5* personality disorders to be maladaptive and/or extreme variants of general personality structure as described within the five-factor model (FFM; McCrae & Costa, 2008). The FFM has become arguably the predominant dimensional model of general personality structure within psychology (Caspi, Roberts, & Shiner, 2005; Deary, Weiss, & Batty, 2011; John et al., 2008). The FFM has amassed considerable empirical support across a wide array of research concerns (McCrae & Costa, 2008), including multivariate behavior genetics with respect to the structure of the FFM (Yamagata et al., 2006), childhood antecedents (Caspi et al., 2005; Mervielde et al., 2005), temporal stability across the life span (Roberts & Del Vecchio, 2000; Soto, John, Golsing, & Potter, 2011), and cross-cultural support (Allik, 2005; McCrae et al., 2005). The FFM has also been shown to be useful in predicting a substantial number of important life outcomes, both positive and negative, such as subjective well-being, social acceptance, relationship conflict, criminality, unemployment, physical health, mortality, and occupational satisfaction (John et al., 2008; Lahey, 2009; Ozer & Benet-Martinez, 2006). This is a scientific foundation that is sorely lacking for the APA personality disorder nomenclature (Widiger & Trull, 2007). As acknowledged by Skodol et al. (2005), "similar construct validity has been more elusive to attain with the current *DSM-IV-TR* personality disorder categories" (p. 1923).

The FFM, as conceptualized by McCrae and Costa (2008), consists of the five broad domains of neuroticism versus emotional stability, extraversion versus introversion, openness versus closedness to experience, agreeableness versus antagonism, and conscientiousness versus disinhibition. Each of these five broad domains were further differentiated into six more specific facets by Costa and McCrae (1995). For example, the six facets of conscientiousness are competence, order, dutifulness, achievement-striving, self-discipline, and deliberation.

There has been a significant amount of research indicating that *DSM-5* personality disorders, including OCPD, can be understood as maladaptive variants of the domains and facets of the FFM (O'Connor, 2002, 2005; Markon, Krueger, & Watson, 2005; Samuel & Widiger, 2008). As suggested by Clark (2007), "the five-factor model of personality is widely accepted as representing the higher-order structure of both normal and abnormal personality traits" (p. 246). Saulsman and Page (2004) conducted a meta-analysis of a subset of this research and concluded that "each of the personality disorders shows associations with the five-factor model that are meaningful and predictable given their diagnostic criteria" (p. 1075). On the basis of his review of this research Livesley (2001) concluded, "multiple studies provide convincing evidence that the *DSM* personality disorders diagnoses show a systematic relationship to the five-factors and that all categorical diagnoses of *DSM* can be accommodated within the five-factor framework" (p. 24).

To the extent that a *DSM-5* personality disorder can be understood as a maladaptive variant of FFM personality structure, a natural step is to develop a measure of that personality disorder from this theoretical perspective (Lynam, 2012). The FFM of

personality disorder does not suggest or imply that the personality traits included within the *DSM-5* diagnostic categories do not exist, only that they might be better understood dimensionally rather than categorically and, more specifically, as maladaptive variants of the more normal traits within the FFM. Quite a few alternative measures of the FFM have been developed (de Raad & Perugini, 2002). However, these instruments have been confined largely to the assessment of FFM traits within the normal or common range of personality functioning. Such measures have evident utility for general personality research but they lack adequate fidelity for the assessment of the FFM maladaptive variants (Krueger et al., 2011).

Researchers are indeed now beginning to develop measures that are focused on maladaptive variants of the domains and facets of the FFM (e.g., De Clercq, De Fruyt, Van Leeuwen, & Mervielde, 2006; Piedmont, Sherman, Sherman, Dy-Liacco, & Williams, 2009; Simms et al., 2011). A recent special issue of *Journal of Personality Assessment* was in fact devoted to the presentation and initial validation of new measures assessing maladaptive variants of the FFM (Widiger, Lynam, Miller, & Oltmanns, 2012), including the Five Factor Obsessive Compulsive Inventory (FFOCI; Samuel, Riddell, Lynam, Miller, & Widiger, 2012).

Samuel et al. (2012) developed the FFOCI as a self-report measure of OCPD from the perspective of the FFM. Based on a survey of researchers (Lynam & Widiger, 2001), a survey of clinicians (Samuel & Widiger, 2004), and empirical research relating the FFM to OCPD (Samuel & Widiger, 2008, 2011; Saulsman & Page, 2004) twelve facets of the FFM were identified as being particularly relevant for the assessment of OCPD from the

perspective of the FFM. Particularly noteworthy perhaps was the inclusion of scales to represent all six facets of conscientiousness.

Section 3 of DSM-5 includes a five domain, 25-trait model. 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). The initial version of this model though included six domains, with one of them being compulsivity. Clark and Krueger (2012) suggested at that time that this sixth domain of compulsivity was needed because “Obsessive-Compulsive Personality Disorder [OCPD] is not well-covered by the FFM.” The proposed domain of compulsivity included at that time such traits as perfectionistic, preoccupied with organization, perseverance, workaholic, and rigidly principled (Krueger et al. 2012), many of which would likely have been included within a trait list for OCPD. However, the 6-domain, 37-trait, model was eventually reduced on the basis of a factor analysis to the 5-domain, 25-trait, model (Krueger et al., 2012). More specifically, the domain of compulsivity was deleted, and only the traits of perfectionism and perseverance from this domain remained. Section 3 of DSM-5 includes rigid perfectionism and preservation within the trait model for OCPD, along with restricted affectivity and intimacy avoidance (APA, 2013).

In other words, it would appear that the FFM trait conceptualization of OCPD places considerably more emphasis on conscientiousness than does the DSM-5. Nevertheless, an FFM conceptualization of OCPD is not confined simply to conscientiousness (Lynam & Widiger, 2001; Samuel & Widiger, 2004, 2008, 2011; Saulsman & Page, 2004). The FFM conceptualization of OCPD includes as well facets of low extraversion (i.e., low

warmth and low excitement-seeking), high neuroticism (i.e., high anxiousness), and low openness (i.e., low openness to feelings, actions, and values).

Samuel et al. (2012) developed 12 brief 10 item scales to assess OCPD maladaptive variants of each respective FFM facet, including Perfectionism (an OCPD variant of FFM competence), Fastidiousness (FFM order), Punctiliousness (FFM dutifulness), Workaholism (FFM achievement-striving), Doggedness (FFM self-discipline), Ruminative Deliberation (FFM deliberation), Detached Coldness (low FFM warmth), Risk Aversion (low FFM excitement-seeking), Excessive Worry (high FFM anxiousness), Constricted (low FFM openness to feelings), Inflexibility (low FFM openness to actions), and Dogmatism (low FFM openness to values). The FFOCI scales were then validated against the NEO PI-R and other measures of OCPD, including (1) the OCPD scales from the Personality Diagnostic Questionnaire-4 (Bagby & Farvolden, 2004), the Schedule for Nonadaptive and Adaptive Personality -2 (SNAP; Clark, 1993), the Wisconsin Personality Disorder Inventory (Klein et al., 1993), and the Millon Clinical Multiaxial Inventory-III (Millon, 1994); and (2) a scale that assesses a more specific components of OCPD, the Compulsivity scale from the Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP-BQ; Livesley & Jackson, 2009). In this initial validation study, the twelve FFOCI scales obtained Cronbach's alpha values ranging from .77 to .87 (Samuel et al., 2012). The total FFOCI score correlated from .50 to .70 with traditional measures of OCPD. Most importantly from the perspective of the FFM, each FFOCI subscale correlated significantly with its parent NEO PI-R facet scale, ranging from a low of .45 for FFOCI Perfectionism with NEO PI-R Competence, to a high of .82 for FFOCI Excessive Worry with NEO PI-R Anxiousness. Median

convergent validity with the NEO PI-R facet scales was .72. The FFOCI scales also obtained incremental validity over the NEO PI-R in accounting for variance with traditional measures of OCPD, as well as incremental validity over the traditional measures of OCPD. For example, the FFOCI total score explained an additional 21% of the variance over the SNAP in accounting for variance within a combination of the scales from the WISPI, MCMI-III, and PDQ-4. The FFOCI accounted for 43% additional variance in a combination of the scales from the WISPI, SNAP, and MCMI-III after the variance explained by the PDQ-4 was removed.

The purpose of the present study was twofold: 1) To further validate the FFOCI by replicating and extending the findings of Samuel et al. (2012) and, 2) To compare and contrast alternative self-report measures of OCPD with respect to their convergent validity and their respective relationships with the FFM. With respect to the validation of the FFOCI, questions have been raised in particular with respect to the alignment of FFM conscientiousness with OCPD (Clark & Krueger, 2010; Krueger et al., 2011). This concern is pointedly relevant to the validity of the FFOCI, as half of the FFOCI scales are conceptualized as maladaptive variants of the six facets of FFM conscientiousness. To address this concern, the current study included scales from other personality inventories that align conceptually and empirically with FFM conscientiousness, including the Dependability scale from the Inventory of Personal Characteristics -5 (IPC-5; Tellegen, 1990) and the Activity scale from the Zuckerman-Kuhlman-Aluja Personality Questionnaire (*ZKA-PQ*; Aluja, Kuhlman & Zuckerman, 2010), which includes subscales assessing work compulsion, general activity, restlessness, and work energy. In addition, the current study also included all of the personality scales from the International

Personality Item Pool NEO (IPIP NEO; Goldberg et al., 2006) and the 5-Dimensional Personality Test (5DPT; van Kampen, 2001). The IPIP-NEO was constructed to align conceptually and empirically with the FFM (Goldberg, 1999). The alignment of the 5DPT is not considered to be as strong, as the 5DPT represents an extension and modification of the three-factor model of Eysenck (1994). The 5DPT domains align conceptually and empirically with the FFM, but are distinguished in part by the emphasis within the 5DPT on personality dispositions for psychopathology (van Kampen, 2009). This distinction appears to be particularly evident with respect to the comparison of 5DPT Absorption with FFM openness (Van Kampen, 2012).

The current study also included additional measures of OCPD and OCPD traits with which to evaluate the convergent validity of the FFOCI, as well as compare and contrast these alternative measures with one another. Included were the OCPD scales from the SNAP-2 (Clark et al., in press), the MCMI-III (Millon, Millon, Davis, & Grossman, & 2009), the Coolidge Axis II Inventory (CATI; Coolidge & Merwin, 1992), the OMNI Personality Inventory (OMNI; Loranger, 2001), and the four OCPD traits from the PID-5 (APA, 2013; Krueger et al., 2012). Also included were additional self-report measures of maladaptive personality traits that have often been associated with OCPD, such as the Compulsivity scale from the DAPP-BQ (Livesley & Jackson, 2009), the Propriety and Workaholism scales from the SNAP-2 (Clark et al., in press), and Risk Aversion from the PID-5 (which at one point was included within the DSM-5 trait list for OCPD; Clark, 2012).

## **Chapter Two: Method**

### **Participants**

Participants signed up for the study via the SONA system, a web-based system used by the Department of Psychology for students to enroll in experiments. An additional sample of individuals were recruited who endorsed OCPD items on a prescreen measure that was administered at the start of the spring semester of 2011 and the fall semester of 2012 through the University of Kentucky PSY 100 mass screening pool. Specifically, items from the Personality Diagnostic Questionnaire (Bagby & Farvolden, 2004) assessing OCPD symptomatology, were administered to all students enrolled in PSY 100 (which includes approximately 900 potential participants). High scorers on these items were identified (endorsing 4 or more items out of a total of 8), and these individuals were contacted and invited to participate. Contact took place via an email to sign up for the experiment via the SONA system. If, after one week, the participant had not signed up for the experiment, a follow-up invitation was sent. The remaining participants were able to sign up through the SONA system via an experiment portal that does not require an invitation code.

A total of 380 participants were recruited (including 146 from the oversampled group) from the PSY 100/215/216 subject pool where there were 280 females and 100 males. Participants had a mean age of 19.4 with a standard deviation of 2.5. For year in school, 56.8% were freshman, 25.5% were sophomores, 13.2% were juniors, and 4.5% were seniors. For ethnicity, 80.8% were white/Caucasian, 8.7% black/African American, 2.1% were Hispanic/Latino, 2.9% were Asian, 0.3% were American Indian or Alaskan Native, 0.8% were Native Hawaiian or Pacific Islander, and 4.5% were other. For marital



status, 95.5% were single, 1.8% were married, 2.1% were cohabitating, and 0.3% were divorced (1 individual did not respond). Thirteen percent of the participants in this study were currently receiving or had received mental health treatment.

## **Materials**

The current study includes a number of measures; specifically, a demographics form, the FFOCI, two personality inventories that align conceptually and empirically with the FFM, two additional measures of the domain of conscientiousness, four alternative measures of OCPD, and five scales assessing specific components of OCPD.

*Demographics Questionnaire.* This instrument consists of questions assessing the participant's age, gender, marital status, year in college, race and ethnicity, and whether the participant has ever received mental health treatment.

*Five-Factor Obsessive-Compulsive Inventory (FFOCI; Samuel, Riddell, Lynam, Miller & Widiger, 2012).* This instrument is comprised of 12 subscales, each containing 10 items, resulting in 120 items answered on a 5-point scale ranging from *strongly disagree* to *strongly agree*. This instrument assesses obsessive-compulsive maladaptive variants of respective FFM facets. Specifically, six subscales of this instrument assess obsessive-compulsive variants of FFM conscientiousness (i.e., Perfectionism, Fastidiousness, Punctiliousness, Workaholism, Doggedness, and Ruminative Deliberation). Two subscales assess OCPD facets of low extraversion (i.e., Detached Coldness and Risk Aversion). One subscale assesses an OCPD variant of neuroticism (i.e., Excessive Worry). Three subscales assess OCPD facets of low openness to experience (i.e., Constricted, Inflexibility, and Dogmatism). Cronbach's alpha values ranged from .77 to .87 in the original derivation and validation study (Samuel et al.,

2012).

*Five-Factor and Conscientiousness-Related Scales.*

*International Personality Item Pool NEO* (IPIP NEO; Goldberg, 1999; Goldberg et al., 2006). The IPIP NEO is a non copyrighted 300-item self-report inventory designed to assess normal personality domains according to the FFM, including conscientiousness. It uses a 5-point Likert scale (ranging from *strongly disagree* to *strongly agree*). This measure was not included in the Samuel et al. (2012) study. Alpha coefficients ranged from .71 (activity and dutifulness) to .88 (depression and anger) with an overall mean of .80 for the facets (Goldberg, 1999).

*5-Dimensional Personality Test* (5DPT; van Kampen, 2001). The 5DPT is a 100-item self report inventory designed to assess five domains of normal personality functioning (i.e., neuroticism, extraversion, absorption, insensitivity, and orderliness) that align closely with the FFM (van Kampen, 2001). The 5DPT uses a two answer response format (yes or no). This measure was not included in the Samuel et al. (2012) study. Alpha coefficients have ranged from .82 (Insensitivity) to .92 (Neuroticism) with an overall mean of .86 for the five domains (van Kampen, 2012).

*Zuckerman-Kuhlman-Aluja Personality Questionnaire* (ZKA-PQ; Aluja, Kuhlman & Zuckerman, 2010). The ZKA-PQ is a 200-item self-report inventory designed to assess five domains of normal personality functioning (i.e., neuroticism, extraversion, aggressiveness, activity, and sensation seeking) that represent an alternative five-factor model. ZKA-PQ Activity, which includes subscales assessing work compulsion, general activity, restlessness, and work energy) aligns with FFM conscientiousness (Aluja et al., 2010). The broad domains are further subdivided into four facets, each of which is

assessed using a 10-item subscale. The ZKA-PQ uses a 4-point Likert scale (ranging from *disagree strongly* to *agree strongly*). Only the 38 items from the ZKA-PQ Activity scale will be included in the present study. This scale was not included in the Samuel et al. (2012) study. Cronbach's alpha for the Activity scale has been reported to be approximately .76 (Aluja et al., 2010).

*Inventory of Personal Characteristics -5* (IPC-5; Tellegen, 1990). The IPC-5 is a 160-item questionnaire designed to assess the seven factor model of personality developed by Tellegen and Waller (1987), five of which align with the FFM (i.e., negative emotionality, positive emotionality, unconventionality, agreeability, and dependability). Using a four-point Likert scale (ranging from *definitely true* to *definitely false*) participant's rate how well statements describe them. The present study will include only the 24 IPC-5 items assessing the domain of dependability. This scale was not included in the Samuel et al. (2012) study.

*Obsessive-Compulsive Personality Disorder and OCPD Component Scales.*

*Millon Clinical Multiaxial Inventory-III* (MCMI-III; Millon, et al., 2009). The MCMI-III is a 175-item true-false self-report inventory designed to assess *DSM-IV-TR* personality disorders (APA, 2000). The present study will include only the 17 MCMI-III items pertaining to OCPD. The alpha coefficient for the MCMI-III OCPD scale is approximately .66 (Millon, Millon, Davis & Grossman, 1997).

*Coolidge Axis II Inventory* (CATI; Coolidge & Merwin, 1992). The CATI is a 225-item questionnaire designed to measure DSM-IV Axis I and Axis II disorders. Using a four-point Likert scale (ranging from strongly false to strongly true) participants rate how statements apply to them. The present study includes only the 32 CATI items pertaining

to OCPD. This measure was not included in the Samuel et al. (2012) study. Alpha values of .70 have been reported for this scale (Watson & Sinha, 1996).

*OMNI Personality Inventory* (OMNI; Loranger, 2001). The OMNI is a 375-item self-report questionnaire designed to assess normal and abnormal personality traits and personality disorders. Responses are given using a 7-point Likert scale (ranging from *definitely disagree* to *definitely agree*). The present study will include only the 18 OMNI items pertaining to OCPD. Alpha values of .66 have been reported for this scale (Loranger, 2001). This measure was not included in the Samuel et al. (2012) study.

*Schedule for Nonadaptive and Adaptive Personality-2* (SNAP-2; Clark et al., in press). The SNAP-2 is a 390-item factor analytically derived true-false, self-report inventory designed to measure both normal and abnormal personality functioning through dimensional scales. It includes 12 scales to measure maladaptive personality traits (e.g., Manipulativeness), three scales to assess broad personality temperaments (e.g., Disinhibition), six validity scales, and diagnostic scales for *DSM-IV-TR* (APA, 2000) personality disorders. The present study includes only the 25 items pertaining to OCPD and the 38 items forming the Workaholism and Propriety trait scales (the latter two scales were not included in Samuel et al. 2012). The alpha values were .79, .82, and .79 for the OCPD, Workaholism, and Propriety scales, respectively (Samuel et al., 2012; Clark et al., in press).

*Dimensional Assessment of Personality Pathology-Basic Questionnaire* (DAPP-BQ; Livesley & Jackson, 2009). The DAPP-BQ is a 290-item self-report inventory consisting of 18 scales designed to measure aspects of personality pathology (e.g., compulsivity and affective instability). Responses are given using a 5-point Likert-type scale ranging from

*strongly disagree* to *strongly agree*. The present study includes only the 16-item DAPP Compulsivity scale, which consists of items such as “I do jobs thoroughly even if no one will ever see them.” The alpha value for the compulsivity scale in Samuel et al. (2012) was .94.

*Personality Inventory for DSM-5* (PID-5; Krueger et al., 2012). The PID-5 is a 200-item questionnaire designed to measure the DSM-5 personality disorder proposed 25 trait model. Using a 4-point Likert scale (ranging from *very false or often false* to *very true or often true*) participants rate how well the statements describe them. The present study includes only the 19 PID-5 items pertaining to the assessment of perseveration and rigid perfectionism. This measure was not included in the Samuel et al. (2012) study. Alpha coefficients were .70 and .95 reported by Hopwood, Thomas, Markon, Wright and Krueger (2012).

*Validity Scale*. A five-item validity scale will also be 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” and, reverse coded, “I have used a computer in the past 2 years”), 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*.

## **Procedures**

All measures were administered via SurveyMonkey, a secure online survey service. Given the online format, individuals indicated their informed consent by selecting the appropriate box. After providing informed consent, participants completed selected scales from personality and personality disorder instruments; the order of

administration was standard across all participants. Participants were allowed as much time as necessary to complete the materials (which required approximately 3 hours), and were able to temporarily suspend participation whenever necessary. Upon completion, each participant received a debriefing document and research participation credits.

## **Chapter Three: Results**

### **Psychometric Statistics**

Table 1 provides Cronbach Alpha, means, and standard deviations for administered measures. Cronbach alpha's for the general personality domains all fell within the acceptable to good range. However, the SNAP, OMNI, and CATI OCPD scales obtained relatively low reliability scores. This is likely a reflection of the heterogeneity of the OCPD construct assessed by these scales. An exception to this finding lies with the PID OCPD scale, which had very high internal consistency, despite the fact that three of its four subscales are from different domains of the DSM-5 dimensional trait model. The FFOCI subscales had reliability scores ranging from acceptable to good, particularly for 10 item scales.

Table 1.

## Cronbach's Alpha, Means, and Standard Deviations for Scales Administered

<b>Scales</b>	<b><i>α</i></b>	<b><i>mean</i></b>	<b><i>sd</i></b>
IPIP NEO: Neuroticism	.94	173.51	28.16
IPIP NEO: Extraversion	.91	202.60	21.57
IPIP NEO: Openness	.87	200.72	20.00
IPIP NEO: Agreeableness	.74	197.42	13.61
IPIP NEO: Conscientiousness	.92	207.40	21.74
5DPT: Neuroticism	.86	10.12	5.11
5DPT: Extraversion	.86	14.90	4.50
5DPT: Absorption	.85	10.10	5.01
5DPT: InSensitivity	.77	8.40	4.00
5DPT: Orderliness	.84	12.23	4.70
IPC5: Dependability	.91	84.00	12.45
ZKAPQ: Activity	.90	119.30	16.56
DAPP-BQ: Compulsivity	.92	52.22	10.17
SNAP: Propriety	.75	11.78	3.94
SNAP: Workaholism	.87	10.80	3.16
SNAP: OCPD	.63	12.67	3.79
MCMII: OCPD	.74	11.03	3.50
OMNI: OCPD	.65	54.03	6.65
PID: OCPD	.91	81.88	16.56
CATI: OCPD	.61	89.99	0.05
FFOCI: N1	.85	35.21	7.00
FFOCI: E1	.77	24.24	5.43
FFOCI: E5	.85	28.32	6.75
FFOCI: O3	.83	22.85	5.96
FFOCI: O4	.73	26.62	5.33
FFOCI: O6	.74	26.26	5.22
FFOCI: C1	.86	32.63	6.50
FFOCI: C2	.86	32.83	6.67
FFOCI: C3	.75	32.48	5.37
FFOCI: C4	.80	32.92	6.00
FFOCI: C5	.80	32.34	5.92
FFOCI: C6	.80	31.56	5.98

<sup>d</sup>Five Factor Obsessive Compulsive Inventory; IPIP NEO=International Personality Item Pool NEO; 5-DPT=5-Dimensional Personality Test; IPC5= Inventory of Personal Characteristics -5; ZKAPQ=Zuckerman-Kuhlman-Aluja Personality Questionnaire; DAPP-BQ= Dimensional Assessment of Personality Pathology-Basic Questionnaire; SNAP-2= Schedule for Nonadaptive and Adaptive Personality-2 ; MCMII-III= Millon Clinical Multiaxial Inventory-III; OMNI= OMNI Personality Inventory; PID-5= Personality Inventory for DSM-5; CATI=Coolidge Axis II Inventory; N1=excessive worry, E1=detached coldness, E5=risk aversion, O3=dispassionate, O4=inflexible, O6=dogmatism, C1=perfectionism, C2=orderliness, C3=punctiliousness, C4=workaholism, C5=Doggedness, C6=Ruminative Deliberation.

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## **Convergent and Discriminant Validity of FFOCI with Measures of General Personality**

Table 2 provides the correlations of the FFOCI subscales with the measures of general personality. Consistent with expectations, each of the FFOCI subscales correlated significantly, and at times substantially, with its parent domain. The correlations were particularly strongest for the FFOCI conscientiousness subscales, with values for IPIP-NEO ranging from .52 for Ruminative Deliberation to .70 for Perfectionism, with a median convergence of .65. This convergence with conscientiousness was largely replicated across three alternative measures of this domain. FFOCI conscientiousness subscales correlated from .54 for Doggedness to .74 for Fastidiousness with 5-DPT Orderliness (median = .61). The convergence of FFOCI Ruminative Deliberation was only .37 with ZKAPQ Activity, but this was not unexpected. The other five FFOCI conscientiousness scales correlated from .51 (Fastidiousness) to .67 (Workaholism), with a median value (across all six subscales) of .67. The correlations with IPC-5 Dependability ranged from .48 (Workaholism) to .63 (Fastidiousness), with a median of .54.

Convergence was also obtained for the FFOCI neuroticism and extraversion subscales with the IPIP-NEO Neuroticism and Extraversion (ranging from -.56 to .58) and with the 5-DPT Neuroticism and Extraversion (ranging from -.48 to .64). Convergence was generally weak, however, for the three FFOCI Openness subscales (ranging from -.26 to -.43 for convergence with IPIP-NEO Openness) and nonexistent with the 5-DPT Absorption. However, weak convergence was expected with the 5-DPT Absorption.

Despite the weak convergence of the FFOCI Openness subscales with IPIP-NEO

Openness domain scores, convergence was good at the facet level of the IPIP, with correlations ranging from -.42 for Inflexibility with IPIP-NEO Liberalism to -.54 for Constricted with IPIP-NEO Emotionality. The FFOCI subscales of neuroticism, extraversion, and conscientiousness also obtained good convergent validity with their respective facet scales of the IPIP-NEO, ranging from .45 for Perfectionism with IPIP-NEO Self-efficacy to .76 for Excessive Worry with IPIP-NEO Anxiety. It is worth noting, however, that the convergence for a few of the FFOCI Conscientiousness subscales was lower with the respective IPIP-NEO facet scores than with the entire domain score. Consistent with this finding the discriminant validity within the respective domain of IPIP-NEO conscientiousness facet scales was weak for FFOCI Perfectionism and Punctiliousness. Significant covariation is desired among scales hypothesized to be within the same FFM domain, but convergence should be relatively higher with the respective “parent” facet. FFOCI Perfectionism correlated the highest with IPIP-NEO Achievement Striving ( $r = .64$ ) as did FFOCI Punctiliousness ( $r = .55$ ).

Discriminant validity outside of the respective FFM domains, however, was strong for all of the FFOCI subscales. The discriminant validity correlations provided in Table 2 with facets outside of the respective FFM domain are averages of the absolute values. Weak discriminant validity can be hidden if high positive and negative correlations are averaged. Therefore, the averages provided in Table 2 concern the absolute values, and these were consistently much lower than the correlations with the respective parent facet.

Table 2

*Convergent and discriminant validity of the FFOCI subscales with measures of general personality.*

Other Measures	FFOCI <sup>d</sup> Subscales											
	(N1)	(E1)	(E5)	(O3)	(O4)	(O6)	(C1)	(C2)	(C3)	(C4)	(C5)	(C6)
IPIP NEO <sup>e</sup> domain	.58***	-.57***	-.56***	-.43***	-.33***	-.26***	.70***	.67***	.64***	.63***	.69***	.52***
5-DPT <sup>f</sup>	.64***	-.48***	-.56***	-.09	-.07	-.01	.64***	.74***	.62***	.56***	.54***	.60***
ZKAPQ <sup>g</sup>							.60***	.51***	.55***	.67***	.65***	.37***
IPC-5 <sup>h</sup>							.56***	.63***	.59***	.48***	.52***	.51***
IPIP NEO facet <sup>a</sup>	.76***	-.64***	-.72***	-.54***	-.49***	-.42***	.45***	.72***	.53***	.60***	.71***	.54***
Disc Same <sup>b</sup>	.47***	-.44***	-.46***	-.38***	-.25***	-.19***	.71***	.56***	.61***	.58***	.62***	.45***
Disc Other <sup>c</sup>	.14	.19	.19	.20	.20	.12	.13	.12	.14	.23	.15	.14

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

<sup>a</sup>Corresponding IPIP NEO facet for each FFOCI trait scale; <sup>b</sup>Discriminant validity between the FFOCI and the average correlation of non-corresponding IPIP NEO facets within the same domain; <sup>c</sup>Discriminant validity between the FFOCI and the average correlation of non-corresponding IPIP NEO facets outside of each scale's domain; <sup>d</sup>Five Factor Obsessive Compulsive Inventory; <sup>e</sup>International Personality Item Pool NEO; <sup>f</sup>5-Dimensional Personality Test; <sup>g</sup>Zuckerman-Kuhlman-Aluja Personality Questionnaire; <sup>h</sup>Inventory of Personal Characteristics -5; N1=excessive worry, E1=detached coldness, E5=risk aversion, O3=dispassionate, O4=inflexible, O6=dogmatism, C1=perfectionism, C2=orderliness, C3=punctiliousness, C4=workaholism, C5=Doggedness, C6=Ruminative Deliberation.

### **Convergent Validity Amongst OCPD Scales**

Table 3 provides the correlations among the five OCPD scales, as well as the DAPP-BQ assessment of compulsivity. It is evident from Table 3 that, with only a couple of exceptions, none of the self-report measures of OCPD correlated substantially with one another. Many of the measures did correlate well with one another, but perhaps not as high as one would expect for instruments using the same method to assess the same construct.

More specifically, the FFOCI total score correlated well with the SNAP, MCMI-III, CATI, and PID-5 assessments of OCPD. However, the only substantial correlation obtained for the FFOCI was with the DAPP-BQ assessment of compulsivity. The PID-5 correlated substantially with the CATI but was uncorrelated with DAPP-BQ Compulsivity. The MCMI-III assessment of OCPD failed to correlate even significantly with the CATI, OMNI, or PID-5. The SNAP correlated moderately with the FFOCI and the DAPP-BQ, but to a lesser extent with the MCMI-III, CATI, OMNI, and PID-5.

Table 3  
*Convergence of OCPD Scales*

	FFOCI	SNAP-2	MCFI-III	CATI	OMNI	PID-5
SNAP-2	.54***					
MCFI-III	.45***	.26***				
CATI	.47***	.29***	.10			
OMNI	.28***	.35***	-.08	.49***		
PID-5	.37***	.29**	-.14	.65***	.50***	
DAPP-BQ	.64***	.48***	.36***	.26***	.17**	.22*

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

FFOCI=Five Factor Obsessive Compulsive Inventory; SNAP-2= Schedule for Nonadaptive and Adaptive Personality-2 ; MCFI-III= Millon Clinical Multiaxial Inventory-III ; CATI=Coolidge Axis II Inventory; OMNI= OMNI Personality Inventory; PID-5= Personality Inventory for DSM-5.

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## **Convergence of OCPD Scales with IPIP Domains**

Table 4 provides the correlations of the five OCPD scales and DAPP-BQ with the FFM domains, as assessed by the IPIP. It is evident from Table 4 that there are striking differences amongst these measures of OCPD from the perspective of the FFM. The FFOCI, as expected, correlated substantially with conscientiousness, to a lesser degree with extraversion, openness, and neuroticism, and not at all with agreeableness. This is largely consistent with the FFM representation within the FFOCI (e.g., the FFOCI does not include any scales from agreeableness, and only one scale from neuroticism).

The DAPP-BQ Compulsivity correlated substantially with conscientiousness, and obtained largely no correlation with any other FFM domain. The MCMI-III also correlated substantially with conscientiousness, but also with low neuroticism and high agreeableness. In stark contrast, all of the other OCPD measures correlated positively with neuroticism, and the CATI, OMNI, and PID-5 correlated negatively with agreeableness.

In contrast to the FFOCI, MCMI-III, and SNAP, the PID-5 did not correlate with conscientiousness. The significant correlations for the PID-5 were instead with low extraversion, high neuroticism, low openness, and low agreeableness (the correlation of the PID-5 with extraversion increased to  $-.40$  if Risk Aversion is included within the measure). The FFOCI and CATI also obtained negative correlations with extraversion (no such correlations with extraversion were obtained for the SNAP, OMNI, or MCMI-III).

Table 4  
*Convergence of OCPD Scales with IPIP NEO Domains*

	<i>IPIP NEO Domains</i>				
	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
FFOCI	.13*	-.25***	-.11*	.06	.58***
SNAP-2	.18**	.03	-.07	-.01	.35***
MCMI-III	-.26***	-.03	.01	.27***	.60***
CATI	.26***	-.40***	-.36***	-.21***	.04*
OMNI	.28***	-.07	-.20***	-.31***	-.11
PID-5	.26**	-.32**	-.22*	-.31**	-.09
DAPP-BQ	-.07	.09	.09	.17**	.67***

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

IPIP NEO= International Personality Item Pool NEO ; FFOCI=Five Factor Obsessive Compulsive Inventory; SNAP-2= Schedule for Nonadaptive and Adaptive Personality-2 ; MCMI-III= Millon Clinical Multiaxial Inventory-III ; CATI=Coolidge Axis II Inventory; OMNI= OMNI Personality Inventory; PID-5= Personality Inventory for DSM-5.

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### **Convergence of FFOCI Subscales with Measures of OCPD and Compulsivity**

Table 5 provides the correlations of the FFOCI subscales with the four OCPD scales and DAPP-BQ Compulsivity. It is evident from Table 5 that the six FFOCI subscales from the domain of conscientiousness correlated substantially with DAPP-BQ Compulsivity and moderately high with the SNAP and MCMI-III OCPD scales. DAPP-BQ Compulsivity correlated weakly or not at all with the scales from the other domains of the FFM. In stark contrast to the DAPP-BQ findings (but consistent with Table 4) the six FFOCI conscientiousness subscales correlated at best weakly with the PID-5. The highest correlations of FFOCI scales with the PID-5 were obtained by Detached Coldness (from low extraversion) and by Constricted and Inflexibility (from low openness). The PID-5 findings were paralleled by the OMNI. The OMNI correlated only weakly with the FFOCI conscientiousness scales; the highest correlations were with Detached Coldness, Constricted and Inflexibility. The CATI correlated primarily with Detached Coldness, but also correlated significantly all of the other FFOCI subscales. In contrast, the SNAP correlated primarily with the FFOCI subscales from conscientiousness and only weakly with the scales from extraversion, consistent with Table 4.



Table 5  
*Convergent Validity of FFOCI Subscales with OCPD and Related Measures*

Other Measures	FFOCI Subscales											
	N1	E1	E5	O3	O4	O6	C1	C2	C3	C4	C5	C6
SNAP-2	.30***	.18**	.27***	.10*	.40***	.30***	.44***	.47***	.46***	.47***	.39***	.39***
MCMII-III	-.01	.06	.39***	-.07	.24***	.26***	.39***	.41***	.48***	.45***	.52***	.40***
CATI	.21***	.51***	.36***	.39***	.49***	.30***	.25***	.28***	.24***	.23***	.14*	.32***
OMNI	.15**	.34***	.07	.37***	.34***	.26***	.07	.08	.16**	.22***	.06	.08
PID-5	.14	.51***	.02	.55***	.34***	.13	.20*	.19	.14	.20*	.11	.05
DAPP-BQ	.29***	.13*	.26***	.01	.35***	.24***	.68***	.70***	.60***	.55***	.57***	.51***

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

FFOCI= Five Factor Obsessive Compulsive Inventory; N1=excessive worry, E1=detached coldness, E5=risk aversion, O3=dispassionate, O4=inflexible, O6=dogmatism, C1=perfectionism, C2=orderliness, C3=punctiliousness, C4=workaholism, C5=Doggedness, C6=Ruminative Deliberation; SNAP-2= Schedule for Nonadaptive and Adaptive Personality-2 ; MCMII-III= Millon Clinical Multiaxial Inventory-III ; CATI=Coolidge Axis II Inventory; OMNI= OMNI Personality Inventory; PID-5= Personality Inventory for DSM-5; DAPP-BQ= Dimensional Assessment of Personality Pathology-Basic Questionnaire.

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## **Convergence of SNAP-2 and PID-5 Trait Scales with Measures of OCPD and Compulsivity**

Table 6 provides the correlations of the SNAP-2 and PID-5 trait scales (included Risk Aversion) with OCPD and Compulsivity scales (the Propriety and Workaholism scales of the SNAP-2 are independent of the SNAP OCPD scale). The FFOCI, SNAP-2, and MCMI-III total scores were uncorrelated with the PID-5 Intimacy Avoidance and Restricted Affectivity trait scales (and weakly with PID-5 Perseveration). On the other hand, the FFOCI and MCMI-III did correlate with Risk Aversion. The FFOCI and SNAP-2 correlated primarily with SNAP-2 Propriety, SNAP-2 Workaholism and PID-5 Rigid Perfectionism.

In contrast to the FFOCI, SNAP-2, and MCMI-III, the CATI did correlate well with PID-5 Intimacy Avoidance and Restricted Affectivity, as well as with all of the other PID-5 OCPD trait scales. Although PID-5 total score did not correlate with IPIP Conscientiousness or DAPP-BQ Compulsivity, the PID-5 trait scale of Rigid Perfectionism did correlate substantially with compulsivity.

Table 6

*Convergent Validity of SNAP-2 and PID-5 Subscales with OCPD and Related Measures*

Other Measures	SNAP-2 and PID-5 Subscales						
	Propriety	Workaholism	Perseveration	Rigid Perfectionism	Intimacy Avoidance	Restricted Affectivity	Risk Aversion
FFOCI	.45***	.58***	.21***	.58***	-.02	.11	.46***
SNAP-2	.48*** <sup>b</sup>	.52*** <sup>b</sup>	.21***	.46***	.16	.02	.15
MCMII-III	.13**	.25***	-.17*	.22***	-.19	-.16	.35***
CATI	.26***	.33***	.34***	.44***	.43***	.48***	.48***
OMNI	.30***	.43***	.48***	.37***	.29**	.29**	.19*
PID-5	.44***	.38***	.41*** <sup>a</sup>	.39*** <sup>a</sup>	.47*** <sup>a</sup>	.37*** <sup>a</sup>	.35*** <sup>a</sup>
DAPP-BQ	.38***	.53***	.21***	.61***	-.23*	-.09	.17

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

<sup>a</sup>The PID-5 scales for these correlations do not include the items from the respective PID-5 subscale.

<sup>b</sup>The SNAP-2 OCPD scale is not modified for these correlations because the SNAP-2 OCPD scales does not overlap with the SNAP-2 Propriety or Workaholism scales.

FFOCI= Five Factor Obsessive Compulsive Inventory; SNAP-2= Schedule for Nonadaptive and Adaptive Personality-2 ; MCMII-III= Millon Clinical Multiaxial Inventory-III ; CATI=Coolidge Axis II Inventory; OMNI= OMNI Personality Inventory; PID-5= Personality Inventory for DSM-5; DAPP-BQ= Dimensional Assessment of Personality Pathology-Basic Questionnaire.

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### **Convergence of FFOCI, SNAP and PID-5 Subscales with the FFM**

Table 7 provides the correlations of the twelve OCPD scales, two SNAP scales, and five PID-5 scales with the FFM domains, as assessed by the IPIP. Consistent with the averaged discriminant validity, all of the FFOCI scales from the domains of neuroticism, extraversion, and conscientiousness demonstrated discriminant validity. Two exceptions though were two of the FFOCI openness scales: Constricted and Inflexibility. Although these two scales obtained median effect size convergent validity with the domain of openness, they also obtained comparable correlations with antagonism and introversion, respectively.

SNAP Workaholism related strongly to conscientiousness and exhibited excellent discriminant validity with the other four FFM domains. However, SNAP Propriety correlated weakly with all five domains of the FFM.

As expected, PID-5 Perseveration correlated primarily with neuroticism, Rigid Perfectionism with conscientiousness, and Risk Aversion with introversion. However, unexpectedly, PID-5 Intimacy Avoidance did not correlate with introversion, correlating instead with low openness and antagonism. Restricted affectivity did not correlate with neuroticism and only weakly with introversion, obtaining its strongest correlation with antagonism.

Table 7

*Correlations of FFOCI, SNAP-2 and PID-5 Subscales with IPIP NEO Domains*

Subscales	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Excessive Worry <sup>1</sup>	.58***	-.11*	.10	.19***	.19***
Detached Coldness	.26***	-.57***	-.27***	-.33***	-.07
Risk Aversion	.20***	-.56***	-.10	.21***	.31***
Constricted Inflexible	.01	-.28***	-.43***	-.56***	-.21***
Dogmatism	.26***	-.42***	-.33***	-.09	.18**
Perfectionism	.02	-.17**	-.26***	-.09	.15**
Fastidiousness	-.02	.06	.14*	.17**	.70***
Punctiliousness	-.03	-.01	.05	.19***	.67***
Workaholism	-.07	.04	.07	.21***	.64***
Doggedness	-.08	.08	.07	.11*	.63***
Ruminative Deliberation	.26***	.19***	.01	.13*	.69***
Propriety <sup>2</sup>	.09	-.21***	.02	.17**	.52***
Workaholism	.10*	.01	-.16*	.04	.20
Perseveration <sup>3</sup>	.04	.08	.03	-.02	.42***
Rigid Perfectionism	.36***	-.13*	-.08	-.09	-.15*
Intimacy Avoidance	.15	-.09	-.02	.01	.36***
Restricted Affectivity	-.04	-.16	-.31**	-.32**	-.27*
Risk Aversion	-.06	-.21*	-.31**	-.42***	-.13
	.24**	.45***	-.25*	.05	.18

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ <sup>1</sup>FFOCI subscales; <sup>2</sup>SNAP-2 subscales; <sup>3</sup>PID-5 subscales

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## Chapter Four: Discussion

Authors of the FFOCI claim that its scales represent maladaptive variants of respective domains and facets of the FFM (Samuel et al., 2012), but it is important to put this to empirical test, particularly since significant skepticism has been raised with respect to some of these claims, notably the relationship of OCPD traits with FFM conscientiousness (Krueger et al., 2011). The current study found support for the relationship of the FFOCI OCPD conscientiousness scales (i.e., Perfectionism, Fastidiousness, Punctiliousness, Workaholism, Doggedness, and Ruminative Deliberation) with conscientiousness, replicated across four alternative measures of this domain of general personality functioning: IPIP-NEO Conscientiousness (Goldberg et al., 2006); 5DPT Orderliness (van Kampen, 2001); IPC-5 Dependability (Tellegan, 1990); and ZKA-PQ Activity (Aluja et al., 2010). The results of the current study do support the hypothesis that the six FFOCI compulsivity scales can be understood as maladaptive variants of conscientiousness. In support of their validity as measures of OCPD, the FFOCI maladaptive conscientiousness scales in turn correlated substantially with DAPP-BQ Compulsivity, as well as with the SNAP-2 Propriety and Workaholism trait scales, and in addition with the MCMI-III, CATI, and SNAP-2 assessments of OCPD.

The results of the current study also demonstrated convergent validity of the FFOCI subscales with their respective parent facet scale of the FFM. These convergent validity coefficients ranged from a low of .42 for FFOCI Dogmatism with IPIP-NEO low Openness to Values (medium effect size) to a high of .76 for FFOCI Excessive Worry with IPIP-NEO Anxiousness (large effect size). The FFOCI subscales also obtained, as expected, significant correlations with IPIP-NEO facet scales within the same domain. However, on average, these were typically lower than those obtained with the respective parent facet scales. Exceptions to this occurred for some of the

FFOCI conscientiousness subscales, notably FFOCI Perfectionism, Workaholism, and Punctiliousness. This may reflect that the maladaptive conscientiousness subscales are assessing a general construct of compulsivity (as assessed, for instance, by the DAPP-BQ; Livesley & Jackson, 2009), the components of which relate strongly to one another (see Table 5) and with the broad domain of conscientiousness (see Table 1), but less specifically with more particular components or facets of normal conscientiousness.

The FFOCI subscales demonstrated discriminant validity with respect to their relationship with IPIP-NEO scales outside of their respective domains (with the exceptions of FFOCI Constricted and Inflexibility, discussed further below). In addition, their convergence with the IPIP-NEO domain scales assessing neuroticism, extraversion, and conscientiousness, were replicated with the 5DPT scales assessing neuroticism, extraversion, and orderliness. Convergence of the FFOCI openness scales with 5DPT Absorption, however, was not obtained. The FFOCI openness scales obtained medium effect size relationships with IPIP-NEO Openness, but virtually no relationship with 5DPT Absorption. This finding, however, was not unexpected. The 5DPT places relatively more emphasis on assessing maladaptive variants of general personality traits than is provided (for instance) by the IPIP-NEO, given its interest in relating general personality to an understanding of psychopathology (Van Kampen, 2009). This emphasis is particularly evident in the case of 5DPT Absorption (Van Kampen, 2012). One might then have expected strong relationships of 5DPT scales with the FFOCI, given its focus as well on maladaptive variants of the FFM. However, 5DPT Absorption assesses for maladaptive variants of high openness, whereas the FFOCI assesses for maladaptive variants of low openness. It would be of interest for future research to consider the relationship of the 5DPT Absorption and FFOCI openness scales with an instrument that assesses for maladaptive variants of both high

and low openness. This assessment is provided, for instance, by the Permeability Index (Piedmont, Sherman, & Sherman, 2012; Piedmont et al., 2009), which includes the scales Odd and Eccentric and Unrestricted Self for maladaptively high openness (predicted to be convergent with 5DPT Absorption) and the scales Rigid and Superficial for maladaptively low openness (predicted to be convergent with the FFOCI openness scales).

It should also be noted that the close association of compulsivity with FFM conscientiousness, and its potential importance for the assessment and conceptualization of OCPD, was not confined simply to findings obtained with the FFOCI. MCMI-III OCPD, SNAP OCPD, and perhaps most importantly, DAPP-BQ Compulsivity all correlated with IPIP-NEO Conscientiousness. The effect size was particularly strong for the DAPP-BQ. This is perhaps particularly noteworthy because compulsivity is one of the four fundamental domains of maladaptivity included within Livesley's (2007; Livesley & Jang, 2000; Livesley, Jang & Vernon, 1998) four-domain dimensional model of personality pathology (the other three domains being Emotional Dysregulation, Dissocial, and Inhibition). Studies relating Livesley's dimensional model of personality pathology with the DSM-III or DSM-IV personality disorders have reported consistently a strong relationship of compulsivity with OCPD, with no other personality disorder relating as strongly or consistently with DAPP-BQ Compulsivity as OCPD (e.g., Bagby, Marshall, & Georgiades, 2005; Bagge & Trull, 2003; Livesley, 2011; Pukrop et al., 2009).. A failure to include compulsivity within one's conceptualization or assessment of OCPD would then largely fail to include one of the four domains of personality pathology emphasized within the Livesley dimensional model of personality pathology, as OCPD appears to be the only personality disorder with a strong representation of compulsivity.



It is also worth noting though that the initial version of the PID-5 included a much stronger representation of maladaptive variants of conscientiousness. The initial version of the DSM-5 dimensional trait model consisted of 37 traits organized within 6 broad domains, one of which was compulsivity, which aligned conceptually and likely empirically with DAPP-BQ Compulsivity (Clark & Krueger, 2010; Krueger et al., 2011). This domain included scales for the assessment of perfectionism, preoccupation with organization, workaholism, and rigidly principled, all of which were included within the initial trait list for the assessment of OCPD, along with being critical, contrary, dogmatic, and dominant. However, in an effort to simplify the trait list, 12 traits were removed through a factor analysis, with the final list no longer including separate scales for preoccupation with organization, workaholism, or rigidly principled. The compulsivity domain was removed from the model, with its only remaining trait of rigid perfectionism (which combines perfectionism with rigidly principled) loading negatively on the domain of disinhibition. Lost as well for the assessment of OCPD were the traits critical, contrary, dogmatic, and dominant. In the final DSM-5 website post of the dimensional trait model, only two traits were identified for the assessment of OCPD: rigid perfectionism and perseveration. Perhaps in recognition that this DSM-IV construct is not well identified by just two traits, restricted affectivity and intimacy avoidance were added prior to the publication of the final version of DSM-5 (APA, 2013). Risk aversion was momentarily considered (Clark, 2012), but was not included in the final official list.

Samuel et al. (2012) evaluated the convergent validity of the FFOCI with respect to the OCPD scales of the WISPI (Klein et al., 1993) and PDQ-4 (Bagby & Farvolden, 2004), along with the MCMI-III and SNAP, all of whom obtained moderate to large effect size relationships with the FFOCI. This was not always the finding though of the current study. The current study

replicated the association of the FFOCI total score with the MCMI-III and SNAP OCPD scales, but the convergence with the PID-5 and OMNI OCPD scales was relatively weak. An understanding of these different conceptualizations and/or assessments of OCPD is provided perhaps by their respective associations with the domains of the FFM. Ozer and Reiss (1994) and Goldberg (1993) likened the domains of the FFM to the coordinates of latitude and longitude that cartographers used to map the world, suggesting that the FFM might be similarly useful in comparing and contrasting different personality measures with respect to their relative saturation of these fundamental personality traits. The FFM has indeed been shown to be useful in comparing and contrasting different conceptualizations and measures of personality disorder, including the antisocial (Decuyper, De Pauw, De Fruyt, De Bolle, & De Clercq, 2009; Gudonis, Miller, Miller, & Lynam, 2008; Hicklin & Widiger, 2005), dependent (Lowe et al., 2009; McBride, Zuroff, Bagby, & Bacchioni, 2006), narcissistic (Miller & Campbell, 2008; Samuel & Widiger, 2008-a) personality disorders, as well as OCPD (Samuel & Widiger, 2010-b).

It is evident from Table 4 that the FFOCI provides particular emphasis on maladaptive conscientiousness for its assessment of OCPD, albeit it does include as well components of low openness, low extraversion, and high neuroticism. Comparable to the FFOCI, the MCMI-III places considerable emphasis on conscientiousness; however, in stark contrast to the FFOCI (as well as every other measure of OCPD) MCMI-III OCPD correlated negatively with neuroticism whereas all of the other scales correlate positively. In addition, MCMI-III OCPD correlated positively with agreeableness, whereas the PID-5, CATI, and OMNI correlated negatively. It is evident that the MCMI-III conceptualization and assessment of OCPD is quite different from other measures. It did correlate significantly with the FFOCI and the SNAP (consistent with their shared relationship with conscientiousness), but it failed to correlate significantly with the CATI,

OMNI, or PID-5, which is rather unusual for an inventory that is purportedly assessing the same construct.

It is also noteworthy that the emphasis given to conscientiousness by the FFOCI and MCMI-III, and to a lesser extent by the SNAP-2, is not shared by the CATI, OMNI, or PID-5 assessments of OCPD, for which there was virtually no apparent relationship with FFM conscientiousness. Emphasis was placed instead on neuroticism, antagonism, low openness, and, for the CATI and PID-5, introversion. These alternative conceptualizations and assessments are perhaps due in part to the rationale for and process of the construction of these respective instruments.

The CATI, for example, was constructed in a manner comparable to the PDQ-4 (Bagby & Farvolden, 2004), including items to assess respective criterion sets from the APA diagnostic manual (Coolidge & Merwin, 1992). However, the CATI was developed to assess the DSM-III-R (APA, 1987) personality disorders and was never updated with the publication of DSM-IV (APA, 2000). One of the diagnostic criteria for OCPD in DSM-III was “restricted ability to express warm and tender emotions” (APA, 1980, p. 327). In DSM-III-R this criterion became “restricted expression of affection” (APA, 1987, p. 356). However, this criterion was not retained in DSM-IV (APA, 2000; Pfohl & Blum, 1995). The PDQ-4 (Bagby & Farvolden, 2004), therefore, no longer includes any such items for this trait of introversion. However, the CATI, which was not revised for DSM-IV, includes quite a few such items within its OCPD scale, such as, “I tend to hold back my emotions and tender feelings”, “I am less emotional than other people”, and “People tell me that I am an unemotional person.”

A difficulty with expressing and accepting feelings of warmth and affection is still noted as an associated feature of OCPD in DSM-IV and now DSM-5: “Individuals with this disorder

usually express affection in a highly controlled or stilted fashion and may be very uncomfortable in the presence of others who are emotionally expressive” (APA, 2013, p. 680). The FFOCI as well includes a scale for low warmth (i.e., Detached Coldness) that represents this feature, along with an additional scale from introversion, Risk Aversion. Nevertheless, the FFOCI includes only two of 12 scales concerned with traits of introversion, whereas the PID-5 has arguably two of four scales.

The PID-5 includes subscales for the assessment of restricted affectivity and intimacy avoidance (and at one point had as well included a scale for risk aversion; Clark, 2012). One might reasonably predict that these actual and potential components of PID-5 OCPD involve low extraversion. Restricted affectivity would appear to include aspects of low feelings of warmth and emotionality; intimacy avoidance could include aspects of social withdrawal, low warmth, and low gregariousness; and, if it had been included, risk aversion would suggest low excitement-seeking. In the current study, this expectation was supported for restricted affectivity and risk aversion. Intimacy avoidance though did not correlate with introversion, correlating instead with antagonism, low openness, and low conscientiousness.

A finding that was not expected, and perhaps difficult to explain, was the correlations of the PID-5, OMNI, and CATI with antagonism. This would not be expected from the PID-5 dimensional trait model for OCPD (Krueger et al., 2012). Within the PID-5 dimensional trait model, perseveration is placed within emotional dysregulation, restricted affectivity within low emotional dysregulation, rigid perfectionism within low disinhibition, intimacy avoidance and risk aversion within detachment (Krueger et al., 2012). The PID-5 includes a domain of antagonism (e.g., scales that assess for manipulateness, deceitfulness, and grandiosity), but none of the PID-5 scales for OCPD are from this domain. The placements for perseveration, risk

aversion, and rigid perfectionism were supported in the current study (with respect to their correlations with the IPIP-NEO), but not the placements for intimacy avoidance or restricted affectivity, both of which correlated as highly with antagonism as they did with introversion. These results parallel the findings reported recently by Watson, Stasik, Ro, and Clark (2013) who also reported that intimacy avoidance and restricted affectivity correlated with their FFM measure of antagonism.

This unexpected correlation of the PID-5 scales with antagonism is perhaps understandable through an inspection of items from the PID-5 and other related scales. For example, the FFOCI FFM description of OCPD includes no traits from antagonism (Samuel et al., 2012) and consistent with this conceptualization, the FFOCI total score did not correlate with this domain of the FFM. However, significant correlations with antagonism were obtained for FFOCI Detached Coldness and FFOCI Constricted. FFOCI Detached Coldness aligns closely with PID-5 Restricted Affectivity, and includes such items as, “I take a personal interest in the people I meet” (reverse keyed), “I enjoy getting to know people on a personal level” (reverse keyed), and “Warmth and intimacy are not my strengths.” This scale correlates substantially with introversion, as intended, but perhaps it is understandable that it would also correlate with antagonism. Not taking an interest in persons, not wanting to get to know persons, and endorsing a lack of warmth and intimacy can have the perception and appearance of being antagonistically rejecting of others, as well as being withdrawn and introverted. Similarly, PID-5 Restricted Affectivity includes such items as, “When it comes to my emotions, people tell me I'm a ‘cold fish’,” “People tell me it's difficult to know what I'm feeling,” and “I never show emotions to others.” This scale did correlate with FFM introversion but, as was the case in Watson et al. (2013), it also correlated with antagonism, perhaps because the items also convey a perception or

appearance of being rejecting of relationships and other persons, and not just simply being introverted or detached.

PID-5 Intimacy Avoidance did not even correlate in the current study with FFM introversion. It correlated instead with antagonism (as well as low openness). It includes such items as, “I break off relationships if they start to get close,” “I prefer to keep romance out of my life,” and “I enjoy being in love” (reversed keyed). It is reasonable to predict that persons who endorse such items will be socially withdrawn. However, being so actively rejecting of romance, love, and relationships can also be perceived as being antagonistically rejecting of relationships and other persons.

The FFOCI does include a scale, Constricted, that was hypothesized to represent low openness to feelings. It includes items which do appear to suggest a low openness to feelings (e.g., “I am a thinker, not a feeler” and “I tend to rely on logic rather than feelings”). However, it also includes items which may also convey an antagonistic lack of empathy or concern for the feelings of others (e.g., “I am not a person who is into how people feel about things” and “Empathy, or putting myself in someone else’s shoes, is not my strong suit”). In sum, none of the FFOCI or PID-5 scales were predicted to correlate with antagonism, but it may indeed be the case that restricted affect and disinterest in warm, romantic relationships conveys not only dispositions toward low positive affectivity, social withdrawal, and/or closedness to feelings, but also an antagonistic rejection of close, empathic, interpersonal relationships.

In any case, an important advantage of the FFOCI and PID-5, relative to the CATI, MCMI-III, and OMNI, is that their conceptualizations and assessments of OCPD can be readily disambiguated, or dismantled into various subcomponents (Krueger et al., 2012; Widiger, Lynam, Miller, & Oltmanns, 2012), which allows for a more nuanced consideration and

understanding of findings that will be obtained with these instruments.. The DSM-IV (and now DSM-5) personality disorders are not homogeneous syndromes, defined by just one trait (Zapolski, Guller, & Smith, 2012). This was evident in the current study by the relatively lower Cronbach's alpha values for the traditional OCPD scales. The DSM-IV/5 personality disorders are instead constellations of maladaptive personality traits (Lynam & Widiger, 2001). An advantage of the FFOCI and PID-5 is that how they are conceptualizing and assessing OCPD, and how the respective instruments relate to other measures, can be more specifically delineated and understood by considering their subscales.

For example, the FFOCI total score did not correlate with antagonism, but as noted above, some of the individual FFOCI subscales did correlate with antagonism. Perhaps more importantly, it would be an error to conclude from the current study that the PID-5 does not include any conscientiousness. The correlation for the total score of PID-5 OCPD suggests no relationship with conscientiousness. This particular finding though is perhaps somewhat misleading. The PID-5 does include a subscale for the assessment of rigid perfectionism, which correlates substantially with the FFM conscientiousness. In other words, the PID-5 conceptualization and assessment of OCPD does include maladaptively high conscientiousness, but this particular assessment might be somewhat lost if the total score of the PID-5 is used for the assessment of OCPD, as the inclusion of more scales outside of conscientiousness to assess (for instance) extraversion (or antagonism) may wash out the contribution of the single scale from conscientiousness. In fact, one of the PID-5 scales, Intimacy Avoidance, correlated negatively with conscientiousness, serving in part to work against Rigid Perfectionism's assessment of high conscientiousness. It is therefore suggested that in future research or clinical applications of the PID-5 assessment of OCPD, that results be provided for the individual

subscales, rather than, or at least in addition to, the total score. The same point could also occur for the assessment of CATI, MCMI-III, and OMNI assessment of OCPD, but these traditional measures of OCPD do not include subscales that allow for the assessment and recognition of the contribution of individual components (Krueger et al., 2012; Widiger et al., 2012).

The same point can also be made with respect to the FFOCI assessment of OCPD. FFOCI total score does not correlate substantially with PID-5 OCPD. This medium effect size association does reflect some differences in the conceptualization and assessment of OCPD. Nevertheless, the FFOCI does include subscales which align more strongly with specific subscales of the PID-5. For example, FFOCI Perfectionism aligns conceptually and empirically with PID-5 Rigid Perfectionism (correlating .57), and FFOCI Detached Coldness aligns with PID-5 Restricted Affectivity (correlating .43). FFOCI Risk Aversion aligns with PID-5 Risk Aversion (correlating .61). These closely shared components of OCPD are perhaps not well appreciated if one considers just the correlation of the total FFOCI OCPD score.

However, it is indeed the case that the FFOCI does not include a scale that aligns closely with either PID-5 Perseveration or PID-5 Intimacy Avoidance. PID-5 Perseveration concerns a persistence at tasks long after the behavior has ceased to be functional or effective; Intimacy Avoidance concerns an avoidance of romantic attachments (Krueger et al., 2012). PID-5 Perseveration correlated weakly with the FFOCI total score, SNAP-2 OCPD, MCMI-III OCPD, and DAPQ Compulsivity. PID-5 Intimacy avoidance did not correlate at all with the FFOCI total score, SNAP-3 OCPD, MCMI-III OCPD, or DAPP-BQ Compulsivity. Pfohl and Blum (1995) reviewed and summarized conceptualizations of OCPD within the clinical and research literature and did not identify any reference to perseveration or intimacy avoidance. Lazare, Klerman, and Armor (1970) did refer to perseverance, but this was an adaptive trait that concerns a steady



persistence in a course of action (more closely associated with doggedness and steadfastness).

However, these two PID-5 scales did correlate moderately with the CATI and OMNI assessments of OCPD. Future research may then suggest that it is a liability of the FFOCI assessment of OCPD not to include an assessment of perseverance or intimacy avoidance. On the other hand, the PID-5 OCPD in turn did not correlate with FFOCI Excessive Worry, Risk Aversion, Dogmatism, or with most of the FFOCI compulsivity scales (e.g., Fastidiousness, Punctiliousness, Doggedness, or Ruminative Deliberation). Some of the existing PID-5 scales could be added to the DSM-5 Section 3 trait description of OCPD (e.g., anxiousness and risk aversion; the latter was at one point part of the DSM-5 description of OCPD; Clark, 2012). In any case, it is apparent that the PID-5 and FFOCI conceptualizations and assessment of OCPD are not strongly convergent, and it will be useful for future research to compare their convergent and incremental validity with respect to additional validators of OCPD.

### **Limitations and Future Directions**

The current study was concerned with the validation of the FFOCI assessment of OCPD, particularly with regard to its representation of maladaptive variants of FFM conscientiousness. Included within this study was the PID-5 traits identified within the DSM-5 as being relevant for the assessment of OCPD (including Risk Aversion). Not included within this study were the additional proposed criteria involving impairments in personality functioning for OCPD included within Section 3 of DSM-5 (APA, 2013): Identity (e.g., sense of self derived primarily from work or productivity); self-direction (e.g., overly conscientious and moralistic attitudes); empathy (e.g., difficulty understanding the feelings of others); and intimacy (e.g., relationships being secondary to work and productivity).. It is perhaps reasonable to hypothesize that some these impairments would be associated with FFM conscientiousness, as well as specific FFOCI

scales (e.g., FFOCI Workaholism with identity and intimacy, Punctiliousness with self-direction, and Detached Coldness with empathy). It would be of interest for future research to determine whether these additional components of DSM-5 Section 3 OCPD align with conscientiousness.

The self/other impairments of Section 3 are generally understood to be independent of general and/or maladaptive personality functioning (Skodol, 2012). An assessment of this hypothesis, however, is somewhat hindered by the absence of an approved or authoritative measure of the specific DSM-5 self-other impairments listed within Section 3. There is, however, the recently developed General Assessment of Personality Disorder (GAPD) by Livesley (2006) and the Severity Indices of Personality Problems (SIPP) by Verheul et al. (2008) that include scales for the assessment of self-other impairments that reasonably parallel the DSM-5 self-other diagnostic criteria.

However, of particular relevance to the current study is that initial research with these measures has not demonstrated a close association with OCPD or with compulsivity. Berghuis, Kamphuis, Verheul, Larstone, and Livesley (in press) reported that DAPP-BQ Compulsivity related weakly with GAPD self pathology and interpersonal dysfunction. Verheul et al., (2008) similarly reported relatively low correlations of the SIPP with DAPP-BQ Compulsivity. Berghuis, Kamphuis, and Verheul (in press) included both the GAPD and the SIPP, along with the DAPP-BQ and measures of the DSM-IV personality disorders. They again reported a relatively weak relationship of GAPD and SIPP with compulsivity and OCPD. The self pathology and interpersonal dysfunction assessed by the SIPP and GAPD are hypothesized to be common to all of the personality disorders (hence included within the Section 3 general definition of personality disorder; APA, 2013; Skodol, 2012). However, the scales from these

instruments do not appear to be associated well with compulsivity or OCPD. Berghuis, Kamphuis, Verheul, Larstone, et al. (in press) therefore suggested that “the DAPP-BQ Compulsivity domain may tap a unidimensional construct specific to a particular PD (perhaps obsessive-compulsive PD)” that is not common or shared with other personality disorders. It would be of interest for future research to assess the extent to which the FFOCI scales, relative to the GAPD and SIPP, account for variance within the Section 3 self and interpersonal impairments criteria for OCPD, given at least the appearance that they do involve aspects of compulsivity.

## **Conclusions**

The results of the current study provided support for the convergent and discriminant validity of the FFOCI. The study also provided further support for conceptualizing measures of compulsivity (e.g., perfectionism, workaholism, fastidiousness, punctiliousness, doggedness, and ruminative deliberation) as maladaptive variants of FFM conscientiousness. Finally, the study also identified similarities and differences among existing measures of OCPD from the perspective of the FFM. It is apparent from the current study that the FFOCI (as well as the MCMI-III and to a lesser extent the SNAP-2) emphasizes in particular maladaptive variants of conscientiousness in its assessment of OCPD, whereas the PID-5, CATI, and OMNI total scores do not appear well related to conscientiousness. On the other hand, the PID-5 does include a subscale that is closely associated with compulsivity which might not impact significantly PID-5 research that fails to consider individually the distinct components of the dimensional trait model.

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### HONORS & AWARDS

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2011 James Miller Award, for poster on The Late Positive Potential as a Neural Index of Five-Factor Neuroticism

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### PUBLICATIONS

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Glover, N., **Crego, C.**, & Widiger, T. A. (2012). The clinical utility of the five-factor model of personality disorder. *Personality Disorders: Theory, Research, and Treatment*.

Widiger, T. A., Costa, P. T., Gore, W. L., & **Crego, C.** (2012). Five factor model personality disorder research. In T. A. Widiger & P. T. Costa (Eds.), *Personality disorders and the five-factor model of personality* (3rd ed.). Washington DC: American Psychological Association.

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Widiger, T.A., & **Crego, C.** (2013). Personality Disorders. In R. Biswas-Diener & E. Diener (Eds), Noba textbook series: Psychology. Champaign, IL: DEF Publishers. DOI:

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Widiger, T. A., & Crego, C. (in press). DSM-IV. In R. Cautin & S. Lilienfeld (Eds.), *The encyclopedia of clinical psychology*. NY: Wiley-Blackwell.

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