Personality Traits in the International Classification of Diseases 11th Revision (ICD-11)

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Purpose of review
The International Classification of Diseases 11th Revision (ICD-11) officially adopted a dimensional system of personality disorder that was a paradigm shift for the classification of personality disorders. The purpose of this article is to review the growing amount of research on one component of that system – the personality trait domain model. Importantly, several self-report measures have been developed to measure the ICD-11 domains and have been subjected to initial validation through examination of their factor structure, multimethod use, convergent and discriminant validity with other prominent dimensional personality models (such as the Five-Factor Model), and criterion validity for important life outcomes.

Recent findings
Studies indicate the ICD-11 domains align with the Five-Factor Model and prior influential models of dimensional personality traits, as expected, and thus rest on an impressive body of empirical research. They also capture large amounts of variance included in the ICD-10/Diagnostic and Statistical Manual of Mental Disorders, 5th Edition Section II personality disorders.

Summary
Together these findings support the construct validity of the ICD-11 trait domains. However, continued validation research is necessary, as well as research on how to implement these domains into clinical practice, and research on the more specific facet-level of the trait domains – although the ICD-11 model is only officially at the domain-level.

Keywords
dimensional model, ICD-11, personality disorder, personality traits, questionnaire

INTRODUCTION

The recent shift to a dimensional system of personality disorder classification in the International Classification of Diseases 11th Revision (ICD-11) is a leap forward for psychiatry. Within the classification system is a five-domain trait model, for which several measures have recently been developed and for which initial validation has been provided (Table 1). The present review examines recent validation research on the ICD-11 traits.

The ICD-11 eliminates the diagnostic personality disorder categories and replaces them with a three-component system: first, a general severity rating; second, five prominent personality trait domains; and third, a borderline pattern specifier, which assesses Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5) Section II/ICD-10 borderline personality disorder [1]. The five domains of the ICD-11 maladaptive personality trait model are directly aligned with the Five-Factor

Model (FFM) : negative affectivity aligns with FFM neuroticism, detachment with low FFM extraversion, dissociality with low FFM agreeableness, anankastia with high FFM conscientiousness, and disinhibition with low FFM conscientiousness [2,3]. Of note is that anankastia and disinhibition align with opposite ends of FFM conscientiousness, and thus are theoretically bipolar opposites. More specific *facets* of each domain are described in ICD-11, but only the domain-level is used for clinical description. This decision was made to preserve parsimony [4].

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KEY POINTS

- The ICD-11 trait domains align with prior well established and validated dimensional personality models such as the Five-Factor Model of personality, providing them with a strong base of preexisting research support.

- The ICD-11 trait domains capture variance in important life outcomes such as depression, life satisfaction, and insomnia, as well as the ICD-10/DSM-5 Section II personality disorder categories.

- Several self-report measures of the ICD-11 trait domains are available, as well as an informant-report measure, and all are freely available for use and have a growing amount of research support.

RECENT FINDINGS

Personality Inventory for ICD-11

The Personality Inventory for ICD-11 (PiCD) was developed as the first direct self-report measure of the ICD-11 trait domains according to descriptions of the ICD-11 trait domains made by the ICD-11 Workgroup for the Revision of Personality Disorders [5]. The measure consists of 60 items, with 12 measuring each of the five domains, and is freely available for use. In the initial validation study, the scales showed good convergent and discriminant validity and joint factor structure with measures of FFM-aligned trait domains of normal and maladaptive personality, including the Personality Inventory for DSM-5 (PID-5) [5]. The PiCD showed good factor structure in an item-level analysis of all 60 items, with 90% of the items loading above λ = 0.40 on their expected domain factor. A four-factor solution consisting of negative affectivity, detachment, and dissociality factors, and a bipolar anankastia-versus-disinhibition factor fit the data better than a five-factor solution with separate factors for anankastia and disinhibition. In a five-factor item-level solution, the bipolar anankastia-versus-disinhibition factor divided into two bipolar anankastia-versus-disinhibition factors, a finding that has since been replicated several times [6–8]. Notably the four-factor structure with a bipolar factor is somewhat confusing, but the factor structure has no bearing on clinical assessment, because a clinician would score and interpret the PiCD for five separate domains regardless of the factor structure.

Oltmanns and Widiger [3] examined the relations of the PiCD with the other components of the ICD-11 system as well as replicated the alignment of the PiCD scales with the FFM and the four-factor structure of the PiCD in an online sample of 269 adults with mental health treatment histories. We found that all domains of the PiCD except for anankastia correlated with measures of the ICD-11 and DSM-5 Section III general severity ratings and the borderline specifier. Gutierrez et al. [8] replicated the four-factor structure and the PiCD scales' relations to ICD-11 general severity in large samples of 2522 Spanish adults and 797 inpatients. McCabe and Widiger [9■] as well identified the four-factor structure of the PiCD, this time in a joint analysis with the facets of the PID-5. Further, they found that the PiCD scales accounted for over 60% of the variance in measures of borderline personality disorder. Carnovale et al. [7] found the four-factor structure and that the PiCD scales accounted for a moderate amount of variance in the MMPI-2-RF scales (median $R^2 = 0.30$) in a sample of 518 Canadian college students.

Crego and Widiger [10■] examined the relations of the PiCD domains to foundational dimensional models of personality disorder traits: the Schedule for Nonadaptive and Adaptive Personality (SNAP) [11],

Table 1. Questionnaire measures of the International Classification of Diseases 11th Revision trait domains

Measure	Number of scales	Number of items and items-per-scale (on average)
PiCD	5 Domain scales	60 Items, 12 items per domain
IPiC	5 Domain scales	60 Items, 12 items per domain
FFiCD	5 Domain scales, 20 facet scales, 47 nuance scales	121 Items, 24 items per domain, 6 items per facet, 2–3 items per nuance
PID-5 for ICD-11	5 Domain scales, 16 facet scales	143 Items, 28 items per domain, 9 items per facet
PID-5BF+ (original)	6 Domain sales, 17 facet scales	34 Items, 6 items per domain, 2 items per facet
PID-5BF+ (revised)	6 Domain scales, 18 facet scales	36 Items, 6 items per domain, 2 items per facet
PAQ-11	17 Items, 5 domain scales	17 Items, 3–4 items per domain

DSM-5, Diagnostic and Statistical Manual of Mental Disorders, 5th Edition; FFiCD, Five-Factor Personality Inventory for ICD-11; ICD-11, International Classification of Diseases 11th Revision; IPiC, Informant Personality Inventory for ICD-11; PAQ-11, Personality Assessment Questionnaire for ICD-11; PiCD, Personality Inventory for ICD-11; PID-5 for ICD-11, PID-5 scored for ICD-11; PID-5, Personality Inventory for DSM-5; PID-5BF+, PID-5, Brief Form Plus.

which measures three maladaptive trait domains, and the Dimensional Assessment of Personality Pathology (DAPP) [12], which measures four maladaptive trait domains. They found convergent, discriminant, and structural validity for the PiCD domains with the SNAP and DAPP, including support for the four-factor structure. Of note is that the DAPP includes a compulsivity domain – analogous to ICD-11 anankastia – and the SNAP includes two facet scales of compulsivity (Propriety and Workaholism). The PiCD Anankastia scale correlated $r = 0.69$ with DAPP Compulsivity, $r = 0.55$ with SNAP Propriety, and $r = 0.42$ with SNAP Workaholism.

Somma *et al.* [13] provided validation evidence for the Italian PiCD in a community sample of 1122 adults. They replicated the convergent and discriminant validity of the PiCD with the FFM and the PID-5 (shorter form), and the four-factor structure. In a subset of the sample ($n = 262$), they found 2-week test–retest reliability, with r values ranging from 0.81 (anankastia) to 0.89 (negative affectivity and detachment). PiCD negative affectivity, detachment, dissociality, and disinhibition domains correlated with two forms of personality impairment.

Oltmanns and Widiger [14] – in developing and validating an informant-version of the PiCD – also examined the criterion validity of the PiCD for several criteria variables such as depressive symptoms, relationship satisfaction, insomnia symptoms, social adjustment, satisfaction with life, health perceptions, and cognitive functioning in a sample of 714 community older adults. Specifically, PiCD Negative Affectivity, Disinhibition, and Detachment were correlated with depressive symptoms, dissatisfaction with life, and worse perceptions of mental health. Negative affectivity had a uniquely strong relationship with insomnia symptoms and detachment had a more unique relationship with social problems. These findings are an important step forward for the criterion validation of the ICD-11 and PiCD domains.

Informant-Personality Inventory for ICD-11

Oltmanns and Widiger [14] developed the Informant Personality Inventory for ICD-11 (IPiC), an informant-version of the PiCD. The IPiC contains the same 60 items as the PiCD, with pronoun changes and minor adjustments to facilitate reporting from the other-perspective about a target person, and is freely available. Bach *et al.* [6] first examined the factor structure of the IPiC as completed by 133 clinicians describing 238 different patients. The IPiC yielded a four-factor solution at the item-level, again with the bipolar

anankastia–disinhibition factor, and a five-factor solution with two separate bipolar anankastia-versus-disinhibition factors (along with negative affectivity, detachment, and dissociality factors).

In Oltmanns and Widiger [14], the IPiC and PiCD were administered to 714 community adults and 569 informants. The IPiC again demonstrated a four-factor solution at the item-level. Self-other agreement correlations on the domains ranged from $r = 0.28$ (for anankastia and disinhibition) to $r = 0.44$ (detachment), which are consistent with prior levels of self-other agreement on maladaptive trait domains [15]. The IPiC correlated with self-reported external criteria such as depressive symptoms, insomnia symptoms, lack of social support, dissatisfaction with life, and worse mental health perceptions. IPiC scales were more strongly associated with informant-reported criteria: correlating even higher with informant-reported relationship dissatisfaction, worse health status, and cognitive problems.

Five-Factor Personality Inventory for ICD-11

The ICD-11 Workgroup decided to limit the trait model to the broader domain-level. Yet within each of the ICD-11 trait domain descriptors, there are clear indicators of more specific, facet-level traits that contribute to each domain. Further, it is evident from research that the facet-level provides a clearer and more specific description of personality [16–18]. For example, both paranoid and avoidant personality disorders are defined by high levels of domain-level neuroticism. However, paranoid is defined at the facet-level – within neuroticism – by high angry hostility, while avoidant is defined by high anxiousness, depressiveness, and self-consciousness facets [16].

Taking this into consideration, Oltmanns and Widiger [19▪] developed a facet-level self-report measure of the ICD-11 trait domains called the Five-Factor Personality Inventory for ICD-11 (FFiCD). The measure was developed from items of over 100 scales of the dimensional Five-Factor Model of Personality Disorder [20]. The FFiCD consists of 121 items that score the five domains, as well as 20 facets, and it is freely available for use. The initial validation article provided evidence of convergent, discriminant, and structural validity of the FFiCD facets with the PiCD, the FFM, and the PID-5. The domains and facets of the FFiCD also display a four-factor structure including a bipolar anankastia-versus-disinhibition factor. Further, the FFiCD includes 47 'nuances', which are 2–3 item scales below the facets that contribute to an even more specific diagnostic picture of the individual.

Personality Inventory for DSM-5

After the PiCD was published online, Bach *et al.* [21▪] published a scoring algorithm for the ICD-11 domains via the PID-5 assessment of the DSM-5 Section III Criterion B trait domains. Creating a 'cross-walk' between the ICD-11 and DSM-5 Section III Criterion B trait domains was a relatively straight-forward task for the domains of negative affectivity, detachment, dissociality (i.e., antagonism), and dis-inhibition, as those four domains are essentially analogous across ICD-11 and DSM-5 Section III. The tougher part has been assessing anankastia with the PID-5. Anankastia is not included in the DSM-5 trait model. PID-5 ICD-11 Anankastia is scored with the PID-5 Rigid Perfectionism and PID-5 Perseveration facets. Including Perseveration in this scoring has proven problematic, as this scale was developed to measure negative affectivity.

Bach *et al.* [21▪] originally hypothesized PID-5 facet/ICD-11 domain alignments and tested the algorithm in a sample of 1541 Danish outpatients and community adults and replicated it in a sample of 637 US undergraduates. Exploratory analyses demonstrated structural validity for a five-factor solution, including separate anankastia and disinhibition factors along with negative affectivity, detachment, and dissociality factors. However, in the Danish sample, the anankastia factor – defined by PID-5 Perseveration – correlated $r = 0.63$ with the negative affectivity factor. Bach *et al.* [22] did find that the anankastia scale correlated $r = 0.60$ with obsessive–compulsive personality disorder, providing evidence that it captures content related to compulsivity/anankastia. Lotfi *et al.* [23] and Lugo *et al.* [24] both showed that the general structure of the PID-5 – as scored for the ICD-11 trait domains – was supported in Iranian and Brazilian adults, respectively. However, they both again found that the anankastia factor was highly correlated with negative affectivity.

Sellbom *et al.* [25▪] examined the PID-5 ICD-11 scoring with the MMPI-2-RF and measures of DSM-IV personality disorders and FFM traits in a sample of 343 psychiatric outpatients. They found support for the five-factor structure and associations with the FFM and the MMPI-2-RF Personality Psychopathology 5 (PSY-5). The ICD-11 domains also captured large amounts of variance in each of the DSM-IV personality disorder scores. However, the PID-5 ICD-11 anankastia factor again correlated highly with the negative affectivity factor ($r = 0.67$), and it correlated $r = 0.56$ with the PSY-5 Negative Emotionality scale – which was even higher than all other hypothesized convergent correlations between corresponding scales, except for negative affectivity. PID-5 ICD-11 Anankastia did again, however, correlate $r = 0.54$ with obsessive–compulsive personality symptoms.

McCabe and Widiger [9▪] directly compared PID-5 ICD-11 Anankastia with PiCD Anankastia. The correlation was only $r = 0.34$. This was likely because the PID-5 Perseveration facet correlated $r = -0.17$ with PiCD Anankastia. In contrast, PID-5 Rigid Perfectionism correlated $r = 0.54$ with PiCD Anankastia. In a four-factor solution of the PiCD scales and the facets of the PID-5, perseveration-loaded $\lambda = 0.69$ on a negative affectivity factor and not at all on a bipolar anankastia-versus-disinhibition factor that included PiCD Anankastia and PiCD Disinhibition, as well as PID-5 disinhibition facets. Together these studies indicated no problems in the PID-5 assessment of ICD-11-negative affectivity, detachment, disinhibition, or dissociality, but indicated problems in the assessment of anankastia, probably due to the inclusion of PID-5 Perseveration in the scoring of PID-5 ICD-11 Anankastia.

Personality Inventory for DSM-5, Brief Form Plus

Kerber *et al.* [26] derived the PID-5, Brief Form Plus (PID-5BF+) as a brief measure scorable for both the DSM-5 Section III Criterion B traits and the ICD-11 traits in data from English and German-speaking samples ($N = 2927$). They used ant colony optimization to select 34 items that assess 17 of the original 25 PID-5 facets. Internal consistency and convergent, discriminant, and criterion validity support was provided for negative affectivity, detachment, antagonism, and disinhibition domains. However, PID-5 ICD-11 anankastia 'had the lowest reliability among all six domains and showed remarkable differences between the constructs of perseveration and rigid perfectionism' ([24], p.25).

Bach *et al.* [27▪] provided an interesting solution to the problematic PID-5 assessment of anankastia. In its development, the PID-5 at one point included more specific facets of compulsivity/anankastia within Rigid Perfectionism [28]. However, these facets were eventually combined into PID-5 Rigid Perfectionism. In light of the problems with the Perseveration facet in the assessment of anankastia, Bach *et al.* altered the PID-5BF+ to delete the perseveration items and divide PID-5 Rigid Perfectionism into three separate two-item facets: orderliness, rigidity, and perfectionism. This led to a modified PID-5BF+ that includes 36 items assessing six domains and 18 facets, with two items per facet. Support was found in archival data of 16 samples from Europe, the United States, and Brazil for a six-factor structure including negative affectivity, detachment, disinhibition, anankastia, antagonism (i.e., dissociality), and psychoticism factors. Notably, the factor correlations between anankastia and negative affectivity

were much lower, suggesting improved discriminant validity for PID-5BF+ Anankastia. However, the PID-5 Rigid Perfectionism facet, from which these two-item facets derive, was developed by retaining only items that loaded highly on a single latent factor (i.e., $\lambda > 0.50$), suggesting high intercorrelations of the items. It is possible that these three facets may be relatively homogeneous.

Personality Assessment Questionnaire for ICD-11

Kim et al. [29■] developed a brief 17-item domain-level self-report measure for the ICD-11 trait domains in samples of Korean adult students and psychiatric patients. The Personality Assessment Questionnaire-11 (PAQ-11) was derived from the Personality Assessment Schedule interview [30], which was used previously in field trials for initial validation of the ICD-11 domains [31■]. The PAQ-11 includes five items to assess negative affectivity, four items for anankastia, four items for detachment, two items for disinhibition, and two items for dissociality. The PAQ-11 domains showed convergent and discriminant validity with and against with the FFM and PID-5 trait measures. Negative affectivity also showed convergent relations with three measures assessing depression, anxiety, anger, and emotional dysregulation. The PAQ-11 may be a useful brief measure of the ICD-11 domains.

Language

Finally, Barroilhet et al. [32,33] have conducted interesting work scoring the ICD-11 traits via transcribed language in electronic health records. In 3623 psychiatric patients, disinhibition and negative affectivity predicted longer hospital stays. In 12 274 medical patients, they found that disinhibition predicted greater mortality risk and detachment increased the likelihood of readmission. The use of electronic health records to assess the ICD-11 traits is a promising avenue for future research.

CONCLUSION

The ICD-11 officially shifted the classification of personality disorder from a categorical system to a dimensional one. This occurred because of the extensive research support on the validity of dimensions for assessing personality [34]. Research on the five ICD-11 trait domains has been developing rapidly in the past 2 years, providing empirical support for the ICD-11 dimensions specifically. The ultimate goal is that – through this improvement in the classification of personality disorders – we will be able to develop and refine treatments that may improve both mental and physical health outcomes.

Conflicts of interest
There are no conflicts of interest.

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